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

GREEN4VIP Teacher Training Curriculum

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)
TEACHER TRAINING CURRICULUM

Project number 2022-1-IT-02-KA220-SCH-000086906

Authors

Vanessa Cascio (CO&SO), Maria Teresa Caldo (UNIONE ITALIANA CIECHI ED IPOVEDENTI SEZ. TER DI FIRENZE), Sarantis Chelmis (1ST PRIMARY SCHOOL OF RAFINA), Nastja Cotič, Nataša Dolenc Orbanić, Karmen Drljić, Mateja Maljevac (UNIVERZA NA PRIMORSKEM UNIVERSITA DEL LITORALE, Faculty of Education), Anna Lemanczyk , Monika Łoboda (POLSKI ZWIAZEK NIEWIDOMYCH) and Elvira Sánchez-Igual (AMEI-WAECE).

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ISBN: 9798343259827
Independently published

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

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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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List of Abbreviations:

- TTC Teacher Training Curriculum
- VIP Visually Impaired Pupils
- ECEC Early Childhood Education and Care

INTRODUCTION

The Teacher Training Curriculum (TTC) presented in this document is part of the GREEN4VIP project 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 visually impaired pupils (VIP).

GREEN4VIP TTC is based on the findings of Work Package number 2 which has identified pre-school teachers' skills gaps and has provided practical advices and tips on how to organize learning and teaching processes in ECEC addressing the specific learning needs of VIP based on the identified skills gaps of teachers.

This document is aimed to contribute to the achievement these objectives:

1) improve pre-school teachers' awareness on environmental topics and contribute to enable behavioural changes for individual preferences, consumption habits and lifestyles
and
2) supply competences to pre-school teachers to implement environmental workshops based on the steam approach and how to adapt it to the needs of VIP.

Our proposal is based on an interdisciplinary and holistic approach and it is organized by 5 different modules:

1) VISUAL IMPAIRMENT IN ECEC: different strategies and tools
2) EFFICIENT USE OF RESOURCES: water, energy and soil; food choices and health
3) BIODIVERSITY PROTECTION: food production and conservation of biodiversity
4) LIFE CYCLE OF WASTE MANAGEMENT: Reduce, Reuse, Recycle
5) SUSTAINABLE LIFESTYLES: consumption habits

Each module is divided in learning units, aimed at supplying competences to teachers on environmental issues, digital technologies, inclusive approaches and the STEAM approach to best convey sustainable practices to children, with a focus on VIP.

The sections into which we have divided each of the blocks and/or modules are as follows:

1.Objectives
2.Duration in learning units
3.Definition of learning outcomes (knowledge, skills, competences)
4.Materials and frame conditions needed for the implementation
5.Step-by-step instructions for trainers
6.Learning process validation
7.Inclusive approaches for VIP
8.Use of accessible digital technology for online learning
9.Interdisciplinarity (STEAM approach and adaptations for VIP)

The implementation of this training programme has a total duration of approximately 25 hours, although its modular structure means that the duration can be adapted to the needs of preschool teachers.

Each of the modules is accompanied by a power point presentation that can be used during the training, on-line or face-to-face, carried out with the teachers.

Before we start... the project partners have elaborated a module which we have called "module 0" whose purpose is to get to know different strategies and activities to break the ice and create an appropriate atmosphere to carry out the training. The module 0, which has an estimated duration of 1 hour and is an 8-page document, is available at https://acortar.link/14g4gk

If you have no previous experience in training and capacity building, we recommend that you read it before starting teacher training.

With this training programme, we indeed expect to raise teachers' awareness on environmental issues and convey awareness and sustainable practices to children and families through to the STEAM approach adapted to VIP learning needs.

"***Teachers can change lives with just the right mix of chalk and challenges***" - Joyce Meyer. GREEN4VIP project partners hope to bring with this TTC to teachers our chalk and our challenges to achieve a more sustainable world from an inclusive approach.

MODULE Nº 1:
"VISUAL IMPAIRMENT IN ECEC: different strategies and tools"

1. Objectives

Upon completion of this module, the participants will:

- Have an overview on the types of children disabilities that you might meet in inclusive education, with the focus on the visual impairment (VI)
- Learn about the early years good setting for the VIP
- Learn about different tools and educational aids accessible to the visually impaired children

2. Duration in learning units

This Module has been divided into 3 sessions and/or learning units. The expected time is as follows:

- First part: Types of disabilities with the focus on visual impairment: 60 minutes
- Second part: How to organize a good setting for VIP: 60 minutes
- Third part: Different tools and educational aids accessible to the visually impaired children: 100 minutes

3. Definition of learning outcomes (knowledge, skills, competences[1])

Knowledge about the types of disabilities (visually impaired children may have additional disabilities), the causes and consequences of VI creating a good setting for VIP different tools, methods and educational aids accessible to the visually impaired children.
Soft Skills developed: Problem Solving Skills, Critical Thinking Skills, Flexibility, Communication Skills, Teamwork, Organization Skills, Creativity, Emotional Intelligence, Attention to Detail, Responsibility and Leadership.
Competences: Personal, social and learning to learn competence - Mathematical competence and competence in science, technology and engineering - Citizenship competence, Cultural awareness and expression competence.

4. Materials and frame conditions needed for the implementation

- PPT Slides with data (to be printed and/or showed in digital screen). Avilable at https://drive.google.com/file/d/1Eug10FAZTpcS8yix59ox3wAhntWfN5AO/view?usp=sharing
- Internet connection available (videos from YouTube)
- PC and screen projector
- FLIPBOARD/whiteboard and markers of different colours
- Some A3 page sheets (at least 4) and some A4 page sheets
- Pieces of materials with different textures (e.g. some pieces of wool and small pieces of different tissues, pieces of paper of different weight and with striking colours.
- Glue.
- Some plastic materials (like bottle caps) and other ecological material (like leaves, conkers, preferably in halves, as this way it will be easier to stick them on a piece of paper, etc).

[1] LifeLong Learning Key competences adopted in 2018: 1. Literacy competence 2. Multilingual competence 3. Mathematical competence and competence in science, technology and engineering 4. Digital competence 5. Personal, social and learning to learn competence 6. Citizenship competence 7. Entrepreneurship competence 8. Cultural awareness and expression competence. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en Council Recommendation of 22 May 2018 on the key competences for lifelong learning.

5. Step-by-step instructions for trainers

UNIT 1: Types of disabilities with the focus on visual impairment

Duration: 60 minutes.

Start with slides nº 1-2

The moderator says the welcome words to the participants and tells them that in this module we will concentrate on the children with VI in kindergartens, who might have multiple disabilities, which is very common nowadays.

The moderator explains its country's educational path to become pre-school teacher able to work with Vi kids or in general with kids with disabilities.For example, the moderator says that in Poland pre-school teachers willing to work with the VIP have to accomplish postgraduate studies which last one year and a half.

During this module we will try to give you all the needed information and links to the materials allowing you to understand the VIP and to work with them in an accessible way.

In the first part of the module, we will introduce you to the theme "disability" in general and the early age disabilities, with the focus on blindness, the second and the third part will be much more practical.

The moderator asks training participants "what is a disability for you?" Let them talk. Then, the moderator can say "As you can hear, there are different approaches to this subject. It is a very complex subject. Just to give you a few examples of possible definitions, a few different approaches…

1. On the website of the World Health Organization, you can read:

   "Disability is part of being human. Almost everyone will temporarily or permanently experience disability at some point in their life. An estimated 1.3 billion people – about 16% of the global population – currently experience significant disability. This number is increasing due in part to population aging and an increase in the prevalence of noncommunicable diseases.

   Disability results from the interaction between individuals with a health condition, such as cerebral palsy, Down syndrome and depression, with personal and environmental factors including negative attitudes, inaccessible transportation and public buildings, and limited social support.

   A person's environment has a huge effect on the experience and extent of disability. Inaccessible environments create barriers that often hinder the full and effective participation of persons with disabilities in society on an equal basis with others. Progress on improving social participation can be made by addressing these barriers and facilitating persons with disabilities in their day to day lives."

2. Just to give you an example of the linguistic approaches: In the Merriam Webster dictionary (https://www.merriam-webster.com/dictionary/disability) you will find many different meanings of the word “disability”, we present just a sample of it:

   1: a physical, mental, cognitive, or developmental condition that impairs, interferes with, or limits a person's ability to engage in certain tasks or actions or participate in typical daily activities and interactions, also: impaired function or ability, also: the financial support provided by such a program, also: a disqualification, restriction, or disadvantage, also: lack of legal qualification to do something..

   As you can see, the meaning, the understanding of the word “disability” can be very wide, so when we use it, we have to be very precise, as people using this word might not have the same understanding of it.

3. The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) defines a disability as any long-term physical, mental, intellectual or sensory impairment which, in interaction with various barriers, may hinder the full and effective participation of disabled people in society on an equal basis with others.
   The experience of disability is influenced by the nature of a person's impairment. Gender, age, ethnicity, and culture can also have a profound and sometimes compounding effect on an individual's experience of disability.

   And now, impairment.

   An impairment can be intellectual, psychiatric, physical, neurological or sensory, and be temporary, intermittent or ongoing. People may acquire an impairment through an accident or illness, and/or a person may be born with an impairment. Multiple impairments are common, especially with increasing age.

   Impairments are often considered to be the disability.

   However, in a moment, when we will speak about different models of disability, you will notice that under the social model, there is a distinction between the two concepts.

   The moderator asks the trainees: Have you ever heard about different models of disability?

   A moderator listens to the participants and then presents and explains 3 possible models of disability.

   Show slide nº4-5-6 Medical, social and functional models of disability

   The moderator compares the social vs medical model of disability.

   According to the medical model disability lies within the individual and the disabled person needs to adapt or be cured to fit the environment and society. This has been the prevailing model in Western society since the time of the Industrial Revolution, and elements of this model persist today.

The social model of disability says that disability is caused by the way society is organized. The medical model of disability says people are disabled by their impairments or differences.

Show slide nº 7 – a film on social model of disability (duration 2 minutes and 23,41 sec)

Show slide nº8

A third model, we can speak about, is a “functional” model, what has been defined as acquired difficulty in performing basic everyday tasks or more complex tasks needed for independent living, so it has this perspective of can or rather can’t do.

None of the presented models of disability is perfect.

We may most like the social model and we would like to remove all the barriers that people with different impairments have to face.

But you might hear as well the critical voices concerning this approach which say that it is too optimistic and that in real life, in practice, we are not able to remove all the barriers.

Anyway, our aim in GREEN4VIP project is to include as much as possible VIP in kindergartens in the learning process by adapting the methods and tools to their needs and possibilities.

The moderator says: Now, we continue with types and degrees of the disability. This way, you will have really all the basic info about disabilities at an early age.

Show and read slide nº 9

Show slide nº 10

Moderator says now: We will show you a short video about different disabilities (it is a presentation of a book “Just ask”, page by page is red by different people working in Boone County Family resources, https://www.youtube.com/watch?v=1fuEyC20_Go&t=75s,

duration 8 minutes 11,79 sec). In our project we focus on VI, but as children might have multiple disabilities, it will be good for you to have at least a basic knowledge of it.

It is a good inspiration on how to present different disabilities to children.

The moderator presents briefly again different disabilities, now in a written way and reads the text aloud – slides nº11-12-13

Just to retain, we can speak about the following types of disabilities:

1. intellectual
2. mental (concerning mental disorders, mental illnesses, e.g., depression, schizophrenia, anxiety neurosis)
3. sensory (concerning smell or taste disorders)
4. auditory or speech

5. visual
6. related to autism spectrum disorders
7. neurological (including the presence of neurodegenerative diseases, e.g., epilepsy, cerebral palsy, multiple sclerosis)
8. motor (including paraplegia, tetraplegia, amputations, rheumatic diseases)
9. arising from genetic diseases and so-called rare diseases
10. due to cardiovascular or respiratory diseases (e.g., asthma)
11. due to metabolic diseases (e.g., diabetes)
12. due to diseases of the genitourinary system

The moderator asks the training participants if they have experience in working with children with disabilities, and if yes, with which kind of.

It is the moment when training participants can speak briefly about their experience of working with disabled children.

If the participants have the experience, the moderator can say: it is very good that you have already some experiences in this field; during this training you will have the opportunity to share it with others, not only during the training sessions but as well during coffee breaks, meals and free time. We strongly encourage you to do so.

The moderator asks if the training participants know the degrees of disability (there can be differences in naming it in different countries).

After the input from the training participants, the moderator says that generally, there are 3 degrees of the disability: light, moderate and severe.

Show slide nº14

From now, we will focus on the visual impairment.

At the beginning, we would like to present you 4 short videos to show you how people with different eye disabilities see the world around them.

Show one after another slides nº15-16-17-18 and at the same time inform what is on them (YouTube videos showing simulation of Cataract, Retinitis Pigmentosa, Diabetic Retinopathy, Glaucoma – A Busy Road view in all of them).

Now the moderator says: Now, it is the time to present you some general info concerning “Sight”.

Show and read slides nº19-20 – Sight – general info.

Sight is man's primary means of acquiring knowledge about the world around him.

Approximately:

📌 **85 % of information acquired non-verbally is acquired by observing the environment,** to compare with other senses: 11% by hearing, 3.5% by smell, 1.5% by touch, 1% by taste and others.

Sight is a sense that plays an important role in everyday life. Lack of sight or its limitation hinders a person's functioning. The importance of sight in human life can be considered in terms of:

- cognitive processes;
- practical activities;
- spatial orientation;
- emotional sphere;
- communication with the environment.

📌 In order to be able to see, **three things** need to work properly: the **eye**, the **optic nerve**, and the **brain**. Damage to any of these can cause a vision impairment. Sight continues to develop after birth and vision must be stimulated (used) to reach its full useful potential. [2]

The moderator says that we will focus now on visually impaired children (VIP), who might be partially sighted or blind.

Show and read slide nº21

Children might be born with visual impairment, or they can get it later in childhood.

Vision impairment can go from blindness or very low vision to an inability to see particular colours.

It is the way children use their sight or behave that might tell you they have a visual impairment. Even the children who can speak and could tell you that something is wrong with their eyes, they might not be aware that there is something wrong with their vision if they see this way from their birth.

Early intervention is very important – thanks to it children with visual impairment can develop well.

Show and read slide nº22 (if there are visually impaired training participants, please say that on this slide there is a photo of a small girl who watches small pumpkins in a metal bin)

Some medical conditions can only cause vision problems for a short time, but most vision conditions in children remain the same during the whole life. Sometimes the visual impairment develops and leads to complete blindness.

The moderator says: Now, I will tell you some words about the **low vision.**

Show and read slide nº23 (If there are any visually impaired participants in the group, please add that there is a photo on this slide on which we can see a small girl with a small boy, the boy is hugging and kissing the girl on her cheek).

[2] Information retrieved from RNIB, Focus on foundation, https://media.rnib.org.uk/documents/focus_on_foundation_0.pdf on date 04/12/2023

Low vision is when a child can't see all the things, they should be able to see for their age. The child may have from low to no vision at all, blurred vision, or loss of side vision. They may also not be able to see certain colours - this is called colour blindness.

Then the moderator says: Now I will tell you some words about **legal blindness** and what is blindness from a pedagogical point of view.

Show slide nº24 (If there are any visually impaired participants in the group, please say that there is a photo on this slide on which we can see a small blind girl wearing dark glasses).

Do you know, when the child is considered legally blind?

We should be aware of the legal blindness of different definitions used across the EU as well as of the definition of the World Health Organisation (WHO).

According to the definition of the WHO, we consider a child to be blind when:

- They can't see at 6 m what a child with typical vision can see at 60 m.
- Their field of vision is less than 20° in diameter (a person with typical vision can see 180°).

This definition in your countries might be slightly different.

📌 From a pedagogical point of view, what is much more important for you, as kindergarten teachers is that children who have low vision include those who have the ability to see black-print texts and do not need to use point writing (Braille). Therefore, children who are considered blind are those who can not use the normal print and use Braille to read and to write.

Now moderator says: We will show you a short film about different causes and impacts of the visual disability at early age (produced for Child Assessment Service, Department of Health, The Government of the Hong Kong Special Administrative Region, https://youtu.be/VNaAjYaXads?si=8DLO5r7XZKUVK3zi, duration 5 minutes, 11,96 sec.).

Show slide nº25

Another film available on this subject, but from teachers' and parents' perspective:

https://raisingchildren.net.au/disability/guide-to-disabilities/assessment-diagnosis/vision-impairment (duration 7 minutes, 16 sec.)

When the film comes to the end, the moderator says: You have heard the info on causes of vision impairment in this film, but let's repeat it again, as you might have heard at least some of this info for the first time.

📌 First, let's memorize this simple division: responding to the need to create and standardize terminology related to visual impairment in young children is the proposal of August Colenbrander (2006, 2009, 2010), who divided visual impairment in children in relation to the causes of it (related to the anatomy and functioning of the visual system) into **ocular visual impairment (OVI)** and **cortical visual impairment (CVI**).[3]

The proposed division is simple, logical and, in view of the changing reality of the increasing number of children experiencing cerebral visual impairment, necessary.

