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ENVIRONMENTAL EDUCATION AND STEAM APPROACH FOR VISUALLY IMPAIRED PUPILS IN KINDERGARTENS (GREEN4VIP)

INCLUSIVE TOOLBOX FOR VIP

Various authors

Environmental education and STEAM approach
for Visually Impaired Pupils in kindergartens
(GREEN4VIP)-
Project N° 2022-1-IT-02-ka220-sch-000086906

ENVIRONMENTAL EDUCATION AND STEAM APPROACH FOR VISUALLY IMPAIRED PUPILS IN KINDERGARTENS (GREEN4VIP)
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ISBN: 9798343256734
Independently published

Images: Freepik

The publication is available in electronic format on https://www.green4vip.eu/

Co-funded by the European Union

Project co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

INCLUSIVE TOOLBOX FOR VIP

States Parties recognize the **right of persons with disabilities to education**. An inclusive education system at all levels and lifelong learning will be directed to the full development of human potential and sense of dignity and self-worth, and the strengthening of respect for human rights, fundamental freedoms and human diversity;

In realizing this right, States Parties shall ensure that Persons with disabilities are not excluded from the general education system on the basis of disability (a) **affective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion** (e).

From Convention on the Rights of Persons with Disabilities (CRPD) Article 24 – Education.

Acknowledgements

We would like to thank all teachers, educators, researchers, and all others that have participated in the project and that have, with their ideas, feedback, and encouragement contributed to the development of this document.

In particular, we would like to thank Weronika Pawlik, Irene Matteucci, Beatrice Mantellassi, Agnieszka Siekan, Lorena Alina, Eleni Andrikopoulou, Nikolitsa Andrikopoulou and Eleni Simou who, during the Transnational Training Event in Madrid in the month of December 2023, provided their suggestions for improvement of this document.

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INTRODUCTION

Welcome to the GREEN4VIP Inclusive Toolbox for VIP, an innovative collection of inclusive environmental education activities, based on the STEAM approach, designed specifically for curious minds aged 3-5 years old, with a special regard on pupils with a visual impairment (VIP).

The Toolbox presented in this document is part of the GREEN4VIP project cofounded by the Erasmus+ programme, whose main objective is to develop innovative training materials for early childhood teachers to bring environmental education (based on the STEAM approach) into the classroom, both in class and online, with children aged 3-5 years, focusing on VIP.

In the enchanting world of early childhood, fostering a love for nature and instilling a sense of environmental responsibility are paramount. This Toolbox is crafted with the belief that every child, regardless of background or ability, deserves the opportunity to connect with the natural world in a meaningful and enjoyable way.

Our carefully curated activities aim to spark the innate curiosity of young learners, providing them with a hands-on and interactive approach to understanding the wonders of the environment. From exploring the magic of plant life to discovering the importance of recycling, this Toolbox is a gateway to a world where learning and play seamlessly intertwine.

We understand the diverse needs and abilities of children in this age group, and our inclusive design ensures that every little kid, including those with a visual disability, can actively participate and thrive in the joy of environmental discovery.

The Toolbox is organized in 4 different main sections:

1) EFFICIENT USE OF RESOURCES: water, energy and soil; food choices and health

2) BIODIVERSITY PROTECTION: food production and conservation of biodiversity

3) LIFE CYCLE OF WASTE MANAGEMENT: Reduce, Reuse, Recycle

4) SUSTAINABLE LIFESTYLES: consumption habits.

While each section is divided as follows:

1. Aims and context of the workshop

2. Resources needed

3. Group size

4. Duration

5. Step-by-step instructions to implement activities, both offline and online, based on the STEAM approach

6. Reflection questions for debriefing

7. Possible risk factors

8. How to adapt the activities to VIP needs and specific age-group

9. Tips and suggestions on how to involve families.

Each section is accompanied by a video tutorial, which illustrates an activity that can be implemented in the classroom with kids. The video tutorials are audio described to be accessible also to visually impaired people and are available through YouTube. At the end of the Toolbox, it is possible to find a section where each video tutorial is explained and the direct YouTube link is provided.

Pre-school teachers can make the most of the GREEN4VIP Inclusive Toolbox for VIP by incorporating its diverse activities into their curriculum, creating a dynamic and engaging learning experience for children aged 3-5. Here are some ways in which teachers can effectively use the Toolbox:

Themed Workshops:

Organize themed workshops centered around the environmental topics covered in the Toolbox (efficient use of resources, protection of biodiversity, waste management and sustainable lifestyles). This approach enhances children's understanding through a more concentrated and immersive experience.

Integration into Lesson Plans:

Embed the Toolbox activities into existing lesson plans, aligning them with key curriculum objectives. Introduce concepts such as water conservation, recycling, plant life, and animal habitats through hands-on activities that capture children's attention.

Flexible Use for Diverse Learners:

Recognize and accommodate diverse learning styles and abilities. The Toolbox's inclusive design allows for flexibility, enabling teachers to adapt activities to suit the individual needs of their pupils.

Outdoor Exploration:

Take learning outdoors by incorporating nature walks or garden visits into the curriculum. The Toolbox activities can be seamlessly integrated into outdoor settings, allowing children to connect with the natural world firsthand.

Multisensory Engagement:

Capitalize on the multisensory nature of the activities to enhance the learning experience. Incorporate touch, sight, sound, and even taste into various exercises to cater to different learning preferences.

Group Collaborations:

Foster a sense of community and teamwork by organizing group activities. The Toolbox provides opportunities for collaborative learning, encouraging children to share their observations and discoveries with one another.

Storytelling and Discussions:

Use the Toolbox as a springboard for storytelling sessions and group discussions. This helps reinforce key concepts and allows children to express their thoughts and questions about the environment.

Parent Involvement:

Encourage parents to participate in at-home extensions of Toolbox activities. Share resources and ideas to create a bridge between the classroom and home, fostering a consistent environmental learning experience.

Assessment and Progress Monitoring:

Use the Toolbox to informally assess children's understanding of environmental concepts. Monitor their progress and tailor future activities based on their responses and engagement levels.

Celebrating Achievements:

Acknowledge and celebrate children's achievements in environmental exploration. Consider creating a display area where their artwork, projects, or findings can be showcased, promoting a sense of pride and accomplishment.

By integrating the GREEN4VIP Inclusive Toolbox for VIP into their teaching practices, preschool educators can cultivate a rich and inclusive environment that nurtures children's love for nature while laying the groundwork for a lifelong commitment to environmental stewardship.

At first, this Toolbox has been tested during a transnational Training Event held in Madrid in December 2023 attended by 14 pre-school teachers from project partner countries. Then, at national level, each partner has tested the resources in the spring 2024 with 10 additional pre-school teachers.

Join us on a journey where the foundation for a lifelong love and respect for the planet is laid in the most delightful and inclusive way possible.

Let the adventure begin!

EFFICIENT USE OF RESOURCES: water, energy and soil, food choices and health

1.Aims and context of the workshop

Efficient use of resources is crucial for sustainable development, environmental protection and improved quality of life. Introducing actions at the individual, societal and institutional levels can contribute to a more sustainable management of these resources.

Integrating the STEAM approach with environmental education can benefit children immensely. Through everyday activities such as nature study, eco-friendly design and nature-inspired art, pupils have the chance to not only understand how the natural world works, but also how they can protect it and contribute to sustainable development.

FIG.1-Recycling in agricultural production [1]

Part I

Water: promoting water conservation in households, thoughtful use of water in industry and agriculture, and investing in modern technologies that enable water efficiency, such as recycling systems or water purification.

Part II

Energy: implementing energy-saving technologies in industry, construction and transport. Investing in renewable energy sources such as solar, wind or geothermal energy.

Part III

Soil: introducing agricultural practices that minimise soil erosion and pollution, such as organic farming or agroecology, and protecting natural areas and applying sustainable land-use practices.

Food choices: education on the health and environmental benefits of a plant-based diet, which can help reduce pressure on natural resources. Encouraging the choice of local and seasonal foods, which can reduce the carbon footprint associated with food transport.

Health: investing in health education and prevention programmes to reduce the burden on the health system and the resources needed to treat diseases, and encouraging physical activity, healthy eating and the avoidance of harmful substances, thereby improving the overall health of the population.

The education of blind children in kindergarten related to the effective use of resources aims to develop the ability to explore the world with different senses through personal experience, to create

[1] *Fig. 1 - Source: Freepik*

environmental and social awareness, to promote healthy lifestyles and to develop versatile skills useful in everyday life.

Objectives:

- **Resource awareness:** to introduce children to different resources such as water, energy, soil and the impact of food choices on health, so that they understand how important they are for everyday life.
- **Environmental education:** highlighting the importance of protecting the environment and using natural resources responsibly, promoting care for the environment and encouraging environmental action.
- **Understanding connections:** showing children how resources are interconnected and how their use affects each other - for example, how choosing healthy food affects health.
- **Promoting frugality:** encouraging the economical use of resources by showing the benefits of using them wisely, as well as the consequences of waste.
- **Practical activities:** giving children the opportunity to experiment with different materials, showing them how they can save water and energy, e.g. through simple exercises where participants can show what daily activities use the most water or energy.
- **Developing social skills:** the workshops are the opportunity to collaborate, create together, share ideas and experiences between children and build social bonds.

  During such workshops, it is important that children can actively participate, ask questions and explore different aspects of resources. The role of pre-school teachers is to encourage children to think about the impact of their daily activities on the environment and health. Integrating play, experimentation and practical activities with educational elements allows for effective learning for the youngest children.

2.Resources needed

Teaching aids needed to implement educational workshops:

TV screen with Internet connection for showing films and songs

Materials for exercises / experiments:

Part I WATER

Water Workshop 1:

- ✓ 3 glasses, 3 food colourings (yellow, red, green)
- ✓ Glasses for each child to drink water / water with juice
- ✓ Some juice to add to water for each child
- ✓ Ice cubes
- ✓ Kettle to boil the water (to produce the steam)

Water Workshop 2:

- ✓ 1 litre plastic bottle
- ✓ 2 sheets of soft edge paper

Water Workshop 3:

- ✓ If implementing the activity in the kindergarten's garden – all the tools needed for planting and watering a plant (and some plants to plant, if possible)

Water Workshop 4:

- ✓ Two bowls, one with cold and one with warm water

Water Workshop 5:

- Annex 1 –GREEN4VIP CARD GAME (Water)

Part II ENERGY

Energy Workshop 1: no additional material required

Energy Workshop 2:

- ✓ battery-powered toy or battery-powered radio
- ✓ everyday electrical appliances in the kindergarten - e.g. electric kettle, radio, TV, etc.

Energy Workshop 3: no additional material required

Energy Workshop 4:

- ✓ microphone, preferably battery-powered

Energy Workshop 5:

- ✓ for the exercise number 1 you will need a 9V battery, LEDs, a buzzer, Play Doh conductive plastic mass. Wire or wire clips may also be useful.

Part III SOIL

SOIL Workshop 1

- ✓ several types of soil (dry, wet, sand, soil from the garden, clay).
- ✓ containers or trays for storing different types of soil.
- ✓ towels or wet wipes for cleaning hands after activities.

3.Group size

All activities can be done with a group with a minimum of 2 and a maximum of 25 children. In some activities the children should be divided into groups in order to share the materials to be used.

4.Duration

(One workshop in the classroom on average 30 min.)

The teacher prepares the teaching materials for the workshop in advance.

As the workshop topics are very important and may be new and difficult for children aged 3-5 years, we propose to dedicate a whole week to one topic, implemented in a very diverse way (STEAM methodology).

Due to the age of the children, we suggest that this should be about 30 minutes per day (we count art time separately, art activities can be added on the same day – see Annex 2).

The environmental education programme for children aged 3-5 years consists of an introduction to ecology and 3 thematic parts:

I. Water as a gift of nature and how to use it sparingly (5 x min. 30 minutes)
II. Energy - how to use it ecologically and economically (5 x min. 30 minutes)
III. Soil, food choices and health (min. 30 minutes)

5.Step-by-step instructions to implement activities, both offline and online, based on the STEAM approach

Methods used in each topic block:

- Classroom workshops: Theory and practice, using STEAM methodology - films, songs rhymes, experiments, exercises, art activities, etc.
- Outdoor learning activities. Visit: e.g. to a fruit and vegetable market, a local farmers' market, a nearby farm, a walk in the park, garden, by the river, going to the kindergarten garden, etc.
- Use of modern technologies - e.g. ZOOM (e.g. to meet an expert on a topic - this could be someone from the children's family, or to enable a child who could not make it to kindergarten that day to participate in the activity)

Introduction to the topic of ecology (5 minutes)

The group of children sits in a circle around the teacher, who announces that there will be a workshop on ecology.

