JUNIOR CYCLE &
TRANSITION YEAR

GLOBAL GARDENS

Irish Aid
An Roinn Gnóthaí Eachtracha agus Trádála
Department of Foreign Affairs and Trade

WorldWise Global Schools



Exploring Global Citizenship Education through School Gardens in Post-Primary Settings

www.worldwiseschools.ie

About Worldwise Global Schools

WorldWise Global Schools (WWGS), funded by Irish Aid, is Ireland's national Global Citizenship Education (GCE) programme for post-primary schools.

WWGS aims to increase the spread and depth of GCE by supporting schools to integrate GCE into all aspects of teaching and learning.

We do this by providing a comprehensive range of supports and engagements, including grant funding, training, events, resources, and personalised support from our team.



About the Resource

This guide supports post-primary educators to approach learning outdoors and to create school gardens that explore issues in Global Citizenship Education (GCE).

It gives information, ideas and practical guidance for both Junior Cycle and Transition Year (Senior Cycle) groups.

Many resources have informed and complement this guide, and links to these resources are provided throughout.

Scan here to access this resource online, as well as the PowerPoint slide presentations for Topic 4 (Seeds) and Topic 5 (Food. Potatoes: famine and festivals).

All **bold underlined** text is a hyperlink, and can be accessed in the web version of the guidebook, available here.

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Acknowledgements

WorldWise Global Schools would also like to thank: Educators for Sustainability, Climate Action short course, The Year Round Organic School Garden, Living Classroom Publications, Lucy Bell, Niamh Ní Dhúill & Áine Ní Fhlatharta.

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This WWGS Guide was first published in 2026.

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What is Global Citizenship Education?

Global Citizenship Education (GCE) is an approach to teaching and learning that links global and local justice issues.

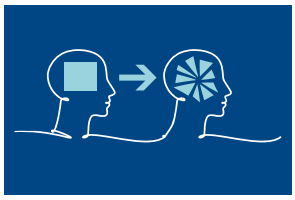
GCE explores the root causes of these issues and equips learners and educators to think critically, build empathy, challenge unjust global systems and take meaningful action towards a kinder, fairer and more sustainable world.

GCE inspires global solidarity by supporting people to fully realise their rights, responsibilities and potential as global citizens. For more on GCE, see the WWGS website.



Guiding Principles for GCE

WorldWise Global Schools has developed five Guiding Principles that direct all our Global Citizenship Education. See the WWGS website for more details on each Principle.



UNLEARNING & RECONSTRUCTING

Question what we know and make space for new ways of thinking.

a. Where do we get our information from? Whose voices do we not hear?

b. How can we create a world that is just and sustainable for all?



FINDING ROOT CAUSES

Dig deeper to find the causes of an inequality or injustice.

a. What are the historical causes?

b. Why do inequalities and injustices persist?



PRIORITISING HUMAN RIGHTS

Our actions and solutions to global issues should not lead to the exploitation of people.

a. Why are some people's rights respected, while other people's are not?

b. Are everyone's rights valued in the solutions presented on this issue?



MAKING LOCAL TO GLOBAL LINKS

Connect local issues with global issues and global issues with local issues.

a. How are we connected to global inequalities and injustices?

b. What can we do locally and nationally that will have a meaningful impact globally?



ACTING IN SOLIDARITY

Work together on an equal footing to challenge injustice.

a. Do our words and actions potentially reinforce inequality and injustice?

b. Can we think of any examples (locally or globally) that show solidarity with those challenging an injustice?

For each topic in this resource, links are given to the most relevant Guiding Principle.

What is a global garden?

A global garden is designed to maximise learning opportunities in an environmentally sustainable way, in a world facing climate change and a growing demand for limited resources such as water and energy sources. It is a living asset to educate our communities about global justice and to show how our local actions have a global impact.



Students working in the global garden at North Wicklow Educate Together Secondary School
Credit: Kate Minnock

A global garden aims to:

- reduce food miles and carbon emissions by growing local fruit and vegetables
- use organic, open-pollinated seeds which can be saved and passed on
- avoid oil-based synthetic fertilisers and pesticides
- harvest rainwater and reduce landfill waste by composting
- limit its carbon footprint by using locally sourced, reused and renewable materials
- include plants which can help to explore historical, cultural and economic contexts
- use the experience of growing fruit, flowers and vegetables to enhance learners' understanding of our connections to people around the world
- develop critical thinking skills
- take a solidarity approach to global justice issues such as exploitation and trade, child labour, farmers' rights and food waste
- build the knowledge, skills and values needed to make a positive contribution, both locally and globally, to a more just and sustainable world

Why learn outdoors?

The evidence

The value of outdoor learning within formal education has been widely acknowledged in academic literature. The benefits include improved health and wellbeing (Lynch et al, 2016; Higgins & Christie, 2020; Forde et al, 2018); supporting learners to make pro-environmental decisions (Chawla & Derr, 2012; Cheng & Monroe, 2010; Chawla, 2007); reducing stress levels, and relieving the symptoms of attention difficulties such as ADHD (Kuo & Taylor, 2004).

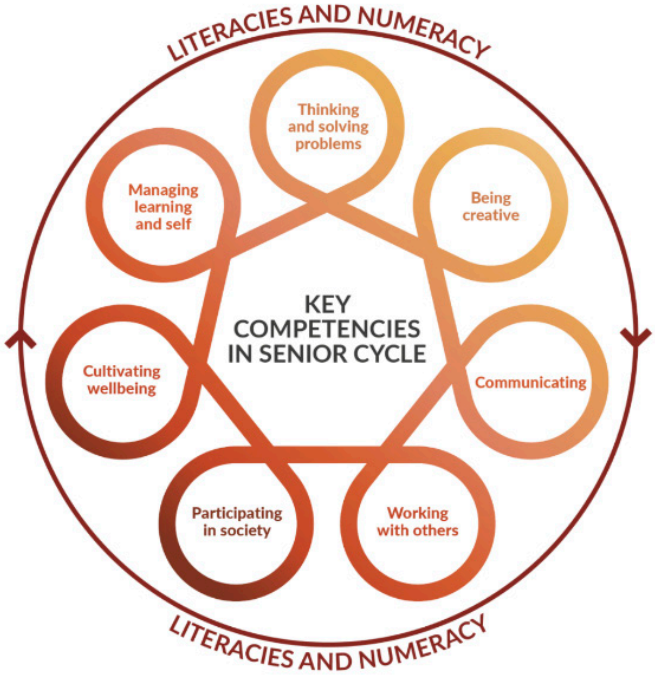
The curriculum

Learning outdoors can support the Junior Cycle key skills and Senior Cycle key competencies below.

Junior Cycle Key Skills



Senior Cycle Key Competencies



NCCA
An Chomhairle Náisiúnta Curaclaim agus Measúnachta
National Council for Curriculum and Assessment

For more specific links with Junior Cycle and Senior Cycle, see the tables on the next two pages.

Junior Cycle

Links between the eight Key Skills in the Framework for Junior Cycle (2015), the topics in this guide & the WWGS Guiding Principles for GCE

JC KEY SKILL	KEY SKILL ELEMENTS & EXAMPLES IN THIS GUIDE	RELEVANT WWGS GUIDING PRINCIPLES FOR GCE
Managing information & thinking	• Gathering, recording, organising & evaluating information & data • Thinking creatively & critically (E.g. **Topic 2. Soil**)	Unlearning & Reconstructing Finding Root Causes
Being creative	• Imagining • Exploring options & alternatives • Implementing ideas & taking action • Learning creatively (All the topics in this guide)	Unlearning & Reconstructing Finding Root Causes Prioritising Human Rights Making Local to Global Links Acting in Solidarity
Communicating	• Listening & expressing myself • Performing & presenting • Discussing & debating (E.g. **Topic 4. Seeds A: Diversity**)	Unlearning & Reconstructing Finding Root Causes Prioritising Human Rights Making Local to Global Links Acting in Solidarity
Working with others	• Cooperating • Contributing to making the world better (All the topics in this guide)	Finding Root Causes Prioritising Human Rights Making Local to Global Links Acting in Solidarity
Being numerate	• Developing a positive disposition towards investigating, reasoning & problem-solving • Seeing patterns, trends & relationships • Gathering, interpreting & representing data (E.g. **Topic 3. Water**)	Unlearning & Reconstructing Finding Root Causes
Being literate	• Expressing ideas clearly & accurately (E.g. **Topic 4. Seeds A: Diversity**)	Unlearning & Reconstructing Finding Root Causes
Staying well	• Being healthy, physical & active (All the outdoor activities in this guide)	Prioritising Human Rights Making Local to Global Links Acting in Solidarity
Managing myself	• Being able to reflect on my own learning (E.g. **Topic 6. Reflection activities**) • Using digital technology to manage myself & my learning (E.g. **Topic 5. Food. Potatoes: famines & festivals**)	Unlearning & Reconstructing Finding Root Causes Prioritising Human Rights Making Local to Global Links Acting in Solidarity

Senior Cycle

Links between the seven Key Competencies in the Framework for Senior Cycle (2024), the topics in this guide & the WWGS Guiding Principles for GCE