Due to improvements in medicines, treatments and surgical techniques, ocular visual impairments (OVI) are **decreasing**.

Due to improvements in neonatal care for premature babies, cerebral visual impairments (CVI) are **increasing**.

Cerebral visual impairment is the leading cause of visual impairment in children in economically developed nations.

You should know that educational strategies designed to increase independence and functionality in children with ocular visual impairments are largely ineffective, and perhaps even detrimental, when applied to children with CVI.

Show and read slide nº26

The moderator says: Now let's systemize the most common causes of visual impairment.

The most common causes of vision impairment are [4]:

- neurological conditions that affect the parts of the brain that control sight (**cortical vision impairment**)
- genetic conditions like **albinism** and **retinitis pigmentosa**
- illnesses that happen to some very premature babies or to babies that have particular problems during birth
- conditions like **pediatric glaucoma** or **cataracts** and cancers like **retinoblastoma**

Show and read slide nº27 (If there are any VI participants in the group, please add that there is a photo on this slide on which we can see a small boy laying on the floor with his eyes open).

Moderator says: **Let's continue with the causes of vision impairment:**

- infections with particular viruses during pregnancy – for example, rubella, cytomegalovirus, sexually transmitted infection, toxoplasmosis and so on
- structural problems with the eyes that limit vision – for example, microphthalmia or anophthalmia
- damage or injury to the eye, to the pathways connecting the eye to the brain, or to the visual center of the brain.

[3] Małgorzata Walkiewicz-Krutak, Mózgowe uszkodzenie widzenia u małych dzieci. Studium teoretyczno-empiryczne. Wydawnictwo APS, Warszawa, 2018, page 10

[4] Retrieved from The Australian Parenting website https://raisingchildren.net.au/disability/guide-to-disabilities/assessment-diagnosis/vision-impairment on date 04/12/02023

📌 Worldwide, cataract and glaucoma are responsible for about 20% of all cases of childhood blindness.

So, you can see that there might be a lot of different causes of the children VI and some of them could really be avoided thanks to the right treatment at the right moment.

Show slide nº28 (if there are any VI training participants, please tell them that on this slide there is a photo with two girls playing together, having the mascots in their hands – one is having a dolphin and the second one holds something looking like a goose in her hands).

Moderator says: You can ask, how to recognize that a child has a sight problem? In fact, very often it is not so obvious, as children with visual impairment can have the eyes looking exactly like those of other children. It might be something about a child's behavior or the way they use their sight that can make us think there's a problem with their vision.

Often parents, grandparents, or caregivers are the first to notice problems.

Show slide nº29

Below are symptoms of possible eye problems[5]:

- Blurred or double vision
- Crossed eyes
- Eyes turn in or out and don't focus
- Eyes are red and/or swollen
- Eyes are sensitive to light
- Eyes seem to bulge
- Drainage or excessive tearing from the eyes
- Squinting
- A child rubs their eyes a lot
- Seeing a white reflection in a child's eye or eyes in a photograph

Show slide nº30 (if there are any VI training participants, please tell them that on this slide there is a photo on which we can see probably a preschool teacher sitting on an armchair with a book in her hands. She reads the book to children, who are seated in front of her).

We continue with the symptoms of eye problems:

- A child has trouble reading or holds reading material close to the face
- A child tilts their head to see
- A child has trouble or avoids doing "close-up" tasks
- "Jiggly" or dancing eyes
- Eyes that are too large or too small
- Droopy eyelid

[5]Retrieved from Nationwide Children's Hospital https://www.nationwidechildrens.org/conditions/health-library/symptoms-of-possible-eye-problems-in-children on date 04/12/02023

- Headaches
- Short attention span
- A child seems to be clumsy – for example, they might knock things over or trip often

Show slide nº31

And now, last but not least, the question of the diagnosis of visual impairment.

Getting a diagnosis by a specialist is the first step to the right intervention, the earlier the better.

📌 As we can read at medicalnewstoday.com, WHO reports that 80% of visual problems could be avoided by implementing a treatment programme early enough or by carrying out simple sight-saving procedures. This is worth bearing in mind.

Now the moderator can say: Now, you know the causes and consequences of the visual impairments. You know, how you can recognize that something might be wrong with the child's vision. You are aware of the importance of good early diagnosis.

You become more and more experts in the field of VI.

To make you experience how a blind person feels in a gathering like this one, **we propose you to wear the blindfolds during two coffee breaks.** Make pairs for practicing it. During the first break, one person puts the blindfolds on and the second person is their guide, and during the second break, you change the roles.

After the break, let's move to another related important subject, which is "A good setting for VIP".

UNIT 2: A good setting for VIP

Duration: 40 minutes.

Show and read slide nº32 and nº33

🕶 🦯 **It is the time now for a practical exercise.**

Now, we will propose to you a role play activity concerning the possible mistakes while working with VIP, which should never occur in a good setting, with professional staff and well-prepared environment.

Depending on the number of participants, the training participants are now divided into at least two groups (each one including at least 3 persons. You have to prepare for each group a paper, on which there will be a task – some scenes to play. (If there are VI training participants).

The possible mistakes done by preschool teachers while working with VIP (you present them to the training participants after this exercise, on the slide nº34 - nº39). When we reformulate them in a proper way, they become "Golden Rules" for preschool teachers, how to work with VIP.

1. Preschool teachers and other children do not use the name VIP so VIP do not know that someone is speaking to them.
2. Preschool teacher does not use the names of other children and VIP does not know whom he speaks to.
3. Preschool teachers or other children do not give precise information while speaking to VIP – they say e.g., this toy you are looking for is over there, you should go this way, your coat is there, etc.
4. Preschool teacher gives a normal print book to a very low vision or blind child.
5. Preschool teacher does not encourage a child to make their choice of activities and does not inform them what is available both indoors and outdoors
6. Preschool teacher does not introduce daily routines being consistent and predictable
7. There is no clear planning for activities such as snack times and toileting.
8. Preschool teacher does not propose activities which use all the senses (including touch and sound).
9. When there is an unexpected noise, preschool teacher does not give the explanation to it
10. Preschool teacher does not give VIP the real objects to play with.
11. Preschool teacher does not help the VIP to make friends.
12. Preschool teacher does not include the VIP in motor games, fearing that they will hit or bump into something (a tip - they should describe accurately the activities and offer the necessary support)
13. Preschool teacher does not pay attention to the VIP's behavior while eating, e.g., holding cutlery correctly.
14. Preschool teacher does not familiarize VIP with the layout of the rooms in the setting, preventing them from moving around inside the building on their own (a tip - If the child is properly introduced to the layout of the rooms in the establishment, with the assumption that we start from the closest environment (kindergarten room). This would have a positive effect on the child's sense of security and would enable the child to move around the building independently.
15. Preschool teachers do not adapt the environment to the needs of VIPs).
16. Preschool teacher does not introduce pre-class techniques and methods of movement in the room, in the kindergarten building.
17. Preschool teacher does not introduce skills using a graded difficulty method - too difficult at the beginning.
18. Preschool teacher does not describe what the child is doing, what other children are doing, or what is happening in the room.
19. Preschool teacher takes the child's place and does things for them.
20. Preschool teachers do not use the hand-on-hand, hand-under-hand method.
21. Preschool teacher does not give more time to the VIP to learn new objects and assimilate knowledge.
22. Preschool teacher does not turn to face the child he/she is talking to.
23. Preschool teacher does not use breaks to give VIP children time to rest.
24. Preschool teacher does not warn what is about to happen (e.g. there will be a rhythm class in a moment).

25. Preschool teacher doesn't show fairy tales to children because he/she doesn't want to upset the blind child (tips for a good solution - the fairy tale can always be told to the blind child, the fairy tale can be planned in advance, e.g. the fairy tale can be given in advance to the parent, who will prepare a description of the fairy tale at home, or this preparation can be done by the preschool teacher etc.).

On the small papers the moderator prepares for each group three (or more) examples of the mistakes enumerated above. In each group, there should be different roles to play. Each group decides who plays which role.

In each group there should be – a preschool teacher and VIP (VIP can be partially sighted or blind depending on the scenario to play) and there could be as well children without VI.

Each group prepares a short sketch showing the mistakes which were written on the small paper.

After each sketch presentation, participants who are not a part of the group presenting the sketch guess what kind of mistake was presented in it.

Another version can be that in each group there is a role of mentor who says to the preschool teacher what was badly done or sad and how it should be done or said correctly and then, the scenes are repeated in a corrected way.

Show the slides nº34 - nº40

The moderator says to the whole group: From your experience, would you like to add something to this list of the most common mistakes, which was not mentioned here? Maybe you had in your work such a situation and you can share it with us now? It is the moment when the participants share their experience.

The moderator asks the training participants if they liked this activity or not and why?

Then, the moderator says: In the references you find the materials, where you can get more precise info on this subject, i.e. how to make a good setting for VIPs, different aspects of it (staff working with VIP, setting accessibility, etc.).

Show and read slide nº41

You can ask the participants if they have any comments or questions to what was done and said, and after it (you answer the questions from participants, if you can), you can move on to the next Unit.

UNIT 3: VI in ECEC – Strategies and tools

Duration:100 minutes

Show and read the slide nº42

You can introduce this subject by saying, that as the training participants know already, in kindergartens we can meet VIP, who have different visual capacities: partially sighted children, who can see/read printed books and those who are considered blind – they will have to learn braille in order to have access to manual writing and reading with their fingers.

Show and read the slide nº43 (if there are any VI training participants, tell them that on this slide there is a drawing of children having different disabilities, including blindness)

The moderator may say: Strategies and tools have to be accessible to VIP.

All the children will benefit from it, if we create **effective multisensory experiences.**

They have to be meaningful and engaging for children, VIP included.

Show and read slide nº44 (if there are any VI training participants, tell them that on this slide there is a picture presenting the Eight Sensory Systems).[6]

We speak the most often of **SMELL**, **VISION**, **TOUCH**, **TASTE** and **HEARING**.

But there is an approach which includes as well **INTEROCEPTION**, **PROPRIOCEPTION** and **VESTIBULAR.**

If VIP have no sight at all, we have 7 other senses to reach their perception.

There is also a theory of 12 senses, but we will not go into details with it.

Show and read the slide nº45 (if there are any VI training participants, tell them that on this slide there is a drawing of a small blond blind girl with a white cane)

Now, the moderator can say: Now, we will analyze in detail what is a multi-sensory experience. [7]

How to do the activities meaningful and engaging for VIP and all other pupils?

The first thing we should think about is to **create an experience full of real objects**, that **pupils can FEEL, EXPLORE, TOUCH and HEAR.** It is good to pair it with natural sounds it might make.

Going through the activity they need to be able to go through it step by step using real things.

Pictures have to be meaningful (for VIP we have to prepare tactile pictures).

Partial textures may not be meaningful but have the real materials paired with what one is learning and it will support the concept development.

Show slide nº46 (if there are any VI training participants, tell them that on this slide there are two pictures: on the first picture which is on the left side there is a boy and a girl; each of them has a small toy car in their hands. On the second picture, on the right side

[6] Retrieved from https://neurodivergentinsights.com/ on date 04/12/02023

[7] A transcript of the interview: Foundation for Blind Children, Teaching Tips Tuesday, Host: Alex Fabrega, Guest: Jaime Pack – Adair; https://youtu.be/LV8pFBIlZck?si=IBf5iohmBdNWxghD

of the slide there is a photo of a men with a very small child; they are both in a car, we see them through an open window; the man is having a child on his lap)

You may ask what about the objects that are not easy to get into a classroom environment like a full-size car. One may ask, if a toy car would do.

The answer to this question is that a toy might be able to teach a concept e.g., of opening and closing a door on a toy car or the concept of feeling a wheel move across a surface.

But a toy car will not teach the full concept of a car. For this purpose, it will be advisable to take a trip out to a parking lot and really see what the full car looks like since you can't bring it into a classroom.

A teacher can also get some car sounds and have it on the phone or a tablet and to hear those sounds, but you have to put all the pieces together for your pupils. Of course, exploring a real car will make much more sense than a toy car.

So, the first, the most important thing is real objects.

Next, it is considering the sensory component of an activity.

When you are setting up an activity, if you are the teacher think about what other sensory experiences the pupil might be feeling. So, if we take out vision, and maybe you are doing a cooking activity, how does the food feel like in our hands, is it wet, is it sticky, is it dry, is it crunchy, is it squishy, what are those feelings, how does it feel from whole to part or from part to whole. What does it feel like as you are cutting it or stirring it or mixing it. Think about the sounds that food makes as you are preparing it.

So, think of all those sensory components of the activity besides vision.

And then is your pupil going to be interested in those sensory components, are they going to have some sensory hesitations. They may be experiencing something that they might not like to feel.

So, think about the big picture, what else is involved in the given activity, that is not a vision component and then how can you support your pupils through the activity. How can you make it meaningful to them without using their vision to participate?

Now let's discuss some examples of the multi-sensory experience.

One example – identifying sounds in our environment.

If we are not using vision, and vision is not meaningful, sounds can be confusing, they can be competing, they can sound similar.

If you take the time to take the pupils through your classroom, through the parts of your classroom and do a sound walk and really practice experiencing the sounds or identifying the sounds what does it sound like when you turn the tap on and off, what does it sound like, when the classroom door open, when it closes, when you put something down, when someone drops something, when you bump into something, or you play with toys.

Identify those sounds, give meaning to those sounds, because as you are moving through any activity there are lots of different sounds. We need to know them. We need to know what they mean, how to identify them and you can do it in a very small space in your classroom, you can do it in a hall, you can do it outside and just get bigger and bigger.

That sound walk can be done throughout a classroom, or it can even be done throughout your activity with your materials and just these are the sounds that these things are making and how to help them know what to experience and anticipate as they are moving through.

It is very good to help the children recognize the noises, as unknown noises can be scary or just interesting.

Now, the moderator can say: Are you ready to create a multisensory experience?

Let’s try it in practice now.

🕶️ 🦯 **It is the time now for a practical exercise.**

Having in mind that in the GREEN4VIP project we are focused on ecology, make pairs (with someone you do not know) and prepare in pairs one activity in the field of ecology teaching, having this toy car and real car example in your mind.

The rules of working in pairs are as follows:

- During the time of the preparation, one person in a pair has the eyes blindfolded, the second one uses the sight all the time.
- You try to do the task together, with equal participation. The person who does not have the eyes covered helps the person with the covered eyes whenever it is needed.
- You can create an object or a short tactile story.
- You have at your disposal different material with different textures.
- You have paper and pencils to write down the complete information – the purpose of the activity and the whole scenario.

Have in mind as well the STEAM method, what is:

→ Science
→ Technology
→ Engineering
→ Art and
→ Mathematics

Do it in a way, how you understand it.

We give you 45 minutes.

Show slides nº47 - 49

After 45 minutes, the moderator says.

So now, it is the time for you to present your multisensory activities, accessible for the VIP.

After each presentation, the whole group is asked to provide feedback concerning the presented activity.

Each group is given 5 minutes to present their work.

During the presentation, the two persons in pairs exchange the roles. The one who had the eyes covered now does not cover them now and the other one puts the blindfolds on her eyes. Both persons present their project, trying to co-operate as much as possible.

When all the groups presented their projects, the moderator thanks all the participants for their fruitful work.

Moderator says: Now, as you have a lot of different information and some practical experience as well, we will present you the list of the methods and tools to work with VIP, but this list is open. If you have an idea, something to add to it, please do it.

Here are some examples of activities and educational materials and methods that can be used when 'working' with a VIP.

1. Books: special books in which images are embossed enable blind children to "touch" images. This allows them to imagine different objects or animals.

2. Educational toys with textures: Toys that have different textures, shapes and patterns help blind children to recognize and differentiate objects using their sense of touch.

3. Tactile boards: Special tactile boards with different textures and shapes - allow blind children to develop their cognitive and conceptual skills.

4. Tactile maps: Maps on which different embossed/convex areas are marked. They can help children to understand and imagine topography and geography.

5. Braille teaching aids: Blind children can learn Braille through touch and writing practice.

6. Sensory experiments: Conducting sensory experiments, such as using different substances with different consistencies or temperatures, helps to develop the sense of touch and understanding of basic concepts related to the environment, for example.

7. Tactile games: Board or interactive games allow blind children to develop social, logical and strategic skills.

8. Sound exercises (very important for VIP, as might be very helpful while moving independently):

   a) Going on “listening walks” in the neighborhood, school, kitchen or zoo. Talking with children about what they hear;

   b) Have VIP take turns making sounds and asking others to guess what it is;

   c) Make a recording of familiar sounds in the pupils´ environment. Include sounds from various categories[8]:

[8] Retrieved from Perkins School for the Blind https://www.perkins.org/resource/familiar-sounds/ on date 04/12/02023

- Household sounds (ringing phone, running water, knocking on door, flushing toilet, alarm clock, TV, radio, closing door, doorbell, smoke alarm)
- Musical instruments (piano, drum, bell, guitar)
- Animal sounds (dog, cat, bird)
- Transportation sounds (car motor, siren, car horn, airplane, train, helicopter – these can be found online at YouTube, or other online resources)
- Tools (hammer, saw, drill)
- Common toys (music box, jack-in-the-box)
- Kitchen sounds (timer, blender, teakettle, pouring liquid, washing dishes)
- School sounds (school bell, kids playing on the playground).

