

# eSchool Garden

This infographic contains four levels of learning, from the simplest (level 1) to the most complex (level 4). Each level offers an activity design framework whose core is the school garden. Each level works on a different aspect: nutrition, recycling, environment and the impact of inanimate factors on crops.

Each level adds both cognitive difficulty and, in the use and application of technology.

The reader should keep in mind that although each level is linked to some core subjects, there is room for more subjects within the framework.

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## Subjects legend

**L** Languages

**M** Mathematics

**S** Science

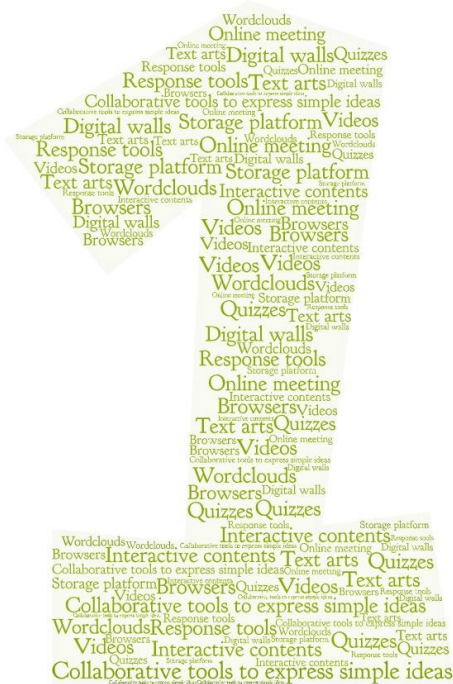
**B** Biology and Chemistry

**G** Geography and history

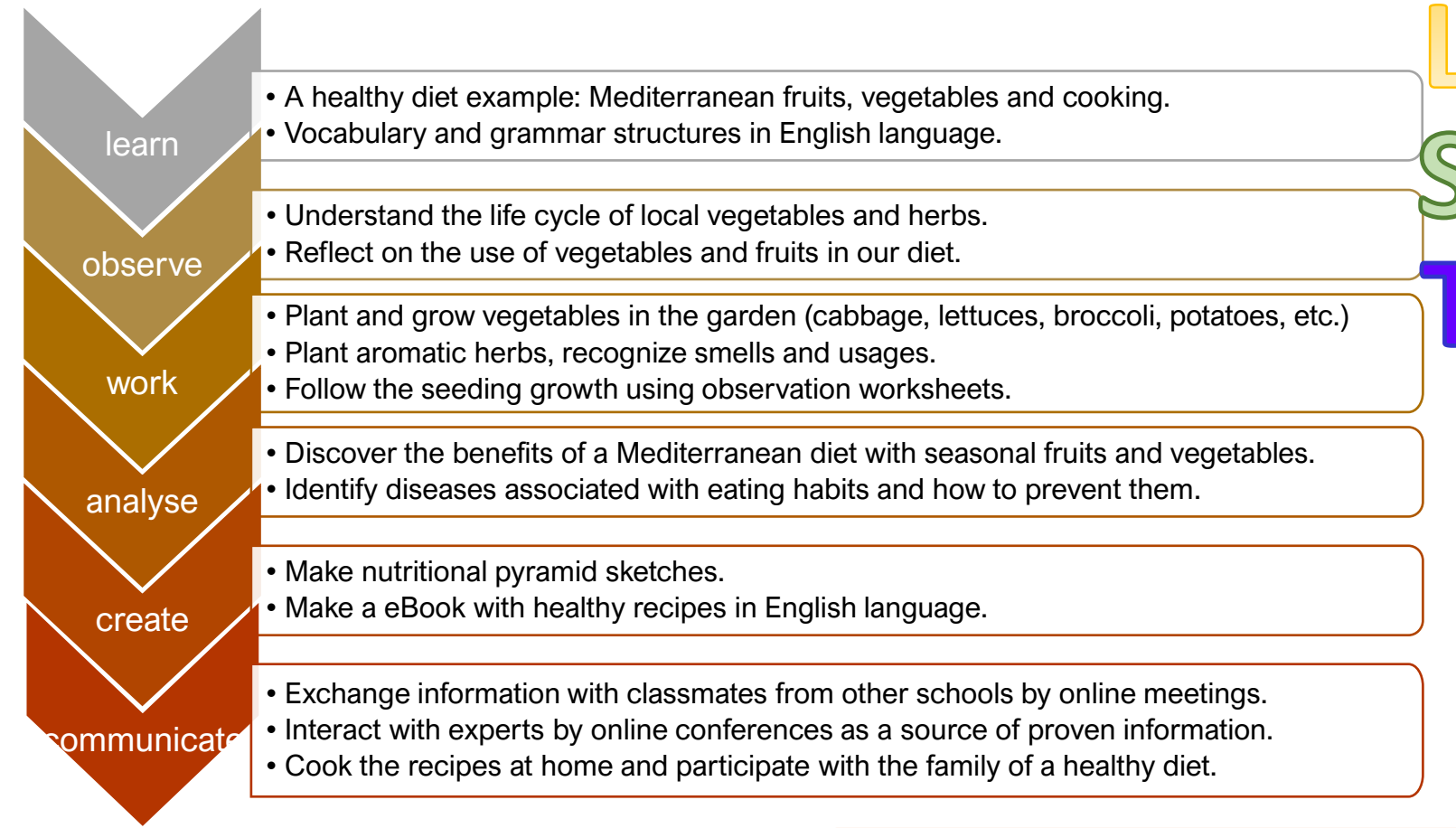
**A** Arts

**T** Technology and informatics

**E** Economics



Growing as learners