SC KEY COMPETENCY	KEY LEARNING OUTCOMES/ATTRIBUTES & EXAMPLES IN THIS GUIDE	RELEVANT WWGS GUIDING PRINCIPLES FOR GCE
Thinking & solving problems	• Apply critical thinking • Identify problems & potential solutions & make informed decisions • Be open-minded, speculate, look for different points of view and explore multiple possibilities (E.g. **Topic 4. Seeds A. Diversity**)	Unlearning & Reconstructing Finding Root Causes Making Local to Global Links
Being creative	• Develop strategies & values which support creativity • Participate in cultural experiences & learn from creative works • Make connections across learnings & between prior & new knowledge (E.g. **Topic 5. Food. Potatoes: famines & festivals**)	Unlearning & Reconstructing Finding Root Causes Prioritising Human Rights Making Local to Global Links Acting in Solidarity
Communicating	• Develop habits & dispositions to communicate meaningfully & effectively • Be open to diverse perspectives & worldviews (All activities in this guide, which use many tools, formats & learning methods)	Unlearning & Reconstructing Finding Root Causes Making Local to Global Links Acting in Solidarity
Working with others	• Develop strategies, values & dispositions to work more meaningfully with others • Decide things as a group & work together to achieve shared goals (E.g. **Topic 4. Seeds B. Flowers**)	Unlearning & Reconstructing Prioritising Human Rights Making Local to Global Links Acting in Solidarity
Participating in society	• Explore complex social issues • Critique, challenge, protect, transform systems • Contribute to democratic values; uphold human rights • Make choices which contribute to ethical & sustainable futures (E.g. **Topic 3. Water**)	Unlearning & Reconstructing Finding Root Causes Prioritising Human Rights Making local to Global Links Acting in Solidarity
Cultivating wellbeing	• Cultivate the wellbeing of self & others • Sustain relationships of care to people & planet • Feel empowered & act in solidarity (All outdoor learning boosts wellbeing)	Prioritising Human Rights Make Local to Global Links Acting in Solidarity
Managing learning & self	• Respond to complexity & uncertainty • Reflect on and evaluate earning • Make informed choices & take action (E.g. **Topic 6. Reflection activities**)	Unlearning & Reconstructing Finding Root Causes Prioritising Human Rights Acting in Solidarity

Structure of this Guide

Below is a note on time frame followed by a note on getting started in your global garden. The guide then explores five topics:

1. Set-up
2. Soil
3. Water
4. Seeds: A Diversity, B Flowers
5. Food. Potatoes: famines and festivals

Each topic includes subject links, information for educators, activities for learners and extension activities. **Topic 6** suggests reflection activities to complete after any of the topics above.

Appendix 1 gives month by month suggestions for activities.

Appendix 2 has ideas for auditing, planning and mapping the school garden.

Time frame

This guide can be adapted for every level of post-primary education. The time taken to cover each activity is flexible, given the broad range of educators' specific knowledge, learners' prior knowledge and skills, and the space and materials available in each school. Teachers can therefore carry out a short 20-minute element of any activity, or build the activity over one or more class periods, according to the school's needs.

Getting started

- If this is your first time teaching GCE outdoors, start small. Pick the practical activity you feel most confident with. For example, you can grow organic cress or winter salad in a tray on a windowsill.
- Use seeds supplied by Irish Seeds Savers or Brown Envelope Seeds, and grow them in organic, peat-free soil, in order to discuss global links such as seed sovereignty and soil health in the Global South.





- For more experienced GCE educators, you may wish to look at the extension activities at the end of each section, which dig more deeply into global issues and enhance learning.

TOPIC 1 SET-UP

Subject links: Wood Technology, Science

Aim: to practise responsible consumption when creating a growing space.

Information for educators:

- Use this section of the resource, together with the introductory pages, to help you and the learners set up your global garden space(s).
- Your growing space will depend on the area available and its location. You may be starting your global garden in a small yard or adding to an existing school garden. You can create any size wooden raised bed using reclaimed timber from a local source such as a zero-waste group. Topsoil could be sourced from some of your garden supporters: for example, home composts or a local landscaping company. You may choose to add layers of seaweed or manure to the raised beds. A local equine centre or stables may donate well-rotted manure to your school.
- Alternative growing spaces could be polystyrene boxes which you could get for free from fish suppliers or some vegetable suppliers. These are lightweight and help to keep soil warm for optimal growing.



Activity 1: Making a raised bed

Materials:

- Timber 15cm height x 5cm length to suit your space
- Saw, nails and hammer or screws and screw gun
- Topsoil
- Manure/seaweed (optional)
- Wheelbarrow (optional)
- Gloves, spades

Step 1: Choose your growing space or container. If making a raised bed, you will need to measure the space available and leave walking space on all sides.

Step 2: The minimum height of the bed should be 15cm, with the thickness of the wood a minimum of 5cm. Your bed should be deep enough for root vegetables (30-40 cm) and a width that allows learners to reach the middle of the bed with ease.

Step 3: There are many simple tutorials and templates available online: for example, How to make a raised bed.

Step 4: You may wish to use the layer method. If so, add cardboard to the base, then a layer of seaweed or manure, then a topsoil layer, followed by seaweed or manure and ending with soil at the top. The seaweed or manure layer is a natural way to add fertility to the soil.



Activity 2: Making a cold frame

Materials:

- Timber for cold frame to suit your space
- Saw
- Two hinges and a door handle or knob
- Wood screws
- Clear plastic bottles
- Drill
- Bamboo canes or thin hazel rods

Step 1: Design and create an upcycled cold frame using recycled plastic bottles. A cold frame is an easy way to extend the growing season if your school does not have access to a polytunnel or covered area, or if space is limited. You could work with your Wood Technology department or get help from a skilled parent.

Step 2: The cold frame can be designed to sit over an existing raised bed (add a stake to attach it to the bed to prevent it from blowing off). Alternatively, it can stand on the ground to start seeds off in trays or pots. Make it higher on one side to allow rain to run off.

Tutorials and templates can be found at DIY cold frames and Easy-to-build cold frame.



A cold frame made using plastic bottles
Credit: Greenside Up CC BY 2.0

Extension activities

See the WWGS Wood Technology Guide topic Rethinking Waste (from page 47) for more GCE learning opportunities connected to the practical activities above.

TOPIC 2 SOIL



A farmer holding healthy soil
Credit: US Department of Agriculture CC0 1.0



Soil degradation from overgrazing and drought, South Dakota. Left of the fence shows poor plant productivity. To the right are healthy plants.
Credit: USDA NRCS South Dakota CC BY-SA 2.0

Subject links: Science, Geography

Aim: to help learners recognise the importance of healthy soil and that they are part of complex, interdependent systems.

Information for educators:

- There are three main activities in this section. You can do all three and end with a reflection activity over several class periods, or you can choose any activity in isolation.
- All three activities have the same aim above.
- These activities support the **WWGS Guiding Principles for GCE** (see page 1 and the WWGS website), especially:

  Guiding Principle 2: Finding Root Causes

  Guiding Principle 3: Prioritising Human Rights

  Guiding Principle 4: Making Local to Global Links

Activity 1: Soil carbon and soil depletion

Materials and preparation:

- Computer, projector and screen for steps 1-3 indoors (discussion and video)
- Printed soil depletion facts (for step 4 outdoors) cut into strips, one fact per learner
- Extra strips – copies of the same facts for learner pairs and groups of four, depending on the class size – added to a suitable container
- Two buckets of soil samples:
  - o One bucket of poor-quality soil from an area of school grounds which has been heavily compacted or walked on and/or sprayed with synthetic fertilisers. Alternatively, mix sand with handfuls of any soil type
  - o One bucket of rich-quality soil from existing school or community garden or a woodland, or use shop-bought organic bag of topsoil
- Two buckets, a trowel, old newspaper, magnifiers and tweezers, learner copies or notebooks (one per group), pencils.

Step 1 (indoors): Ask learners what they know about soil. Ask them to think of reasons why soil is important for all life on earth.

Step 2: Expand on learners' knowledge to ensure they understand how healthy soil helps to grow our food and trees. It also absorbs rainwater to prevent flooding and sequesters (stores) carbon from the atmosphere, helping to tackle climate change.

Step 3: Watch the video, Kiss the Ground – the Soil Story (3 min 57 sec) to show the above benefits of soil in a visual way.

Step 4 (outdoors):

- Ask learners to pick a fact, read it to themselves and then circulate to find all the learners who have the same fact as them.
- Repeat the above, asking learners to pair with another learner who has a different fact, and to share their facts.
- Repeat the above, asking learners to gather in groups of four different facts.

Discussion questions:

  - o Ask learners which facts they already knew, and which fact was the most surprising.
  - o Explain that global soil depletion threatens the global food supply, drinking water and biodiversity.
  - o Ask learners who they think would be most affected by soil depletion and where they think these people might live.

SOIL DEPLETION FACTS
90% of the Earth's topsoil is likely to be at risk by 2050.
Soil erosion could reduce crop yields by up to 10% by 2050.
The equivalent of one soccer pitch of soil erodes every five seconds.
Soils are becoming severely degraded due to a combination of intensive farming practices and natural processes.

For an extension activity, learners could research soil depletion in Ireland. See Soil, forests and biochar (Teagasc, the Agriculture and Food Development Authority).

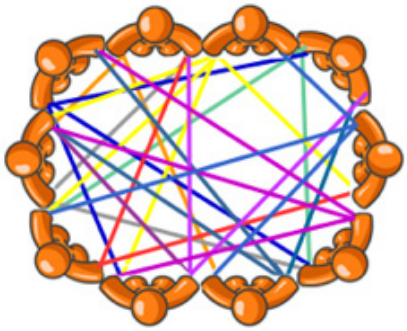
Step 5: Comparing two soil samples (this can be done outdoors if there are enough tables).