The moderator says: So now, after your hard creative work and intellectual work, you can have some rest watching two short, but very interesting films showing the work with VIP.

Then the moderator shows a short film concerning the "Messy play".

Show the slide nº50: https://www.youtube.com/watch?v=XrQZrTn0-dk

(duration: 2 min., 52,66 sec.)

After showing the film, the moderator asks the participants: What did you like in it?

What did you learn out of it?

Then, the moderator shows another film, about a blind girl, where we can see the work methods applied by school teachers (the same methods can be used in ECEC).

Show the slide nº51 https://youtu.be/7wGP_k_UP9c?si=tzcQZ-9LHsEFDGET

(duration: 4 min., 48,41 sec.)

After showing the film, ask the training participants, what did they like the most in it?

Is there anything they did not like?

What did they learn out of it?

Optionally, the moderator can show the slide slide nº52 – the film – 10 tips for Teaching Blind or Visually Impaired Pupils. https://www.youtube.com/watch?v=FAH0o9_XJ8o

(duration: 5 min., 5,81 sec.)

So now, you really got almost all the needed info in order to be able to support well and teach efficiently the VIP in kindergartens. Moreover, you will have in the references the info about the books and websites where you can find more info on the subjects related to this module.

6.Reflection questions for debriefing

1. What are the key elements of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) definition of disability, and how does it emphasize the importance of removing barriers for inclusive society?
2. Reflecting on the types of disabilities, which ones do you think are often overlooked or misunderstood in educational settings?
3. How do sensory impairments, especially visual impairment, affect a child's development and learning process?
4. What are the most common mistakes that preschool teachers might make when working with visually impaired children, and how can they be addressed or avoided?
5. How can educators create a multi-sensory learning environment to accommodate children with visual impairment effectively?
6. What are some practical strategies for incorporating sensory experiences into educational activities for visually impaired children?
7. How can educators promote inclusion and independence of visually impaired children in classroom settings?
8. Reflecting on the examples of activities and educational materials, which ones do you think would be most effective in supporting the learning and development of visually impaired children, and why?

7. Learning process validation

1.- We perceive information about the world around us in the following ways:

A. 70% by view, 10% by hearing, 3,5% by smell, 1,5% by touch and 15% by taste and others
B. **85% by view, 11% by hearing, 3,5% by smell, 1,5% by touch and 1% by taste and others (true)**
C. 60% by view, 20% by hearing, 5% by smell, 10% by touch and 5% by taste and others

2.- WHO reports that some visual problems could be avoided by implementing a treatment programme early enough or by carrying out simple sight-saving procedures. To which it would be possible to avoid visual problems, according to them?

A. **80% (true)**
B. 20%
C. 50%

3.- Worldwide, which illnesses are responsible for about 20% of all cases of childhood blindness?

A. Retinoblastoma and cortical vision impairment
B. **Cataract and glaucoma (true)**

C. Retinitis pigmentosa and albinism

4.- Is it good to create multisensory experiences for children?

A. No, because it can be dangerous for them
B. No, because they do not like it
C. Yes, because they learn better this way (true)

5.- What is the main difference between **ocular visual impairment (OVI)** and **cortical visual impairment (CVI)**

A. They have different origins – OVI is cause by damage or illness of eye or eye nerve and CVI is cause by the by an injury to the brain (true)
B. OVI is a childhood blindness and CVI means the blindness of an adult person
C. CVI is a childhood blindness and OVI means the blindness of an adult person

6.- In order to be able to see, what has to work properly?

A. **Eye, brain and optic nerve (true)**
B. Eye and optic nerve
C. Brain and optic nerve

8. Inclusive approaches for VIP

First, prior to the training, it is important that the moderator asks the visually impaired participants what kind of support they need during the training. In particular, the moderator should ask which format they prefer to get the handouts or PPT presentations.

All handouts should be provided to visually impaired participants in electronic format or, depending on their needs, in Braille or large print. The same applies for the PPT presentation which the moderator shows during the training course. Additionally, the PPT presentation must be provided to VI in advance, so that they can familiarize themselves with it prior to the training.

The moderator should also suggest to the VI participant to bring their own laptop, which is already equipped with screen reader and/or screen magnifier software.

9. Use of accessible digital technology for online learning

Tactile objects: how to create 3D objects to enhance VIP learning process. 3D printers and other tools to create tactile drawings.

Tactile models can meet different learning styles and respond to different needs of learners. Visual learners can benefit from visual representation, while tactile learners can engage with "virtual objects". In addition, they can help pupils with learning difficulties by providing alternative and accessible ways of learning.

3D models and tactile objects are a very important learning tool for visually impaired pupils. Such tools enable them to improve understanding of some otherwise abstract concepts (e.g. chemistry, physics, etc.). In particular, they allow learners to: interact with objects and explore new things; help pupils develop spatial reasoning skills, enabling them to understand concepts related to shape, size and inter-spatial relationships; and enable kids to bridge the gap between theoretical concepts and real-world applications.

The **3D printing** process used nowadays begins with the creation of a 3D blueprint using specific software or a scanner. Once the 3D blueprint has been created, it is separated into several layers of the model in question. The printer itself is then prepared for use and the necessary materials are inserted. The most common are plastic, composite materials and metal filaments. Once the printer is ready for use and the design has been converted for the printer, it will work through a process that involves layering the material over and over again until the object is created.

Another way to create tactile objects is through **Thermoform™**. This technology uses thermoplastic sheets on which, using a special machine, the image is embossed on the side opposite to that where the pressure has been applied by the machine. It is a very common technique and pre-made sheets can often be found already printed for different categories of use.

Two other popular methods are **collages** and **tactile graphic tablets**.

The first allows users to create, as the name implies, collages by combining different textures, materials and techniques to create a tactile representation of the required subject.

Tactile graphic tablets are a very useful and immediately available tool. They work like any drawing tablet, but in this case the 'board' consists of a tactile film that creates a raised line when the stylus is passed over it, allowing VI pupils to feel the drawing as they do it.

Here a website with a list of different tactile technologies:
https://www.teachingvisuallyimpaired.com/tactile-graphics-technology.html

10. Interdisciplinarity (STEAM approach and adaptations for VIP)

No need to adapt these activities to the needs of the VIP.

MODULE Nº 2: "EFFICIENT USE OF RESOURCES: water, energy and soil, food choices and health"

1. Objectives

Upon completion of this module, the participants will:

- Understand the concept of renewable and non-renewable resources
- Understand the concepts of resource consumption and efficient use
- Learn and understand how energy efficient school buildings can benefit the environment
- Learn and understand the impact of water waste reduction at home and school
- Learn how the school can achieve and benefit from a fair, healthy and environmentally friendly food system.

2. Duration in learning units

This Module has been divided into 3 sessions and/or learning units. The expected time is as follows:

- Unit 1: Energy and electricity: 120 minutes
- Unit 2: Water: 90 minutes
- Unit 3: Soil, food choices and health: 70 minutes + 20 minutes for the Learning Process Validation

3. Definition of learning outcomes (knowledge, skills, competences[9])

Knowledge:

- Understand the meaning of renewable and non-renewable energy
- List and identify different types of renewable and non-renewable sources
- Explain strategies for an efficient use of energy
- Explain strategies and best practices for an efficient water management at home / school
- Know the Farm to Fork strategy, as the EU reference point to make environmentally friendly food choices
- Explain strategies and best practices for efficient food choices, in the respect of the environment

Skills:

- Is able to use efficiently energy, water, soil and to make appropriate food choices in the respect of the environment
- Is able to convey the knowledge acquired through this training module to kids aged 3-5
- Is able to use at a basic level the main accessibility features of online meeting software such as Zoom Meeting to support the learning process of VIP

Competences[9]:

- Personal, social and learning to learn competence
- Mathematical skills and competences in science, technology and engineering
- Digital competences

[9] LifeLong Learning Key competences adopted in 2018: 1. Literacy competence 2. Multilingual competence 3. Mathematical competence and competence in science, technology and engineering 4. Digital competence 5. Personal, social and learning to learn competence 6. Citizenship competence 7. Entrepreneurship competence 8. Cultural awareness and expression competence. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en Council Recommendation of 22 May 2018 on the key competences for lifelong learning.

4. Materials and frame conditions needed for the implementation

- PPT Slides with data (to be printed and/or showed in digital screen) available at https://acortar.link/BXOxMW
- Internet connection available for all participants
- Printed or electronic handouts (annex I, annex II, annex III)
  Annex I: https://acortar.link/96mRVo
  Annex II: https://acortar.link/d0UeIc
  Annex III: https://acortar.link/viU8rM

- PC and screen projector
- FLIPBOARD/whiteboard and markers of different colours
- Pens and papers for participants

For activity 1 of Unit 1:
- Any type of clay you can buy should work, or you can make your own conductive clay with flour, water and salt (see the video link in the Step-by-Step section)
- A 3V button cell battery to operate a very simple circuit
- LEDs (at least 2 or 3 per team)
- 9V batteries and battery clips (one battery and one circuit clip).

5. Step-by-step instructions for trainers

UNIT 1: Energy and electricity.

Estimated time 120 minutes.

"Without natural resources life itself is impossible. From birth to death, natural resources, transformed for human use, feed, clothe, shelter, and transport us. Upon them we depend for every material necessity, comfort, convenience, and protection in our lives. Without abundant resources, prosperity is out of reach" Gifford Pinchot[10]

To **start the first session** on the topic of energy, the moderator asks the participants to watch some explanatory videos on electrical circuits. Then, they will create electrical circuits out of modelling clay. In this way, pre-school teachers understand the basics of electrical circuits, recognize simple components and their functions, connect the components and make a circuit working, through a funny activity based on STEAM approaches. This activity can also be carried out in the classroom with 5-year-old kids (or in any case with the older children of the kindergarten). For this activity, the moderator uses instructions such as "Make Your Own Conductive Play Dough" https://www.instructables.com/How-to-make-conductive-play-dough/ and an online video on simple circuits of modelling clay, like the one from STEM-Dola: https://youtu.be/VcdqBmFETNw

[10] Quote retrieved from https://quotlr.com/quotes-about-natural-resources on the 5th of September 2023

After watching the videos, the teachers are able to create circuits using conductive clay and LEDs! Therefore, involve them in building a circuit using conductive play doughs. If you have buzzers or other audible components, they can be used instead of LEDs to favour the participation of visually impaired participants.

Then, the moderator/trainer splits participants into 5 groups. Each group will have to share knowledge on its assigned topic:

1st group: what is energy and different types of energy
2nd group: meaning of resource consumption and resource efficiency
3rd group: non-renewable sources of energy
4th group: renewable sources of energy
5th group: fossil fuels

After 10 minutes, each group presents to the other groups its knowledge on the allocated thematic. This way, all participants will share knowledge on energy, resource consumption and efficiency, renewable and non-renewable sources, etc.

If needed, the moderator can show Annex IV slides N° 1 to 25 to provide further information or to clarify some doubts which may arise.

The info contained in slide 16 to 25 have been adapted from the following article and can be easily conceived to kids: renewable & Non-renewable Energy | Science Lesson For Kids, Grades 3-5: https://www.generationgenius.com/renewable-and-nonrenewable-energy-for-kids/.

If there is still time, the moderator can use the discussion questions in slide N° 25 to debate with pre-school teachers.

Third step! The moderator explains the link between inefficient use of resources and pollution / greenhouse gas emissions. To do so, the moderator shows slides N° 26 to 29.

But how can we use resources in an efficient way? After the presentation, the moderator proposes to watch the movie and read the article "Why you shouldn't charge your mobile phone overnight" available at the following link: https://time.com/4949569/mobile-phone-charge-overnight/

Step N° 4! The moderator proposes participants to carry out an Energy Efficiency Treasure Hunt at their school by using Annex I.

If there are visually impaired pre-school teachers, Annex I must be provided in electronic format or in Braille / large print. Teachers complete the treasure hunt questions, going around their school and / or asking the school principal/staff.

Then, when back at the training, they discuss and share their results together with the other training participants.

After the game, the moderator summarises different ways of using the energy efficiently at home/school showing slides N° 30 to 32.

UNIT 2: Water.

Estimated time 90 minutes

In the second unit, the moderator explains the importance of using water efficiently. Water conservation is important for both environmental and financial reasons. On one hand, protecting and preserving water resources is crucial for maintaining the health and integrity of ecosystems, preserving biodiversity and ensuring the availability of water for human and animal needs. On the other hand, reducing water usage can also have financial benefits for schools by lowering their water bills.

From an environmental perspective, water conservation helps to protect and preserve water resources by reducing the demand on these resources. This is particularly important in regions where water is scarce or where there is competition for water resources between different industries and sectors. In addition, reducing water usage can also help to reduce the energy and greenhouse gas emissions associated with water treatment and distribution.

For further explanations, he/she uses the information provided at this page: https://www.epa.gov/sites/default/files/2017-02/documents/ws-ourwater-shower-better-learning-resource_0.pdf and the ones contained here https://www.epa.gov/watersense/watersense-kids

As a **second step**, the moderator proposes to **calculate how much water we use for a shower and how much water we might save in a year thanks to shorter showers**: "See what can happen when you cut your shower time by just one minute by filling in the blanks below. If you don't know how much time you spend in the shower, just use the average person's time of 8 minutes".

1. How long do you spend in each shower? = ____________________ minutes
2. Multiply that by the average shower flow: x 7.9 litres a minute[11] = ______________
3. Multiply your answer for #2 by the number of times you shower every week:= ____________ litres per wee
4. Multiply your answer for #3 by 52 weeks = ______________________ litres per year
5. Subtract one minute from your regular shower time. = ________________ minutes
6. Multiply that by the average shower flow: x 7.9 litre a minute = __________________
7. Multiply your answer for #6 by the number of times you shower every week:= _______________ litres per week
8. Multiply your answer for #7 by 52 weeks = _____________________ litres per year
9. Subtract your answer for #4 from your answer for #8 = _____________ litres saved per year!

Step N° 3! The moderator explains that: an important step in reducing water waste is to conduct an audit of water usage to identify areas where water is being wasted. This process involves measuring and monitoring the amount of water used in different areas of the school/house and comparing it to established standards or benchmarks.

[11] data retrieved from https://home-water-works.org/indoor-use/showers on the 23th of August 2023

Leaks in the plumbing and irrigation systems can result in significant water waste, so it is important to identify and measure leaks as part of a water audit. There are several ways to identify and measure leaks, including:

- Visual inspection: This involves physically inspecting pipes, faucets, and other fixtures for signs of leaks, such as water stains or drips.
- Sound detection: This involves using a device that amplifies the sound of water flowing through pipes, making it easier to identify leaks.
- Flow monitoring: This involves using a flow meter to measure the flow rate of water in different areas of the building and comparing it to established benchmarks or standards.

After this explanation, the moderator proposes to carry out the following activity in the building where the training takes place or, if it is not possible, each participant will do it on his/her own at home[12]:

- Find the water meter on your house. Usually, it's on the outside of the house in a box or under a metal cover on the sidewalk that says "Water". The numbers in the box represent cubic meters of water used in your home. Check your meter, then don't flush the toilet, run the faucet, or use any water for two hours. At the end of the two hours, check the water meter again. If the meter does not read exactly the same, you probably have a leak.
- Walk through your house listening for running toilets and looking for drips. Drips usually mean leaks.
- Find out if your toilet is leaking silently by placing a drop of food coloring in the toilet tank. If color shows up in the toilet bowl after a few minutes without flushing, you have a leak. Once you finish the experiment, flush a few times so you don't stain the toilet.

Now it's time to **move to the fourth step**! The moderator splits participants into small working groups (max 4 participants for each group). Each group is given the following assignment:
"In the recent past, the water bill in your school has gone exceedingly high. The principal has constituted a committee whose mandate is to establish the cause of the problem and how it can be solved. You have been appointed to the committee and you have 30 minutes to solve the problem".

Each group uses the following group discussion points and the table in Annex II to record the outcomes of the role play. To conclude the activity, each working group shares and debates its results with the other groups.

Group Discussion Points:

1. Analysing water usage patterns: Discuss the main water users in the school, their consumption levels and potential areas for improvement.

[12] This activity has been adapted from "Fix a Leak Week" of the US Environmental Protection Agency Water Sense® program, retrieved from https://www.epa.gov/sites/default/files/2017-02/documents/ws-ourwater-falw-teachers-guide.pdf on the 24th of August 2023

2. Identifying opportunities for water conservation: Brainstorm and discuss possible ways to reduce water consumption and costs, such as upgrading to water-efficient appliances, fixing leaks promptly, promoting water-saving practices among pre-school teachers and staff, and implementing water recycling systems.