**L**  
**S**  
**T**

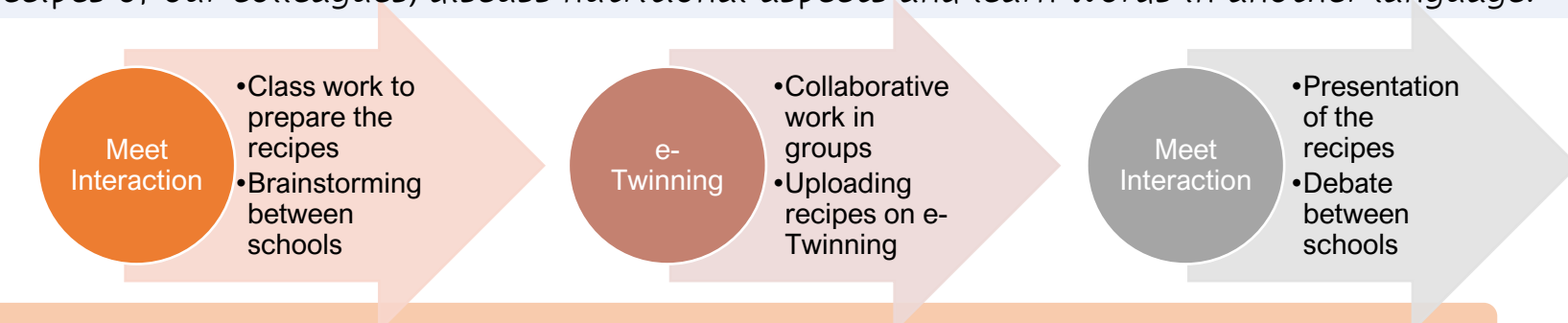
This activity is focused on nutrition. Through the subjects related to foreign languages we will discover new vegetables and crops for our garden. Together with colleagues from other schools, and via online meetings, we are going to propose a cookbook to use at home with our family.

We will speak with experts via videoconference and discover what are the local products, the nutrition pyramid, what the CO2 footprint means and how to reduce it.

We will talk about the Mediterranean diet and the vitamins of the most named fruits and vegetables in this diet.

We will search for information on the Internet and use simple digital tools to create posters, sketches, videos, and a simple eBook.

Interaction with another school will allow us to get to know other cultures and typical recipes of our colleagues, discuss nutritional aspects and learn words in another language.