Some info for introduction, children are encouraged to actively participate.

The teacher asks the children if they already know what ecology is.

He listens to the children and then gives a definition:

"Ecology is the science of order and disorder in nature, and how this order and disorder affects human life and the environment in which they live."

Let's consider what it means for something to be ecological. It means that it does not harm the environment. And what is the environment? It is everything that is around us, i.e. the air, lakes, rivers, seas, lawns, meadows, forests, in other words, everything that surrounds us that has not been created by man.

But it is human beings, small and adult, who have a say in whether this environment will be healthy, unpolluted, and whether we will lack these various natural resources.

There are several such natural resources that we cannot live without. Can you give some examples? The teacher listens to the children.

The teacher announces the start of the workshop on water.

WATER

Workshop 1 (30 minutes on average, no more than 45, with a short break, if needed)

Introduction: 10 minutes

Let us start with water. Water is one of the resources we cannot live without. Today and throughout the week in our workshops we will be dealing with water.
If there is a person here who has not dealt with water today, please put your hand up.
Nobody raised their hand! Well, you can see that we cannot live without water.

So, everyone has had to deal with water.
Can you tell us for what did you use the water this morning?
Time for the children to speak.

Then, depending on what the children have said, the teacher can say, for example:

Did you drink something for breakfast today? Everything we drink contains water. Even juices and other coloured, cold and hot drinks.

Did you wash yourselves this morning? Well, that's right. So you needed water this morning.

We can't live without water. Because water is so important, we are going to dedicate our entire workshop to it today. Water is the hero of today (or of the whole week).

Every child knows what water is, right?

Exercises: Discovering water through the different senses (20 min)

Touch: Water is something you can touch, for example with your lips when you drink it or with your hands when you wash them.

Hearing: And water can also be heard. So maybe first, let's hear water, what sounds it makes.

It will be a little riddle - what does water hum about?
O czym szumi woda - zagadki dźwiękowe - YouTube
(1 min, 42 sec.)

Another recording, also the sound of water
https://www.youtube.com/watch?v=yehY0zxymlQ
(1 min, 19 sec.)

FIG.2 -A little girl is listening [2]

Smell: Water on its own, pure water, has no smell, but it can take on different smells depending on what we add to it.

FIG.3 -Lemon squeezed into a glass of water

[2] *Fig.2 – 5 - Source: Freepik*

The children sit in a circle, the kindergarten teacher gives each child in turn water alone to smell (pure water does not smell!), then water with lots of lemon, then strong coffee, then water with strong mint (or something else).

So, the water changes its smell, depending on what we add to it, but it is still **water.**

Sight: Next, the teacher shows the water that has to be colored with different food colorings and says to the children - you can see that water can also change color depending on what we add to it (if there is a blind child in the group, or one who cannot distinguish colors, then the teacher tells the child that the water comes in 3 glasses, and now he will add some drops of food coloring to each and each glass of water now has a different color - yellow, red and green).

FIG.4 -Three glasses of colored water

FIG.5 - Children drinking an orange liquid

Taste: Each child is given a cup with a small amount of water to drink. First it is water alone, then with a little bit of some juice.

Touch, sight: The pre-school teacher informs the children that water can exist as liquid, vapor and ice and snow. It is still the same water.

The kindergarten teacher invites each child in turn to a table: there is a small bowl with water, ice cubes on a plate and a cup with hot water over which steam rises.

Each child touches the water, then the ice cubes, and finally, under the teacher's control, touches the steam.

The teacher explains to the children that it is still the same water. It has the property that it can become steam if it is very hot and can freeze when it is very cold. E.g. snow, it is such frozen rain.

Summary: The kindergarten teacher can say to the children: today we have talked about the important role water plays in everyone's life. Everyone needs it from the very morning onwards, for drinking and for washing, among other things.

Water itself has no color or smell. Water can be in liquid form, or it can turn into ice, steam or snow, in wintertime. It can change color if we add something colored to it.

Water is so important that we will continue to talk about it in the next workshop.

WATER

Workshop 2 (30 minutes on average, no more than 45, with a short break, if needed)

Informative section: Saving water

Did you know that we all use too much water, and that is why we may eventually run out of it? For example, in Africa, where it is very hot, it is already scarce.

If everyone saves water, then we won't run out of it and there won't be a drought in the world.

We should be aware of that; we need water to produce everything.

FIG.6 - A child with a sheet of paper [3]

See, I have here one piece of paper (the kindergarten teacher can give a soft piece of paper to the children so that each child can take this piece of paper in their hand). **How much water is used to produce 1 sheet of paper?**

To produce 1 sheet of paper, 10 liters of water are used. What do you think, is it a lot of water or not? And this is just one sheet of paper, but many sheets of paper are produced all over the world. Everyone needs paper, children and adults in all countries.

FIG 7 -A little boy with a bottle

The teacher approaches each child and shows (supporting with hands) a one-liter bottle of water and points out that it takes as much water as there is in such 10 bottles to produce one sheet of paper. Water is needed to produce almost everything, e.g. to produce all your toys, to produce the clothes you wear. Water was needed to produce every single thing that is in this room. But more than that, all humans, you children and us adults, are made up largely of water, just like dogs, cats, all other animals and plants as well. Water is the basic ingredient of all things and creatures that surround us.

Imagine one day without water. It would be a very difficult day for everyone.

So you see, water is very important, and we often forget it. We don't think about the fact that some children don't have as much of it as they need, such as children in poor African countries.

[3] *Fig.6 - 7 - Source: Freepik*

Because it is so important, we must learn to save it so that we never run out of it. We must not let this happen, because we already know that we cannot live without water.

And now we are going to watch a short film about saving water.

(In the Polish film, the protagonists are the hippo Hibbo, the giraffe Molo and the fish Poli)

https://www.youtube.com/watch?v=p0Nr-A7ElxQ

Duration 4 min.

FIG.8 – Several animals meet at the pond. [4]

You've all heard Molo the giraffe says - **"If you want to be happy, you have to live ecologically!"**

And what does it mean to live ecologically? It means not harming the environment, not polluting it and not using it in excess.

Do you know how we can save water? What do you remember from the film?

This is the time for the children to speak.

Then the teacher says:

Today you have already heard about some ways and you will learn some more simple rules that you can apply at home and you can also teach them to your family members and friends.

- When you brush your teeth, turn off the tap. It is best if you rinse your teeth with water put into a cup.
- Never turn the tap as far as it will go, only as much as is needed.
- Keep the tap well turned off so that water does not drip from it.
- If possible, take a shower. A short shower uses less water than a bath.
- If you see a leaky tap or flushing toilet, tell other adults in the household so that someone can fix it quickly.

[4] *Fig.8 - Source: YouTube*

- You can tell your mother, grandmother or another person who washes clothes in your home to only wash when the washing machine is full.
- Use rainwater, e.g. to water plants.
- Similarly, you can wash fruit and vegetables in a bowl, for example, and then use this water to water the plants.
- It is also a good idea to water your plants in the morning or evening, so less water will evaporate from the soil.
- Don't buy unnecessary items and look after the ones you already have - a lot of water is used to produce each item.
- Tell other children and adults that water needs to be saved - let's all make sure there is enough water for everyone.

The idea is to use only as much water as needed, never to waste it and, when you can, to use the same water several times.

Recap: Today we talked a lot about saving water. You already know that we need to save it so that we don't run out of it. You have learned that water is needed to produce everything. You already know that all humans are made up in a large part of water.

WATER

Workshop 3 (45 minutes or more, if needed)

Going outdoors with the children: an excursion in search of water or information about water purification / optionally a ZOOM meeting, if possible, with expert organising educational meetings for children

Examples of outdoor destinations - (see Annex 2)

FIG.9 – Watering the pumpkins![5]

[5] *Fig.9 – 10 – 11 - Source: Freepik*

WATER

Workshop 4 (30 minutes on average, no more than 45, with a short break, if needed)

Film about water saving told to a child from an adult's perspective (9 min - to consolidate the message)

https://www.youtube.com/watch?v=xIxXRNT6iEM&t=5s

You will find the films in English in the Annex 2

Exercise (hearing, sight)**:**

Saving water - ecological detectives

(15 min.)

Now that we know a lot about water and efficient use of it, we can become environmental detectives. We can go to the bathroom to check whether the taps are turned off properly or whether we can hear water leaking somewhere.

If the group is large, we divide it into two or three smaller ones.

FIG.10 – A Little girl turns off the tap

On this occasion the children wash their hands in an economical, ecological way.

The kindergarten teacher makes sure that the water is turned off while they are soaping their hands and we tell the children that they are now washing their hands in the correct, ecological way, without wasting water.

Clean hands will come in handy for the next exercise.

The teacher sums up the exercise with the children (whether or not the little detectives have discovered instances of wasting water).

Exercise (touch): **Warm and cold** (15 min.)

For this exercise you will need water in two bowls and paper towels to wipe the hands.

Pour cold water into one bowl and warm water into the other.

(For more see Annex 2)

FIG.11 - A little boy with a bowl: is it warm or cold?

WATER

Workshop 5 (30 min. or more, if needed)

- Recap of knowledge from previous workshops on water.
  Water is a unique gift of nature, because it has no colour or taste, it can be added to anything. You can boil potatoes or cabbage in it and these vegetables will keep their taste, and water will not change it.
  We need water every day, to drink, to wash ourselves, to cook vegetables, soups, etc.
  We need to save water so that there is enough for us and for all the people of the world.
  Without drinking water, there is no life!
- Annex 1 – GREEN4VIP CARD GAME (Water)
- A song about Kubuś (who teaches us how to save water & energy)
  https://www.youtube.com/watch?v=-Eqyk9ZGPeA

(As a reward to the children for their creativity and commitment during the week-long workshop on WATER. (A song in Polish. Songs about water, about saving water, should be found in all countries, in a language understood by the children in the respective kindergarten).

Songs in English see Annex 2

PART II – ENERGY

Workshop 1 (30 min. or more, if needed)

Exercise - what is energy?

The children sit in a circle.

The teacher asks the children to do a heel sit.

He shows the children a fragment of the Great Pardubice Game. He strikes vigorously first with his left hand on the left thigh and then with his right hand on the right thigh. The teacher does it rhythmically several times and tells the children that this is a game in which a sound is created that resembles a rushing horse. Perhaps some of the children have seen or even touched a horse during a holiday in the countryside?

https://www.youtube.com/watch?v=BRhpBxjSA7o

(Great Pardubice – a short video online)

The teacher tells the children that they had to use energy to hit their thighs. Every movement requires the use of energy.

Sometimes adults say, for example: “I have a lot of energy to act today”. And sometimes they say: “I lack energy today”. The teacher asks the children if they have ever heard the word 'energy' before.

The teacher listens to the children's statements and summarizes it.

Basic information about energy

- The kindergarten teacher gives the children basic information about energy in a few sentences.

Energy is used by us and around us every day.

It is used by children and adults, simply by everyone, including animals.

Energy is used by us to move, speak and play. It is used in everything we do.

Energy is used by cars, radios, toys, fire and musical instruments. There are many ways to use energy.

There are also many ways to get energy. It comes from the sun, from the food we eat, from gas, coal, wind and fire. It also comes from gravity, or the pull of the earth.

The interesting thing about energy is that it never gets used up. It is always changing into something else.

It cannot be destroyed, but it can be wasted. Our aim is to learn how to use it parsimoniously.

We all already know that to be happy, one has to live ecologically.

We learned this in the workshop about water.

And in order to live ecologically, you also have to learn how to save energy, i.e. only use it as much as you really need.

Among other things, we humans get our energy from food. If you don't eat breakfast or lunch, you won't have the strength, you won't have the energy, either to walk or to play. Is there anyone here who has not had breakfast today? Without breakfast you would not have the strength to come here and to play.

We have to eat to live. But we must not waste food, just as we must not waste water and energy.

As energy is so important, there are books, films and even songs about it.

Now listen to a song about electricity.

- Link to song in Polish (teachers can find songs about electricity on the internet in the language spoken by the children in the group).