3. Cost-saving potential: Calculate the potential cost savings that can be achieved by implementing water conservation measures and discuss how these savings can positively impact the school.

4. Implementation plan: Develop a plan to implement the identified water conservation measures, including assigning responsibilities, setting timelines, and monitoring progress.

5. Continuous improvement: Emphasise the importance of regularly reviewing and improving water conservation practices based on feedback, data analysis, and changing needs to achieve sustainable water management in the school.

To conclude this part of the training, the moderator shows slides n° 33 to 35, in order to sum up how to use water efficiently at home / school.

UNIT 3: Soil, food choices and health

Estimated time 70 minutes + 20 minutes learning process validation

To **start the last session**, the moderator summarises the information provided at the following links / articles[13]:

- Introduction to soils: soil quality: https://extension.psu.edu/introduction-to-soils-soil-quality
- Introduction to soils: managing soils: https://extension.psu.edu/introduction-to-soils-managing-soils
- Why soil matters and what we can do to save it https://www.nationalgeographic.com/environment/article/paid-content-why-soil-matters-and-what-we-can-do-to-save-it
- 5 ways to save your soil at home https://www.soilassociation.org/causes-campaigns/save-our-soil/five-ways-you-can-save-our-soils-at-home/
- Soil matters for our future read the following link https://agriculture.ec.europa.eu/news/soil-matters-our-future-2019-12-05_en
- Organic production and products https://agriculture.ec.europa.eu/farming/organic-farming/organic-production-and-products_en

Then, he/she shows the following video to explain how compost can be beneficial to the quality of the soil:
What is composting? (for kids) YouTube https://www.youtube.com/watch?v=MQN26JLs7xU.

[13] It is necessary the moderator reads these articles prior to the training session, to be able to convey such concepts to participants

In this session participants learn also about how their school can achieve and benefit from a fair, healthy and environmentally friendly food system.

Therefore, moderator shows slides N° 36 to 45

Based on the slides which have been shown and on the template provided in Annex III, the moderator asks pre-school teachers to analyse their existing school's food supply chain. This is the first step in order to use food resources more efficiently without wasting them!

Then, the moderator asks participants to share with the whole group the main findings of the self-learning activity. The moderator writes the key words on the whiteboard, categorising them already in some core clusters such as:

- Characteristics of ingredients/supplies participants' schools work with
- Waste prevention/management practices
- Staff training
- Information for pupils/families

If some core elements are missing the moderator introduces them.

Note: teachers will delve more in detail into these topics in Module 5, when we will speak about sustainable lifestyles! So, no worries if the concepts of this unit are not fully clear yet! Here, we just wanted to make pre-school teachers understand the importance of using resources efficiently such as the soil and the food.

To conclude this last session, the moderator shows slide n° 46 to 47, in order to sum up the concepts of this unit.

6.Reflection questions for debriefing

1. What is the environmental impact of the raised energy consumption?
2. Which measures can governments apply to reduce energy consumption?
3. How can we better use appliances at home?
4. What can a kindergarten do to become more resource efficient? Examples are welcome!
5. Will you be able to share all these learned lessons in your country with preschool teachers? How? Examples are welcome!

7. Learning process validation

What are non-renewable energy resources?

A) Resources that can be replenished
B) **Resources that cannot be replenished**
C) Solar power from the sun.

1. Geothermal energy sources are:
   A) **Renewable**
   B) Non-renewable
   C) Finite

2. According to Cadex Electronics marketing communications manager John Bradshaw, you can't overcharge your phone's battery. **True** or false?

3. What is a water audit?
   A) Physically inspecting pipes, faucets and other fixtures
   B) Identifying and measuring leaks
   C) **Measuring and monitoring the amount of water used and comparing it to established standards or benchmarks**.

4. According to UNEP (2021):
   A) **About 17 % of food is wasted at the retail and consumer levels**
   B) About 75 % of food is wasted at the retail and consumer levels
   C) About 14% of food is wasted between harvest and the retail market

8. Inclusive approaches for VIP

First, prior to the training, it is important that the moderator asks the visually impaired participants what kind of support they need during the training. In particular, the moderator should ask which format they prefer to get the handouts or PPT presentations.

All handouts should be provided to visually impaired participants in electronic format or, depending on their needs, in Braille or large print. The same applies for the PPT presentation which the moderator shows during the training course. Additionally, the PPT presentation must be provided to VIP in advance, so that they can familiarise with it prior to the training.

The moderator should also suggest to the VIP to bring their own laptop, which is already equipped with screen reader and/or screen magnifier software.

When writing on the flipboard or whiteboard, the moderator should say out loud what he/she is writing.

- → For the first activity of the module – *electric circuits using modelling clay* – instead of using the LED it's possible to use a simple buzzer (DC power supply ranging from 4V to 9V) and it will create a sound effect instead of a visual one. It's also important to follow the VIP through every step of the process, make them familiarise with the supplies and the components and explain each step with the help of touch so as to create tactile memories so later the visually impaired pupils can work on their own.
  Learn more about the buzzer circuit at
  https://www.youtube.com/watch?v=cdqrOq8FDq0

- → For the *Treasure Hunt*, it is ideal for the visually impaired person to be paired with a sighted person, and it is also important for the VI person to have made an exploratory visit to the site in advance, so as to be safer and confident.

9. Use of accessible digital technology for online learning

Virtual meetings and online classrooms: the accessibility of Zoom Meeting, Google Meet and Microsoft Teams for visually impaired persons.

All the main video conference platforms have accessibility settings for as many as possible types of needs. The settings are pretty much the same, with some differences and specifics.

In this paragraph we'll explore the features of Zoom Meeting, Google Meet and Microsoft Teams. All three are compatible with screen-readers, such as JAWS or NVDA, and have some certain commands that can be used to browse independently. Particularly, Zoom Meeting and Vision Dept (the company that owns JAWS) have joined to develop some scripts that aim to *"improve the user experience providing greater control over what JAWS reads, without interrupting the flow when users enter and exit the room or leave comments"* (https://www.visiondept.it/Whats_New_2020.htm#:~:text=Premete%20INSERT%2BH%20per%20visualizzare,di%20scelta%20rapida%20di%20Zoom). A list of Zoom *hot-keys* and *shortcuts* it's available at this link: https://support.zoom.us/hc/en-us/articles/205683899-Hot-Keys-and-Keyboard-for-Zoom?_ga=2.203993045.494881096.1614756525-359380451.1613573452

Know more about How To Use Accessibility Features with Zoom

Google offers the possibility of using the integrated screen reader, full-page zoom, high-contrast colour and accessibility extensions in the Chrome browser when using Meet. In addition, there is a list of shortcuts that can be used to improve the user experience (Google Meet shortcuts).

Regarding Microsoft Teams, through the JAWS virtual cursor, it is possible to navigate within the interface using specific commands. To activate the virtual cursor, it is necessary to use the *SR key+Z* key combination, remembering first to enable its use via the *JAWS Settings Centre*. Once it is active, it will be possible to go through the Microsoft Teams screen regions, navigate inside the vertical app bar, navigate inside the content pane where all your chat, files or content are displayed. Also, it's possible to have access to the keyboard shortcuts page by using the combo *Ctrl+Period (.)* at any moment.

More information about how to use a screen reader to explore and navigate Microsoft Teams at this page: https://support.microsoft.com/en-gb/office/use-a-screen-reader-to-explore-and-navigate-microsoft-teams-47614fb0-a583-49f6-84da-6872223e74a0

10. Interdisciplinarity (STEAM approach and adaptations for VIP)

"To do good, you actually have to do something" Yvon Chouinard[14]:

Teaching toddlers and older children about efficient use of resources can help them to create sustainable habits in the future. Try some STEAM-based activities that will engage pupils, reinforce good energy-saving habits and create fun times both in the kindergarten and at home! Here are some activities pre-school teachers can implement in the GREEN4VIP workshops with kids aged 3-5:

- ➔ Create electric circuits out of modelling clay. You can use the instructions and the videos provided at the beginning of this module to implement this activity with kids. To enhance the participation of VI pupils, you can involve them in mixing the ingredients to create the modelling clay, and you can use buzzers instead of LEDs to help them understanding the concept of an electric circuit;

- ➔ Encourage pupils to prepare a lunch without the use of any electricity. Cooking activities for kids are fun and educational simultaneously. Additionally, cooking helps develop physical, social, mental and emotional skills. For example, cooking together can help children learn the values of teamwork and communication. While cooking, they can also learn to measure, count, mix, and cut food items[15]. At last, it requires a lot of imagination and exploration. As they experiment with the ingredients or find creative ways to plate the dish, their creativity and imagination will be glowed. You can have them prepare a cold cake or a sandwich, which are more appropriate recipes to kids aged 3-5; You can involve VIP in mixing ingredients and counting them. For measuring, you can provide them with a talking kitchen scale to weigh the ingredients. This tool can be used also by sighted pupils, this way all kids will use the same instrument and the VIP will not feel different from his/her mates. Additionally, this talking scale can be useful as children might not be able to read, and as they are very young, they might need the support of the teacher for measuring.

- ➔ Energy Efficiency Treasure Hunt: have the kids go hunting for energy wasters, such as cables still plugged in, faucets dripping, electronics left on, etc. This activity is more suitable for 5-year old kids. As kids are very young, we advise them to create small working groups (4-5 pupils) which go hunting with the supervision of a teacher to ensure their safety. The teacher can also be in charge of supervising the safety of the VI kid who goes hunting around the kindergarten together with his/her mates. Furthermore, still for guaranteeing the safety of the

[14] Quote retrieved from https://daretobeawildflower.com/sustainability-quotes-to-inspire-eco-friendly-living/?utm_content=cmp-true on the 8th of September 2023
[15] Retrieved from https://empoweredparents.co/cooking-activities-for-preschoolers/ on the 8th of September 2023

pupils, it is advisable to arrange this activity in a circumscribed setting, such as the classroom.

MODULE Nº3:
BIODIVERSITY PROTECTION

1. Objectives

Through the module, preschool teachers will learn how to raise children's awareness of the importance of biodiversity.

Upon completion of this module, the participants will:

1. Learn about the diversity of living things.
2. Learn about the importance of biodiversity for life on Earth.
3. Understand what is important for food production.
4. Raise awareness of the importance of biodiversity

2. Duration in learning units

This Module has been divided into 4 sessions and/or learning units. The expected time is as follows:

- Introduction: 30 minutes
- First part: Plant biodiversity and food production: 90 minutes
- Second part: Food production: 60 minutes
- Third part: Food web: 60 minutes
- Fourth part: Animal biodiversity: 60 minutes
- Conclusion: 30 min

3. Definition of learning outcomes (knowledge, skills, competencies)

Soft Skills developed: Problem-Solving Skills, Critical Thinking Skills, Flexibility, Communication Skills, Teamwork, Creativity, Attention to Detail, Responsibility.

Competences[16]: competences GreenComp (promoting nature, future literacy), social competencies, mathematical competence and competence in science, technology and engineering, art competences.

4. Materials and frame conditions needed for the implementation

- PPT presentation to be download from https://acortar.link/35gv9U (shown on digital screen)
- PC and screen projector
- Paper, pens, pencils, and felt-tip pens.
- 5-10 magnifying glasses.
- Real plants - dried plants or photocopied pictures of plants.
- Cards (life cycle of the plant).
- Cards (pollination process).
- Worksheet - different plant parts we can eat.
- Pictures of different animals for food chain.
- Sound of different animals for Bingo.

[16] LifeLong Learning Key competences adopted in 2018: 1. Literacy competence 2. Multilingual competence 3. Mathematical competence and competence in science, technology and engineering 4. Digital competence 5. Personal, social and learning to learn competence 6. Citizenship competence 7. Entrepreneurship competence 8. Cultural awareness and expression competence. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en Council Recommendation of 22 May 2018 on the key competences for lifelong learning.

5. Step-by-step instructions for trainers

If there are any VI participants use the following suggestions to adapt the activity:

Provide black markers and blank paper, so people with low vision can write easily. Allow them to use technology supports to make notes or use a braille typewriter (or a braille slate) according to their needs.

Instead of posting it/writing it on the meta board, let VI participants read their notes while the facilitator writes them down.

Description of the assistive aids mentioned before (Braille typewriter and Braille slate) available at point n° 9: Use of accessible digital technology for online learning

UNIT 1: Introduction

Duration: 30 minutes.

Greetings to participants.

Introduction game to introduce each other (5 - 10 min).

Discussion about the activities that they can do on biodiversity in kindergarten (10 min). Showing the workshop scenario.

Show Slide n° 2, n° 3, n° 4: Workshop scenario.

Conversation corner: Participants estimate how many different species live on Earth.

Then we all watch a film to introduce the meeting:

Watch the video: https://www.youtube.com/watch?v=Kx3n0FFgpT4&t=225s (English, 4:53 min). .

The game for divided participants into groups..

UNIT 2: Plant biodiversity

Duration: 60 minutes.

The participants are divided into groups or pairs. If possible, we go to a nearby meadow to observe the biodiversity of plants and record how many different species we find there. Otherwise, they received different types of grassland plants (can also be dried or photos) and magnifiers to observe the different parts of plants. When they have finished their observations, we discuss the different parts of the plant and their functions (slide n° 5).

Show Slide n° 5: Plant parts and their functions.

After the first activity, participants observe the life cycle of a plant (watching the video https://www.youtube.com/watch?v=TD60-3rqPXg&t=1s (English, 3:09 min).

They continue with a game in which they put the cards showing the development of plants in the correct order. In the next step, we discuss the activity for children: observing the plant development from seed to adult, sowing bean seeds, and monitoring the development. Then we will show, different ways of introducing children to the plant life cycle (e.g., making a book, a poster...).

Show Slide n° 6: Different examples of teaching plant life cycle.

Introduce them to plant identification keys. In groups, they prepare a simple identification key to identify selected plants (n° 7 and 8).

Show Slides n° 7 and 8: Dichotomous key.

Show Slide n° 9: Make your identification key for the selected plant.

Show films how to prepare a dichotomous key: https://www.youtube.com/watch?v=IFDuz92fzLE, https://www.youtube.com/watch?v=QEnTATHJ058.

UNIT 3: Food production

Duration: 60 minutes.

The participants work in groups or pairs. First, they will observe the flower and its structure. Then they will use a magnifying glass for more detailed observation. Then they will sketch the structure of the flower they observe and try to name the parts.

Show Slide n° 10: Parts of a flower and its functions. We discuss the different parts of a flower and its functions.

Next, we would like to talk about the pollination of flowers. Pollination is the act of transferring pollen grains from the male anther of a flower to the female stigma. The goal of every living organism, including plants, is to create offspring for the next generation. One of the ways that plants can produce offspring is by making seeds (Forest Service U.S. DEPARTMENT OF AGRICULTURE, 2023). Pollinating agents can be animals such as insects, birds, and bats; water; wind; and even plants themselves, when self-pollination occurs within a closed flower. Pollination often occurs within a species. When pollination occurs between species, it can produce hybrid offspring in nature and plant breeding work.

Show Slide n° 11: The pollination process

How does pollination in plants occur?

- A flower's bright petals and fragrance attract insects.
- The insect arrives on the flower to collect nectar (a sweet liquid that insects eat).

- The feeding insect rubs against the anthers, which rub pollen onto the insect.
- The insect is then attracted by another flower.
- As it feeds on the new flower, the pollen from the anther (male part of a flower) is deposited onto the stigma of the new flower (the female reproductive part of a flower).
- This pollen then travels down the style of the flower into the ovary.
- This plant has now been fertilized.
- The ovary of the flower will turn into seeds which will then be dispersed to become new plants.

Show Slide n° 12: Pictures of pollinators.

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

In pairs, they do an exercise with cards showing the pollination process and sort them into the right sequence.

Then participants play the game on their phones, computers, or tablets: Pollinator Pathway | Games | Nature Cat | PBS KIDS

Successful pollination and fertilization result in the production of healthy fruit and fertile seeds, allowing plants to reproduce. Without pollinators, we simply would not have food.

We discuss different plant parts we can eat (for example):

- we eat apples, which are fruits,

- we eat spinach that are leaves,

- we eat carrots which are root

- we eat asparagus that is stem…

In pairs, fill out the worksheet: I can eat all parts of the plant.

Conversation Corner: Focus the conversation on the importance of food self-sufficiency. The participants are divided into groups of three and they discuss the possibilities of creating a mini garden, using the STEAM approach.

Some ideas are shown on the Slide n° 13.

Show Slide n° 13: Examples of garden design in kindergarten.

Show Slide n° 14: Part of plants we can eat.

Watch the film: https://www.youtube.com/watch?v=-yA412FDAMg (English, 4:45 min)

UNIT 4: Food web

Duration: 60 minutes.

First, explain the importance of the food web.

Show Slide n° 15 – food chain

A food chain represents the feeding relationships between species within a particular habitat (ecosystem). It depends on the habitat and environmental factors.