## Sustainable Development Goals: Learning Objectives Examples

## DigComp: Learning Objectives Examples



**Efficient use of natural resources**



**Nutrition and health**

**Information and data literacy**

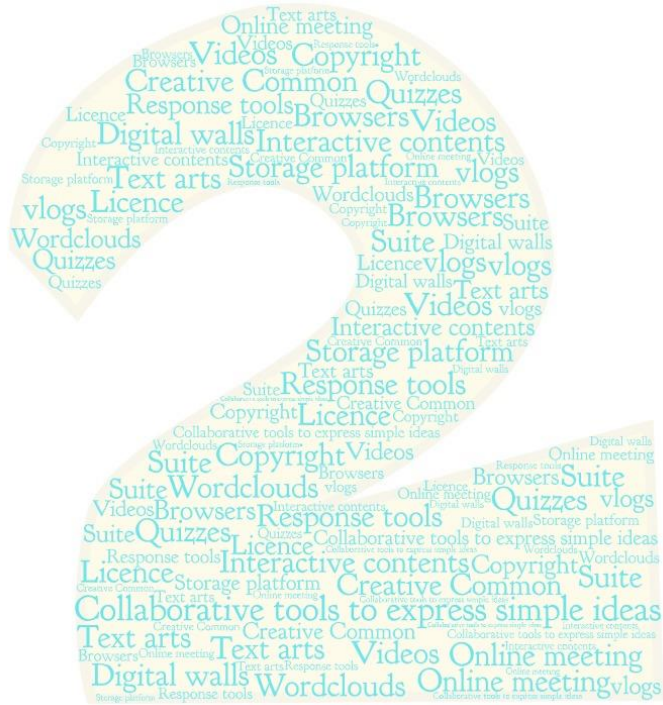
**Communication and collaboration in digital environments**