Elektryczny PRĄD || NutkoSfera i DrobNutki || Piosenki DLA DZIECI || CeZik dzieciom - YouTube

- Example songs about electricity in English (see Annex 2)

To conclude: Spark

Let’s stand in a circle and let off a spark from one person to another. That's how the electricity from the power station, a kind of electricity factory, reaches us, along the cable to the socket in the wall. We don't see these cables here, because they are behind the wall, hidden so as not to disturb us.

I will send a spark (that is, I will gently squeeze a hand) to the person on my right, that person will send it to the next one and we will see when the spark comes back to me. And then we'll see, maybe we'll let off another spark, maybe in the other direction? Here we go.

A teacher lets go of a spark. A second teacher helps the children to let go of the spark to the next person.

ENERGY

Workshop 2 (30 min. or more, if needed)

Today we will also talk about energy.

Exercise - a battery-operated toy (touch, sound) – (see Annex 2)

ENERGY

Workshop 3 (30 min. or more, if needed)

Today we will continue to deal with energy.

It's time to introduce you to Christopher (Krzyś), a boy not much older than you, who started taking an interest in ecology when he was your age and now really knows a lot and is happy to share this knowledge with others.

Christopher is the hero of the cartoon you are about to watch.

This boy is a little environmentalist, he knows that water and electricity must be saved. He really enjoys telling other children, and also adults, about this.

Everyone can learn from him.

Listen for yourselves: https://www.youtube.com/watch?v=zleExE18fqQ (duration 9:08). /Film in Polish/.

Find a film in the language spoken by the children in the group, or tell a fable/story about saving energy.

We have all heard Christopher, the cartoon boy, tell us that if we want to live ecologically, we are not to waste anything, not to use anything in excess, not water, not energy, not food, not anything else.

And why? Because the production of all things requires, as you already know, water, but also energy and various materials that often harm the environment, that is, they harm plants, animals, bodies of water, the air and us humans too.

The energy we need to run the house and the kindergarten, to keep the lights on, to keep the cars running and the airplanes flying, is bad for the environment and simply destroys it.

So, the less of this energy we use, the more we protect our environment.

The electricity and heat we need there, especially in winter, can also be produced in a way that causes as little harm to the environment as possible.

For example, there are methods to produce energy in a more natural way:

- From the sun - you know how the sun warms. Don't you? Did you ever feel so hot in the summer when the sun was heating up a lot?

- From the power of the wind - nowadays there are often large windmills erected. Have you ever seen such large windmills? They often stand outside built-up areas, i.e. in fields.

It would be a good idea to show blind children a thumbnail of such a windmill, or a convex drawing, and explain to them in detail what such windmills look like (e.g. that you can often see them when driving along a motorway, etc.).

- From water power - there are several hundred such small hydroelectric power stations in Poland.

But we still mostly get it from materials such as coal. And when we use this coal, we pollute the environment a lot.

And it is simply a matter of using everything only as much as is really needed.

We generate electricity mainly in traditional power stations, which pollute the environment, but in recent years home solar panel installations have become increasingly popular.

- (Note for kindergarten teachers - it is a good idea to find out what energy sources there are in the area and tell the children about it "at our place, in our kindergarten, in our village there is...") and if possible, explain to the children how energy, including heat energy, is supplied to the kindergarten (or is produced in the kindergarten).

To conclude: Spark (for more details, see page 19.)

ENERGY

Workshop 4 (30 min. or more, if needed)

Exercise - microphone (hearing, touch)

Exercise - riddles

(See Annex 2)

FIG.12 - A little boy is thinking [6]

ENERGY

Workshop 5 (30 min. or more, if needed)

It's another day we will be talking about energy. You already know that electricity is something that helps us in our everyday lives! Electricity is like that spark that runs through the electrical wiring and gives us light in our bedside lamp, makes our TVs work and allows us to play with our favorite electric or battery-operated toys.

Technology related to electricity is a bit like a jigsaw puzzle - electricity moves through wires and cables. When we put a plug into a socket, we give energy to appliances. But remember not to touch sockets or wires, because electricity can be dangerous!

Did you know that batteries store energy, which we then use to play with our favorite toys, for example?

And have you ever built bridges with blocks? Similarly, engineers are building roads for electricity to get into our homes, kindergartens and schools

FIG. 13 - Some hands are touching Lego blocks

It's great that we have electricity, but remember that we need to use it carefully and always with the help of adults!

[6] *Fig.12 - 13 - Source: Freepik*

Exercise - Electrical circuit

We can build a simple electrical circuit using modelling clay, which conducts electricity.

For this exercise you will need a 9V battery, LEDs, a buzzer, Play Doh conductive plastic mass. Wire or wire clips may also be useful.

First, based on a short film (film in Polish, to be replaced by a film in the language spoken by the children or a more extensive introduction by the teacher).

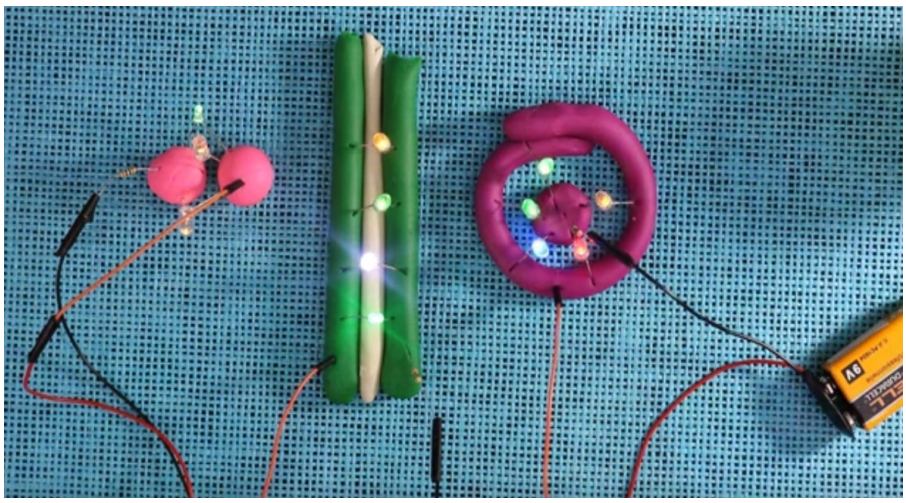


FIG. 14 - Handcrafted electrical circuits[7]

Links to the films in English are available in the Annex 2

https://www.youtube.com/watch?v=LmpLrMs44VQ

The teacher explains to the children that there are different sources of energy. We have electricity not only from coal-fired power stations, but also from renewable sources, i.e. water, sun, wind.

The teacher then constructs a simple electrical circuit together with the children, demonstrating a glowing LED lamp and a buzzer.

The teacher performs all the steps slowly, explaining to the children exactly what he or she is doing at any given time.

In this way, the teacher connects the components and creates a working circuit through a fun exercise based on the STEAM approach.

In this exercise, the teacher uses instructions such as the online video on simple circuits made of modelling clay (subtitles in any language can be switched on).

https://www.youtube.com/watch?v=VcdqBmFETNw

Instructions: see Annex 2

Introducing children to the world of technology, we explore the mysteries of electricity together. J. Tuwim's poem 'Pstryk' can serve as an introduction to a conversation about electricity: https://www.youtube.com/watch?v=FNRNs4cHkto
(Note: it is possible to set subtitles in different languages on the video material).

[7] *FIG. 14 - Source: YouTube*

The teacher then asks the children to talk about the electrical appliances found in different rooms of their homes. The teacher discusses the rules for safe use of such appliances.

PART III – SOIL, FOOD CHOICES AND HEALTH

Workshop 1

Introduction: 10 minutes

Today we are going to learn the secrets of soil! Each of you has probably already come into contact with soil, haven't you? Maybe this morning while running around the backyard or maybe while planting plants in the garden? Everything that grows needs healthy soil!

That's why we'll be exploring today why soil is so important. Did you know that it is the secret to beautiful flowers and tasty fruit and vegetables? Do any of you know what soil is?

Time for the children to speak.

Then, depending on what the children have said, the teacher may say, for example:

The soil is very important, it is from it that trees grow with fruit such as apples and pears. It is also in the soil that vegetables grow, for example carrots and many other delicious things that we enjoy.

But that's not all! Soil is also home to many beneficial insects that help plants grow healthily. The soil also helps to protect our planet. It absorbs water, preventing floods, and holds it for plants to grow abundantly.

Exercises: Getting to know the soil through different senses (20 min)

Touch: By touching the soil, you can feel the differences in its texture, for example whether it is soft, dry, lose or moist.

After a short talk about soil, the teacher divides the children into groups. In each group he assigns a different type of soil. The children touch, move and play with the soil, describing its texture: is it soft, dry, lose or wet.

After completing the exploration and washing their hands, the teacher gathers the children in a circle. He/she asks the children what differences they felt in the touch of the different types of soil. The pre-school teacher encourages them to describe their tactile experiences. He/she may ask the children to tell what they liked the most about this experience.

The activity of touching different types of soils will give children a better understanding of the differences in texture and stimulate their curiosity about nature!

Hearing: This may not be the sense typically used to explore the soil, but we can listen to the sounds it makes, for example when digging in the ground with a shovel, walking on dry ground, walking on sand.

Let's hear the sound of walking on sand. https://www.youtube.com/watch?v=4H44_AAIBxs

And now we hear the sound of a shovel digging into the ground.
https://youtu.be/daHhqa33dgU?si=qvFTaKAAyG_6OmdJ

Smell: Have you ever smelled soil? Every soil has its own unique smell. Rain on dry ground, fertilized soil for the garden or forest soil, etc. - each smell different!

Sight: Looking at the ground can be fascinating! We can see the different colors, textures and shapes of the soil. Dark brown soil in the garden, sand on the beach or mud after rain - every soil looks different! [8]

FIG.15 - Form of soil layers, colour and textures

FIG. 16 - Soil layers

Taste: Caution: here you have to be very careful! We do not recommend tasting the soil, but sometimes we can get to know the soil by taste, for example when we take vegetables that have grown in it into our mouths.

Exploring the soil through the different senses is a great way to discover its secrets and understand how many different things it can hold!

It is worth remembering that the quality of the soil determines the quality of the food we eat and thus our health and quality of life.[9]

6.Reflection questions for debriefing

Suggestions are included in the GREEN4VIP CARD GAME (see Annex 1).

7.Possible risk factors

The manual and motor skills of the children have to be taken into account, so all the activities will have to be supervised by an adult who will have to support children, whenever needed.

To prevent the children from getting wet or dirty during the experiments with water, energy, etc. or art activities, it is recommended that they wear an apron and water-based erasable paint.

If in the group there are children who will not be able to go out during the outdoor activity, there should be another interesting individual indoor workshop proposed for this child (or group of children).

Some children might be afraid of touching e.g. water, ice cubes, steam or soil – we should not force them to do it. Maybe the next time, when we will lead similar activities, they will be eager to join them.

[8] *Fig. 15 - Source: istockphoto.com*

[9] *Fig. 16 - Source: pixabay.com*

8.How to adapt the activities to VIP needs and specific age-group

Teacher have to pay attention to different level of abilities in the group and help the children whenever needed.

9.Tips and suggestions on how to involve families

- Parents who are experts on water, energy, soil, etc. can share their knowledge, e.g. during short activities on ZOOM (they do not have to come to the kindergarten).
- Parents can be invited to an exposition of children's artwork on water, energy, soil, etc.
- Parents can implement at home art activities proposed in the Annex 2, moreover art activities proposed in the Annex 2 can inspire parents to invent other activities of this kind to be carried out at home
- Give parents a sheet of paper with the printed information from the water/energy-saving workshop
- Organise an Eco-picnic with parents or guardians of children, e.g. on Children's Day
- Organise a Water Day (22 March) or World Sustainable Energy Day. Presentation of children's artwork, water / energy / soil rhymes, a short water / energy / soil-themed performance by the children, a small water concert (e.g. using water bottles).

Annex 1 – GREEN4VIP CARD GAME

Annex 2- Additional materials

BIODIVERSITY PROTECTION

1. Aims and context of the workshop

In response to the growing environmental crisis, developing environmentally literate citizens is crucial to understanding and overcoming environmental problems. Environmental education represents an important factor in solving environmental issues and teachers have an important role in developing the environmental literacy of future generations. Effective education enhances environmental awareness, attitudes, values, and knowledge, as well as develops skills that prepare individuals to collaboratively undertake positive environmental action and responsible behavior regarding the environment (Aminrad et al., 2013; Ardoin et al., 2020).