Primary producers make their food via photosynthesis. Photosynthesis uses the sun's energy to make food by converting its light energy into chemical energy (for example plants and algae). These organisms are also known as autotrophs.

Primary consumers are those animals that eat the primary producers. They are called primary, as they are the first organisms to eat the primary producers who make their food. These animals are also known as herbivores (for example: rabbits, beavers, elephants, and moose).

Secondary consumers consist of organisms that eat primary consumers. Since they eat the animals that eat the plants, these animals are carnivorous or omnivorous. Carnivores eat animals while omnivores consume both other animals as well as plants (for example: bears).

Similar to secondary consumers, tertiary consumers can be carnivorous or omnivorous. The difference is that tertiary consumers eat other carnivores (for example: eagles).

Organisms known as decomposers consume dead plants and animals and decompose them (for example: fungi, earthworms, and bacteria) (https://www.treehugger.com/what-is-a-food-web-definition-types-and-examples-4796577).

What is the Food Web?

A food web is a complex network of interconnected food chains that represents the direction of the flow of energy and nutrients among various organisms in an ecosystem.

Show Slide n° 16 – food web

They also play a game: each participant is given a picture of an organism that they imitate by movement and 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.

Participants give ideas on how to develop activities linked to the food chain and the food web.

Some ideas are shown on the Slide n° 17: Examples of food chain activity.

UNIT 5: Animal biodiversity

Duration: 60 minutes

Show Slides n° 18 and 19: What is biodiversity?

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.

We can speak about:

- Ecosystem diversity - the diversity of different habitats (rivers, seas, wetlands, deserts, forests...)
- Species diversity - diversity between species
- Genetic diversity - the diversity in the genetic records of individuals within a species (diversity at the level of individuals)

Show Slide n° 20: The importance of biodiversity for people

Biodiversity is important for people:

- aggregation of food, oxygen, fuel,
- providing shelter and building materials,
- provides air and water purification,
- detoxification and waste decomposition,
- impact on climate,
- mitigating floods, droughts, temperature extremes, and wind power,
- creating and restoring soil fertility,
- pollination of plants,
- control of pests and diseases of crops,
- conserving genetic resources that are key to developing new varieties, medicines, and other products,
- providing cultural and aesthetic benefits,
- enabling adaptation to change, etc.

Show Slide n° 21: What threatens biodiversity?

The biodiversity is threatened by:

- Habitat destruction (conversion of natural ecosystems into arable land, development...),
- Invasive non-native species,
- unsustainable use of ecosystems and overexploitation of certain species,
- Climate change,
- Pollution (overuse of fertilizers, untreated urban wastewater, etc.),
- Intensive agriculture...

Show Slide n° 22: Biodiversity conservation

- conserving habitats, species, and genes in nature (Protected areas, parks, reserves, Natura 2000 sites, ecologically important areas not under protection),
- conservation of genes, varieties, and species outside nature (gene banks, Zoos, Botanic gardens, collective plantations, and other collections).

Conversation Corner: in the small group the participants discuss about endangered animals. Animal pictures and questions for discussion are presented on slide n° 19 (15 min).

Show Slide n° 23: Endangered animals discussion

Show Slide n° 24: IUCN extinction risks categories

Each participant draws an imaginary animal or plant and presents its characteristics to the others (10 – 15 min).

Show Slide n° 25: Examples of STEAM biodiversity activities in kindergarten

Show Slide n° 26: Examples of the construction of a bird feeder.

UNIT 6: Conclusion by playing bingo game

Duration: 30 minutes.

In conclusion, all participants play a bingo game:

PREPARE: Print out different BINGO cards for each participant plus a call sheet (pictures of different animals - rooster, lion, dog, cat, owl, goat, sheep, cow, starling, duck, frog, dolphin, monkey...). Cut out the call sheet and put the squares into a bowl.

DISTRIBUTE: Hand out one Bingo card to each participant (each card should be different).

CALL: The caller should pull out one image, and play the sound of the selected animal. If they don't recognize the voice the caller describes the characteristic of the selected animal.

MARK IMAGE: The participants will then place something on the called image if it is on their card.

WINNING: The one who has everything covered on the card, calls out BINGO.

Conversation corner: Participants discuss the workshop.

6. Reflection questions for debriefing

1.How human activities affect biodiversity?

2.What is being done to preserve biodiversity?

3.How can you help promote biodiversity (in kindergarten)?

4.Why is it important to raise children's awareness of the importance of self-sufficiency?

5.Which activities presented in this module would you like to implement in your practice?

6.In your opinion, what are the advantages and disadvantages of using the STEAM approach in kindergarten?

7.Will you be able to share all these learned lessons in your country with preschool teachers? How? Examples are welcome!

7. Learning process validation

1. What is biodiversity?
2. Which, according to you, is the major cause for loss of biodiversity?
3. How can the loss of one species lead to the extinction of another?
4. List 3 different ways through which humans are benefitted from biodiversity.
5. Food chain consists of:

    a) Producer, consumer and decomposer (true)
    b) Producer, carnivore and decomposer
    c) Producer and primary consumer
    d) Producer, herbivore and carnivore

6. The order of marine organism in a food chain is:

    a) Phytoplankton > Zooplankton > Fish > Seagull (true)
    b) Fish > Phytoplankton > Zooplankton > Seagull
    c) Zooplankton > Phytoplankton > Fish > Seagull
    d) Phytoplankton > Fish > Zooplankton > Seagull

7. List the main plant parts and explain their functions.
8. How do animals help plants to reproduce?

8. Inclusive approaches for VIP

Unit 2:
After the video on slide 5, in the activity of pairing cards that show the development of plants in the correct order, the moderator should prepare large printed cards or adapted cards with braille.

Tactile drawing board

For the activity on slide 6, create a tactile book or tactile poster using different types of textures and materials (https://www.pathstoliteracy.org/tactile-books-students-visual-impairments/).

Unit 3:
For the first activity, create a model of a flower from which you can separate the various parts (use different materials and textures); or the moderators could help the VI participants draw the flower on a *tactile drawing board*.

For the activity on slide 11, moderators must also prepare adapted cards with braille or large characters.

The game Pollinator Pathway | Games | Nature Cat | PBS KIDS isn't accessible for visually impaired participants.

The moderator must provide an electronic accessible version of the worksheet.

Unit 4:
The game Food Chain 1 isn't accessible for visually impaired participants, assistance from a sighted person will be required.

For the game on slide 14, the moderator should provide accessible supplies. For example, enlarged printouts or with name in large print or in braille.

9. Use of accessible digital technology for online learning

Audiobooks: online websites for downloading children's audiobooks and accessible applications and software that can be used to listen to them.

Audio-books can be a great help for readers of all ages. They consist of recordings of book readings that are then shared via CD, mp3 files or online downloads.

They are particularly useful in the educational development of children as they allow the user to listen to a fluent and complete reading. By listening to them, children discover first-hand the correct rhythm, pronunciation of new words, intonation, tone and punctuation. With the ideal promise of learning to transfer this knowledge into their personal reading practice: increasing their self-confidence, knowledge and independence.

Students with VI typically use adapted books (in Braille, large print or through magnifier) during their schooling, while using audio books as study support and/or courses. Once downloaded, they can be listened to on all devices that support audio formats. Some accessible websites from which it's possible to have access to children's audiobooks are listed here: www.weareteachers.com/free-audiobooks-for-kids/ or www.ibvi.org/blog/top-10-audiobook-sites-for-blind-and-visually-impaired/

Audio-books, when downloaded, can be listened to on all devices that support audio formats. There are also apps that can be downloaded from on iOS and Android, such as: Audible, Kobo and Kindle (requiring a monthly subscription) or Libby (free).

A further way to listen to audio books is to use digital assistants such as Alexa or Google Home, to whom you can simply ask to read a story! A Skill example that can be used with Alexa is StoryCastle.

10. Interdisciplinarity (STEAM approach and adaptations for VIP)

The STEAM approach can be applied to all four units.

In **Unit 2** the STEAM approach can be used for teaching about the plant life cycle.

The preschool teachers can include **art** when the children make a book *Life Cycle of the plant*. They can do the book with different materials (paper, wood, textile, plastic…) or with their photos. If they make a book with their photos, they can take pictures of growing plants with the photo camera. The preschool teacher and children can make a short film with a video camera – growing plant – **using technology.** We can introduce **math** when children sort cards representing plant life cycles in the correct order.

Teachers can use recordable magnifier glasses (https://www.edtechs.com.au/products/tts-recording-magnifiers), so they can guide the child in observing the plant.

In **Unit 3** the STEAM approach can be used when we design different types of gardens **(engineering** – make a plan). Teachers can use different materials to make a garden, and children use different materials and learn about the characteristics of this material. In the process of garden designing, we can also integrate **math and art.**

In **Unit 4** the STEAM approach can be used for teaching about the food chain and food web.

Children can learn about the food chain/web through computer games (for example http://projects.plattebasintimelapse.com/prp_a/food_chain.html?game=food_chain_02).

They can search for pictures of animals online and try to make the food chain with found images. In the class, we discuss the different possibilities to represent the food chain (use of cups, plates, etc.). They try to make a food chain (look at the food chain activity).

In **Unit 5** the STEAM approach can be used to discover different bird species.

Example: Go outside with children and for a few days record how many birds come to your playground. Then try to identify some birds using the identification key. Find out about their characteristics using books or a computer. Then plan how to build a bird feeder (look at examples of bird feeders) and make it using different materials. Place the bird feeder in your playground and monitor the birds' visit to the bird. Make research (for example which species were most frequently present on the playground).

It is very important for children to learn about plants and animals outside, to explore their surroundings.

In addition, preschool teachers can prepare science and technology corners on these four topics. In corners, children can also independently explore.

MODULE Nº 4:
“LIFE CYCLE OF WASTE MANAGEMENT:
Reduce, Reuse, Recycle”

1. Objectives

Upon completion of this module, the participants will:

- Have an overview of the waste generation in the EU
- Learn about the life cycle of waste management
- Be able to explain kids the meaning of the 3 “R”: Reduce, Reuse, Recycle
  4. Raise awareness of the importance of environmental care and protection

2. Duration in learning units

This Module has been divided in 3 sessions and/or learning units. The expected time is as follows:

- Unit 1: Waste generation in the European Union (EU): 40 minutes
- Unit 2: The cycle of waste management: 80 minutes
- Unit 3: what can I do to" save" the planet? RRR: 60 minutes

3. Definition of learning outcomes (knowledge, skills, competences[17])

Knowledge about the types of waste, the life cycle of waste management and statistics at EU level.

Soft Skills developed: Problem Solving Skills, Critical Thinking Skills, Flexibility, Communication Skills, Teamwork, Organization Skills, Creativity, Emotional Intelligence, Attention to Detail, Responsibility and Leadership.

Competences: Personal, social and learning to learn competence & Mathematical competence and competence in science, technology and engineering

4. Materials and frame conditions needed for the implementation

- PPT Slides with data (to be printed and/or showed in digital screen). Available at https://acortar.link/jfDq0r
- PC and screen projector
- Materials to be recycled as plastic bottles, paper, bottles, cans, tetrabrik… If this is not possible, you can print this resource https://acortar.link/iQxiow
- Internet connection for YouTube videos
- Annex 1: Reuse Game I do... https://acortar.link/brRVqx
- Annex 2: Reduce Game: I do... https://acortar.link/cFajCx
- If you have Visially impaired participants, you will need stars or other objet in 2 different sizes (for Games "I do").

[17] LifeLong Learning Key competences adopted in 2018: 1. Literacy competence 2. Multilingual competence 3. Mathematical competence and competence in science, technology and engineering 4. Digital competence 5. Personal, social and learning to learn competence 6. Citizenship competence 7. Entrepreneurship competence 8. Cultural awareness and expression competence. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en Council Recommendation of 22 May 2018 on the key competences for lifelong learning

5. Step-by-step instructions for trainers

Slide nº1: cover
Slide nº2: Objectives of the Module
Sline nº3: Learning units

UNIT 1: Waste generation in the European Union (EU)

Slide nº 4: cover of the unit 1.

Duration: 40 minutes.

Show Slide nº 5. Ask participants "what is waste?" Let them talk. Then, moderator can say "Waste is everything that no longer has a use or purpose and needs to be disposed of, right? But is not that easy. There are different definitions…

-Unwanted or unusable material, substances, or by-products. (oxford definition)
-Waste, defined by the EU Directive 2008/98/EC Article 3(1) as 'any substance or object which the holder discards or intends or is required to discard '.

These definitions are closely related to what we are going to see later about the life cycle of waste management.

Show Slide nº6: Waste in the EU

Ask participants "How many tonnes of waste were generated per EU inhabitant in 2020?" In the slide there are 3 answers, the good one is 4.8 tonnes. How many were recycled and landfilled in the EU in 2020? 39.2 % of waste were recycled and 32.2 % landfilled in the EU in 2020.
The graphic gives an overview on waste generation and treatment in the European Union (EU) and several non-member countries.

Show Slide nº7: Type of waste

The waste generated by industry and society needs to be classified in order to apply the correct form of management. There are different classifications, depending on their origin, composition, danger, etc.:

- "Domestic Waste": Household-generated waste as a result of domestic activities. Similar waste generated in the service sector and in some industries, are also considered to be domestic.
- "Industrial Waste": Waste resulting from the processes of manufacture, processing, utilisation, consumption, cleaning or maintenance generated by industrial activity, excluding emissions into the atmosphere.

As can be observed there is no simple single classification of waste. Some emphasize on the origin or activity that produces them, others in their physical-chemical characteristics and others in special compounds within their constitution. However, the **end result of this variability aims to reduce and improve waste management through the use of best existing technologies**.

Show Slide nº8 and nº9 (solution): Type of waste: let´s play

To learn about the cycle of waste management, we are going to organize garbage depending the most common types of Waste Management. Ask participants to play a simple game*: Can you put the rubbish in the right recycling bins? Are the colours equal in all countries? Is something missing? Is something wrong?*

Tip for moderator: you can print the containers and do this game by using real garbage or you can do it on-line by moving the images according to the ideas of participants. (https://www.freepik.es/vector-gratis/juego-clasificacion-basura_13146308.htm) Music is available at the ppt.

UNIT 2: The cycle of waste management

Show Slide nº 10

Duration: 80 minutes.

Slide nº 11: types of waste. Moderator will say that life cycle of waste management is different depending on materials.

Let´s start from plastic…

Show Slide nº 12: **PLASTIC.** Ask participant next questions:

How much plastic do we produce? In 2021, 391 million tonnes of plastics were produced globally[18].

How much plastic do we use? Globally, each person uses around 45 kg of plastic per year.

Our relationship with plastic is out of control. Both the production and consumption of plastic is increasing exponentially year on year. It is estimated that globally we use approximately 45 kg of plastic per person per year[19]. In North American countries and the European Union, each person consumes more than 100 kg of plastic per year. In Asia, each person consumes more than 30 kg, while another source reports that annual consumption per person is around 20 kg.

How much plastic do we discard? Of the 391 million tonnes of plastics produced worldwide in 2021, 44% went into packaging, i.e. single-use plastic that is discarded soon after use.

How long does it take for plastics to degrade? Plastics do not disappear, they can take more than 500 years to break down into smaller pieces.

When plastics degrade they simply break down into smaller pieces. This means that they do not disappear. Plastic never biodegrades, i.e. it is not broken down by the action of living organisms such as bacteria or fungi, so it is never

[18] Data retrieved from https://www.statista.com/statistics/282732/global-production-of-plastics-since-1950/ (Plastics Europe, 2022) on the 3rd of November 2023.
[19] Data retrieved from https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm (Plastics Insight, 2015; Wang et al., 2019) on the 3rd of November 2023.

assimilated by nature. The time it takes to break down depends on environmental conditions and can take hundreds of years. This process is slower in the oceans than on land with devastating consequences for the environment and people.

Limited recycling: The chemical composition of plastics allows only limited and finite recyclability, unlike other materials such as glass or metal.

Plastics can only be recycled 2 or 3 times[20]. This means that they cannot enter the production chain infinitely, and at some point, they will be discarded. Why can't they be recycled infinitely? As plastic is recycled, it loses its quality (downcycling or cascaded recycling), which results in a shortened life cycle.

Open discussion: Ask how they imagine the recycling process goes; all the plastic have the same treatment? After a group discussion, play video (English language. 3:51m) Slide nº 13: https://www.youtube.com/watch?v=zO3jFKiqmHo

Comments coming from participants are welcome.

Next stop: **PAPER**. Slide nº14. Moderator will explain:

Unlike plastic, paper is easier to recycle, with data claiming that up to 71.4% of paper is recycled in Europe[21] (2021). Over the course of 2021, the total amount of paper and board collected and recycled in Europe reached 57.1 million tonnes, an increase of 2% compared to the previous year.

In Spain[22], 84 kg of paper per inhabitant/year is collected for recycling. Considering the average consumption of 170 kg/inhabitant/year, only 49% of the paper consumed is recycled.