- Place a piece of old newspaper on each table.
- On top of the newspaper, give each group of 4 a handful of poor-quality soil and a handful of rich soil.
- Using magnifiers and tweezers, have learners compare the two samples.
- Ask each team to notice all the differences they can between these two samples, and everything they wonder about the samples. Ask them to choose a team member to record their findings.
- After several minutes, invite each group to share their observations with the class.
- Ask learners to consider the statement that soil is full of life. What evidence did they gather from their observations to support this claim?
- Ask if any of them found any life forms moving around in their soil.
- After learners have shared their evidence, tell them that some soil organisms are too small to see without a microscope. In fact, in one teaspoon of healthy soil, there are more microorganisms than there are people on earth!

Step 6: Sequestering (storing) carbon in the soil

- Ask learners to take a handful of the healthy soil and find where it has bunched together. Now do the same for the poor-quality soil. What differences do they see?
  Explain that all the sponginess and air pockets they notice in the healthy soil are formed by 'glues' made from dead fungi and bacteria (microorganisms). These glues are full of carbon that could be polluting our atmosphere but, instead, are now sequestered in our soil. (This is taken from The Soil Story.)

Activity 2: Soil web of connections



Materials and preparation:

- Ball of wool, scissors
- Printed soil web of connections, one word per learner. Add to or double up words so that every learner has at least one web word. There are 24 provided here:

soil	worm	strawberry	tree	leaves	farmer
sun	ant	potato	wheat	fungi (microorganisms)	fertiliser
rain	butterfly	tomato	grass	bacteria (microorganisms)	chef
carbon	bee	sunflower	cow	algae (microorganisms)	learner

Step 1: Make a space free of tables and other furniture or, ideally, do this activity outdoors. Ask learners to stand in a circle and take one word each from the container.

Step 2: Tell learners they are going to use the string to map out all the connections they can find between each word. Give an example to start: 'I'm a worm. I'm connected to the leaf because I eat decaying matter.' Keeping hold of the end of the string with one hand, ask the person beside you to walk across the inside of the circle, unrolling the string as they go, and to pass the ball of string to the person holding the word 'leaf'.

Step 3: Next it is the leaf's turn to make a connection. The leaf can nominate the person beside them, or anyone else in the circle who still doesn't have a connection, to pass the ball of string for them. Continue until everyone is linked by at least one connection. Allow participants to help each other come up with connections if they are stuck.

Step 4: Ask learners to observe the web they have created. When we do something to one part of the string (pull or drop it, for example), the entire network changes. All the words are connected. For more details on this activity, see the Connections Web on the WWGS Activities page.

Discussion questions:

- What happens when you drop the string? If something changes – for example, it doesn't rain – this means the worms or trees will die. (Ask 'Rain' to pull their string to the ground. Can everyone feel this?)
- How far do these effects reach? How could they affect humans?
- Ask learners if they like to eat pizza. Which parts of the web are most connected to pizza? Ask learners what would happen if …? and encourage them to come up with scenarios that might affect, say, tomatoes (they might suggest extreme heat or cold, disease or pests etc.).
- Ask learners to imagine that there is no rain, making the soil dry. How might people be affected differently? Will some people be more at risk from hunger or job loss than others? Who?
- Ask learners to consider the role of fertilisers. Tell them that fertilisers improve soil fertility and can be natural, such as clover or seaweed, or synthetic, such as Calcium Ammonium Nitrate (CAN). CAN is the most widely used nitrogen fertiliser on Irish farms and contributes to soil depletion and greenhouse gas emissions. Ask learners what solutions they can think of to encourage farmers to use natural fertilisers to ensure good soil health.
- Let them try to untangle the web without letting go of the string (keep the scissors handy in case this becomes too difficult!).

Activity 3: Making healthy soil (wormery/green manure)

If you skipped the **Activity: Soil carbon and soil depletion** (page 9), discuss soil and carbon with learners. Explain that, to bring our carbon cycle back into balance, we need to do two things: reduce the amount of carbon we are releasing into the atmosphere, and capture and store some of the excess carbon that we have already pumped into the atmosphere. Creating healthy soil gives a place to store that carbon. There are two options below for improving the health of your soil: A) Making a wormery and B) Growing green manures.

Option A: Making a wormery

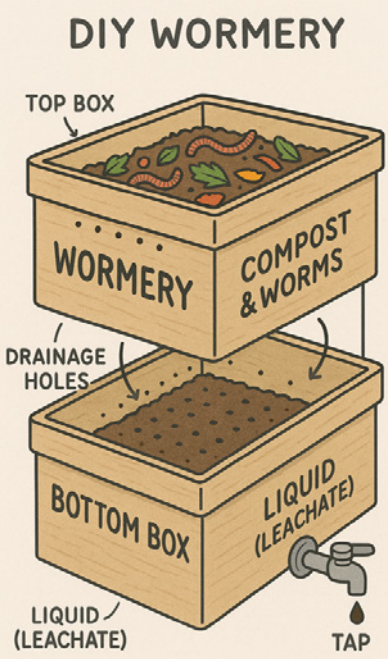


Diagram of a wormery



Contents of the wormery's top box (compost, kitchen waste etc.). See Step 2 below.
Credit: Katie Chapple

Materials:

- Composting worms (you can order online at Quickcrop and they will be sent by post in a sealed box)
- Two boxes approximately 30 x 50cm that fit together with lid for top box
- Compost, food waste
- Drill and drill bit or awl for punching holes, tap (optional)
- Newspaper and cardboard, two bricks to stand wormery on

Step 1:

- Drill small holes in the top box at the sides and base. Leave the bottom box with no holes so that worm tea (liquid fertiliser made from worm manure) can collect.
- If you are using a tap (optional), make a tap hole as low down as possible in the bottom box and attach your tap.

Step 2: Fill the top box with compost or soil. Add newspaper, kitchen waste such as crushed eggshells, tea bags, vegetables (not onion or garlic), pasta and other leftovers (avoid dairy and meat). Place the lid on top securely and stack the top box on the lid-free bottom box. Place the stacked boxes on two bricks and cover with cardboard.

Step 3: Top it up with kitchen waste (little and often) and small amounts of newspaper and damp cardboard to keep moist.

Step 4: After a few weeks, release worm tea from the tap or remove the bottom box and pour worm tea into a cup. Dilute 1:10 and use it on your plants.

See the video How to make a wormery (5 min 17 sec) from Keep Scotland Beautiful to show the steps above. Note: the summer months see the most growth. Worms will need feeding over the three-month summer break, and their castings must also be drained off.

Option B: Growing green manures

Green manures are fast-growing plants that cover bare soil to smother weeds and prevent soil erosion. Digging them into the ground restores nutrients and improves soil structure.

Materials:

- Trowel or fork
- Organic peat-free compost
- Organic open-pollinated comfrey and/or clover seed packets
- Watering can with rose head



Green manure crop from clover
Credit: Kate Jewell CC BY-SA 2.0

Step 1: Green manures such as clover and comfrey help pollinators, act as a natural fertiliser and help to create healthy soil. Comfrey can also be used in your compost bin as an activator, to heat up the compost and accelerate its breakdown into compost ready to use in your garden.

Follow instructions from the table in **Topic 4. Seeds. Activity: Growing flowers for biodiversity and soil health** (page 25) or directly from your seed packets.

Step 2 (indoors): Show the Symphony of the Soil trailer (2 min 17 sec). See also Regenerative soil practices at the Airfield Estate in Dublin.

Step 3: Ask learners to carry out one of the reflection options in **Topic 6. Reflection activities.**

Extension activities

Your learners may wish to:

1. make a compost bin with upcycled wooden pallets. There are plenty of resources online with materials required and step-by-step instructions. If you and your learners do not have the time or materials to make a compost bin, you can contact your local council, which may donate one to your school.
2. make signs for the garden with slogans such as ‘artificial-free soil’.
3. organise a trip to an organic farm or community garden in your area.

TOPIC 3 WATER



A march in Cochabamba, Bolivia, commemorating citizens' victorious fight against water privatisation
Credit: Peg Hunter, Documentary Photographer and Videographer CC BY-NC 2.0

Subject links: Geography, Art, Science, History

Aims:
- to help learners recognise the importance of water, water sanitation, groundwater depletion and contamination
- to give learners opportunities to take action in their school global garden to conserve water and to support global campaigns for clean, safe water for all

Information for educators:

- There are two main activities in this section. You can do both, as well as some of the extension and reflection activities, over several class periods. Alternatively, you can choose any one activity in isolation.
- All activities share the aims above.
- All activities support the **WWGS Guiding Principles for GCE** (see page 1 and the WWGS website), especially:
  Guiding Principle 1: Unlearning and Reconstructing
  Guiding Principle 2: Finding Root Causes
  Guiding Principle 3: Prioritising Human Rights