Education is essential for the sustainable and equitable use of biodiversity and its conservation (UNESCO, 2017). Biodiversity is the diversity of all life on Earth encompassing all life forms that have evolved over millions of years, all habitats and ecosystems, and all the connections between organisms and between organisms and their environment. Biodiversity provides essential products such as food, textile fibres and building materials, maintains ecosystem services such as soil fertility, and underpins societies, cultures and religions (UNESCO, 2017).

To achieve a positive impact on future generations, high-quality environmental education starting from preschool age is crucial. Teaching children about biodiversity helps them understand biodiversity.

With STEAM lessons, children can explore, solve problems, develop practical skills and critical thinking about biodiversity. Children are more actively involved in the learning process, are more motivated and show more interest in these areas (Henriksen, 2014).

Environmental education in the preschool period increases environmental awareness and knowledge and children have more positive attitudes towards the natural environment. Environmental literacy is a precursor for effective environmental protection (Kaya & Elster, 2019; Keinonen et al., 2016).

Within the implementation of this workshop, children will:

- learn about the diversity of living things,
- learn about the importance of biodiversity for life on Earth,
- understand what is important for food production,
- raise awareness of the importance of biodiversity.

The workshop is composed of three sessions:

The first session is about plant biodiversity. In this session, children learn about the plant parts and their functions and they observe the plant life cycle.

The aim of the second session is to learn about food production. It is divided into three parts:

I. Flower observation
II. Pollination
III. Different plant parts we can eat

In the third session, children learn about animal biodiversity. The session has three parts:

I. Introduction to animal biodiversity
II. Discover a new species
III. Animal bingo

The fourth session is dedicated to learning about the food web.

2. Resources needed

Required materials for the Session I:

- ✓ magnifiers
- ✓ plants
- ✓ glass jar
- ✓ paper towels
- ✓ germination bean seeds
- ✓ game cards.

Required materials for the Session II:

- ✓ magnifiers
- ✓ flowers
- ✓ ice cream stick
- ✓ black chenille stems
- ✓ pom poms or plastic yellow eggs
- ✓ glue
- ✓ two coloured papers
- ✓ scissors
- ✓ two jar lids
- ✓ turmeric powder
- ✓ different fruit and vegetables
- ✓ poster
- ✓ felt-tip pens
- ✓ tetra pack
- ✓ soil
- ✓ different seeds.

Required materials for the Session III:

- ✓ pictures of the endangered animals
- ✓ paper A4 format
- ✓ crayons
- ✓ bingo cards and call sheet with pictures of different animals
- ✓ recordings of animal sounds
- ✓ something to cover the cards (e.g., beans, plastic caps…).

Required materials for the Session IV:

- ✓ pictures of different animals and plants for making simple food chains
- ✓ 5 paper cups or toilet paper tubes
- ✓ plastic animals' figures toys and plants models

3. Group size

All the activities can be done with the whole group. In some activities, children are divided into groups of four (more detailed description in the chapter Step-by-step instructions).

4. Duration

Green4VIP proposal to educate “BIODIVERSITY PROTECTION" foresees 3 different sessions with 10 activities: the first session is estimated that it takes 30 minutes, the second one 45-60 minutes and the third approximately 45 minutes.

For some activities, the preschool teacher needs some time for prior preparation of the materials.

5. Step-by-step instructions to implement activities, both offline and online, based on the STEAM approach

Session I: Plant biodiversity

Children are divided into groups. If there is a possibility, we go to a nearby meadow to observe the biodiversity of plants. Otherwise, the teacher collects different types of grassland plants for observation. Then children use magnifiers to observe the different parts of plants. When they have finished their observations, the teacher discusses with the children about the different parts of the plant and their functions.
After the first activity, children observe the life cycle of a plant (the observation of bean seed germination). The teacher prepares bean seeds that have germinated and for which different stages of development can be observed.

Activity adaptation for VIP: The proposed activity isn’t totally accessible. However, the teacher can provide the VIP with Thermoform reproduction of the various growth phases of a plant. In addition, one or more sighted classmates could explain the observed changes in the plant to their VI classmates, thus promoting cooperative learning.

They continue with a game in which they put the cards showing the development of plants in the correct order (Figure).

Activity adaptation for VIP: provide to VI pupils cards in large print or with braille labels. Braille labels should describe the picture or content of each card and should be prepared by the pre-school teacher prior to the activity. In the eventuality of kids who are still not able to read large print or Braille (as it can be often the case for pupils of this age), the pre-school teacher may create tactile drawings on each card. Drawings can be made of different materials, textures and characteristics to represent in a tactile way the picture of the card.

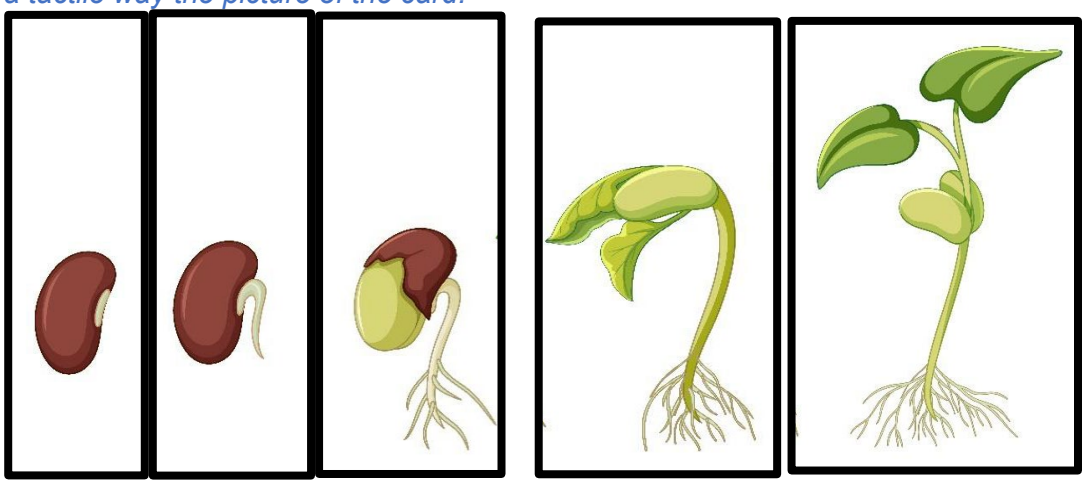


FIG. 17 - Cards showing bean seed germination[10]

Session II: Food production.

Flower observation

First, children observe a flower and its structure. Then they will use a magnifying glass for more detailed observation. The teacher explains the different parts of a flower and its functions.

Watching a video https://www.youtube.com/watch?v=DN4nMNocZrI.

Activity adaptation for VIP: provide VIP a 3D model or tactile object (like Thermoform) of the flower, and also assist the pupil through the exploration of the different parts of the flower.

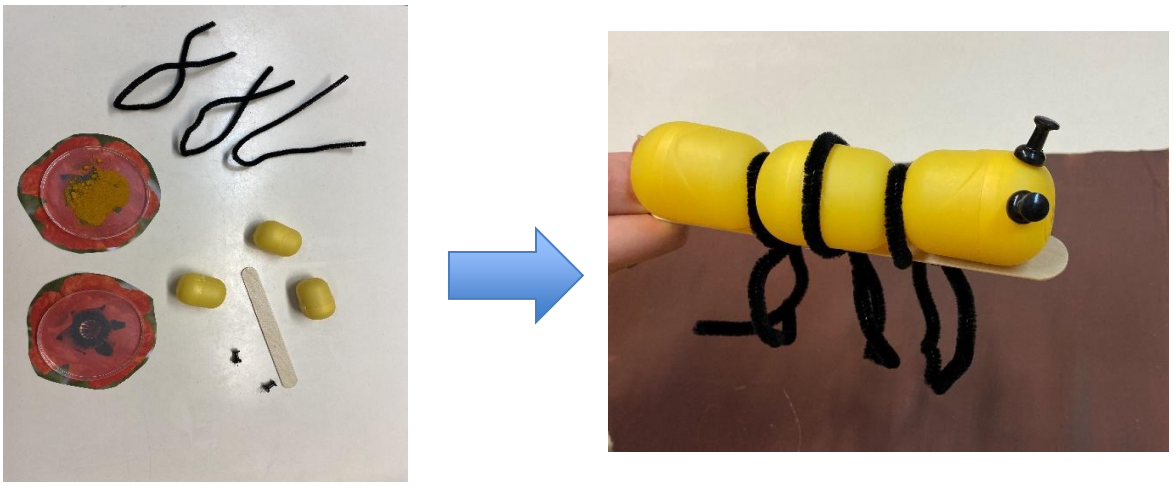
Pollination

Children with the teacher's help do a simulation of the pollination process:

- 1st Step: Creation of the bee (*Figure*)
  Materials needed: ice cream stick, black chenille stems, 3 plastic eggs or pom poms, drawing pins, glue.
  Take 3 plastic eggs or 2 yellow and 1 black pom poms (representing head, thorax and abdomen of the bee) and stick them close together with the glue.
  Wrap 3 black chenille stems (representing 6 legs of the bee) around the stick.
  Stick 2 drawing pins in the first plastic egg (representing antennas of the bee).

- 2nd Step: Creation of two flowers
  Materials needed: two colored papers, scissors, two jar lids, turmeric powder.
  Draw a flower on both colored paper and then cut them out or print 2 flowers.
  Put the jar lids on the flowers and fill one of them with the turmeric powder.

Children playing with their bees and deliver the pollen from flower to flower (*Figure*).
Bring the bee closer to the jar lid full of pollen.
When the pollen sticks to her legs, transfer the bee to the empty jar lid and drop off the pollen.



[10] *Fig. 17 - Adapted from https://www.freepik.com*

FIG.18 - Creation of the bee

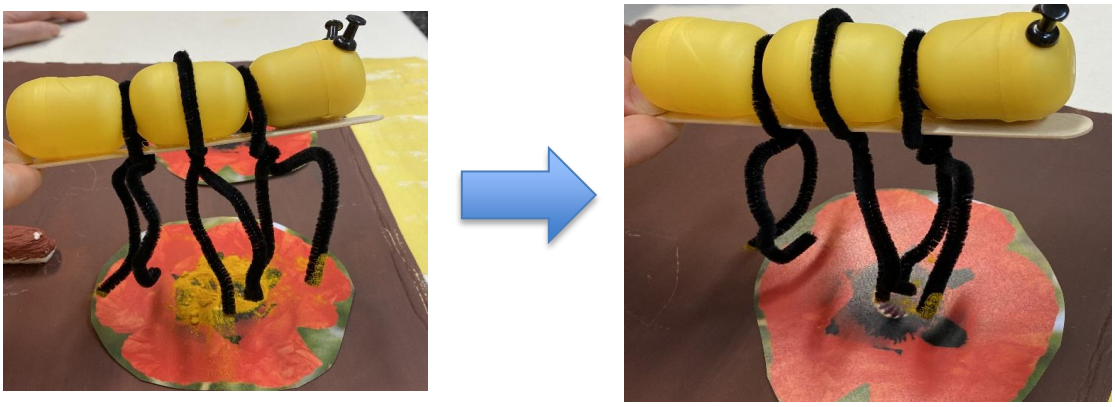


FIG. 19 - Pollination experiment

Activity adaptation for VIP: Prepare pom-poms that are tactilely different. Outline the shape of the flowers with contour colors. Use cornmeal instead of powder, which is easier to apply.

Different plant parts we can eat

The teacher brings different fruits and vegetables into the classroom (e.g., apples, spinach, carrots, asparagus…). Children sit in a circle and discuss with the teacher about different plant parts we can eat (for example):

- → we eat apples, which are fruit
- → we eat spinach that are leaves
- → we eat carrots which are root
- → we eat asparagus that is stem…

Then the teacher sketched a picture of a plant with all plant parts (roots, a stem, leaves, flowers and fruit).