Ask participants if they usually recycle papers. Ask them if all the paper are available for recycling.

Is paper recyclable? The answer is yes, we can recycle most paper, and we say most because what is recycled is the cellulose, the main material that forms it, but there are some types of paper whose main material is not cellulose, but are composed of other materials that make them non-recyclable.

We must be careful with toilet or sanitary paper, grease-stained paper, waxed, plasticised or paraffin-embossed paper, carbonless paper or thermal fax paper. These are the types that you will not be able to recycle.

After a short discussion, play the video (Slide nº15): https://www.youtube.com/watch?v=jAqVxsEgWIM (music plus text in English. 1:44min). Or How Do They Recycle Paper? (Slide nº 16) https://www.youtube.com/watch?v=isEV-mCFPiY (real sounds without voice in any languages. 4:02min)

[20] Data retrived from https://blog.nationalgeographic.org/2018/04/04/7-things-you-didnt-know-about-plastic-and-recycling/ (National Geography, 2018) on the 3rd of November 2023.
[21] Retrieved from European Paper Recycling Council (EPRC) Monitoring Report 2021. https://www.paperforrecycling.eu/publications/# on the 3rd of November 2023
[22] Data retrieved from Greenpeace https://archivo-es.greenpeace.org/espana/Global/espana/report/other/el-papel.pdf on the 3rd of November 2023

Comments coming from participants are welcome.

Next stop: **CANS (METAL)**. Slide nº17. Moderator will explain:

Moderator will explain:

> For our purpose, we are going to focus on domestic metals, that is, cans or tins. The most common types of metal which cannot be recycled are those which have radioactive properties such as uranium and plutonium, but these aren't commonly found in household items so this should not be a huge concern. Additionally, metals containing mercury and lead are also non-recyclable.
>
> Many of the food and drink products we buy are packaged in cans made from either aluminium or steel and both of these materials can be recycled after we have finished with them to make either new cans or other products.
>
> The average recycling rate for aluminium beverage cans in the European Union, UK, Switzerland, Norway, and Iceland was 72.8 percent in 2020. The highest recycling rates for aluminium beverage cans were in Germany and Finland, at 99 and 98 percent, respectively.
>
> Aluminium is an infinitely recyclable material, and it takes up to 95 percent less energy to recycle it than to produce primary aluminium, which also limits emissions, including greenhouse gases. Today, about 75 percent of all aluminium produced in history, nearly a billion tons, is still in use.
>
> How are cans recycled?
>
> Aluminium cans are shredded, removing any coloured coating. They are then melted in a huge furnace and the molten metal is poured into ingot casts to set. Each ingot can be made into around 1.5 million cans. Aluminium foil is a different alloy and is usually recycled separately with other aluminium scraps to make cast items such as engine components.
>
> Steel cans are put into the furnace where molten iron is added. Oxygen is then blasted into the furnace which heats up to around 1700°C. The liquid metal is poured into a mould to form big slabs which are then rolled into coils. These coils are used to make all sorts of steel products.

After this introduction, play How Are Aluminium Cans Recycled?
https://www.youtube.com/watch?v=zm0P3F5VzRI (Slide nº18)
(audio in english. 1:08) and after "How Are Aluminium Cans Recycled?" (Slide nº19)
https://www.youtube.com/watch?v=KmMP67eC2tg (audio in English. 6:18m)

Next stop: **FOOD**. Slide nº20. Moderator will explain:

Moderator will offer some data about Food Waste in the European Union

> In the EU, nearly 59 million tonnes of food waste (131 kg/inhabitant) are generated annually. Eurostat roughly estimates that around 10% of food made available to EU consumers (at retail, food services and households) may be wasted. At the same time, some 32.6 million people cannot afford a quality meal every second day (Eurostat, 2021).

Globally, approximately a third of all food produced for human consumption is lost or wasted (FAO, 2011).

According to the UNEP Food Waste Index 2021, around 931 million tonnes of food waste were generated in 2019 – 61% of which came from households, 26% from food service and 13% from retail – suggesting that 17% of global food production may be wasted at these stages of the food supply chain. Similarly, in the EU, households generate more than half of the total food waste (53%) in the EU with 69% of food waste arising at household, food service and retail (Eurostat, 2022). Wasting food is not only an ethical and economic issue but it also depletes the environment of limited natural resources[23].

Ask participants if they do something for preventing and reducing food waste. Open dialog.

What happens to all the food that goes to waste? Play video: Organic: Food waste recycling - creating a circular economy (Slide nº21) https://www.youtube.com/watch?v=2I8Tjb4Fy-Q (audio in English. 3:44 min).

Next stop: **GLASS**. Moderator will explain:

Moderator will ask (Slide nº22): IS ALL GLASS RECYCLABLE? Give time to answer. Then, explain:

In short, no. Despite its endless qualities, not all glass varieties can be collected in your household recycling because they have different chemical properties and melt at different temperatures than the recyclable bottles and containers.

Although it depends on where you live and what the local recycling policy is, most glass items in your day-to-day life are 100% recyclable. Here's a list of the most common collection types:

- Bottles of any colour (soft drinks, juices, water, wine, beer, spirits, food sauces and olive oil)
- Jars of any colour (food, jam, sauces, condiments, baby food, etc.) Cosmetics and perfume containers – also known as flacons.

Glass That Cannot Be Recycled: Any glass mixed with other materials, Decorative glass. Mixed-colour glass, Dirty glass or glass caked with food waste, Ceramics or dishware, Pyrex and other types of heat-resistant glass, Window glass and Mirrors.

(Slide nº 23). For container glass, the recycling rate in the EU-28 is stable at 74 %. There is still a large north-south and west-east divide. Countries such as Sweden, Belgium and Slovenia, which have efficient separate collection systems, perform best and achieve recycling rates in excess of 95 %. Countries such as Turkey, Greece, Cyprus and Malta are the worst performers. Here, the recycling rates for container glass are sometimes well below 50 %. This is particularly a

[23] Data retrieved from https://food.ec.europa.eu/safety/food-waste_en on the 3rd of November 2023

consequence of the so-called collection gap in these countries, lack of government incentives and the general economic framework.

Play video (Slide nº 24): Glass: Recycling Glass | Environmental Chemistry | Chemistry | FuseSchool (English audio 3:29m) https://www.youtube.com/watch?v=vhpc0UULjDU

(Slide nº 25) How do we recycle glass? A real example https://www.youtube.com/watch?v=18oxQkP4qQ0 (audio in English. 4:37 min)

Slide nº 26: What happens to garbage that doesn't have a "second life"? **Do you know what a landfill is**? Garbage trucks take our trash to a municipal solid waste landfill, a site designed to contain household trash. It has specialized structures to reduce the contamination of the surrounding soil or water.

Although modern landfills are designed to keep toxic trash contained, leaks do happen. Therefore, landfills are still dangerous to the environment and human health. The methane that is released due to the decomposing waste is a potent greenhouse gas that contributes to global climate change.

Play video How a Landfill Works (Slide nº 26): https://www.youtube.com/watch?v=Wzo5sv4Irlw Duration: 2:49. english audio.

Let´s finish this second part of the Module by showing the video (Slide nº 27): "Beyond the Bin": https://www.youtube.com/watch?v=jc8Cy1RbcW4 (audio in English. 06:05)

The moderator will finish this part by asking: what have we learnt? (Open question). Take notes.

UNIT 3: what can I do to" save" the planet? REDUCE, REUSE, RECYCLE

Duration: 60 minutes.

Show Slide 28: Unit 3 cover.

Show Slide nº 29. There is a "sad music (Yiddish sadness) and information for reflection. The moderator will read the information as the music plays. Finally, he/she will say "It is the time for solutions!".

Show Slide nº 30: REDUCE, REUSE, RECYCLE

Reduce, Reuse, Recycle – 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. It's Really simple!

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

Using the 3 'R's also helps to minimise the amount of space needed for landfill sites, where waste materials are disposed of.

Slide nº 31: Make gropus and ask participants to make a list of actions that you can do to reduce waste.. **in your preeschool**. Give some minutes and then, put the list in common.

Slide nº 32: And what about actions in your personal life? Let´s play the quizzy “I do...”. Give the Annex 2 and let´s play. Moderator will read each sentence and she/he will give participants enugh time for answer: 1 point, 0,5 or 0 points will be given.

For Visualy impaired participants, give starts ot other objet in 2 different size and tell them to select the big for 1 point, the small for 0.5. At the end of the “game”, he/she will count how many object she/he has got and she/he will be able to calculate the score by him/herself.

Slide nº 33: Ask participants: How can I **REUSE** the amount of waste I produce at home? Listen and make a list with the participants´ ideas.

> The first 'R' is all about creating less waste. The concept of reducing what is produced and what is consumed is essential to the waste hierarchy. The logic behind it is simple to understand – if there is less waste, then there is less to recycle or reuse.
>
> The process of ‘reduce’ begins with an **examination of what you are using**, and what it is used for. There are three simple steps to assessing the reduction value of an item or process –
>
> Step 1: Is there something else that can be used for this purpose? *(Promote dialog)*
>
> Using multi-use items is essential to beginning reduction. The purchase of one item means that you don’t use two. It reduces the amount of production and the amount of waste packaging material that will be generated.
>
> Step 2: Is this something that needs to be done? *(Promote dialog)*
>
> A lot of our waste material comes from items that are considered to be “disposable.” Not in the sense that you use something once and then throw it away, that can actually be a part of environmental responsibility when you are working with medical items – disposable in this sense means whether or not what the item allows you to do has any real meaning or purpose.
>
> Step 3: Is the item a part of something that you need to do or want to do in your life? *(Promote dialog)*
>
> Always make sure that what you consume, or keep in your life as preparation – matches the reality of potential opportunity in your life.

Slides nº 34 and 35: Reuse game. Give the Annex 1 and let´s play. Moderator will read each sentence and she/he will give participants enough time for answer: 1 point, 0,5 or 0 points will be given.

For Visualy impaired participants, give starts ot other objet in 2 different size and tell them to select the big for 1 point, the small for 0.5. At the end of the “game”, he/she will count how many object she/he has got and she/he will be able to calculate the score by him/herself.

Ask participants (Slide nº 36): How can I **RECYCLE** the products I use? Listen and make a list with the participants` ideas.

The third 'R' is about making sure you separate items that can be recycled, meaning they can be used for a new purpose. One needs to learn as to what products can be recycled and what they cannot. By carefully choosing the products that can be recycled, it can be the first step towards efficient recycling.

Before you throw something away, think about whether all or part of it could be recycled.

Show Slide nº 37 Tips for a successful recycling.

Show Slide nº 38: examples from https://www.bebesymas.com/manualidades-y-disfraces/manualidades-ninos-17-ideas-para-hacer-juegos-caseros-material-reciclado

Are there any more 'R's? Open question (Slide nº 39).

Sometimes, two more 'R's can be added to the three basic ones.

Rethink can be added to the start of the list. It means we should think about the way our actions impact the environment.

Recover is sometimes added to the end of the list. It refers to the act of putting waste products to use. For example, decomposing garbage produces methane gas, which can be recovered and burnt to produce energy.

They are not that hard to implement. All you need is to bring a small change in your daily lifestyle to reduce waste so that less amount of it goes to the landfill that can reduce your carbon footprint.

After a short break Slide nº 40 Play this video (in English 3:39min) Reduce, Reuse and Recycle, to enjoy a better life | Educational Video for Kids https://www.youtube.com/watch?v=OasbYWF4_S8

it summarize all the ideas we have covered in this Module.

6 Reflection questions for debriefing

1. Why is it important to reduce, reuse, and recycle?
2. How do these actions impact our environment, wildlife, and well-being?
3. How can we adjust our habits to help our surrounding community?
4. What can we do to tell others in our community about the importance of the three R's and preserving our world?
5. Will you be able to share all these learned lessons in your country with preschool teachers? How? (Make some examples). And with kids aged 3-5? How? (Make some examples).

7. Learning process validation

Moderator can ask next questions:

Question nº1: Let's start with a very easy question... (Slide nº 41). What RRR means in the context of the Life Cycle of waste management?

a) Read, Recognize, Remember
b) Reduce, Reuse, Recycle (true)
c) Rescue, Reserve, Resist

Question nº 2: How much plastic do we use (globally) and How long does it take for plastics to degrade? (slide nº 42)

a) Each person uses around 45 kg of plastic per year. It can take more than 500 years (true)
b) Each person uses around 90 kg of plastic per year. It can take more than 100 years
c) Each person uses around 120 kg of plastic per year. It can take more than 300 years

Solution: A. The world is producing twice as much plastic waste as two decades ago, with the bulk of it ending up in landfill, incinerated or leaking into the environment, and only 9% successfully recycled, according to a new OECD report[24].

Question nº 3: IS ALL GLASS RECYCLABLE? (Slide nº 43)

a) Yes
b) No (true)
c) Depending the countries

Solution: b. But…Glass is a 100% recyclable material made from three natural ingredients – sand, soda ash and limestone. Despite its endless qualities, not all glass varieties can be collected in your household recycling. There are diverse types of glass, with many different treatments applied to them.

Question nº 4: Let´s talk about colour… True or false: (Slide nº 44)

According to the United Nations, up to five billion plastic bags are used every year, and one million plastic bottles are bought every minute. However, data shows that just 9% of all the plastic waste ever produced has been recycled. Most of it ends up in landfills or in nature, especially the ocean. Each and every one of us is responsible for halting the devastating effect of the climate crisis. We must adopt sustainable behaviours like recycling at home.

4.1.- Plastics, cans and cartons: The yellow container. Snack wrappers and drinks cans. True or false? True

4.2.- Paper and cardboard: The blue container. Newspapers and the boxes from moving home that you can’t reuse. True or false? True

4.3.- Glass: The green container. Bottles and jars. True or false? True

[24] Data retrieved from https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm on the 3rd of November 2023

4.4.- Organic waste: The orange or brown container. Food waste like fruit peel and fish bones. True or false? True

4.5.- Do you know other containers? For example, we also have other containers to recycle medicines and batteries, plus recycling centres for things like electronics that no longer work... (open question)

Question 5: Find differences…. (Slide nº 45)

Image: https://www.freepik.es/vector-gratis/conjunto-plano-proteccion-medio-ambiente-dos-composiciones-paisaje-fabrica-contaminado-frente-ciudad-ecologica-limpia_16607947.htm)

Note: this two images can be described. The idea is to show the differences between "healthy" or "unhealthy" worlds.

Open dialog.

Slide nº 46: thank you.

Note: Sli.do is highly recommended for Live Polls[25] or Quizzes[26].

8. Inclusive approaches for VIP

UNIT 1 – SLIDE no. 6

If there's any VI participant the facilitator can use the following text as a cue to explain slide no. 1:

"In the current slide, there is a graph describing waste generation in European countries in 2020 by kg per capita. 4.8 tonnes of waste generated per inhabitant in 2020: 39.2% of waste were recycled and 32.2% landfilled, Europe-wide. As for of Green4VIP Partners, Poland is leading with a range of almost 5.000 kg, followed by Slovenia, Italy, Greece and Spain. "

UNIT 1 – SLIDE no. 8 and 9

If there's any VI participant, it is necessary to adapt the game proposed in these slides. The moderator can adapt the activity as follows:

- When in presence, use some real objects that the VI participant can touch, as an example of waste to recycle in the correct bucket. Ask the VI participant which item it is and where they think it should be recycled.
- If online, make a verbal list of the objects in the photo and the recycling bins. Describe them and move them around according to the VI participant thoughts.

[25] Turn your one-way presentations into engaging conversations with live polls, word clouds or surveys. Ask what people think or how they feel and get their feedback in real time.

[26] Bring a bit of fun to your meetings or training sessions. Create a live quiz or trivia game and test people's knowledge in an interactive way. Turn your one-way presentations into engaging conversations with live polls, word clouds or surveys. Ask what people think or how they feel and get their feedback in real time.

UNIT 2 – SLIDE no. 23

If there's any VI participant the facilitator can use the following text as a way to explain slide no. 23:

"On the current slide, there is a map of Europe showing the percentage of recycled glass in each country in 2020. As an example, it can be noted that Estonia has the highest rate with 105% and Turkey the lowest with 14% - but it must be said that Turkey's figures do not reflect the entire market and are not comparable with previous years."

UNIT 3 – SLIDE no. 33

If there are any VI participants, the facilitator can use the following text to explain the slide no. 33:

"The image depicts a hand holding an old laundry detergent bottle reused as a pot inside which a plant has been placed."

UNIT 3 – SLIDE no. 36

If there's any VI participant the facilitator can use the following text as a cue to explain slide no. 36:

"The image depicts a father with his child to whom he is explaining how to properly recycle plastic bottles."

UNIT 3 – SLIDE no. 38

If there's any VI participant the facilitator can explain the images.

UNIT 3 – SLIDE no. 39

If there's any VI participant the facilitator can use the following text as a cue to explain slide no. 39:

"The image depicts a road sign with four arrows, each of which has a different direction: reduce, reuse, recycle and repair."