**Digital contents creation**

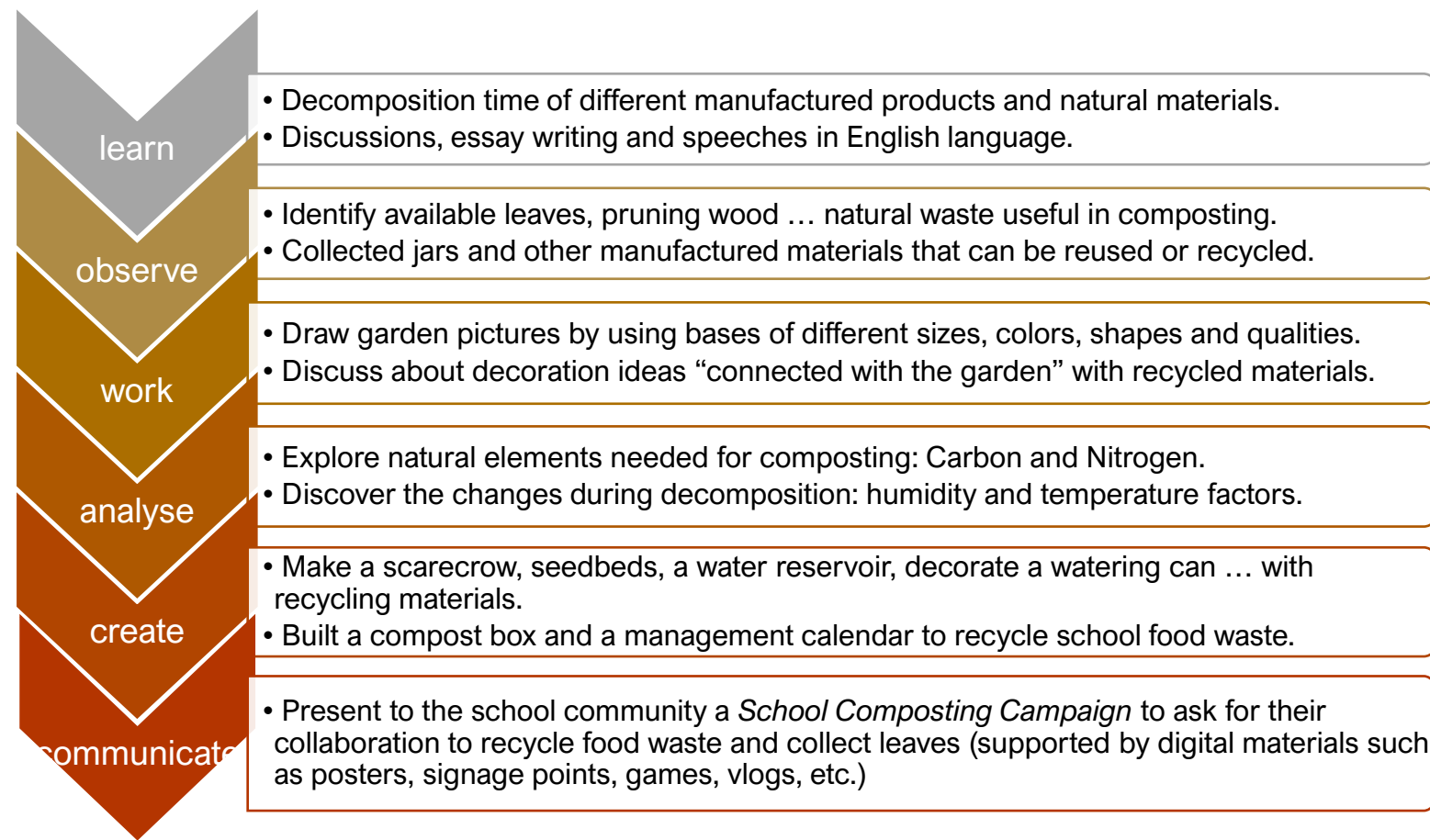
<b>Recognize and understand</b>	Identify basic factors and good practices for the cultivation of an eco-friendly garden (water, soil and compost, weeds and insects )	Identify vitamin groups in vegetables and fruits. Read food labels and recognize organic brands and EU regulations.
<b>Argue and negotiate</b>	Argue about larger scale area's ecological farming and possible hazards. Discuss the convenience of buying local products (CO2 footprint, community issues, etc.)	Summarize, ask questions, clarify points and take notes on a presentation given by a doctor from the town hospital and an expert about healthy diet and the importance of eating vegetables and fruit for children and youngsters.
<b>Reflect on one's own actions</b>	Propose ideas for possible and innovative solutions about effective organic waste management in the school and personal contribution.	Observe our breakfast for 3 days. Evaluate the nutritional and caloric value. Apply expert recommendations to propose a healthier breakfast.
<b>Solve problems and develop solutions</b>	Design simple experiments such as generating electricity from potatoes, rust removal, Mendel's laws, apple glucose level, etc. to connect science and nature.	Design a recipe book with local and seasonal vegetables.

<b>Foundation</b>	Search on the Internet for information regarding the benefits of the Med. Diet and create Med.Diet nutritional pyramids. Identify symbols in a foreign language.	Use videoconference to hear expert speakers in the field of Mediterranean diet. Interact and sharing ideas through online meetings with classmates from another school.	Identify and choose a digital cloud platform to create a eBook with healthy recipes. Brainstorming about video recording and rendering tools.
<b>Intermediate</b>	Evaluate data regarding the benefits of the Med. Diet and organize the material in an attractive way: wordclouds, digital walls, concept maps, mind maps, etc.  Manage, store and organize data to create posters of seasonal local crops.	Upload digital contents made in class to the school blog to make them useful for others.  Use different types of online quizzes (using interactive tools, e.g., Socrative, Kahoot, etc) to asses students' knowledge on science.	Create a digital story video to narrate "how we help on garden being a reality in the school"  Create an eBook with healthy recipes.  Recognize copyright and creative common materials.
<b>Advanced</b>		Practising critical and safe use of ICT	Licence creative common materials.

Safety and Problem solving



Growing as learners



**S** The aim of this activity is to encourage our students to reduce the amount of their waste, to prevent pollution, to be creative and to think like designers.

**B** The activity evolves in two lines. On the one hand, it promotes the use of recyclable materials to create useful objects, whether for use in the garden, decorative or for use at home.