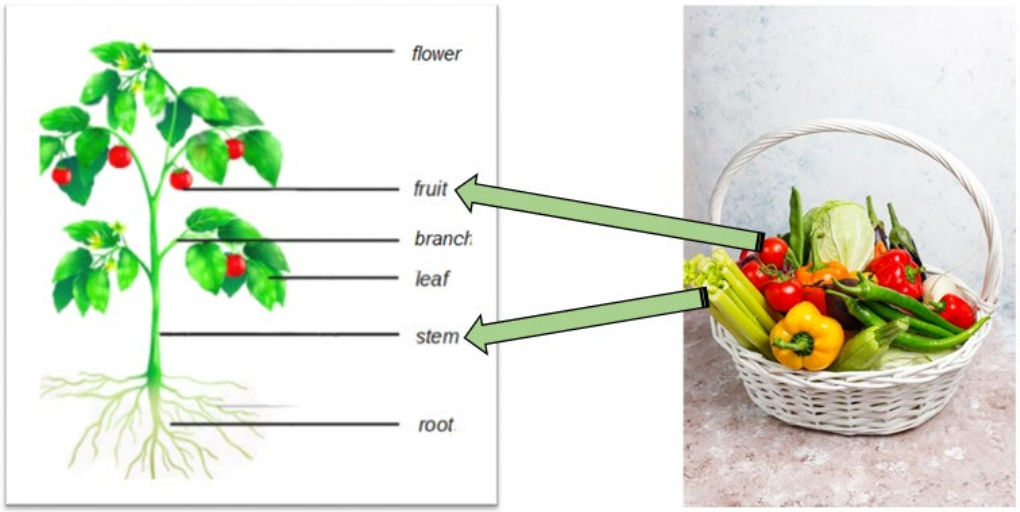


FIG. 20 - Example of the poster and a basket of fruits and vegetables[11]

[11] Fig. 20 - Retrieved from https://commons.wikimedia.org/; https://www.freepik.com/

Activity adaptation for VIP: provide a tactile object (like Thermoform) or – regarding the picture – use a tactile drawing board or a collage with parts of the plant glued to the sheet.

Children learn which parts of plants we can eat. They place the selected fruit and vegetables next to the corresponding part of the plant on the poster (*Figure*).

***Additional activity: Making your own garden**

The teacher discusses with children the importance of food self-sufficiency.

Then the children are divided into groups of four. Each group makes their own garden.

Materials needed: tetra pack, soil, different seeds, and scissors.

The teacher cuts out one side of the tetra pack. Then children fill the tetra pack with the soil an put different seeds in it.

At the end they water the soil and place the tetra pack near the window. They take care of the garden and observe the changes every day.

Activity adaptation for VIP: this activity can be done by visually impaired children; however, they need to be assisted. In particular, the last phase, the one of the "observation" is not accessible for a totally blind pupil, but we can give him/her a closer look at the day-to-day changes in the plant's growth through accurate description. In this case, we suggest that the pre-school teacher asks the other kids to describe loudly what they observe. This process is useful both for the visually impaired

pupils, and for the sighted mates who can better reflect and analyze what they can see and the differences they observe from the previous days.

Session III: Animal biodiversity

Introduction to animal biodiversity

Children sit in a circle and discuss with the teacher about different animals from their surroundings. They also speak about endangered animals. The teacher shows pictures of the most endangered animals like rhinos, orangutans, African forest elephants, gorillas… Then the children try to move like the selected animals.

Activity adaptation for VIP: provide VIP with tactile objects, such as toy models of these animals. We can also play the sounds of different animals for children.

Discover a new species

Children role-play as an explorer who has discovered a new animal. They draw this new animal and describe its characteristics to the others (Where does it live? What does it look like? What are the sounds of this animal? What does it eat?).

Activity adaptation for VIP: supply toy models of the animals from which the VIP can choose or a tactile drawing board on which they can draw an animal of their choice.

Animal bingo

In conclusion, children play a bingo game.

The teacher prints out different BINGO cards for each child and a call sheet with pictures of different animals (e.g., rooster, lion, dog, cat, owl, goat, sheep, cow, starling, duck, frog, dolphin, monkey...). Then he or she cuts out the call sheet and puts the pictures of each animal into a bowl. Each child receives one Bingo card (each card should be different).

The teacher pulls out one picture and plays the sound of the selected animal. If children don't recognize the voice the teacher describes the characteristics of the selected animal.

Children will then place something on the called image if it is on their card.
The first child who has everything covered on the card, calls out BINGO and he is the winner.

Activity adaptation for VIP: create large print cards (maybe can be useful also a portable magnifier) or braille-labelled cards. Braille labels should describe the picture or content of each card and should be prepared by the pre-school teacher prior to the activity. In the eventuality of kids who are still not able to read large print or Braille (as it can be often the case for pupils of this age), the pre-school teacher may create tactile drawings on each card. Drawings can be made of different materials, textures and characteristics to represent in a tactile way the picture of the card.

Session IV: Food chain and food web

Children play a game in groups of three: each child is given a picture of an organism that they imitate by movement and/or sound. Once they have identified which organism they represent, they place themselves in the appropriate position along the food chain. The individual links are connected by a rope.

*Examples of food chain: grasshopper- frog- snake- eagle; algae- small fish- mackerel- tuna- shark; carrot – rabbit – fox - …

The preschool teachers can also prepare paper cups on which they stick pictures of the organisms and children sort them into a food chain.

Animal and plant figurines can also be used and children can sort them into a food chain.

Activity adaptation for VIP: create large print cards (maybe can be useful also a portable magnifier) or braille-labelled cards. Braille labels should describe the picture or content of each card and should be prepared by the pre-school teacher prior to the activity. In the eventuality of kids who are still not able to read large print or Braille (as it can be often the case for pupils of this age), the pre-school teacher may create tactile drawings on each card. Drawings can be made of different materials, textures and characteristics to represent in a tactile way the picture of the card. Provide support to VI pupils during the activity.

6. Reflection questions for debriefing

- List the parts of the plant (In the picture show the leaf, stem, root, flower and fruit).
- Sort the pictures showing seed germination into the correct order.
- Which part of the plant can be eaten?
- Why is it important to have our own garden?
- Why do you think some animals are endangered?
- What could you do to ensure that as few animals as possible become extinct?

Activity adaptation for VIP: for numbers 1 and 2 use large-printed images, braille labelled or tactile prints.

7. Possible risk factors

The teacher must ensure the safety of the children during the activities, both in the playroom and on the meadow (allergies, insect bites, sun protection, etc.). When working with scissors, special attention is needed. Throughout the activities, the teacher provides help and support to the children.

8. How to adapt the activities to VIP needs and specific age-group

All the needed adaptations are written below each single activity.

As concerns braille labels and tactile objects, it is important to highlight as follows:

Braille labels should describe the picture or content of each card and should be prepared by the pre-school teacher **prior to the activity**.

In the eventuality of kids who are still not able to read large print or Braille (as it can be often the case for pupils of this age), the pre-school teacher may create tactile drawings on each card. Drawings can be made of different materials, textures and characteristics to represent in a tactile way the picture of the card.

9. Tips and suggestions on how to involve families

The involvement of the family is always important, not only in the implementation of this workshop but also in the whole educational process of the child.

We will ask the families to help us to bring the materials needed to implement the activities. For the first session activity, parents should be asked to bring a variety of meadow plants. Unit 2 activities will require a variety of fruits and vegetables.

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LIFE CYCLE OF WASTE MANAGEMENT: Reduce,Reuse,Recycle

1.Aims and context of the workshop

The concept of “3R” refers to reduce, reuse and recycle, particularly in the context of changing consumption and production patterns. It calls for an increase in the ratio of recyclable materials, further reusing of raw materials and manufacturing wastes, and overall reduction in resources and energy used. These ideas are applied to the entire lifecycles of products and services – from design and extraction of raw materials to transport, manufacture, use, dismantling/reuse and disposal.

A fourth “R” (repair) was introduced recently1 to integrate promotion of repair services, which in principle helps to expand product life spans of durable products, and thereby further contributes to waste prevention.

Within the implementation of this workshop, children will learn the meaning of the “3R”, increase their commitment to care for and protect the environment and will be able to:

Reduce the amount of waste they produce.
Reuse items as much as they can before replacing them.
Recycle items wherever possible.

Workshop is composed by 5 phases:

The first part is based on dialogue. Preschool teacher will start a conversation with children in which he/she will explain the situation the planet is in regarding waste generation and will make them aware of the need to find a solution. After this first approach, s/he will explain the meaning of RRR and encourage them to be part of the solution and not part of the problem.

In the second part, a game will be played in which the children will put each of the waste in the corresponding rubbish bin (cardboard box).

In the third part, we will see how to recycle the paper we have been storing.

In the fourth part, also based on dialogue, the meaning of Reduce and Reuse will be explored in more depth. To do this, after a discussion, a craft can be carried out to exemplify the concept of reuse.

In the fifth (and last) session, also based on dialogue, we will hand out the "heroes" cards to the children and we will take on the commitment to continue putting into practice what we have learned in order to "save planet earth".

2.Resources needed

For the realization of the workshops some teaching aids are necessary that the team of pre-school teachers will have to find first. Download these images (source: own elaboration):

Landfill images: https://acortar.link/W0is7y
Poster RRR: https://acortar.link/FaH1lr
Poster “In this class we reduce, reuse and recycle to take care of mother nature”:
https://acortar.link/sztAGP

Poster “In this class we reduce, reuse and recycle to save the earth”: https://acortar.link/6NFhpR
Green Hero Card template: https://acortar.link/oEBI5N

FIG. 21 – Composting poster [12]

For the second part: “Recycling workshop” we need:

3 cardboard boxes. coloured paper or paint to line the boxes with the corresponding colour.

Materials. Note: Due to the age of the children with whom the activity is going to be carried out, we have only included in the list of materials with which we are going to work, those wastes with which they are familiar and are part of their daily life. That is:

Drinks cans (important: Tape the top opening to prevent children from cutting themselves), paper, cardboard and plastic straws, plastic bottles, juice tetrabrachs, aluminium foil, some food (organic), plastic bag, paper bag, napkin, crystal glass or glass jar, paper glass, … If you have 25 kids in the classroom, 25 objects would be appropriate.

These materials can be substituted by images of them, but as the objective of the project is the development of classroom activities FOR VISUALLY IMPAIRED PUPILS IN KINDERGARTENS, we recommend the use of real materials to encourage the child's sensory stimulation.

Composting poster: https://acortar.link/opOqZF

Recycling process: https://acortar.link/bILEsU

[12] *FIG. 21 – Retrieved from https://www.freepik.es/vector-gratis/ilustracion-concepto-ciclo-compost_24372235.htm on the 01/09/2023.*

For “Make Paper with Kids”, you will need: used paper (newspaper, tissue paper, magazines), water, blender, window screen (grid or mesh), washcloth, towel, rag, paper towels, o a large piece of felt to absorb water and rolling pin.

For “Reuse: Pencil Holdres” we would need cans, plastic bottles, roll of toilet paper or pringles potatoes chips and everything necessary that we can use to decorate the pencil holder.

3.Group size

All the activities can be done with the whole group. In any case, we recommend to carry them out with a minimum of 8 children up to a maximum of 25 at the same time. At some points, children should be divided in small groups to be able to share the materials for handcrafts.

4.Duration

Green4VIP proposal to educate “LIFE CYCLE OF WASTE MANAGEMENT: Reduce, Reuse, Recycle” foresees 5 different activities of about 30-45 minutes each.

Preschool teachers would need time to prepare the activities that are carry out during the workshop: print the posters; print, cut and fill out the hero id card, find suggested materials, create the boxes for the recycling game, etc.

The children's attention, as well as the day-to-day tasks in the classroom, make it necessary to divide the workshop into five different parts.

- **(10 minutes)** What RRR means? Discovering our planet.
- **(20 minutes)** Recycling game (first part)
- **(30 minutes)** Recycling game (second part)
- **(30 minutes)** Reuse-Reduce game
- **(30 minutes)** We are green heroes!

5.Step-by-step instructions to implement activities, both offline and online, based on the STEAM approach

“Tell me and I forget. Teach me and I remember. Involve me and I learn”
Benjamin Franklin

The educational activity is aimed at children aged between 3 and 5 years and will be divided into 5 phases:

- Dialog to explain the situation the planet is in regarding waste generation and will make them aware of the need to find a solution. After this first approach, the meaning of RRR will be explained. and encourage them to be part of the solution and not part of the problem.
- In the second part, a game will be played in which the children will put each of the waste in the corresponding rubbish bin (cardboard box).
- In the third part, kids will make their own paper.
- In the fourth part, the meaning of Reduce and Reuse will be explored. After a dialog, kids will make a pencil holder as example of reuse concept.
- Finally, the "green hero Id" will be distributed.