UNIT 3 – SLIDE no. 45

Unfortunately, it's not possible to adapt this game for visually impaired people. Try to describe both images.

9. Use of accessible digital technology for online learning

The facilitator can provide to the training course participants (pre-school teachers) the following information to make YouTube videos more accessible to visually impaired participants (or even to VI pupils). Furthermore, it is possible to find out more about an interesting website which allows to create audio description for videos. Audio description can be a useful tool to make didactical videos for kids, accessible also to the visually impaired ones.

First of all, when playing a YouTube video, make sure to activate subtitles. To do so, click on the subtitles icon in the video's command bar or by clicking on the letter "c" on your keyboard. Activating subtitles is important because they can be read by screen-readers and speech synthesis. In addition, Google provides an accessibility guide for the YouTube mobile application, which you can find at the following link: https://support.google.com/youtube/answer/6087602?hl=en&co=GENIE.Platform%3DAndroid&oco=0#zippy=

Another way to make videos more accessible is to use **Youdescribe**. This is a website created by the Smith-Kettlewell Eye Research Institute that allows viewers to watch YouTube videos with an audio description. It is also possible for sighted volunteers to register and create audio descriptions on the Youdescribe website. Here is a link with instructions on how to do so: https://veroniiiica.com/create-audio-description-youtube-youdescribe/
You can find out more about Youdescribe here: https://youdescribe.org/ and https://www.ski.org/project/youdescribe

To acknowledge more about accessible digital technology, you can read Point 9 of the Introductory Training Module.

10.- Interdisciplinarity (STEAM approach and adaptations for VIP)

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. The list below is a list of starting activities that will help introduce children to the concepts of sustainability and caring for the environment. Most of these make great ideas for sustainability activities for toddlers and older children.

-Introduce the concept of recycling. The earlier children learn the habits of recycling, the more likely they are to have ingrained recycling behaviour. Recycling can start by having designated bins for recyclable materials, trash and food scraps. The bins you have in your classroom can be colour coded.

-Use recyclable items for craft activities. Common everyday materials ranging from cereal boxes, toilet rolls and aluminum cans can be used for a range of recycling ideas in childcare that can stimulate the imagination and keep children engaged for hours.

-Reuse: Make art supplies using materials like food dyes, dish soap and even milk… You can give a second life by demonstrate how to make musical instruments like maracas, shakers and drums using easily accessible and recyclable material.

-Build a compost bottle using a clear plastic soft drink bottle with the top cut off and label removed. Add layers of compostable material and keep moist. Children can then observe the changes that occur in organic material as the composting material takes place.

-Why don't we recycle old Crayons? It is easier than you may think. This video explains you how to do it https://www.youtube.com/watch?v=-Ad0vzBxBzU (English language. 06:00 min)

-Teach children how to make their own paper using recycled paper scraps. Have you ever done before? here you have a video to understand the process: https://www.youtube.com/watch?v=wVIyhgZI-X0 (English language. 07:22 min)

-Is the schoolyard clean? Encourage rubbish collection. Instigate a “green walk” to clean up the area. Before you do have a discussion about the negative impacts of rubbish being left around. Make sure that all children are properly attired with gloves and have a collection bag.

"*In the end we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught*." Baba Dioum[27]

-Encourage outside play. There is no better way to create an affinity with the earth than to encourage a love of the outdoors and playing outside is a great way to engender a love of the outdoors and sustainable outdoor fun.

[27] Baba Dioum (born 15 October 1937) is a Senegalese forestry engineer. Quote from the paper presented in New Delhi in 1968, at the triennial meeting of the General Assembly of the International Union for the Conservation of Nature and Natural Resources (IUCN). https://en.wikipedia.org/wiki/Baba_Dioum Retrieved on 3rd of November 2023.

MODULE Nº 5
“SUSTAINABLE LIFESTYLES: Consumption Habits”

1. Objectives

Upon completion of this module, the participants will:

- understand the significance of a healthy diet in early childhood education.
- learn how to integrate nutritional education in a classroom setting.
- explore sustainable food choices such as plant-based proteins, sustainable seafood, and the avoidance of single-use plastics.
- promote the importance of physical activity alongside healthy eating habits.
- engage in hands-on activities that emphasise sustainable living and healthy eating habits.

2. Duration in learning units

1. Unit 1: Introduction and Emphasising Sustainable Lifestyles (Duration: 20 minutes)
   - Slides: 3-4
   - This unit sets the stage for the seminar, emphasising the importance of sustainable lifestyles and healthy food choices.
2. Unit 2: Understanding Healthy Diets and Nutrition (Duration: 40 minutes)
   - Slides: 5-9
   - This unit delves into the specifics of sustainable consumption and healthy food choices, the benefits of these choices, and how to teach children about healthy eating.
3. Unit 3: Hands-on Learning with Creative Activities (Duration: 20 minutes)
   - Slide: 10
   - This unit will allow participants to engage in a hands-on activity involving the design of motivational badges for children related to healthy food choices.
4. Unit 4: Sustainable Food Practices (Duration: 40 minutes)
   - Slides: 11-18
   - This unit addresses sustainable food production, agriculture, and how to reduce food waste.
5. Unit 5: Sharing Stories and Traditions (Duration: 20 minutes)
   - Slide: 21
   - This is an interactive storytelling session where participants share a traditional story from their home country relating to food and/or nutrition.
6. Unit 6: Mindful Eating and Healthy Alternatives (Duration: 40 minutes)
   - Slides: 22-27
   - This unit delves into topics such as mindful food choices, emotional eating, alternative protein sources, sustainable seafood choices, and the importance of hydration.
7. Unit 7: Sustainability and Plastic Alternatives (Duration: 30 minutes)
   - Slides: 28-30
   - In this unit, participants learn about avoiding single-use plastics, sustainable food packaging, and engage in a practical STEM activity creating a water-holding cup from paper and tape.
8. Unit 8: Physical Activity and Healthy Eating (Duration: 20 minutes)
   - Slides: 31-32
   - The concluding unit highlights the importance of physical activity alongside healthy eating for overall well-being.

3. Definition of learning outcomes (knowledge, skills, competences[28])

- Knowledge: Participants will gain knowledge about the importance of sustainability in early childhood education and the specific ways to integrate it into daily lessons.
- Skills: Participants will develop skills to engage children in conversations about sustainability, create activities that encourage sustainable habits, and implement strategies for teaching these concepts.
- Competences: Participants will be competent in teaching sustainability concepts to children, organizing relevant activities, and fostering a love for nature and the environment among their kids.

4. Materials and frame conditions needed for the implementation

- Access to a multimedia presentation software for slides. Power point presentation is available at https://acortar.link/n2jhlz
- Internet connectivity for accessing videos and online resources.
- Materials for activities: paper, tape, reusable water bottles, etc.
- Safe outdoor spaces for physical activities and outdoor learning.
- Suitable space for discussions and group activities

5. Step-by-step instructions for trainers

UNIT 1: Introduction and Emphasizing Sustainable Lifestyles

Duration: 20 minutes.

Show Slide 3: Introduction

In this session, we explore the importance of sustainable living and healthy eating. Empowering children to make wise dietary choices enhances their well-being and promotes a sustainable future. The term 'diet' originates from the Greek *"dietome"*, encompassing lifestyle elements like exercise, hydration, sleep, and nutrition.

Show Slide 4: The Importance of Sustainable Lifestyles

Recognizing diet includes exercise, hydration, sleep, and nutrition underscores the need for sustainable lifestyles. Focusing on healthy eating benefits our well-being and

[28] LifeLong Learning Key competences adopted in 2018: 1. Literacy competence 2. Multilingual competence 3. Mathematical competence and competence in science, technology and engineering 4. Digital competence 5. Personal, social and learning to learn competence 6. Citizenship competence 7. Entrepreneurship competence 8. Cultural awareness and expression competence https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en Council Recommendation of 22 May 2018 on the key competences for lifelong learning

environment. Teaching children these values early on fosters a generation that embraces and contributes to sustainability.

UNIT 2: Understanding Healthy Diets and Nutrition

Duration: 40 minutes.

Show Slide 5: Sustainable Consumption and Healthy Food Choices

Sustainable consumption involves choosing food that boosts personal health and benefits the planet, impacting our well-being, environment, and society. Selecting nutritious and environmentally responsible options, supporting sustainable agriculture, and endorsing fair trade and local producers promote a sustainable, equitable, and inclusive future.

Show Slide 6: Benefits of Healthy Food Choices

Children's nutrition crucially influences their growth, development, and lifelong habits by providing vital nutrients for physical and cognitive function, and disease prevention. Foods high in omega-3s, complex carbohydrates, and low in added sugars foster mental clarity and sustained energy. Promoting diverse healthy foods from a young age establishes a foundation for enduring health and well-being.

Show Slide 7: Balanced Diet

The 7 Countries Study, spanning 15 years and involving 13,000 people, found a link between high intake of monounsaturated fatty acids and reduced cardiovascular disease mortality, spotlighting the then-prevalent diet in Crete. The Mediterranean Diet, emphasizing fruits, vegetables, whole grains, and fish, encapsulates this heart-healthy dietary pattern.

Show Slide 8: Nutritional Guidelines for Children

Understanding children's nutritional needs, as per WHO and UNICEF guidelines, is vital for promoting healthy choices. These guidelines stress diverse food group consumption, regular intake of fruits, vegetables, legumes, whole grains, and limiting saturated fats, salt, and sugars. Ensuring adequate fibres, essential nutrients, and energy intake, along with encouraging healthy dietary and activity habits, is key to mitigating childhood obesity risks.

Show Slide 9: Teaching Children About Healthy Eating

Teachers crucially educate children about healthy eating with interactive activities, including exploring food groups, discussing health roles, visualizing portion sizes, and involving them in cooking. These not only enhance understanding of food groups and nutritious choices but also instil pride and ownership in making healthy decisions.

UNIT 3: Hands-on Learning with Creative Activities

Duration: 20 minutes.

Show Slide 10: Activity 1

In this activity, teachers create personalized badges, using provided materials, to reward pupils for meeting healthy food challenges tailored to their age and dietary needs. After sharing designs and related challenges, teachers discuss the badges' potential impact and reflect on promoting healthy eating in kindergarten, aiming to motivate children towards nutritious habits in a supportive environment.

UNIT 4: Sustainable Food Practices

Duration: 40 minutes.

Show Slide 11: Sustainable Food Production and Agriculture

"Promoting sustainable consumption involves adopting food production methods like organic farming, permaculture, and regenerative agriculture, which balance human needs with ecosystem support. Using natural inputs, designing efficient, self-sustaining ecosystems, and restoring soils while sequestering carbon, these methods enable informed food choices, support for local and organic producers, and contribution to a resilient food system."

Show Slide 12: Organic Farming and Its Benefits

Organic farming utilizes natural inputs and conserves biodiversity, illustrated by the aquaponic system at the 1st Primary School of Rafina, Greece. This symbiotic system combines aquaculture with hydroponics, avoiding synthetic chemicals, conserving water and soil, and minimizing environmental impact. Additionally, it serves as an educational tool, teaching pupils about sustainable food production and environmental stewardship while exemplifying aquaponics' role in fostering sustainable food systems.

Show Slide 13: Understanding food labels

Educating children on interpreting food labels enhances their ability to make informed food choices by understanding nutritional content, ingredients, and product origin. Effective label reading aids in selecting minimally processed items and identifying lower levels of fat, sugar, and salt in products.

Show slide 14: Engaging Children in Sustainable Food Practices

Engaging children in sustainable food activities like planting, gardening, and composting fosters environmental appreciation, healthy eating, and responsibility towards sustainability. These activities teach plant biology, sustainable food production, nutrient recycling, and organic waste management, cultivating a connection with nature, practical skills, and empowering informed, sustainable choices.

Show slide 15: Teaching Children About Seasonal and Local Foods

Teaching children the merits of consuming seasonal and local foods – such as reduced carbon emissions, peak nutritional value, local economic support, and cultural awareness – encourages sustainability and environmentally conscious choices. Integrating these foods into diets empowers children to positively impact their health, environment, and community.

Show Slide 16: Reducing Food Waste

Food waste is a significant global issue with environmental, social, and economic consequences. We will explore strategies to reduce food waste, such as creative ways to use leftovers and meal planning.

Show slide 17: Creative Ways to Reduce Food Waste

Reducing food waste through children's activities like creating a “Food Rescue” recipe book, food-sharing, composting, and a mindful lunch box policy instils value in food resources. Using apps like Plant Jammer, which suggests recipes from available ingredients, enhances engagement in minimizing waste. These activities empower children to make conscious, environmentally protective, and future-oriented sustainable choices.

Show slide 18: Meal Planning and Preparation

Meal planning and involving children in preparation cultivates healthy, sustainable eating habits by ensuring nutritious and balanced meals, while also saving time and money. It teaches life skills, shapes food preferences, and enhances understanding of food’s environmental impact. Practical involvement like choosing simple recipes, helping with shopping, and performing age-suitable tasks empowers children to make mindful, sustainable, and healthy food choices.

Show Slide 19: Gardening and Growing Food

School gardens are valuable educational tools that offer a range of benefits in promoting sustainable and holistic education. They foster environmental stewardship, provide understanding of plant life cycles, promote nutritional education and healthier food choices, encourage physical activity, promote interdisciplinary learning across various subjects, and cultivate empathy and patience as children nurture plants over time. Thus, school gardens enrich the learning environment, nurturing a love for nature and a deeper understanding of sustainability.

Show Slide 20: Teaching Children About Food Sources

Teaching children about the origins of their food is an important aspect of promoting sustainable consumption habits. By exploring various activities and resources, we can provide engaging and interactive learning experiences for children to understand where their food comes from. Farm visits allow children to see firsthand how food is grown and harvested, while virtual field trips provide access to different food sources worldwide. Storytelling can further enhance their knowledge by connecting traditional practices and cultural aspects of food production.

UNIT 5: Sharing Stories and Traditions

Duration: 30 minutes.

Show Slide 21: Activity 2

Each participant is given 5-7 minutes to share a traditional story from their home country relating to food and/or nutrition. The story could be a folk tale, a legend, a childhood memory, a festival-related anecdote, or even a nursery rhyme.

UNIT 6: Mindful Eating and Healthy Alternatives

Duration: 40 minutes.

Show Slide 22: Mindful Food Choices and Emotional Eating

Mindful eating emphasizes being present and savouring food's sensory experiences, enhancing physical and mental health through healthier habits and a positive food relationship. Teaching children this approach involves promoting awareness, engaging senses, supporting emotional well-being, and exploring healthy emotional management. These strategies empower children to establish a healthy, happy relationship with food and contribute to their overall well-being.

Show Slide 23: Healthy Snack Ideas

Snacks, crucial for children's growth and energy, can be nutritious and appealing with options like fruit kabobs and veggie sticks with hummus. Ensuring they are balanced and involving children in preparation enhances their appeal, fostering a positive food relationship and promoting lifelong healthy eating habits. Snacks represent opportunities for nutrition, learning, and enjoyment.

Show Slide 24: Teaching Children About Sugar and Sweetened Beverages

Excessive sugar consumption in children poses health risks like obesity and diabetes. Educating them about these risks and promoting healthier habits, such as understanding moderation, offering attractive hydration alternatives like fruit-infused water, and leading by example, fosters a healthy relationship with food and beverages, encouraging lifelong healthy habits.

Show Slide 25: Introducing Children to Alternative Protein Sources

Exploring plant-based proteins like lentils and tofu with children introduces them to nutritious and sustainable food choices, offering health benefits and reducing our carbon footprint. Education about these proteins encourages culinary exploration and fosters a positive, lasting impact on their health and the environment.

Show Slide 26: Sustainable Seafood Choices

Sustainable seafood, vital for protecting marine ecosystems, demands adopting practices like using bycatch-minimizing gear and respecting fishing seasons due to concerns like overfishing. Educating children about these practices instils responsibility regarding their planetary impact and fosters a generation committed to protecting marine ecosystems. The WWF Finprint game is a notable resource for learning about sustainable seafood choices.

Show Slide 27: Hydration and Drinking Water

Staying hydrated is vital for overall health and well-being. We will discuss the importance of drinking water.

UNIT 7: Sustainability and Plastic Alternatives

Duration: 30 minutes.

Show Slide 28: Avoiding Single-Use Plastics

Single-use plastics, persisting in the environment for centuries, can harm wildlife and enter our food chain, posing potential health implications. Alternatives like biodegradable plastics and recyclable materials are available. Engaging children in reducing single-use plastic use by promoting reusable items and educating on the importance of reducing, reusing and recycling is crucial.

Show Slide 29: Sustainable Food Packaging

Sustainable food packaging, using recyclable or biodegradable materials like plant-based plastics and mushroom packaging, reduces environmental impact compared to conventional, single-use plastic packaging. Involving children in creating sustainable packaging solutions enhances their creativity, sustainability awareness, and promotes a mindset of mindful purchasing and waste reduction.