Activity 1: Soil carbon and soil depletion

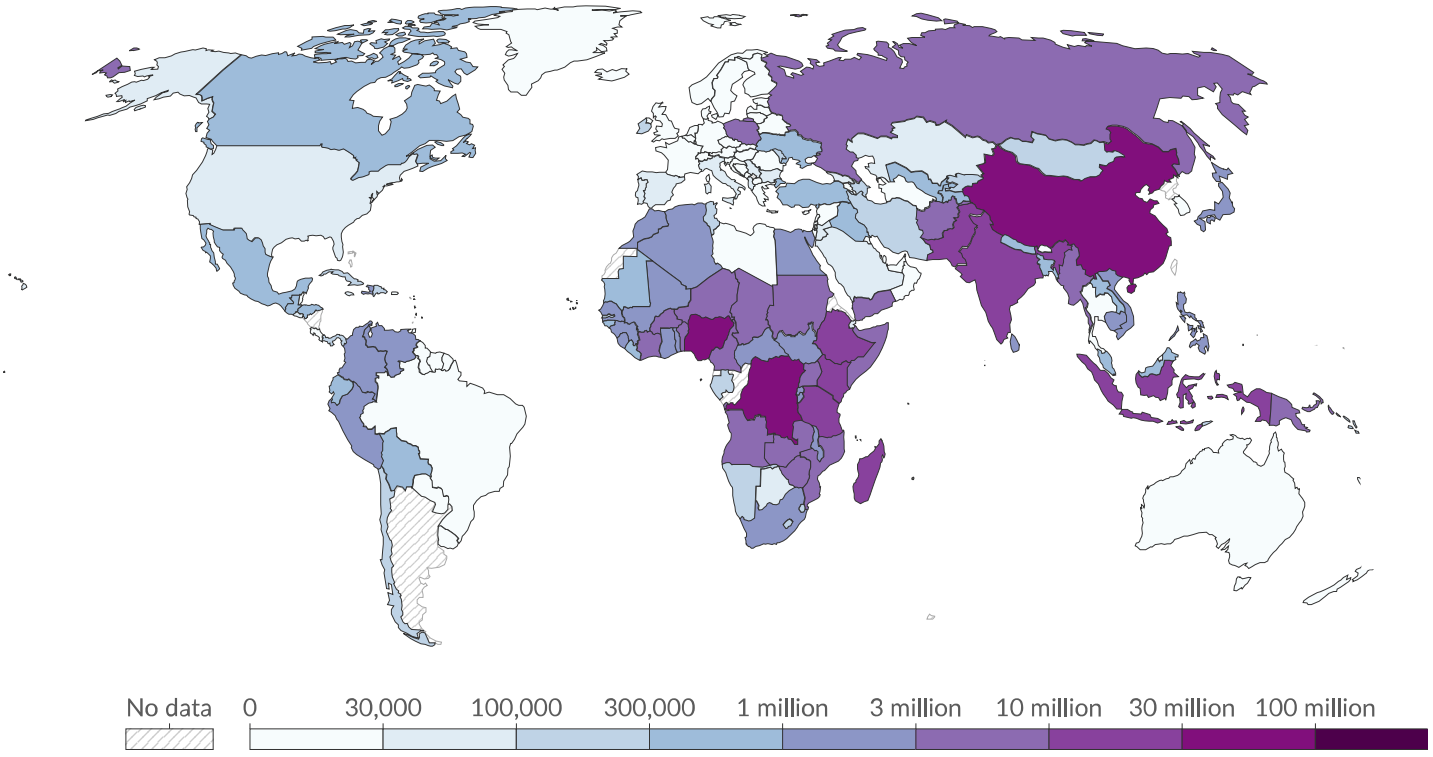
Materials and preparation:

- Two glasses of water, one safe for drinking and one unsafe e.g. muddy rainwater
- Clipboards, copy or paper, a pencil or pen per pair
- Access to school window(s) and paint markers with a range of colours
- Clean water map (below) colour-printed A4, one per pair
- Standard world map colour-printed A4, one per pair (optional)

This activity can be carried out indoors or outdoors.

People not using improved drinking water sources, 202

Improved drinking water sources[1] are designed to deliver safe water and include: piped water, boreholes or tubewells, protected springs or wells, rainwater, and packaged or delivered water. If no safe and reliable water source is available, people use surface water sources or unprotected springs or wells.



Data source: WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (2025)
OurWorldinData.org/water-access | CC BY

1. **Improved drinking water sources** are those that have the potential to deliver safe water by nature of their design and construction, and include: piped water, boreholes or tubewells, protected dug wells, protected springs, rainwater, and packaged or delivered water.

Clean water map colour-printed A4, one per pair
Credit: Our World in Data CC BY 4.0

Step 1: Show learners two glasses of water, one clean and one muddy/unsafe for drinking.

Ask learners which glass they would like to drink from.

Ask them how they can tell if one is safe and the other unsafe.

What might happen if they drink unsafe water?

Learners can Think-Pair-Share their answers (see The Teacher Toolkit for instructions) or record their answers in their copies or on sheets of paper.

Step 2: Write **1:4** large on a window where learners can view it. Ask them what they think this ratio represents.

Explain that access to clean water is one of our most basic human needs, but one in four people in the world do not have access to safe drinking water.

Step 3: Write **1 million** large on a window where learners can view it. Ask them what they think this number represents.

Explain that unsafe water is responsible for more than a million deaths each year.

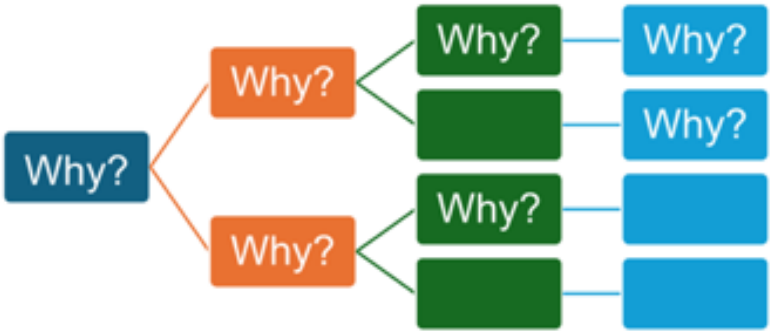
Step 4: Hand out the world map showing access to clean water worldwide, one per pair.

Explain that the map shows where in the world people have easy access to clean water.

Ask learners to answer the following questions:

- Where is their country? This could be where they currently live, or lived in the past, or a place they visited on holidays.
- Where is it on the clean water map?
- Which countries have good access to clean water? Which continent(s) are they in?
- Which countries have less access to clean water? Which continent(s) are they in?
- How equal is access to clean water around the world?

Step 5: The Why-Why-Why Chain is a root cause analysis technique used to explore the cause-and-effect relationships underlying a particular issue.



- Invite learners to consider the problem (lack of access to clean water) and to ask each other in pairs 'Why' four or five times, encouraging each other to delve deeper into the underlying causes of the problem. Learners create a draft brainstorm of their four or five Whys in their copies or on sheets of paper.
- When learners cannot go deeper with their answers, share the following headings to use as prompts for them to consider more 'Whys':

  Conflict over water supplies

  Using water as a weapon of war

  Water pollution

Step 6: Ask pairs to share their Whys. Give them the following facts to expand their answers:

Conflict over water supplies

- Conflict arises as major rivers cross national boundaries, arid zones and areas with limited resources. See Water as a weapon of war in the New Internationalist and the Pacific Institute's Water Conflict Chronology.

Using water as a weapon of war

- 2019: Turkey invaded Rojava in Syria, bombing the main water station on the first day of the invasion (see the BBC video report 3 min 34 sec).
- 2023-24: Israel began preventing supplies needed for safe water from entering the Gaza Strip, leaving 70% of the population in Gaza drinking salinised and contaminated water. See Trócaire's Water Justice Tree.

Water pollution

- Chemicals and waste from farms washing into streams and rivers
- Untreated sewage from toilets that mixes with clean water supplies
- Oil spills



Oil spill in the Sundarbans mangrove forest, Bangladesh
Credit: Kallol Mustafa CC BY-SA 4.0

Step 7: Ask pairs to join into groups of four. Learners combine their initial brainstorms (on why there is lack of access to clean water globally) into one group brainstorm and add visuals or doodles to illustrate some of the points. They can divide group roles according to strengths, such as art, clear writing, colourful headings, and create a design.

Step 8: Assign each group to a school window space to create their Why-Why-Why Chain in a colourful and visual way to educate others in the school about the root causes of the lack of access to clean water.

Step 9: Choose an activity from **Topic 6. Reflection** activities to reflect on this activity.

Activity 2: Groundwater depletion

Materials and preparation:

- Large storage container(s) for water such as a gallon water bottle from a water filter
- About ten plastic 2-litre bottles
- Scissors
- A mitre saw, hole saw or sharp blade (to use with supervision)
- Rubber gloves
- Tap fitting and bricks

Before this activity, you will need to assess the most suitable space for a water butt or other storage container with your school caretaker and ask him to cut the downpipe to a level that suits your container height.

Step 1: Ask learners what they already know about groundwater. Ask them what groundwater has to do with a school garden or growing food.

Step 2: Tell learners that water is moving beneath their feet. Groundwater provides about half the world's population with drinking water and nearly half the water used globally on crops.

There is water moving through the ground beneath your feet. Groundwater – the world's largest freshwater store – provides about half of the world's population with drinking water and nearly half of all water used to water crops. It sustains rivers, lakes and wetlands during droughts.

Why should we care?

Groundwater across the world is being depleted and contaminated. Ask learners why this might be.