During the first part of the workshop in the classroom:

(10 minutes) The group is seated in a circle around the preschool teacher, who announces that a workshop will take place. He/she explains that 4.8 tonnes of waste were generated per EU inhabitant in 2020. Less than half of waste were recycled and the rest went to landfilled in the EU in 2020. Have you ever thought about where the things you throw away go? Do they magically disappear? Do you know what a landfilled is? Can you imagine the consequences for planet earth of the amount of rubbish we humans generate? Encourage all children to express their opinion and encourage them to reflect on it. Show images of the landfill (https://acortar.link/W0is7y).

FIG. 22 - 4 photos of landfills[13]

Once you have captured the children's attention and generated some expectations, it is time to introduce the concept of the 3Rs.

RRR means: REDUCE, RECYCLE and REUSE. These three 'R' words are an important part of sustainable living, as they help to cut down on the amount of waste we have to throw away. mIt's Really simple!

> Reduce the amount of waste you produce.
> Reuse items as much as you can before replacing them.
> Recycle items wherever possible. Show image the explain the process:
> https://acortar.link/blLEsU

Using the 3 'R's also helps to minimise the amount of space needed for landfill sites, where waste materials are disposed of. Ask children next questions:
R1: How can I reduce the amount of waste I produce? (Open dialog)
R2: How can I reuse what I have? (Open dialog)
R3: How can I recycle the products I use? (Open dialog)

[13] *FIG. 22 – Retrieved from Freepik on the 01/09/2023.*

S/he can finish this dialog by putting the posters in the classroom **and explain them to participating visually impaired children.**

(20 minutes) Explain that recycling is the process of taking materials ready to be thrown away and converting (changing) them into reusable materials. In order to carry out this process, there are places where professionals give a second life to certain products by transforming them. But we are also very important, because in order to give this waste a second chance, we have to dispose of it in the appropriate rubbish bin.

Do you want to know where each waste product goes? Play the game “Recycling is fun”. Preschool teacher explains the colour codes:

The colour of garbage bags could have been harmonised across the 27 EU member states under European Commission plans to improve waste collection and boost recycling.

FIG. 23 - Comics with 5 recycling bins with respectively separated rubbish items[14]

Yellow Recycling Bins for Plastics, Cans and Cartons. What can we put inside? Items which can be recycled are: plastic containers (water bottles, plastic bags, yogurt containers, etc.), beverage and food cans, cartons (such as Tetra bricks), plastic plates, metal lids, aluminium foil, cling film and polystyrene trays.

Green Recycling Bins for Glass. Items which can be recycled: glass containers and bottles. Items which cannot be recycled: broken glasses, window glass, mirrors, ovenware (like Pyrex), ceramic items, dishes, standard and fluorescent light bulbs.

[14] *FIG. 23 – Retrieved from Freepik https://www.freepik.es/vector-gratis/conjunto-contenedores-reciclaje-basura-ilustraciones-vectoriales-clasificacion-contenedores-basura-coleccion-dibujos-animados-basura-papel-organico-metal-vidrio-plastico-cubos-basura-aislados-blanco-concepto-medio-ambiente_26876949.htm (adaptation) on the 01/09/2023.*

Blue Recycling Bins for Paper and Cardboard. Items which can be recycled: packaging and cardboard boxes, newspapers, magazines, notebooks books without plastic or wire binding, envelopes, paper bags, sheets and wrapping paper. Paper items that cannot be recycled in the blue bins: dirty paper products. This includes paper napkins or paper towels soaked with cooking oil or food; these items should be thrown in the brown containers.

Brown Recycling Bins for Organic Waste. Items which can be recycled: leftover meat, fish, bread, fruit, vegetables. *(1 - activity adaptation below)*

What do we do with organic waste? Composting is the natural process of recycling organic matter, such as leaves and food scraps, into a valuable fertilizer that can enrich soil and plants. Show image: https://acortar.link/opOqZF

The children will pick up a piece of waste and place it in the cardboard box of the corresponding colour. If the teacher considers it appropriate and has time, painting and decorating the cardboard box that will be used as a rubbish bin among the children in the class can be a fun activity.

In any case, each child will put the waste in its corresponding place and the rest of the children will respect their turn. Once it has been placed in the corresponding bin, they will explain why.

During this activity, the teacher can ask about other waste that he/she has not been able to obtain or some that are already in the classroom but s/he wants to reinforce.

Activity adaptation for VIP:
To adapt the exercise and make it more accessible to everyone, the teacher could add on the containers two labels – one with enlarged text and one in braille – so visually impaired pupils can read the text and chose the correct one. For kids who are not able to read Braille / large print, it is possible to paste tactile objects on the respective rubbish container.

During the second part of the workshop on RRR in the classroom

(30 minutes - with an interruption of a couple of hours) Children are involved in a practical workshop.

Preschool teacher summarizes the ideas REDUCE, RECYCLE and REUSE and s/he will explain that it is time to recycle by themselves. How many pages do you use per day? Would you like to know how we can create our own paper using already used paper?

Due to the age of the children, the preschool teacher is the one who will be in charge of carrying out the experiment, although s/he will have a child in some parts such as making small pieces of used paper, pressing the paper paste, etc.

The teacher will have prepared the ingredients and utensils that s/he will need in advance: Recycled paper (magazines, newspapers, used pages...), bucket, rolling pin, hot water, mixer and/or blender to create the dough, grid or mesh, cloth (rag or towel) and sponge.

The steps to prepare recycled paper are as follows: Cut the paper into small pieces. This part can be done by children with children's scissors or by hand. When you already have the cut pieces, put them in a large container (a bucket, for example) and add the hot water (more or less twice as much water as paper).

FIG. 24 - Prepare recycled paper[15]*e*[16]

Pass the mixer (blender) in the mixture of paper and water until you get a paste, and let it rest for a couple of hours. *You can take advantage of that hour to go out to the patio or to carry out some other activity in the classroom. It can even be done at the end of the day and resume activity the next day or take advantage of the lunch break.*

Strain the paper pulp through a vegetable strainer to remove excess water.

Run the paper pulp under cold water.

Spread the paste out onto the wire rack or mesh with a spoon to create the paper to the thickness and spread you want to achieve. You can use a rolling pin to flatten the dough. This can be done by a child.

Cover the pasta with a cloth and turn it over.

Remove the mesh and cover the pasta with the cloth. To remove excess moisture, you can press the paper with a sponge on the fabric.

When the fabric absorbs the water, remove it and let the paper dry for at least one day.

The results will be seen the next day because to take care of the planet and be green heroes, we have to be very patient.

Finally, if you want to create paper of a certain colour you can use food colouring. Add it to the paper pulp before mixing it all with the mixer.

During the third part of the workshop on RRR in the classroom:

(30 minutes) The group is seated in a circle around the preschool teacher, who asks “who can tell me what the 3R's mean?”.

[15] *Fig. 24 - retrieved from Freepik https://www.freepik.es/foto-gratis/mano-mujer-disolviendo-papel-tornado-agua_2573276.htm#from_view=detail_serie on the 01/09/2023.*

[16] *Retrieved from Freepik https://www.freepik.es/foto-gratis/mujer-que-cubre-pulpa-papel-tela-amarilla_2573265.htm#from_view=detail_serie on the 01/09/2023.*

Just as we learn the importance of recycling, we also should learn about reusing. Reusing means combining reusing materials and using items that can be reused. For example, paper plates cannot be reused, and reusable cutlery lowers the energy that is needed to make new products, and it also can be reused to prevent more waste in the landfill. Reusing things that can be reused means less pollution and more of our precious natural resources are left intact.

Think about the possibilities of a product before you throw it away; it could be reused for another purpose. Reuse is different from recycling, but it does lead to reduced consumption – always a good thing. How about that cans, plastic bottles, roll of toilet paper or pringles potatoes chips box? It could be used as pencil holders.

FIG. 25 - Photo of a nice pencil holder[17]

Pencil holders made with aluminium or metal cans: Children can paint them or cover them with decorated paper. They can also use them as a planter.

If you select plastic bottles, preschool teacher will have to cut by using scissors the top of the bottles.

(30 minutes) We are "green heroes".

To motivate the children to complete the activities that foster positive attitudes towards the care of the environment and the development of values, each child will be issued a "Green Hero Card". Preschool teacher can print it and customize by visiting https://acortar.link/oEBI5N

If you put into practice the 3Rs we have learned, not only at school but also at home, you will become "green heroes". And as I know you will do it; I will give you your "green hero card" if you answer some questions.

- Which of the following materials can be recycled? Paper, Plastic, Glass, All of them?
- Should you recycle paper cartons with food scraps or stains? Yes, it is still paper or no, anything contaminated should go into the regular waste bin.
- Peter is turning a plastic bottle into a piggy bank. Which of the 3Rs is he practising? Reusing, Reducing, Recycling. (Note: At this age, all three options are correct, but let the children reflect and express their opinion on this question).

- What is a benefit of recycling? Less trash filling up landfills / Fewer resources taken from Earth / Less pollution / All of them.
- What colour is the container where plastic bottles should be thrown away? Green / Blue / Yellow
- What colour is the container where paper should be thrown away? Green / Blue / Yellow
- What colour is the container where food should be thrown away? Green / Blue / Brown
- True or False? Plastics decompose quickly. True / False (Note: this information has not been provided but the question will give preschool teacher the opportunity to talk about it: Plastic bag – 20 years, Plastic straws – 200 years, 6 pack plastic rings – 400 years, Plastic bottles – 450 years, Plastic toothbrush – 500 years[18])

[17] Retrieved from https://wwf.org.au/blogs/the-lifecycle-of-plastics/ on the 01/09/2023.
[18] Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3511648/ on the 01/09/2023.

- Turning the water off when you brush your teeth is an example of: reducing / reusing / recycling
- Which natural resource does recycle paper allow people to conserve? electricity / solar energy / trees / gas
- Was the theme of the workshop fun? Yes / No. Why?
- Finally… are you committed to putting the 3Rs into practice and convincing your family members and friends to also comply with these three principles? Yes / No

Preschool teacher will hand out the cards to the children as a way of rewarding and recognising their effort and commitment to the 3Rs.

If possible, the children will visit other classes in the school and hand out a poster (previously printed by the teacher) to spread the 3Rs to other classrooms.

Final suggestion:
Visiting a recycling plant is a unique experience, although it is true that it is not easy for these centres to open their doors to children, especially at this age (3 to 5 years old). In addition, there is the added difficulty of accessibility for visually impaired children.

In any case, it is good to at least try. To do so, we suggest contacting the town council of the city where the educational centre is located so that they can guide you on how to make the visit, if possible.

In Spain, for example, you can visit the Valdemingómez Technology Park in Madrid (https://acortar.link/CW3igX) or one of the centres that Ecoembes has throughout Spain (https://www.ecoembes.com/es).

6.Reflection questions for debriefing

The questions the children had to answer in order to get their "green hero" card can be used.

7.Possible risk factors

When teaching pre-schoolers, you can almost expect to have daily interruptions, plenty of bathroom breaks and perhaps some tears. Educating children when they're just beginning to learn how to socialize and adjust to a classroom is no easy task, so organization is key.

Childhood development experts[19] generally say that a reasonable attention span to expect of a child is two to three minutes per year of their age. That's the period of time for which a typical child can maintain focus on a given task. GREEN4VIP target group (from 3 to 5) would be:

4 years old: 8 to 12 minutes
6 years old: 12 to 18 minutes

The main information should be provided according this period of time.

Another aspect to take into account is the manual skills or motor skills of the children, so the plastic activities will have to be supervised by an adult who will have to help them at all times.

[19] Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3511648/ on the 01/09/2023.

In the case of the activity to reuse materials, such as making a pencil holder, the teacher will have to have the can (with the edges protected with duct tape, for example, to avoid cuts) or the plastic bottle already cut (also with the edges protected to avoid cuts) ready in advance and show only one as an example.

To prevent the children from getting dirty during the plastic activities, it is recommended that they wear an apron and water-based erasable paint.

8.How to adapt the activities to VIP needs and specific age-group

Dialogue-based activities do not present difficulties for children with visual impairment.

Images of the landfill can be described by the preschool teacher: *Landfill is the oldest and most common form of waste disposal. Can you imagine the smell? How dirty it is…*

The posters can be converted into a tactile drawing (preferable for 3-5 years old kids) or described using a Braille or large print labelled card as well as the "green hero" cards.