Show Slide 30: Activity 3

In the STEM activity, kindergarten teachers design water-holding cups from paper and tape as an eco-friendly exercise, then assess them for leakage, followed by a discussion on effectiveness. This activity enhances critical thinking, creativity, and collaboration, while embedding STEM and sustainability concepts into early childhood education, encouraging experimentation, and learning from mistakes in a supportive environment.

UNIT 8: Physical Activity and Healthy Eating

Duration: 20 minutes.

Show Slide 31-32: Encouraging Physical Activity Alongside Healthy Eating

Physical activity is crucial for maintaining health, wellbeing, and a healthy adult lifestyle. Incorporating physical activity into daily life, especially for children, can be achieved through active transportation, movement breaks, and simple changes like taking stairs. This also connects to sustainable living as active transportation reduces carbon emissions, and nature-based activities promote environmental appreciation and sustainable attitudes. Ultimately, increasing daily movement and promoting active, nature-based activities contribute to personal wellness and planetary health.

6. Reflection questions for debriefing

1. How has this training session influenced your understanding of the importance of sustainable lifestyles and their impact on overall health, specifically in relation to dietary habits?

2. What strategies or methods do you plan to use to make learning about nutrition and healthy eating engaging and fun for your pupils?

3. How do you intend to incorporate teachings about food waste reduction and the principles of sustainable food practices in your classroom?

4. Reflecting on the activity of sharing traditional food and nutrition stories, how can you use storytelling as a tool to teach children about nutrition and healthy eating in a culturally diverse classroom?

5. How can you apply the knowledge about mindful eating and the introduction of alternative protein sources to guide your pupils towards healthier and more sustainable food choices?

6. Reflecting on the water-holding cup activity, how can you integrate the concepts of sustainability and avoiding single-use plastics into your curriculum?

7. Learning process validation

1. Q1: What role does early childhood nutritional education play in shaping long-term health outcomes?

   A. It has no significant impact on long-term health outcomes. (Incorrect)

   B. It mainly affects physical development during childhood but has minimal long-term effects. (Incorrect)

   C. It can establish positive eating habits, prevent chronic diseases, and contribute to overall well-being in adulthood. (Correct)

2. Q2: Which of the following strategies can teachers use to promote sustainable food choices in the classroom?

   A. Only serve plant-based meals in the classroom. (Incorrect)

   B. Encourage children to avoid all types of seafood. (Incorrect)

   C. Integrate lessons about sustainable seafood, plant-based proteins, and the environmental impact of food production. (Correct)

3. Q3: What was the primary learning objective of the no-plastic cup-making activity?

   A. To teach pupils how to handle water without spilling. (Incorrect)

   B. To encourage creativity and problem-solving skills while highlighting the importance of finding sustainable alternatives to single-use plastics. (Correct)

   C. To have a competition and determine the best cup designer in the classroom. (Incorrect)

4. Q4: How can physical activity be integrated into a sustainable lifestyle?

   A. By exercising only at home to save energy used in transportations, outdoor and sports grounds lighting (Incorrect)

B. By promoting active transportation, like walking or cycling, which reduces carbon emissions and fosters an appreciation for the natural environment. (Correct)

C. By spending more time in gyms, which often use energy-efficient equipment. (Incorrect)

5. Q5: How can the STEAM approach be effectively utilized in conveying the importance of a healthy diet and sustainability?

A. By using it as an opportunity to showcase the latest technological gadgets. (Incorrect)

B. By using only real-world math problems related to diet and sustainability. (Incorrect)

C. By integrating elements of science (understanding nutrition), technology (digital tools for learning), engineering (problem-solving activities), arts (creative projects), and mathematics (real-world calculations related to nutrition and sustainability) in lessons. (Correct)

Link to Quiz: https://quizizz.com/join?gc=84362403

8. Inclusive approaches for VIP

Slide 24: Teaching Children About Sugar and Sweetened Beverages - Use a tactile representation of the amount of sugar in different beverages. Provide different quantities of sugar in separate containers that teachers can feel and weigh in their hands.

Slide 25: Introducing Children to Alternative Protein Sources - Provide samples of various plant-based protein sources for the teachers to touch, smell, and taste, discussing the texture, flavor profiles, and potential uses in children's meals.

Slide 26: Sustainable Seafood Choices - The WWF Finprint game might not be fully accessible, but its teachings could be adapted into a discussion format or even a role-playing scenario, exploring the consequences of different seafood choices.

Slide 27: Hydration and Drinking Water - Discuss the physical sensations associated with dehydration (such as dry mouth or fatigue) which can be recognized without sight.

Slide 28: Avoiding Single-Use Plastics - Provide samples of common single-use plastic items and their more sustainable alternatives, allowing teachers to feel the difference in materials.

Slide 29: Sustainable Food Packaging - Provide samples of various types of sustainable packaging for the teachers to handle, discussing the different materials and how they feel, as well as their environmental benefits.

Slide 30: Activity 3 - The paper and tape activity can be conducted with verbal guidance. For visually impaired teachers, it will be crucial to provide clear instructions and allow for hands-on exploration of the materials.

Slides 31-32: Encouraging Physical Activity Alongside Healthy Eating - Discuss the benefits of physical activity, providing examples of how it can be felt in the body (increased heart rate, feeling warmer). When discussing the integration of physical activity into a daily routine for children, give clear verbal examples and encourage discussion on how this can be implemented.

Thermoform Printer. Usage: Creating tactile representations of healthy food items, sustainable materials, and environmental structures. Application in Units:

- Unit 4 (Sustainable Food Practices): Illustrate sustainable agricultural practices and food production processes.
- Unit 7 (Sustainability and Plastic Alternatives): Represent different sustainable food packaging options.

Piaf Printer. Usage: Generating embossed diagrams and images, allowing tactile exploration of food items and sustainable materials. Application in Units:

- Unit 2 (Understanding Healthy Diets and Nutrition): Creating tactile food pyramids.
- Unit 3 (Hands-on Learning with Creative Activities): Designing tactile motivational badges for hands-on activities.

3D Printer. Usage: Fabricating 3D models of food items, human body parts related to nutrition, and sustainable materials. Application in Units:

- Unit 5 (Sharing Stories and Traditions): Producing 3D models related to traditional food stories.
- Unit 6 (Mindful Eating and Healthy Alternatives): Demonstrating various food sources and healthy alternatives in 3D format.

Braille Printer. Usage: Converting textual information and diagrams into Braille, aiding visually impaired pupils in accessing content. Application in Units:

- Unit 1 (Introduction and Emphasizing Sustainable Lifestyles): Providing introductory content in Braille format.
- Unit 8 (Physical Activity and Healthy Eating): Offering information related to physical activities and healthy eating in Braille.

Interactive Digital Platforms. Usage: Engaging participants through interactive sessions, quizzes, and discussions. Application in Units:

- Unit 5 (Sharing Stories and Traditions): Facilitating interactive storytelling sessions.
- Unit 7 (Sustainability and Plastic Alternatives): Conducting practical STEM activities and discussions on sustainable alternatives.

Screen Reader Software. Usage: Narrating the text to visually impaired participants to ensure accessibility of content. Application in Units:

- Unit 2 (Understanding Healthy Diets and Nutrition): Reading out detailed nutritional information and benefits of healthy food choices.
- Unit 6 (Mindful Eating and Healthy Alternatives): Narrating information related to mindful food choices and alternative protein sources.

9. Use of accessible digital technology for online learning

Audio games for visually impaired kids: where to find them and how to use them? Find out more about this amazing possibility for VI kids.

"An **audio game** is an electronic game played on a device such as a personal computer. It is similar to a video game save that there is *audible* and *tactile feedback* but not visual." (Wikipedia)

The first audio game was released by Atari in 1974 and it was called *Touch Me*; but shortly after that the interest would grow and also the number of audio games available on the market.

Audio games were originally created as "blind accessible games" and were developed generally by amateurs and visually impaired programmers. At first most audio games were housed in arcade cabinets ore handheld game console, but nowadays they run on PC platforms, Android and Apple devices. The most recent upgrade was given by the advent of voice assistants such as Amazon Alexa, that developed a new series of audio games available through Alexa Skills.

Some examples of most popular audio games are:

1. Song Quiz, Jeopardy, True or False and Heads Up all available on Amazon Alexa
2. Path of Adventure, Zarodnik, Tomato Clinic, Lookouts available on Android devices
3. Papa Sangre, Flarestar, Ploppy Pairs, Letter Rooms available on Apple devices
4. Wordle, A Dark Room, Six Ages: Ride Like the Wind, Space Wave Race available on Web browser and PC
5.

For an extended list, visit www.audiogames.net

The increase of TTS (text-to-speech) software and the consistent improvement in this field have allowed the complete audio-conversion of traditionally video-based games into audio-based. Games that were developed to be used by seeing audience, that don't rely solely on visual aspects of it, were converted by the audio game community by using them in pair TTS software. The most recent result of this research is *The Last Of Us Part II*, which was released by Noughty Dog in the summer of 2020 for PlayStation 4. The game contains over 60 accessibility features, including a TTS feature. Other characteristics that make the game completely accessible include the use of voice actors, haptic feedback, audio cues that act as hints to the players and also a sound glossary menu that users can consult to hear how the audio cues sound. Examples include signals to the user that they can jump, crouch or interact with the nearby environment.

To learn more about audio games, read this article from Wired:
https://www.wired.com/story/future-video-games-visual-accessibility/

10. Interdisciplinarity (STEAM approach and adaptations for VIP)

1. <u>Hydroponic Gardening (Science, Technology, Engineering):</u> Children could be guided to set up a simple hydroponic system to grow herbs or lettuce. This will allow them to understand the basics of plant biology (science), use technology and engineering principles to create the hydroponic system, and understand the implications of such systems for sustainable food production.

2. <u>Edible Art (Art, Science):</u> Use plant-based protein sources and various fruits and vegetables to create edible art. This encourages creativity (art) and allows children to explore the textures, flavors, and nutritional benefits of these foods (science).

3. <u>Food Waste Composting (Science, Engineering):</u> Children can be guided to set up a compost bin in the classroom, teaching them about the biological process of decomposition (science) and the engineering of creating an efficient composting system. They can then observe how food waste can be turned into nutrient-rich soil, a key aspect of sustainability.

4. <u>Water Filtration (Science, Engineering):</u> Children can construct their own water filtration system using various materials such as sand, activated charcoal, and gravel. This project demonstrates the concept of physical filtration (science) and requires constructing a device that effectively filters water (engineering).

For VIP adaptations, tactile materials, clear verbal instructions, and hands-on guidance can ensure that these activities are inclusive. For instance, in the hydroponic gardening activity, the visually impaired pupils could be involved in physically assembling the system, feeling the texture of the roots and leaves, and taking care of the plants daily. In the edible art activity, they could use their sense of touch and taste to create and appreciate the *"art".* These STEAM activities are designed to ensure that all children, regardless of their visual ability, can actively participate and learn.

CONCLUSIONS

A way to prevent the further deterioration of the world is to ensure that every person receives appropriate environmental education and acts accordingly to its guidelines. This then becomes a developmental need and an essential educational task. GREEN4VIP contributes to the environment protection and fight against climate change supplying pre-school teachers with competences on suitable and inclusive pedagogical strategies for VIP.

With this Teacher Training Curriculum, we want to take a step forward and train pre-school teachers, since in the first phase of the project, teacher training in aspects related to the project's objectives became evident.

Through this TTT, **preschool teachers will be able to acquire the necessary knowledge to be able to bring environmental education to the classroom with a STEAM approach**. In addition, **educators who have visually impaired children in their classrooms will learn how to adapt the contents so that VIPs can actively participate in the activities.**

The modular structure, which at the same time is divided into units, makes the TTC developed by project partners a very flexible tool that can be adapted to different contexts as well as to the needs of the trainees.

This tool for teachers is complemented by the Inclusive Toolbox for VIP, which offers workshops to be carried out in kindergarten.

Finally, since the UN approved in 2015 the 2030 Agenda on Sustainable Development, which included the 17 Sustainable Development Goals, much progress has been made. And much remains to be achieved. Education must go further; it must make the youth generate changes in the world around them.

With this Environmental Teacher Training Curriculum, we intend to contribute with more than just doing our bit in the education of this vast community of humanity in which everybody take care of the planet and where we can enjoy the advantages of a more educated and developed society.

Because we deeply believe that we can only have a better world with adequate inclusive early childhood education.

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Module 1: “VISUAL IMPAIRMENT IN ECEC – different strategies and tools”

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Module 2: EFFICIENT USE OF RESOURCES: water, energy and soil; food choices and health

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Module 4: LIFE CYCLE OF WASTE MANAGEMENT: Reduce, Reuse, Recycle

M3 cover image: https://www.freepik.es/foto-gratis/fondo-reciclaje-mujer-sujetando-caja_2295687.htm

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Module 5: “SUSTAINABLE LIFESTYLES: Consumption Habits”

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ABOUT THE AUTHORS

Vanessa Cascio (Italy), EU project manager since 2018 for the Consorzio CO&SO, a big social service provider of Tuscany (It). Vanessa is visually impaired herself. She has got a MA in Lifelong Educational Processes at the University of Bologna (It) and has attended several courses on blindness-related issues in particular in the field of education, technology and accessibility. She was vice president of the Italian Union of the blind branch of Florence from 2015 to 2023 and was in charge of the VI members' job placements and labour integration.

Maria Teresa Caldo (Italy) works at the Unione Italiana dei Ciechi e degli Ipovedenti ETS-APS in Florence. Her area of interest is administration and accounting, public relations and project development in the field of blindness and visual impairment. She is also an expert in the field of digital assistive aids and technologies for VI, following a training course at UICI Toscana.

Elvira Sánchez-Igual (Spain), Pshicologist and specialist on early child development. She works as project coordinator at the World Association of Early Childhood Educators (AMEI-WAECE) since 2005. She previously served at the Unit of Social Development and Education for the Organization of American States (OAS) in Washington, D.C (USA).

Sarantis Chelmis (Greece), school principal, holds a PhD in Curriculum & Instructional Design from the National and Kapodistrian University of Athens. His work focuses on teacher's training, curriculum design and development, production and evaluation of training/educational materials, citizenship education and children's social and moral development. With a practical approach, he has effectively managed several European Erasmus+ projects, contributing to educational collaborations across Europe. His involvement in evaluating the National Curriculum's social studies materials reflects his commitment to improving educational content. Being a member of the Children's Identity and Citizenship in European Thematic Network since 1998, he has maintained a steady engagement in educational communities. Additionally, he shares his knowledge in ICT by training other educators at the University Centre of In-service Training in Eastern Attika.

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 adolescents with special needs and with immigrant backgrounds. In 2016, she organized a Summer school on the inclusion of children with immigrant backgrounds.

Nataša Dolenc Orbanić (Slovenia) is an Associate Professor of didactic of natural sciences at the Faculty of Education, University of Primorska, Koper, Slovenia, where she has been employed since 2003. She has a Ph.D. in educational sciences. Her research interests focus on the didactics of science in preschool and primary education, especially in environmental education and misconceptions about natural phenomena, namely in detecting these, as well as in developing appropriate teaching strategies to prevent misconceptions. She has participated in many national and international projects. She has also conducted various workshops for educators and teachers and has prepared various didactic materials (primary school books and workbooks, interactive identification key for determining marine organisms, and materials for students…) and curriculums. Her scientific papers focus mainly on the constructivist approach in science classes, outdoor education, and education for sustainable development, emphasizing cross-curricular teaching.

Mateja Maljevac (Slovenia) works at the Faculty of Education at the University of Primorska and at the Centre for Education, Rehabilitation, Inclusion and Counselling for the Blind and Partially Sighted. Her research interests are in the field of special needs and inclusive education, with a focus on people with visual impairment. She has been the President of the TIFLO Section of Slovenia for two terms and a member of the main committee of the Association of Special and Rehabilitation Educators of Slovenia, and in her third term she is its Vice President. She is actively involved with the National Education Institute Slovenia in the field of special needs, in the organising committees of conferences and in international projects, for which she was awarded the Quality Apple in 2023 as a member of the Erasmus+ project team of the Deafblindness project.

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. Subsequently, while working at the Polish Association of the Blind since 2004, she completed postgraduate studies in the field of: sociotherapie, typhlopedagogy, professional counselling and coaching. At the Polish Association of the Blind she successfully coordinated projects aimed at supporting blind people in entering the labour market, she also worked as a vocational counsellor and coach. She implements various national and international projects aimed at improving the life situation of visually impaired people. She supports the participation of young visually impaired people in volunteering projects and youth exchanges at European level.

Monika Łoboda (Poland) **-** tylphopedagogue, instructor of Orientation and Mobility training for visually impaired people. She graduated from the Academy of Film Words in the field of audiodescription. Monika graduated with honors of the Academy of Journalism in Warsaw. She participated in workshops of typhlographic „KoLABorations Visual" project. At the Polish Association of the Blind (Polski Związek Niewidomych) in Poland, she was a specialist for diagnosis and typlopedagogical counseling. She worked at school with blind and visually impaired children in Poland, India and in South Africa.

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

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