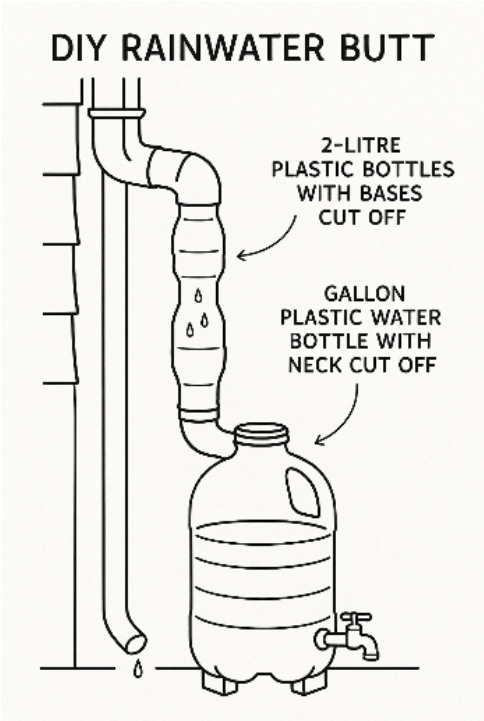
Reasons include:

- Industrial monoculture (one-crop) farming, which uses lots of water and synthetic (inorganic) fertilisers. This destroys biodiversity, such as insect populations, and pollutes groundwater.
- Farm wastewater seeping underground
- Sewage
- Climate change (increased global temperatures)

Step 3: Water conservation. Rainwater can be saved and used in the school garden. Learner groups build a series of water butts or containers.

- Cut the neck off the gallon water bottle and bases from the 2-litre bottles using a mitre saw or a sharp blade. Beginner holes may be started in advance to help learners.
- Attach the 2-litre bottles together so they sit under the cut downpipe and into the neck of the gallon water bottle to catch the rainwater.
- Measure the space for your tap and cut a hole in the gallon water bottle using a hole saw or sharp blade (with supervision).
- Attach the tap fitting and lift your DIY water storage on to bricks, placed high enough to fit a watering can underneath the tap. (See also the instructions for a plastic bottle rainwater downpipe at Autodesk Instructables.)

Step 4: Choose the most suitable activity to carry out to reflect on this activity (see **Topic 6. Reflection activities**).



The 2-litre bottles form a 'pipe' between the downpipe and the gallon bottle

Extension activities

Your learners may wish to:

1. make a ‘Tippy Tap’ to learn more about water sanitation. Tippy Taps are a DIY handwashing tool made from a plastic container that holds water. They are a cost-effective way to improve handwashing, especially in areas with limited access to water and sanitation infrastructure. See the Instructions for making a tippy tap by World Vision and the video (2 min 13 sec) by Columbia Climate School.
2. look deeper into justice issues, such as water conflict.
3. set up a weather station to measure rainfall. For guidance, see Beyond Penguins and Polar Bears.
4. make a DIY water filtration system from a 2-litre plastic bottle. See Autodesk Instructables and other websites for instructions.
5. carry out water challenges using buckets and cut gutter pipe as a fun way to learn about water conservation. Set up a timed challenge where groups must carry 5 litres of water from one end of the garden to another as a relay, using basins or a series of cut gutter pipes. Note each group's time and measure who loses the least amount of water in the process.
6. create signage to place beside taps and water filters to highlight global water issues.
7. be inspired by water activists in Bolivia who won a campaign against water privatisation. See the teaching and activities guide Climate Change is About… Water by the Democracy Center, Bolivia.
8. explore the Clean Water for All resource in The World’s Largest Lesson by UNICEF.

TOPIC 4 SEEDS

A. Diversity



Saving seeds in the global garden at North Wicklow Educate Together Secondary School
Credit: Kate Minnock

Subject links: Home Economics, English, Science, Geography

Activity 1: Seed types & seed saving

Aim:
- to understand the importance of seed diversity and organic, open-pollinated seeds in supporting sustainable food systems
- to experience saving seed

Information for educators:

- This activity supports the WWGS Guiding Principles for GCE (see page 1 and the WWGS website), especially:

  Guiding Principle 2: Finding Root Causes

  Guiding Principle 3: Prioritising Human Rights

  Guiding Principle 4: Making Local to Global Links

  Guiding Principle 5: Acting in Solidarity

  By connecting local seed saving with global genetically modified (GM) seed varieties and the global seed industry structure, learners begin to critique the role and accountability of systems, structures and corporations.
- This activity can begin indoors using a projector to show the slide presentation Topic 4. Seeds. If you wish to do the lesson outdoors, you can print **slides 3-8** in advance.
- It includes a walking debate. For instructions on this, see the WWGS Activities resource page 23.

Materials and preparation:

- Computer, projector and screen for slide presentation Topic 4. Seeds
- If choosing to do the lesson outdoors, print the text on **slides 3-8**
- Seeds for saving (details below)
- Envelopes, bags or containers for seed, clean cloth (optional)

Step 1: Read **slides 3-5** with your group. If doing the activity outdoors, print **slides 3-5**. Divide learners into three groups. Ask each group to read their slide or printout together and plan an answer to share with the class about their slide question in their own words:

- Why is seed diversity important?
- What's happening with seed diversity?
- What is seed saving?

Step 2: Find seeds and practice seed saving.

Ask learners to find seeds in your school grounds. Some plants produce seeds on the outside - peas, sunflowers and broccoli - and some on the inside, such as tomatoes and pumpkins. If these options area not available, you could ask one of your supporters to donate seed heads or pods for demonstration purposes.

Autumn
Peas & runner beans: allow seeds to turn brown, remove and leave in a damp-free place to dry fully. Then label and store in an airtight container to plant out in spring.

Garlic: one garlic clove becomes a head of garlic. Save some large cloves from your harvest. Leave to dry in a damp-free place, then label and store in a paper bag to plant out in spring.

Other seeds include pumpkins, sunflowers, nasturtiums, poppies and honesty flowers.

Late Spring
Purple sprouting broccoli: allow flower and purple or black seeds pods to form. Remove and put pods to dry in a damp-free place. Once fully dry, break the pods open over a clean cloth so that the small seeds fall out. Store in an airtight container to plant in March to harvest in early winter, or from April to mid-June for harvesting from January to May.

Step 3: Read **slides 6-9** with your group. If working outdoors, print the slides. As in step 1, divide into three groups and give a few minutes to plan answers to the following:

- What are open-pollinated (OP) seeds?
- What are F1 hybrid seeds?
- What are genetically modified (GM) seeds?

Step 4: You could hold a walking debate to share views on different statements around seed types and saving. For instructions, see the WWGS Activities resource page 23. Statements could come from the slide presentation, or from the 'myth' list in the booklet 10 Myths About Our Global Food System by DevelopmentEducation.ie.

Activity 2: Seed activism

Aim: to examine global seed sovereignty and analyse sources of information.

Information for educators:

- These activities support the WWGS Guiding Principles for GCE (see page 1 and the WWGS website), especially:

  Guiding Principle 1: Unlearning and Reconstructing

  Guiding Principle 2: Finding Root Causes

  Guiding Principle 3: Prioritising Human Rights

  Guiding Principle 5: Acting in Solidarity

- While there is more to read and prepare for this topic, this activity gives a basic understanding of the complexity of seeds and the seed industry. This is an important precursor to engaging in any planting with learners in the school garden.
- You will need to adapt some of the suggested texts to suit your class group: for example, the Vandana Shiva text and the Guardian article on Bt cotton. Your own preparatory background reading would be useful if you are unfamiliar with these topics.



Materials and preparation:

- Computer, projector and screen for slide presentation Topic 4. Seeds
- You will first need to choose which of the additional resources – news articles, videos and/or websites – you wish to focus on with your learners. It may be helpful to add your own slides or to print excerpts from your chosen articles for groups to read. If there is access to devices, you could share excerpts and links with learners
- Two sheets of large paper, Blu Tack and markers with the headings 'Keywords' and 'Seed Topics' on each sheet
- Printouts of the CRAAP Test worksheet (from Woodsville High School, developed by the Meriam Library of the California State University) for evaluating the reliability of sources: one printout per group
- Learner devices for researching and creating presentations

Step 1: With the class, read the slides in the presentation Topic 4. Seeds about:

- Seed sovereignty (**slide 10**)
- Indian activist Vandana Shiva **(slide 11**)
- Indian farmers and GMO - Bt cotton (**slide 12**)
- Brown Envelope Seeds and/or Irish Seeds Savers (**slides 13-15**)

You may decide to divide the class into five groups and give each group one of the topics to read or listen to.

Step 2: Ask the learners to make a list of keywords they do not understand, and seed-related topics they wish to research further. Invite learners to write these on the two large sheets.

Step 3: Divide learners into groups, based on their interest, to research their topic more, using their printed copy of the CRAAP Test worksheet or any other resource you know that helps learners to analyse the reliability of their sources.

Step 4: Learners can create a presentation for their peers. The nature of the presentation will depend on the age of your learners and could include:

a. Key facts

b. Mainstream media voice

c. Alternative or marginalised voices

d. Local voices

e. Sources of information

Alternative Step 3-4
If more structure is needed, you could first divide the class and ask groups to research the pros and cons of GMO seed and food. You can share:

a. Links to companies such as Bayer (which has taken over Monsanto) and look at the website branding and key messaging.

b. A link to Navdanya International or a link to the Guardian article on Bt cotton and farmer death rates - or you can search for more recent articles with your learners.

Step 5: Use any method that creates good class discussion (e.g. Concentric Circles in the WWGS Activities resource, page 10). You could discuss questions such as:

- What does the mainstream media say about your seed topic?
- What are some alternative discourses you have researched and what do they say?
- Is there a group in our local environment that is working on this issue?
- What are the potential biases?
- What values can we connect to each voice?

Step 6: Choose the most suitable activity to reflect on this activity (see **Topic 6. Reflection activities**).