The two crafts have been chosen precisely because they are simple and both are sensory and manipulative in nature.

Finally, when children are asked to visit other classrooms within the school to bring the posters and encourage other children to put the 3Rs into practice, it is understood that children with visual impairment are familiar with the school and therefore this activity would not present any difficulty for them.

9.Tips and suggestions on how to involve families

The involvement of the family is always important, not only in the implementation of this workshop but also in the whole educational process of the child.

The help of parents is crucial so that at home they can accompany the learning process (in this case "green awareness") that we try to carry out at the educational centre.

We will ask the families to help us to bring the materials for the handicrafts to the classroom. In the same way, we will inform them of the objectives we are looking for with these activities so that they can serve as an example at home.

We can only understand the environmental education if we treat it simultaneously with what we traditionally know as value education. Children won't take care of the environment if they don't usually respect either themselves or other people. So, it is clear that we have to educate children in order to share, respect, love believe, etc.

A 2017 study[20] exploring the relationship between childhood experiences in nature and young adult environmental attitudes and behaviours found that children who play outdoors are more likely to take steps to protect nature as adults. It just goes to show that the scientists of tomorrow are being made in the parks and playgrounds of today.

[20] Retrieved from https://www.sciencedaily.com/releases/2017/03/170317102447.htm on the 01/09/2023.

SUSTAINABLE LIFESTYLES: Life is better with ... herbs

1.Aims and context of the workshop

As part of our teaching approach, we seek to enrich children's educational experience with activities that promote environmental awareness and sustainable development. Through a range of interactive activities, such as story readings, music and movement education and exploration, we aim to actively engage children and develop their critical thinking and creativity.

By incorporating the STEAM approach into our teaching, we enhance pupils' interaction with the natural environment and broaden their understanding of science through everyday activities. In addition, by involving parents in classroom activities, we foster a sense of community and encourage collaboration between family and school.

Figure 26 - Mortar with herbs to crush [21]

Objectives:

1. Understanding human interaction with the environment:

- Pupils understand the health benefits of herbs and add them to their diet.
- Be able to identify and describe three ways in which human activities affect the natural environment.
- Create a simple art project showing the importance of plants in the environment

2. Relating science principles to everyday life:

- Report how the herbs they studied (e.g., lavender, oleander) are used in everyday activities.
- Observe and record changes in the plants they care for in a week.

3. Active participation as responsible citizens:

- Organise a small event to educate other pupils or parents about the importance of responsible consumption.
- Participate in a material reuse activity that will help reduce waste.
- By achieving these goals, we expect that children will develop a strong environmental awareness and become active members of the community, having acquired the necessary skills to act positively for their future.

[21] *Fig. 26 -Photo from PhotoMIX Company: www.pexels.com/el-gr/photo/105028/*

2.Resources needed

For the implementation of the Environmental Education Programme in the laboratory, the following materials are needed:

1. Books for children

For the Greek context the following books are recommended:

- "The seed travels..." by Eric Carle, Kaleidoscope edition, with a version adapted for children with visual disabilities.

- "The Garden of Asclepius" by Eleni Tsaldiri, Kalendi Publications, "My Green School" by V. Tsoka, D. Fotiou and K. Theocharis, Kalendi Publications, and "Plants Inventors" by K. Gifford and G. Herba, Pataki Publications.

2. Aptic materials

- Lavender and other herbs, plasticine, sticks, straws, plastic cans, and 3D geometric shapes to create the tactile reference book and the scales.

FIG.27-Little picture with real herbs, lavender[22]

3. Information material

- Information from the internet about the history, symbolism of herbs, as well as information about their use in antiquity, mythology, art, folk medicine, cooking, pastry and perfumery.

4. For the visit to the Farmer's Market:

- A plan for a visit to the farmers' market that includes the herbs to be purchased (e.g. basil, oregano, oregano, arborica, bay leaf).

5. Additional materials

- A binder, tabs with the names of the herbs in plain and Braille, and dried herbs for the reference box.

By preparing these materials, we will ensure that students have a full and multi-sensory experience during the lesson, thus enhancing their learning and understanding of the subject.

[22] *Fig. 27 - Photo by Nikolitsa Andrikopoulou*

3.Group size

The activities can be carried out with a minimum of 5 children up to a maximum of 23 at the same time.

4.Duration

In this Environmental Education programme for kindergarten, the lesson design follows three phases:

(20 minutes) Preliminary workshop activities: Introduction to the topic of herbs through storytelling, aiming to activate the senses and awaken the children's curiosity.

(1 hour) External educational activity: A visit to the local Farmers' Market, where children will interact with plant professionals and growers, developing social skills and knowledge about the origin and use of herbs.

(2 hours) Classroom workshop: the main part of the lesson will include activities such as making herbal prints and balance scales, combining Science with everyday activities, as well as environmental awareness activities. The duration of this workshop will not exceed two hours, and will include the participation of parents in the last part to enjoy the pizza together and inform them about the project.

5.Step-by-step instructions to implement activities, both offline and online, based on the STEAM approach

Activity adaptation for VIP: The visually impaired kid(s) should be accompanied throughout the course of the following activities in order to ensure an optimal experience.

The educational path is aimed at children aged between 3 and 5 years and will be divided into 3 phases:

- Preliminary workshop activities before visiting the farmer's market

- Educational visit to a farmer's market

- Workshop activities in the classroom, after the educational visit outside.

1. Introduction to the topic (5 minutes):

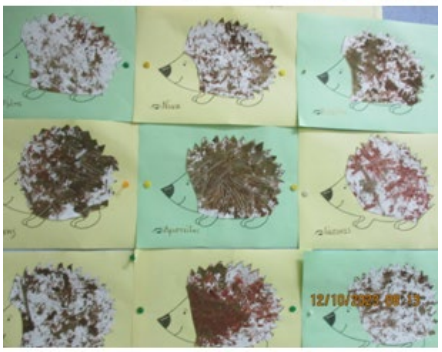
- The students gather in the "corner of the side room" where the teacher presents the objectives and the content of the herbal unit.

- The teacher gives each pupil a sprig of lavender to smell and process.

FIG.28 - Collage and tactile drawing of plants[23]

[23] *Fig. 28 - Photo by Nikolitsa Andrikopoulou*

- This is followed by an exploration of the students' prior knowledge and what they want to learn.



2. Reading of a fairy tale (10 minutes):

- This is followed by the reading of a selected fairy tale which may have been constructed at a previous time using the thermoform method, while using tactile aids so that the preschoolers can better perceive what they hear. Dramatization of the story can also be carried out to make listening more active.

3. Music and Movement Activity (Duration flexible):

- Children are encouraged to get up and dance freely to the rhythm of a traditional song such as "In the blossom of the oleander", while trying to find and form groups based on the herb they are holding.

Activity adaptation for VIP: If one or more children with VI are present, all the children dance blindfolded to the music. Whenever the music stops, they should form groups or pairs by touching the plant the others are holding. Since all children will be blindfolded, one or more teachers should help direct them to other children and support them in touching each other's plants.

FIG.29 - Collage porcupine collage made with herbs and seeds[24]

4. Exploratory Learning (Duration flexible):

- After the end of the song, students research the herb they are holding using the herb book prepared as a reference book.

Activity adaptation for VIP: For visually impaired children, it must be a tactile book where they can touch either the raised drawing of the plants or parts of previously glued into the book by the teacher (e.g. leaves, twigs, etc.)

-The children are encouraged to bring home jars of food they have used up and reuse them by filling them with dried herbs, sorting them and keeping them at school and at home for various preparations.

[24] *Fig. 29 – 30 - 31 – 32 - Photos by Nikolitsa Andrikopoulou*

FIG.30 - Artisanal scale

5. Artistic Creation (Duration flexible):

- Children are encouraged to create stamps using the branches of herbs.

Activity adaptation for VIP: Use salt dough, modelling clay or similar materials as a base on which to place herbs to create stencils.

FIG.31 - Child's hand picks a sprig of mint

6. Educational Excursion (Out of School):

- A visit to the local Farmers' Market is organized to procure herbs and develop social skills, interacting with professionals and learning about weighing and pricing procedures.

7. Completion and Evaluation (Duration flexible):

- Upon returning to class, students create a balance scale using the materials provided and conduct experiments by weighing various objects. For example, they can weigh basil or lavender to fill sachets and make gifts for their families such as anti-corrosive - scented gifts for the wardrobes. Be careful while weighing: all the sachets must have the same amount!

Activity adaptation for VIP: Provide a talking scale. This adaptation is useful also for those sighted kids who are still not able to read.

FIG.32 - A little boy is preparing a small pizza

8. Extension:

Students make up a recipe book and complete the activity by tasting pizza with basil which has healing properties. They can even knead rye bread which has beneficial health properties.

After watching relevant recipe videos, students can also prepare at school enough quantity of oregano oil which has antimicrobial and antiviral properties, then they reuse waste bottles by filling them with oregano oil for use at home and at school.

6.Reflection questions for debriefing

Reflection and evaluation questions that the teacher can pose to all the pupils in the classroom:

- Did you have a good time building the scales?
- What other materials do you think would be useful for our construction? How could we make a stronger or a different scale? Do you have any other ideas?

-

- What else could we weigh?
- What have you found difficult?
- What was the best part?
- Which activity did you like the most?

7.Possible risk factors

For pupils with language difficulties, the use of a book or reference table on herbs can be an important tool. This will facilitate their understanding of the educational material and help to enrich their vocabulary. Experiential learning and tactile contact with objects during the story telling process, as well as the use of a multisensory book, encourage the child's participation.

FIG.33 - Porcupine collage made with herbs and seeds[25]

For pupils with visual impairments, it is important to adapt the classroom space to be more open and accessible, with clear corridors to facilitate movement from one location to another. The use of symbols (with each one corresponding to a student from the beginning of the school year) placed on their chair, drawer or storage area for their personal belongings can help children find their belongings easily, even if there are changes to the classroom layout. These practices are great supports for students with developmental challenges or multiple disabilities.

[25] *Fig. 33 - Photo by Nikolitsa Andrikopoulou*

8.How to adapt the activities to VIP needs and specific age-group

This age group requires clear goals, dynamic action, short activity rotations and a strong thirst for discovery. What makes the educational process accessible to visually impaired children is the same element that is essential for all pupils: the activation of all the senses. Touch, smell, movement, rhythm and taste are essential for children to participate actively in activities and to acquire knowledge experientially.

The proposed activities are tactile, allowing all children to actively participate in the learning process. For example, the printing activity can be enriched by turning it into an embossing activity by gluing the herb branches onto the paper, thus creating a specific shape.

9.Tips and suggestions on how to involve families

The involvement of parents and guardians in the educational process is valuable, as they often support our efforts and contribute to the multifaceted development of children. As part of this programme, it is recommended that parents are invited to all activities. Preschool teachers can create a schedule of planned activities so that parents can sign up for those that interest them, either to contribute to enriched knowledge, or to offer help, such as acting as chaperones on field trips or helping to build the scales, or simply because they wish to understand how children learn at this age.

At the end of the programme, parents are invited to enjoy a pizza with their children, during which teachers inform them about the activities that have taken place. Teachers also encourage them to become more aware of environmental issues and to consider ways to address the challenges presented.

Through this approach, children and parents alike become educated about the nutritional advantages of incorporating herbs into their diet. This initiative also promotes financial prudence and environmental stewardship. By eschewing pre-packaged and ready-made foods, families can significantly diminish their environmental impact. This encourages them to become hands-on with their food preparation, taking charge from the initial stages to the final meal. Such practices not only cultivate a deeper appreciation for food but also instil lifelong habits of healthy and mindful eating.

FIG.34 - Preparation of a pizza[26]

[26] *Fig. 34 - Photo by Katerina Holmes: www.pexels.com/el-gr/photo/5908203/*

VIDEO TUTORIALS

Efficient use of resources: water

Material needed:

- Water: save the water you used and recycle it for this activity
- Paper to be thrown away
- Bowl
- Fork
- Sieve
- A piece of cloth

Method:

In a bowl, tear the paper and pour the saved water until it covers all the paper. Leave to rest for a few hours or a day. Subsequently, with a fork or with the help of an immersion blender, break up all the paper until you obtain a mixture of crumbled paper. At this point insert the sieve, cover it with crumbled paper and let it drain.