**A** On the other hand, it explores concepts related to chemistry on basic elements such as carbon and nitrogen. We will learn the decomposition of materials and apply this knowledge to make a compost box and design a plan for the entire school to participate in making compost for our garden.

In technology, we will take advantage of gamification and interactive videos to create simple content to prepare campaigns such as "zero food waste lunch day" or the collection of leaves and wood for our compost.



## Sustainable Development Goals: Learning Objectives Examples



### Recycling

**Recognize and understand**  
Understands the importance of recycling and both minimizing the use of natural resources and preventing pollution.

**Argue and negotiate**

Make a nice scarecrow, a water reservoir and a watering can from the packaging waste.

Make crafts and decorative products as New Year's decoration.

**Reflect on one's own actions**

Organize a school wide zero waste lunch day.

**Solve problems and develop solutions**

Raise awareness in the community by selling decorative products and use the money to buy materials for a composting machine.



### Impact of human actions

**Recognize and understand**  
Understand the importance of composting and recognize the materials that can be decomposed in our compost box.

**Argue and negotiate**  
Argue about human impact on environment: decomposition and recycling of manufactured products. Connect climate change and natural disasters.

**Reflect on one's own actions**  
Write a letter to Earth expressing their feelings about pollution and writing what they most love on our planet.

**Solve problems and develop solutions**  
Design a quiz about the time needed for the materials to decompose in order to understand the impact on the environment.

## DigComp: Learning Objectives Examples

### Information and data literacy

**Foundation**

Watch selected videos giving all the information about composting. ([A compost box for your school garden](#))

**Intermediate**

Evaluate data and organize the material in an attractive way: wordclouds, digital walls, concept maps, mind maps, etc.

**Advanced**

### Communication and collaboration in digital environments

Interacting in a suite for education platform.

Use of a suit for education platform to visualize videos and teacher's selected material.

Upload posters and creations to the education suit.

Practising critical and safe use of ICT

### Digital contents creation

Identify and choose a digital cloud platform to create digital interactive games.

Brainstorming about vlogs types and use.

Create digital games and simple interactive resources for classmates and younger students.

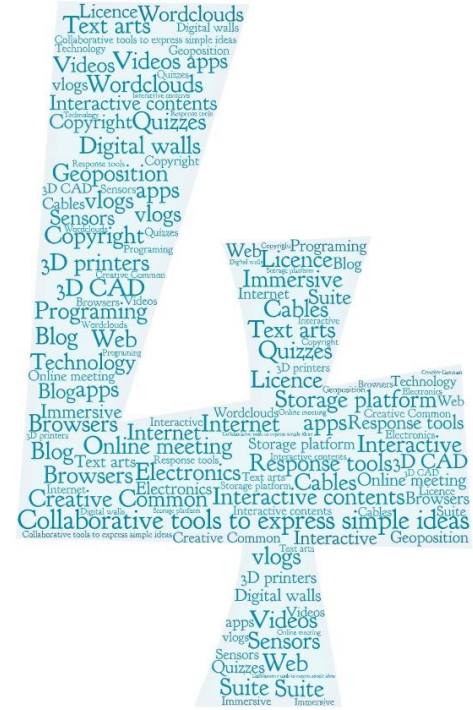
Create vlogs about crafts and decorations with recycled materials.

Recognize copyright and creative common materials.