Extension activities

Your learners may wish to:

1. create colourful information points on wood with paint markers. They may choose to highlight facts or concerns they have about the lack of seed diversity, or positive ways people can promote seed diversity.
2. support organisations such as Irish Seed Savers, or support campaigns for farmers' rights, seed sovereignty and biodiversity, such as those at Navdanyana International.
3. start a campaign or write to garden suppliers to stock more organic, open-pollinated seed.
4. create their own 'artwork as activism'. You can show learners the work of Irish artist Rachel Doolin and her installation 'Seedarium' (see the slide presentation Topic 4. Seeds, **slides 17-18**). Learners may wish to use photography of their seed saving activities to organise an exhibition, create a 1-minute video to share with other schools or create original drawings for the display of vegetable and flower seed heads with their art educator.



A display board at North Wicklow Educate Together Secondary School
Credit: Kate Minnock



Seedarium installation by artist Rachel Doolin
Credit: Rachel Doolin

5. reach out to your local seed bank and offer seeds you may have saved for their local library. If no seeds are available, you could set up a seed bank in your school and reach out to other organic growers. One such example is the Community Seed Ark at Bray Library, Co. Wicklow. You could plan for next year to make your own seed envelopes from recycled paper, create a logo or a brand identity and contact other schools in your area who may wish to also get involved in your project.
6. collect pollinator-friendly wildflower seed from the local area in autumn and grow it up in pots over winter to add to a meadow in spring. See the National Biodiversity Data Centre's Resources for schools on pollination for more information.

TOPIC 4 SEEDS

B. Flowers



Cowslip



Comfrey



Clover

Activity 2: Growing flowers for biodiversity and soil health

Aim: to understand the importance of choosing native Irish organic, open-pollinated (OP) seeds to support biodiversity and healthy soil.

Information for educators:

The flowers below have been selected as they:

- support native biodiversity.
- can be bought as Irish, organic, OP seeds from suppliers such as Irish Seed Savers or Brown Envelope Seeds. If out of stock you can also try Seedaholic.com or Seeds Ireland. These last two companies sell organic, OP seeds, although some are imported.
- can be sown at various stages within the post-primary school calendar. Wildflowers and honesty may be planted in pots in autumn under a covered area, sheltered from heavy frost (young plants will be hardy and ready to plant out next spring) or all seeds can be planted directly outdoors.
- will mostly flower before the summer months.
- have extra benefits such as acting as a natural fertiliser, which creates healthy soil.

Preparation:

- Depending on existing knowledge, you may wish to spend time exploring the importance of biodiversity and pollinators with your learners. There are many resources, such as the WWGS Wood Technology Guide (page 26 Forests and Biodiversity) and the How-to guides (bottom of the webpage) from the National Biodiversity Data Centre.
- The activities under **Topic 4. Seeds A. Diversity** should ideally be taught before or directly after this practical activity to give the experience a global justice focus.
- The flowers you choose will depend on the time of year you carry out this activity.
- Note that specific seed packet instructions may differ from the information in the condensed table below. If in doubt, follow seed packet instructions.
- Source materials and buy Irish, organic, OP seeds in advance.
- Consider how you will keep seedlings and plants hydrated if in trays or pots. Encourage learners to keep a watering rota. Remind them to water the soil at the base of each plant and not the leaves, to avoid damage. Use a rose head on the watering can for seeds and seedlings. If feasible, use rainwater from a water collector and, in warmer months, water in the morning before it gets too warm.

Materials:

- Gardening forks, hand trowel and (optional) gloves
- Seed trays, pots and plant labels (these can be upcycled from washed 2-litre milk cartons. Cut them open and name plants with a permanent marker, or with wooden lollipop sticks and pencil)
- Organic, peat-free compost
- Organic, OP seed packets
- Watering can with rose head

CATEGORY	NAME	TIME TO SOW	FLOWERS	TIME TO FLOWER	INSTRUCTIONS/ REQUIREMENTS	BENEFITS
Irish wild-flowers	Cowslip	Autumn	April-June	1-2 years	• Can be sown directly into the school lawn or pressed into damp compost in seed trays. Do not cover as they need light and cold to germinate. • Can be kept outdoors. • Takes up to 2 years to flower.	• Medicinal (see Brigit's Garden). • High biodiversity value, attracts butterflies and bees. • Once a popular wildflower across Ireland, now in decline so important to plant.
	Corn (or wild) pansy	Sept-Oct Feb-April	May	2-6 months	• Sow outside in autumn for flowering plants the next year or in trays or small pots under cover.	• The corn pansy (Viola arvensis) is nearing extinction so is important to plant. • Medium wildlife value.
For seed saving	Honesty (white pennies)	Early Sept Spring	April-June	2 years	• Can be sown directly into ground where you want it to flower or in pots under cover to thin and transplant. • Prefers partial shade but tolerates full sun. • Do not overfeed or use manure. • Takes up to 2 years to flower.	• Seed saving: spread out the flower heads on a piece of drawing paper when they are dry and crisp. Each disc is composed of twin circular plates locked together and enclosing three large flat seeds.
Green manure	Comfrey	Oct-Nov March-May	May-Aug	6 months	• For a heavy yield, comfrey plants must establish before winter. Sow seeds in indoor pots in autumn and plant out or sow directly in spring. • Ideal for disused corner, prefers wet ground. • Leaves can be used as mulch or chopped and mixed with leaf mould to make a base for potting compost. • Make your own organic liquid fertiliser feed by adding leaves to a large, lidded bucket. You can also use nettles or seaweed. Leave for 2-3 weeks. Dilute to a weak 'tea' and feed plants weekly using gloves and a watering can. (Warning: liquid will get very smelly!) • Comfrey can also be used in your compost bin as an activator.	• A 'super-plant' it can be used as a medicinal herb, green manure, fertiliser and compost booster. • Easy to grow, spreads fast once established and lives for many years. • The roots draw nutrients from deep in the soil and transfer all the goodness into their leaves. Comfrey contains more nitrogen, phosphorus and potassium than most commercial (synthetic) fertilisers and around twice as much potassium as farmyard manure or indoor compost.
	Clover (red, white or crimson)	March-Sept	Summer-Sept	1 year	• Sow directly into the area you want it to grow. • Prepare by loosening and breaking up the soil. • Spread thinly, rake in the seed and cover it lightly with the soil.	• Attractive, feathery flowers beneficial to bees and butterflies. Flower heads can be left to self-seed. • Flowers and leaves can be dug into soil to boost fertility and structure and fix nitrogen.

Extension activities

Your learners may wish:

1. to talk to their local tidy towns or other community groups to ask them what their planting plans are for the coming year. While many groups like to plant bulbs such as daffodils and tulips to provide colour, these flowers produce hardly any pollen or nectar for pollinators like bees and other insects. Learners could share information from this and other activities with community groups, and offer to volunteer on their planting days, using organic, open-pollinated seeds with a high biodiversity value for the local area.
2. to contact the National Biodiversity Data Centre for more ideas and existing campaigns to increase biodiversity in Ireland.
3. to campaign for the addition of a biodiversity value rating (low, medium or high) to flower seed and flower bulb packets sold in Ireland. Learners could write an email to their local council representatives or TDs, or contact their local city or council environmental offices or Biodiversity Ireland, to ask for their support and suggestions.

National Biodiversity Data Centre
Documenting Ireland's Wildlife

4. to research the fresh and potted flowers industry in Ireland and the impacts these flowers have on soil health and biodiversity.



Activity 2: Flowers of solidarity



Aim: to help learners build a sense of empathy and solidarity with people affected by humanitarian crises globally.

Information for educators:

- This activity supports the WWGS Guiding Principles for GCE (see page 1 and the WWGS website), especially:

  Guiding Principle 3: Prioritising Human Rights

  Guiding Principle 5: Acting in Solidarity
- As global citizens, it is important to stand in solidarity with people globally so that they can act for meaningful change to redress the world's inequalities and injustices.
- This activity aims to use flowers you may have in your school garden, or which you have planted in previous activities as part of this resource. However, it could be also adapted to create an indoor wall display using existing art materials in the school.

Preparation:

- Depending on existing knowledge, you could spend time learning about the root causes and connections between global crises: for example, conflict, hunger or climate change. The Digging Deeper Tool on the WWGS Teacher Resources webpage (scroll down) is a powerful way of 'unearthing' root causes.
- Other helpful resources include Discussing War with Young People by the National Youth Council of Ireland and the Afri website.

Materials:

- Wooden board suitable for outdoors such as marine plywood (ideally offcuts from your woodwork department or local wood suppliers)
- Household or outdoor paint (supplied from a zero-waste or local recycling centre)
- POSCA brand or other paint markers in a variety of colours, ruler, pencil or chalk, rubber
- Small stakes such as bamboo or willow
- Fixings such as nail or screw, hammer or screwdriver

Step 1: Learn about the connected root causes of global crises (see **Preparation** above).

Step 2: Ask learners to search online for 'humanitarian crises' using reliable sources such as the United Nations High Commissioner for Refugees or the International Rescue Committee for a list of countries currently in crisis.

Step 3: Learners choose one country from their list from above to research in greater depth. This can be done as part of Step 1 or as a stand-alone task. As a starting point, or if time is limited, learners can look up the country's national flower and flag.

Step 4: Provide wood, paint markers or suitable art materials for learners to create a public display. This would ideally be installed in an outdoor location beside existing flowers, visible to both the school community and the public.