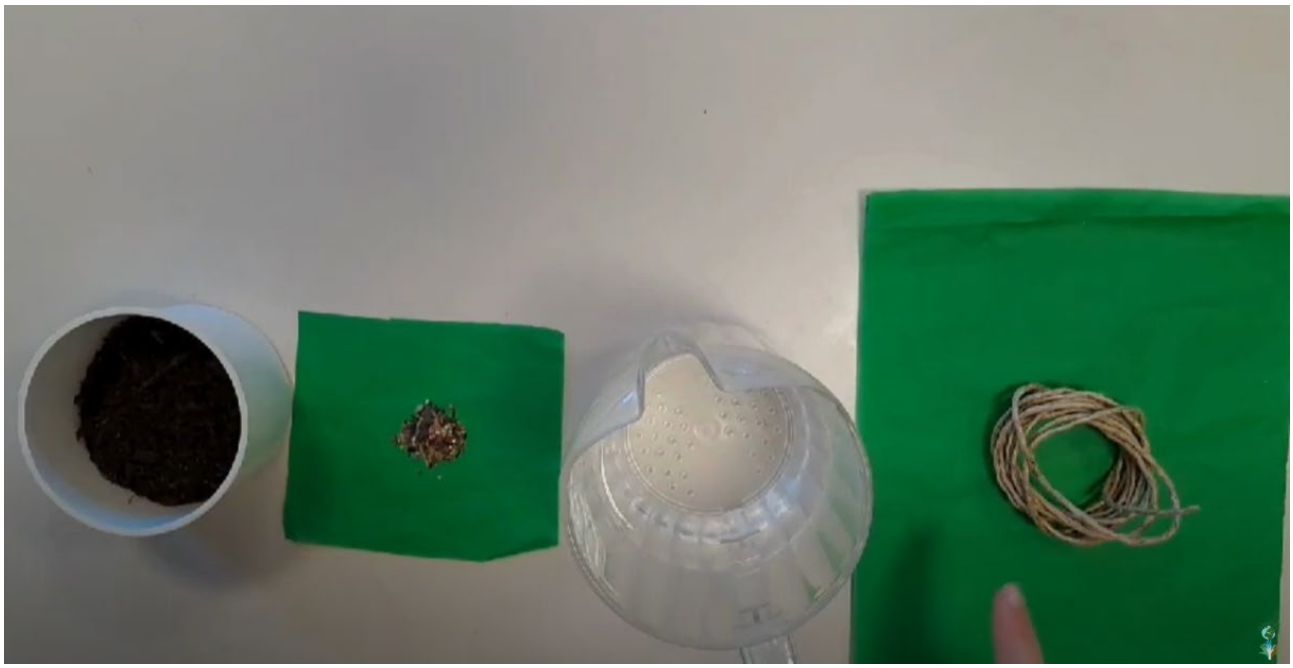
Once all the excess water has drained, dab with the piece of cloth and tap until the recycled paper comes away from the sieve.

Once you have obtained the sheet of recycled paper, leave it to dry well for a few days.

Objective:

This work can be done to effectively use energy resources, as recycled water, in this case is used to create new paper. Combined with this experience, an awareness activity aimed at reducing water waste daily can also be implemented: during this awareness activity, teachers can remind children to always turn off the tap when we wash our hands in the bathroom and to finish the water that we pour into the glass at lunch.

Direct Youtube link: Efficient use of resources: water. Audiodescribed in Eng.



Material needed:

- Bowl with clayey soil
- Flower seeds
- Jug with water
- Recycled tissue paper
- String

Method:

On the table, place a bowl with the clayey soil, a handkerchief on which the flower seeds are placed, a jug of water and the already cut string.

At first, have the children put the seeds in the soil, as a second step have them add some water. Then, start mixing the soil with the seeds. Afterwards, begin to create balls of the desired size and leave them dry.

Once the balls have dried, the children can make small balls with tissue paper and string. Once ready, you can go to the school garden or organize an outdoor educational trip to have the children place the seed bombs in the garden ground. In the following months the seed bombs will transform into flowers. You can go back with the children to see the flowers that have appeared. Seed bombs can also be given to children so they can plant them with their parents in the places they want such as their own garden, in the pot on the balcony or the park where they go to play. Children can give them as a gift to anyone they want.

Objective:

Making seed bombs requires manual skills boys and girls should have, as they have to mix the ingredients and create balls.

The second objective is to spread the seed bombs to friends and relatives to increase the flowering of seeds in private parks and in your city, this can promote the protection of biodiversity all around.

Direct Youtube link: Protection of biodiversity: seeds bombs. Audiodescribed in Eng.

Life cycle of waste management

Material needed:

- 4 bins for separate waste collection
- Cardboard
- Rough paper (biscuit packaging)
- Recycled paper
- Finished paper towel roll
- Plastic bottle
- Plastic bag
- Dried rose petals
- Orange peel
- Broken Lego blocks
- Glue

Method:

Paper collection bin → make a square out of the cardboard. Then glue the rough paper, the empty paper towel roll and the paper to be binned onto the square.

Plastic collection bin → make a rectangle out of the cardboard. Then glue a bottle and a plastic bag on top of the rectangle.

Organic collection bin → make a circle out of the cardboard. On the circle, glue the dried rose petals and the peel of an orange, creating a small composition.

Bin for the collection of undifferentiated waste → make a triangle out of the cardboard. Glue the broken blocks onto the rectangle, taking care to check that they are secure.
Once the 4 compositions have been created, they can be glued above or in front of the bin corresponding to the waste contained inside.

Objective:

This activity can be carried out by all kids, with the support of adults. It has multiple objectives: promoting the recycling of waste; teach boys and girls to carry out separate waste collection, in an inclusive manner, as it is achieved through the use of tactile perception. We also decided to mark each waste bin with a different geometric figure, in order to facilitate the use of touch and lay the first foundations for the knowledge of geometry, in the form of game and interactive experience.
Attention! Different colour bins are used in EU countries! Be aware of it and explain the colours used in your country to the visually impaired children!
Direct Youtube link: Life cycle of waste management: inclusive trash bins. Audiodescribed in Eng.

Material needed:

- Buttons
- Hay
- Cereal box
- Corrugated cardboard
- Yellow, green, brown and blue tempera paints
- Fabric
- Wooden sticks
- Vinavil glue
- Scissors
- Pencil
- Phone cover packaging
- Star-shaped die cutting machine
- String

Method:

prepare all the necessary materials on a table. Cereal box, phone cover packaging, wooden sticks, buttons, hay, brushes, pencil, Vinavil, small quantities of tempera in a plate.

With the pencil, draw two circles on the white part of the cereal box. Using the leftover cardboard, create yellow stars by hand or with the help of a die-cutting machine. Cut the two circles and glue

them with vinavil glue. Once dried, the children can color the circle with the blue tempera that has already been placed on a plate. Using the leftover cardboard, create stars by hand or with the help of a die-cutting machine. Color them with yellow tempera. Leave to dry.
Have the corrugated cardboard cut into small strips, which will be the roof of the hut, and ask kids to color them with brown. Then, move on to making the Holy Family with the packaging of the phone cover. To make the clothes of Joseph, Mary and Jesus, have the children make three rectangles of different sizes. These three rectangles will be colored green, light blue and white respectively. Once the circle, which represents the sky, has dried, we glue the roof represented by the brown rectangles and the walls by the sticks onto it. The star will be glued to the roof. The clothes of Jesus, Joseph and Mary will be glued inside the crib. The head will be made by gluing the buttons. The children can put a small piece of fabric on Mary's head to make the headdress. In the lower part, put some hay. Behind the circle, the children can put some string so they can hang the small nativity scene.
The gift prepared for the parents will be placed inside recycled paper, previously decorated by the children.

Objective:

For a sustainable lifestyle we thought of making a Christmas gift using recycled materials, such as buttons, cardboard, fabric and natural elements. Using materials of different consistencies favors the use of touch and the possibility of distinguishing the different elements in a more inclusive way. Different geometric shapes were also used to create the background and characters so that they can be easily recognized by touch. Furthermore, as it is a Christmas gift, it was important to create packaging made with recycled paper, also decorated by the children.
Direct Youtube link: Sustainable lifestyles: a sustainable Christmas gift. Audiodescribed in Eng.

CONCLUSIONS

As we conclude our journey with the GREEN4VIP Inclusive Toolbox for VIP, it is with a sense of joy and anticipation for the endless possibilities that lie ahead for the young minds we've had the privilege of guiding. Through this Toolbox, we aimed to sow the seeds of environmental curiosity and responsibility in the fertile minds of children, and we trust that these seeds have found a nurturing home.

Our inclusive approach has been intentional, recognizing the diversity of young learners and the importance of providing equal opportunities for all to engage with the wonders of the natural world.

The Toolbox serves not as a conclusion but as a catalyst, igniting a lifelong passion for environmental stewardship. We encourage educators to continue fostering a sense of wonder and respect for the planet, knowing that the impact of early exposure to eco-friendly practices extends far beyond the preschool years.

As we bid farewell to this Toolbox, we envision classrooms filled with laughter, curiosity, and a shared commitment to preserving the beauty of our world. May the GREEN4VIP Inclusive Toolbox for VIP continue to inspire a new generation of environmental advocates, laying the foundation for a sustainable and harmonious future.

Thank you for embarking on this adventure with us! The exploration doesn't end here; it's merely the beginning of a lifelong journey of care for our planet. Keep exploring, keep learning, and keep nurturing the little kids. The world is a better place with them learning to cherish and protect the environment!

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Nastja Cotič (Slovenia) is an Assistant Professor of Science Education. Her field of research is the development and evaluation of different teaching approaches in Science Education in preschool and primary school and the effective use of technology in the Science teaching and learning process. Since 2008, she has been actively involved in various national and international projects and activities: School-oriented Interactive Identification Tools (SiiT): exploring biodiversity in a cross-border area, Innovative and flexible teaching and learning in initial teacher education programs, Learning about biodiversity through experience. She had given different workshops for children from kindergarten and school, the topics of workshops are experiential learning on the seashore and the importance of knowing biodiversity. So far she talks at national and international conferences and courses with the topics of Information – communication technology in education, Cross-curricular education in kindergarten and Motivation in Education.

Karmen Drljić (Slovenia) is an Assistant Professor of Inclusive Pedagogy. Her field of research is the resiliency of future teachers, inclusion, mostly of children with special needs, and inclusive pedagogy. By now, she has been associated with various international projects, such as: Improving the quality of higher education by introducing modern, more flexible forms of learning and teaching, Multiculturalism - a new form of coexistence, and Archaeology for all (EEA grants project). One of the main aims of the latter one was to increase the accessibility of the Agrological park Simonov zaliv for visitors with disabilities, ensuring properly customized contents and activities. She was also associated with a national innovative project on Multisensorial learning financed by the National Education Institute Slovenia. So far she had been given various thematic workshops for children and

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Anna Lemańczyk (Poland) graduated from the University of Warsaw with a degree in Roman Philology. She also completed postgraduate studies in European Industrial Management carried out by the Warsaw School of Economics in cooperation with HEC.
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Asociación Mundial de Educadores Infantiles / AMEIWAECE (ES)

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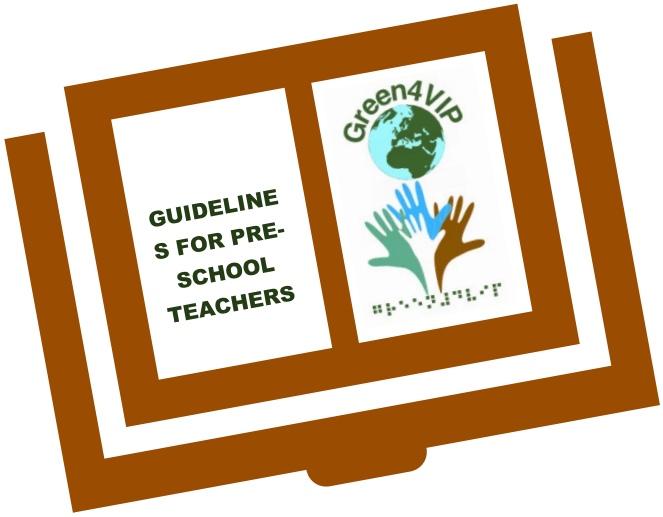

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Environmental education and STEAM approach for Visually Impaired Pupils in kindergartens (GREEN4VIP)

PROGETTO N° 2022-1-IT-02-KA220-SCH-000086906.
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Co-funded by the European Union