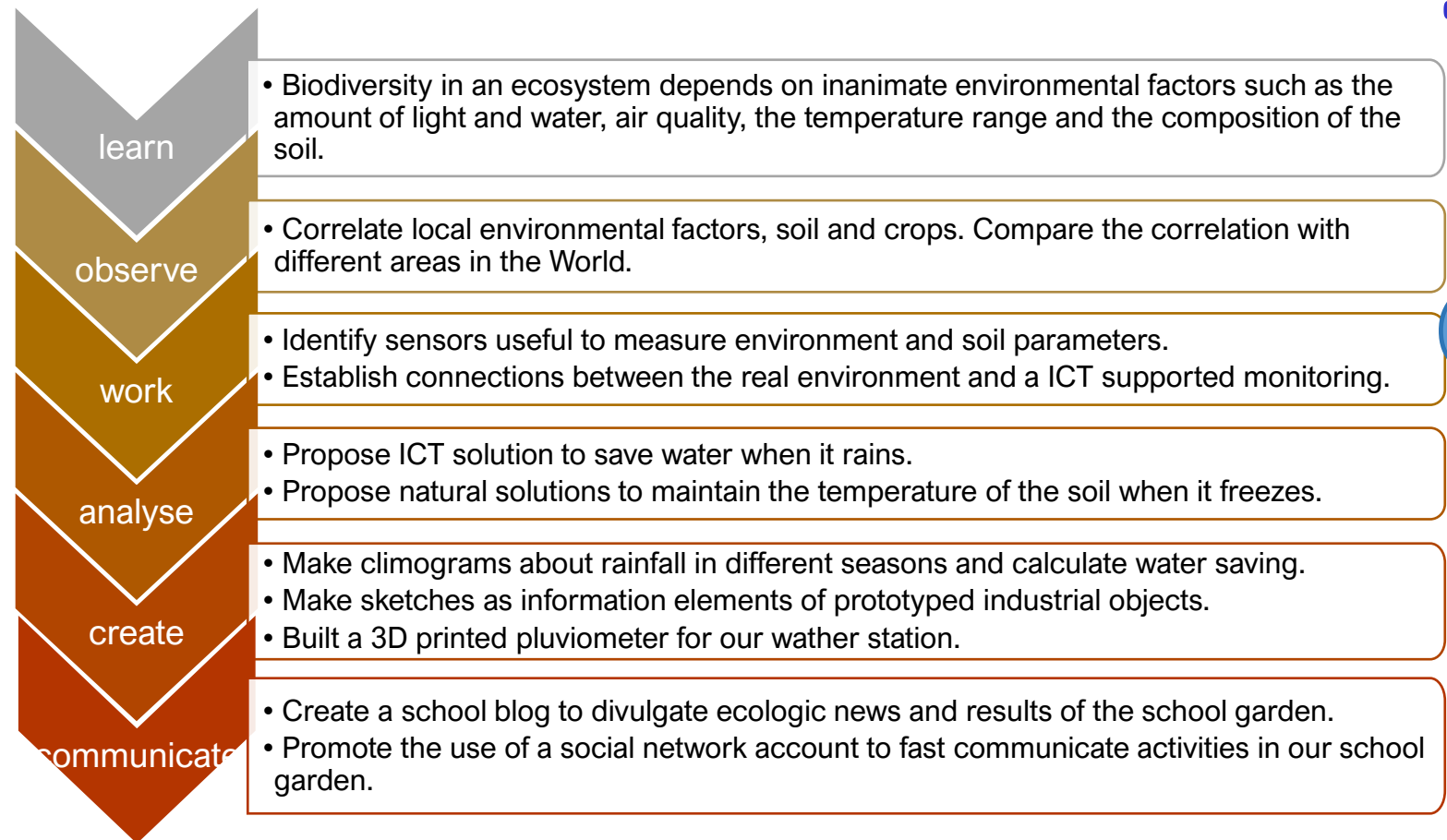
Licence creative common materials.