Boards (in English and Ukrainian) giving the background to sunflowers, the national flower of Ukraine, as part of the flowers of solidarity display at North Wicklow Educate Together Secondary School
Credit: Kate Minnock

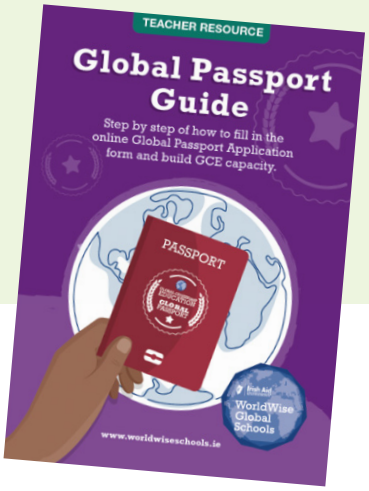
Extension activities

Your learners may wish:

1. to plant sunflowers as flowers of solidarity. Though not native to Ireland, sunflowers provide food for bees and other pollinators. They are very easy to grow, and their seeds can also be saved for the following year. Organic, open-pollinated sunflower seeds can be bought from Irish Seed Savers and Brown Envelope Seeds.

   Sunflowers (соняшник pronounced 'soniashnyk') are the national flower of Ukraine and are important to the country's economy and history. In 1986, when an explosion at the Chernobyl Nuclear Power Plant in Ukraine released radioactive material into the environment, scientists planted sunflowers—hyperaccumulators that extract toxins from soil—to remove radioactive elements from the surrounding earth and ponds. Today, sunflowers symbolise peace, unity and hope.

2. to invite supporters with horticultural skills to the school to help plant the flowers.
3. to ask permission from their local city or town council to display their 'flowers of solidarity' installation in a public park or other suitable location. This could be a one-day exhibition, during which learners educate others or organise a 'soapbox' public speaking event. They could also start or join a pro-peace social media campaign, sharing videos and photographs from the day.
4. to write an article for their local newspaper providing photographs of their installation along with messages of support for migrant communities living in Ireland because of conflict or other crises. These activities will support completion of the WWGS Global Passport, especially Stamp 4 (Student Capacity and Engagement) and Stamp 6 (Community Engagement). See the Global Passport Guide for more details.



TOPIC 5 FOOD

Potatoes: famines and festivals



A timeline of the Irish Famine standing above potato plants at North Wicklow Educate Together Secondary School
Credit: Kate Minnock

Subject links: History, Art, Science, Geography

Activity: The potato in Ireland: past, present and future

Aim: to understand the risks of monoculture (one-crop) agriculture historically in Ireland. To explore sowing a diversity of Irish organic seed potatoes.

Information for educators:

- Additional information on the history of the Irish Potato Famine will be needed for the timeline part of this activity. You may wish to work with History educators or use History curriculum resources, as this topic is on the Junior Cycle History course. See the WWGS Junior Cycle History Guide pages 12-15 and the TED animation (5 min 3 sec). For Senior Cycle, see other websites such as RTE History and University College Cork for resources on the Potato Famine.
- The best months to plant potatoes are March or April for a harvest the following September.

Materials and preparation:

- Computer, projector and screen for slide presentation Topic 5 Food. Potatoes: famines and festivals
- History book or other resources such as the video A Timeline of the Potato Famine (11 min). Photocopy relevant information to create a timeline
- Printed or projected text boxes
- Sample timelines: digital or physical using coloured paper or, for outdoor signage, a wooden board and paint markers such as POSCA
- At least two varieties of Irish, organic seed potatoes
- Soil and growing box such as a raised bed or potato grow bags

Background information on Ireland: Monoculture and the Great Famine

A 'monoculture' is the cultivation of a single species or variety of crop in a specific area.

Monocultures lack genetic variation. A monoculture of potatoes contributed to the severity of the Irish potato famine, which devastated Ireland's population and economy. In the early 1800s, the Irish solved their problem of feeding a growing population by planting potatoes. Specifically, they planted the 'lumper' potato variety. All these lumpers were clones, genetically identical and therefore low on genetic variation. This meant that, when the environment changed and a potato disease swept through the country in the 1840s, all the potatoes rotted.

Although the Great Famine had many causes, it may well not have been so disastrous if different types of potatoes been planted. Some would have carried the right genes to survive the epidemic, and more of the resistant varieties could have been planted in the years following the first epidemic.

There are almost 5,000 varieties of potato in the world today. Approximately 90% of potatoes grown in Ireland are from 5 varieties.

Sources: University of California Museum of Paleontology and irishpotatofederation.ie

Step 1: Project the two images on **slide 3** (fields with one crop of potato) and ask learners to Think-Pair-Share (see the Teacher Toolkit for instructions), using the images to suggest what they think the word 'monoculture' means. Show slides 4 and 5 to illustrate potato diversity.

Step 2: Photocopy the additional history book texts (and/or other resources) on the history of the Great Famine.

Step 3: Learners can choose to use a free online timeline template and submit a digital timeline, or use their own artistic skills, to draw and create physical timelines on coloured paper. These can be displayed on the school walls or on wooden boards in the school garden alongside their newly sown potatoes.

Step 4: Show learners some examples of timelines (e.g. slide 6) and explain that they will make a creative timeline in small groups. Divide learners into groups of 2-3 and assign a role to each learner such as fact-checker, designer, scribe, according to the skills in each group.

Step 5: Ask learners to choose the most important dates, to summarise the information in their own words and to create or find images online to illustrate each part of the timeline.

Step 6: Ask learners to include an explanation of monoculture and information about the different potato varieties in Ireland today, as well as their group's conclusion about whether there is enough diversity in Ireland nowadays.

Step 7 (optional): You could ask learner groups to choose different countries that have experienced famine (examples are Malawi, Yemen, Afghanistan, Sudan). Each group can create a famine timeline for that country.

Extra learning

You may wish to find out more about food systems with learners. This is a complex topic but well worth digging deeper. We live in a world where over 800 million people go to bed hungry, yet we produce 1.5 times enough food to feed people on the planet. Some issues you may like to look deeper at are:

- climate change and the impact on Bolivian communities. See **slide 8** in the presentation Topic 5 Food. Potatoes: famines and festivals. This links to a film, Seeds of Resilience (9 min 8 sec) by Terra Justa, about Norte Potosi in Bolivia where school learners gathered in 2013 for a seed festival, to celebrate local seed diversity.
- the commodification of food (focus on making money rather than ensuring nutritious food and access).
- middle-controllers and big companies making most profit (farmer making very little).
- land grabs from smallholder farmers to sell to larger companies.
- climate change and the impact on farming communities e.g. flooding low-lying land.
- exploitation of farm workers and of the natural world.
- sustainable and resilient farming. An example is the revival of ancient rice seeds in Bangladesh (BBC podcast, 27 min).

Extension activities

Your learners may wish:

1. to plan a cooking exchange by sharing recipes with learners in schools around the world, or to make new recipes. You could ask a Home Economics educator to collaborate. If contacting schools in the Global South, please read and follow the WWGS Global School Partnerships Guide. See also the WWGS case study describing the Eco-Eats Sustainable Cookbook created by learners at West Wicklow Youthreach.
2. to organise an ethical food fair. Learners could cook food from other countries they have learnt about in their famine timelines. See the WWGS case study describing the ethical Christmas market organised by Castletroy College in Limerick.
3. instead of, or as well as, sowing potatoes, learners could sow autumn salad mix, garlic (easy to grow, and garlic bread is healthy and popular with learners), winter salad mix, purple sprouting broccoli (great for learning to save seed) or herbs. These easy practical activities support learning about food systems.
4. to contact schools in Bolivia if interested in learning more about that country. Again, please read and follow the WWGS Global School Partnerships Guide.
5. to research potato traditions, science and potential around the world. See the Guardian article on the International Potato Center in Peru.



Some of the more than 4,000 varieties of native potatoes grown in the Andean highlands of Peru, Bolivia, and Ecuador
Credit: International Potato Center CC BY-NC-SA 2.0

TOPIC 6

REFLECTION ACTIVITIES



Activity 1: Self-assessment tools

Aim: to provide learners with statements to evaluate their knowledge, skills and attitudes before and after taking part in an activity or topic.

Preparation: You can adapt the following questions to create a basic self-assessment tool that suits the scope of activities and topics you may cover, or you could use the WWGS Reflection Tool.

BEFORE SCORE 0-5	GLOBAL GARDEN	AFTER SCORE 0-5
	1. I know how my everyday life and global justice issues are connected. *Optional*: An example of a connection is ….	
	2. I am aware of some of the root causes of why the world is unequal. *Optional:* An example of a root cause of injustice is …	
	3. I think it is important to learn about inequality in the world.	
	4. I am confident in sharing my understanding of (knowledge and attitudes about) justice issues with others.	
	5. I know different ways that I can participate to make the world a fairer place for all. *Optional:* One way I can participate is ….	
	6. I feel motivated and empowered to act to create a more just, sustainable world. *Optional:* One action I can take is …	

Activity 2: Head, heart and hand collective insights

Aim: to provide learners with non-verbal ways to collectively share their key insights from any activity.

Materials and preparation:

- Post-it notes (ideally three different colours)
- Markers, wall space/display board with three symbols drawn in the middle (a heart, a hand and a head) and space for Post-it responses

Step 1: Give each learner three colour Post-it notes and one colour marker.

Step 2: Ask learners to write in capitals, or easy-to-read writing, one or more key insights from the activity or topic for each heading: one heart (emotional) response, one hand (practical activity or skill) they liked and one head (fact or piece of information).

Step 3: Assign one or two learners per heading to gather the Post-its and place them on the wall display, clustering similar answers together.

Step 4: Give time for groups to share each symbol. Then give an overview of their insights.

Activity 3: Hand personal reflection

Aim: to provide learners with non-verbal ways to share their personal responses and feedback on an activity.

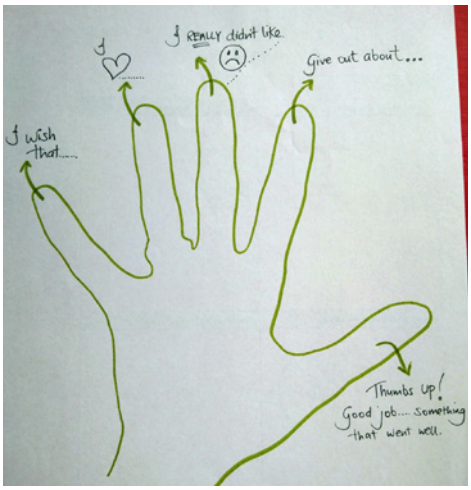
Materials and preparation: A4 plain paper, markers, pens

Step 1: Give each learner one A4 page. Ask them to draw around their open hand.

Step 2: Ask learners to use each finger to reflect on their experience of an activity or topic. A thumbs-up for something that went well, a negative point on the index finger, a strong reaction on the middle finger, something they loved on the ring finger and, on their baby finger, a 'pinkie' promise for something they might wish to do in the future.

Step 3 (optional): Learners can cut out their outline hands and display on the wall. This allows them to read other learners' responses and reflect together on experiences.

Step 4: Learners could share their 'pinkie' promise or wish with the class as the basis for future extension activities. These promises could also support educators to reflect and improve future activities.

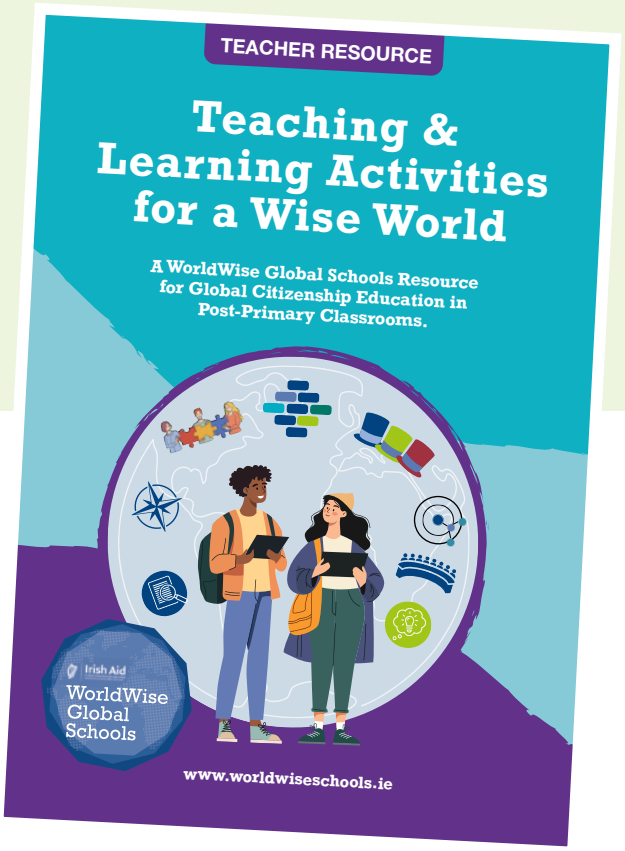


Activity 4: Sample reflection question

- How does this activity affect me positively?
- Who might be affected negatively if more learners, schools, organisations and/or governments do not support this/these activities?
- What global justice issues have I learned about today?
- What personal viewpoints have I changed today because of something I learned?

There are more reflection activities online, for example:

- The WWGS Activities resource page 33
- Curious Teachers, Critical Classrooms edited by Brighid Golden, Appendix 3
- Education Rickshaw
- Edutopia



Appendix 1:
Month by month cycle suggestions

MONTH	TOPICS + ACTIVITIES	MONTH	TOPICS + ACTIVITIES
Sept	Sow cowslip, corn pansy, honesty, comfrey or clover flowers from open-pollinated (OP) seeds (see **Topic 4. Seeds B. Flowers**). Save seeds from established plants (see **Topic 4. Seeds A. Diversity**). Year Two: save seed from your own plants. Year Two: harvest potatoes from last spring planting.	Feb	Sow wildflowers such as corn (or wild) pansy from OP seeds (see **Topic 4. Seeds B. Flowers**).
Oct	Plant flowers from OP seeds (see **Topic 4. Seeds A. Diversity**). Other sowing options include peas & runner beans, garlic, pumpkins, sunflowers, nasturtiums, poppies or honesty flowers.	March	Sow purple sprouting broccoli (see **Topic 4. Seeds A. Diversity**). Sow green manures (see **Topic 4. Seeds B. Flowers**). Sow Irish organic seed potato varieties (see **Topic 5. Food**).
Nov	Sow comfrey flowers ('green manure') from OP seeds (see **Topic 4. Seeds A. Diversity**). Harvest rainwater.	April	Sow purple sprouting broccoli (see **Topic 4. Seeds: A Diversity**). Sow wildflowers such as cowslip from OP seeds (see **Topic 4. Seeds B. Flowers**). Sow Irish organic seed potato varieties (see **Topic 5. Food**).
Dec	Choose indoor activities outlined below for any wet winter days.	May	Sow green manures (see **Topic 4. Seeds B. Flowers**). Harvest crops such as purple sprouting broccoli (allow some to flower to save seed). Celebrate the activities you and your learners have engaged in with a Global Garden Open Day and invite your school and wider community. This could be a seed exchange event or a community food fair.
Jan	Choose indoor activities outlined below for any wet winter days.		

Appendix 2:
Ideas for auditing, planning and mapping the school garden

Audit ideas

1. School Garden Audit. See the Bord Bia resource. Audit, plan and design school garden and grounds. Also, the UN Food and Agriculture Organization's Setting up and running a school garden.
2. School Garden S.W.O.T (strengths, weaknesses, opportunities and threats).

Planning + Mapping ideas

1. For guidelines on this, see the Green Schools resource Habitat Mapping of your school grounds.
2. Together as a class you could choose which activities you would like to carry out this month or year and create a list.
3. Learners could volunteer to create a 'toolkit wish list' poster and contact supporters to donate used or new items.

Toolkit

Aim to have a responsible consumption or ethical purchasing code for your global garden. You could start with two simple questions:

1. Can I source this tool or equipment from a reclaimed or reused supplier, e.g. household paint or varnish tins from the local recycling centre, or wood for signage from offcuts in the woodwork department?
2. Can we make this ourselves?

Wish list tool kit could include:

- Set of class clipboards
- Paint markers
- Screws and screw gun
- Nails and hammer
- Watering cans
- Free pre-used pots from a garden centre or landscaping company
- Home-grown compost or bags of organic peat-free compost
- Manure from stables (rotted) for raised beds
- Unused paint tins for creative projects
- Wooden pallets for compost bin
- Salvaged wood for upcycling, e.g. cold frames or cloches
- Large water bottles, tap, drainage piping or 2-litre plastic bottles for DIY rainwater harvesting.

Get supporters on board

- School management. (You can share your plan to increase biodiversity by not mowing and leaving areas to grow wild. This will save on landscaping costs and funds could be redistributed for any other costs incurred.)
- School caretaker
- School community
- Parents' association
- Community groups
- Zero-waste groups
- Local recycling centres
- Garden centres. With advance notice they may collect used pots and other items for your school. You could drop in an empty container with a laminated 'toolkit wish list' poster attached to request materials.
- Landscape companies. They may supply free or discount compost or pots.
- The Rediscovery Centre is the National Centre for the Circular Economy in Ireland
- Local city or council environmental office.

WorldWise Global Schools Supports

WWGS Education Officers

Each school engaged with the WWGS programme is assigned a regional Education Officer who is available to guide and assist educators throughout the school year.

Education Officers are available to provide a range of supports, including phone and email support, school visits and guidance on the Global Passport Framework.

Visit our website to find out how to get in touch with your regional Education Officer.

WWGS Training and Workshops

WWGS provide free tailored GCE training for post-primary educators. We provide both online and in-person training sessions designed to support and guide educators on all levels of their GCE journey.

See our website for upcoming training as well as recordings of past trainings.

WWGS Education Officers can also offer in-house training in your educational setting, including whole staff training, subject or module specific training and support for planning.

Contact your regional Education Officer for more information.

WWGS Events

WWGS events aim to celebrate and share GCE practices, new developments and resources. Annual events include our Teacher Conference and our Leadership Symposium. We also host regular workshops and events in response to current issues in the GCE field and beyond.

Visit our website to find out more.

WWGS Resources

We have developed the subject specific series 'Doing GCE', designed to assist the teaching and learning of GCE in a range of post-primary subject areas. Browse our subject hub to explore these resources and supports.

In addition to the subject specific guides, our resource library includes GCE and Sustainable Development Goals thematic worksheets.

For more information about WorldWise Global Schools and the opportunities our programme offers to engage with Global Citizenship Education, visit our website **www.worldwiseschools.ie**

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Irish Aid
An Roinn Gnóthaí Eachtracha
Department of Foreign Affairs

Irish Aid's **WWGS** is Ireland's national Global Citizenship Education (GCE) programme for post primary schools. WWGS is funded by Irish Aid and implemented through a consortium comprised of; Self Help Africa; Concern Worldwide; the City of Dublin's Education and Training Board Curriculum Development Unit; Association of Secondary Teachers Ireland (ASTI) also representing TUI; the National Association of Principles and Deputies (NAPD) and the Ubuntu Network.

Self Help AFRICA · CONCERN worldwide · City of Dublin · ASTI · TUI · NAPD · UBUNTU