Safety and Problem solving





Growing as learners

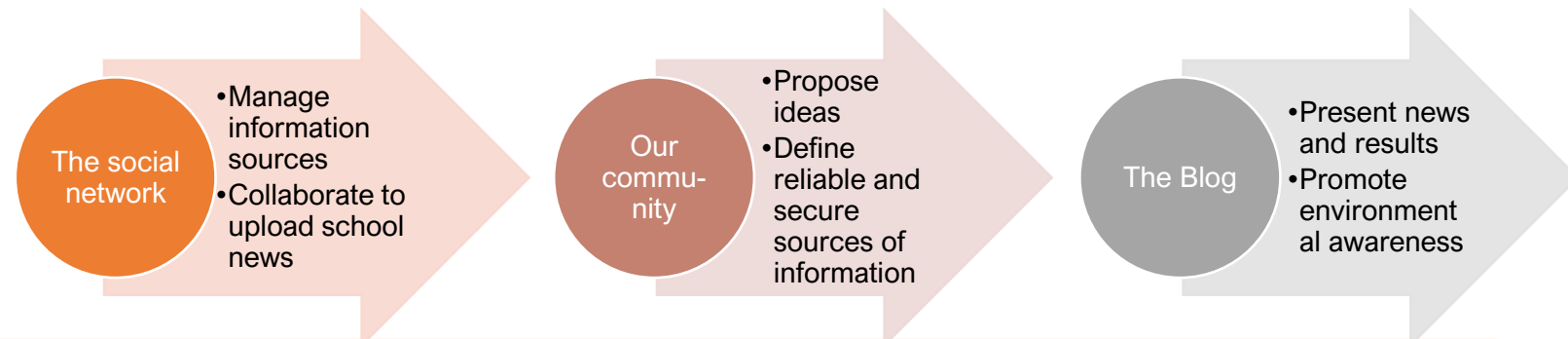


**T** Technology is very important at this level. We will learn to observe and use observation to make decisions.

**E** We learn about macroeconomics and agriculture with a global vision. We will talk about the changes in agriculture throughout history, for example, in crops, extensions, economy and technological development.

**G** Inanimate environmental factors are the common thread of the proposal. So we learn about simple sensors but we also build complex ones like the pluviometer with a 3D printer. We are true engineers. We designed and deployed a weather station, humidity sensors and ... a scarecrow in our garden? why not!

We use technology to be the promoters of environmental awareness at school with a blog and a channel on social networks.



## Sustainable Development Goals: Learning Objectives Examples

## DigComp: Learning Objectives Examples

	<b>The need of technology in agriculture</b>	<b>Sustainable actions in the garden</b>
<b>Recognize and understand</b>	Identify usage of technology in different agricultural aspects. Identify technological roles and new needs.	Identify humidity needs of different crops and understand dry and excess thresholds. Identify manual and ICT supported actions to save water in the garden.
<b>Argue and negotiate</b>	Argue about EU economic strategies in agriculture.  Recognize edge-cutting technologies and the potential use in agriculture.	Define a protocol for opening and closing and ICT supported irrigation system in the school garden. Observe the influence of temperature and solar radiation in seasonal crops. Discuss actions to prevent crop suffering.
<b>Reflect on one's own actions</b>	Communicate how one's own consumption affects working conditions in the global economy.	Design a suitable irrigation system for a small urban garden to save water based on observation both manual and ICT supported.
<b>Solve problems and develop solutions</b>	Design a local fruits and vegetables consumption calendar. Map and analyse sourcing routes for non-local fruits and vegetables.	Build ICT supported resources collaboratively to monitor our school garden.

	<b>Problem solving</b>	<b>Communication and collaboration in digital environments</b>	<b>Digital contents creation</b>
<b>Foundation</b>	Install and configure an IDE software for Arduino programming. Management of widgets and plugins. Understand a basic routine to use a 3D printer.	Identify methods to search, follow and organize the activity on social networks. Promote the use of a social network to fast communicate our school garden activities.	Recognize a data cloud service for IoT. Understand about basics in data transferring frames and formats. Understand the difference about observation and actuation.
<b>Intermediate</b>	Understand basics in electronics and make sketches for cable connection of sensors to Arduino kits (or alternative) .  Solve basic problems of energy harvesting to supply power to an Arduino kit (or alternative).	Design a wiki about garden concepts and applied technology.  Use a Control Version Application.	Program read and write functions to operate with sensors and actuators.  Insert cloud database push-pull instruction in a algorithm to read-push and write-pull.
<b>Advanced</b>	Design a pluviometer with a 3D cad tool and fabricate a prototype with a 3D printer.  Practising critical and safe use of ICT	Design, organize and manage a school blog to divulgate ecologic news and garden results.	Choose materials to fabricate a weather station with criteria of economy, security and respect for the environment.  Participate in the design of an app to observe the weather station measures.

Data literacy and Problem solving