SESSION ONE
Introducing the Circular Economy

Content:
Science, Geography, History, SPHE, Visual Art, English, Education for Sustainable Development, Global citizenship, Music

Age Range:
11-14

Time:
Approximately 60-90 minutes

Learning Outcomes:

1. To explore the term 'The Circular Economy.'

2. To rethink how we look at waste.

3. To develop an understanding of new terms and vocabulary and to use in dialogue.

Materials and Preparation:
(All worksheets & video links available on AgroCycle Kids website)

- **Recording Our Observations** worksheet A3 size
- **The Environmental Detective** worksheet A4 size
- A selection of art materials – crayons, pencils, colouring pencils, charcoal, chalk
- A3 sheets
- Rough work sheets
- Access to video links https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s and https://www.youtube.com/watch?v=5yzrT3zwq3I

Word Wall:
(Use these terms to start a word wall)
Circular Economy, observation, sustainable living, waste, valorise, repurpose

Introduction:

Activity 1 – Exploring a Circular Economy

- Write '**Circular Economy'** on the nearest whiteboard/blackboard.
  Ask:

  - Have you seen it before?
  - Do you understand it?

- Discuss the term 'Circular Economy' in pairs. Discuss their outcomes as a group. Is there any previous knowledge of the term?

- '**Recording Our Observations'** A3 worksheets

  - In box 1, record in pictures what you know about
    - environmental awareness and care
    - sustainable living
    - a circular economy

  - Add text too, if you wish.

- Discussion and conferring is welcome. Discuss the artwork as a group.

Activity 2 – The Environmental Detective Worksheet

- Game:
  Give each participant **'The Environmental Detective Worksheet'**. All participants move around the room questioning. Discuss the outcomes together.

Development

- Recap on the familiar environmental care code of the **3Rs** '**Reduce, Reuse, Recycle'**

  - Do you talk about this at school and at home?
  - Do you know of a different code?

- Rethink what we know of the **3 Rs.** Teacher led discussion on the **3Rs**. Introduce the **5Rs** and discuss – **Refuse, Reduce, Reuse, Repurpose, Recycle.**

- Look at the **AgroCycle Kids** video on the **AgroCycle** website. www.agrocycle.eu or

here: https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s

- Invite them to write down the key words they hear repeatedly throughout the screening. For example – valorise or waste. Explore the questions below:

  - What do you think was the main message of the film?
  - Do you agree with it?
  - Can you explain the term valorise?

- Add to their **Recording Our Observations** sheets. Fill in box 2 on sheet.

Conclusion:

- To bring the session to a close, ask:

  - Did anyone hear or learn anything new today?
  - Are you wondering about anything now?

- Display the **Recording Our Observation** sheets laid out in a large circle and invite all to walk around to see and reflect on the work.

Task for the next Session:

- Create! Innovate!
  - Can you think of things we are doing that we may be able to improve?
  - Is there something in the school environment that is producing waste?
  - Is it really waste?
  - How could you use that waste in a different way?
  - Bring these thoughts to the next session.

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SESSION TWO

Investigating 'The Circular Economy' through the AgroCycle Project

Content:

Science, Geography, History, SPHE, Visual Art, English, Education for Sustainable Development, Global Citizenship, Music

Age Range:

11-14

Time:

Approximately 60-90 minutes

Learning Outcomes:

1. To understand the concept of the valorisation of waste.
2. To critically analyse the impact that human behaviour has on the planet.
3. To develop an understanding of new terms and vocabulary and to use in dialogue.

Materials and Preparation:

(All worksheets & video links available on AgroCycle Kids website)

- Their original **Recording Our Observations** worksheets from session 1
- A selection of art materials – crayons, pencils, colouring pencils, charcoal
- A3 sheets
- A5 sheets
- Word Search (Session 2)
- The **AgroCycle PowerPoint Presentation**
- Access to video links and PowerPoint presentation https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s and https://www.youtube.com/watch?v=5yzrT3zwq3I

Word Wall:

(Add these terms to the word wall)

Valorise, biological nutrient, technological nutrient, linear economy, waste value chain

Introduction:

- Recap on previous session and word wall. Introduce new words and add to word wall

  - Play the **word search** in pairs.

- Highlight that just as the participants are examining environmental issues, waste issues, and sustainable development issues during these sessions, there are agencies, companies, universities, and researchers around the world doing likewise and also, looking at ways to valorise waste. They are making every effort to not 'throw anything away' as there is 'no away' and that if 'value' is added to something then it moves from rubbish to something useful.

- Show the video from the innovative Biobean company in the UK:

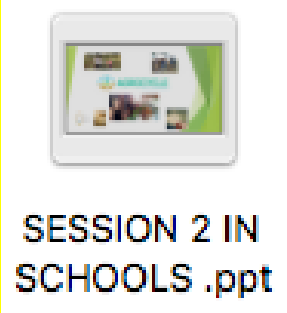
- **Video - Grounded Coffee Beans (2:04)**
  - https://www.youtube.com/watch?v=BW8yfabtp6o
  - Invite opinions and discussion before, during and after this video.

- Questions:
  - What do you think about this idea?
  - Did you think this would be possible with ground coffee beans?
  - Why do this?
  - Can you think of other things that accumulate as 'waste' as a result of other processes?

Development:

(PowerPoint presentation available on AgroCycle Kids)

- **Activity 1**
  Introduce the participants to the work of the AgroCycle partners using the PowerPoint presentation below.



- Discuss examples of the valorisation of waste in the PowerPoint.

- Possible follow up questions:
  - Why do researchers look to put a value on waste?
  - What waste could you make valuable?

- **Activity 2**
  Explain and discuss the difference between **biological nutrients** and **technological nutrients**:

  - Biological nutrients such as leaves, berries, grass etc, occur naturally and organically and eventually go back into the earth and nurture the planet. Technological nutrients are inorganic materials made by humans such as products containing metals and plastics.
  *- Watch the **AgroCycle Kids** video to help you understand these concepts*

  - Invite the participants to draw a biological or technological nutrient on the A5 pages.

- Stand on the left of the room if you drew a biological nutrient. Stand on the right of the room if you drew a technological nutrient. Discuss their choices and artwork.

  - Ask the participants where their chosen artwork belongs in the economy. Would they be part of a circular or a linear economy?

Conclusion:

Q & A with class:

- Did anyone hear or learn anything new today?
- Are you wondering about anything now?
- Would anyone like to comment on what we discussed?
- When you were drawing, did anything occur to you that you would like to share?

Alert them to their **Recording Our Observations** sheets once again. Invite the participants to record any further information before the end of the session in box 1, 2 or 3.

Information for next session:

Availing of a nearby outdoor space, discuss the chosen outdoor classroom for the next session. This is an outdoor artistic exploration of natural examples of a circular economy.

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SESSION THREE
The Circular Economy in the Natural World

Content:
Science, Geography, History, SPHE, Visual Art, English, Education for Sustainable Development, Physical Education

Age Range:
11-14

Time:
Approximately 60-90 minutes

Learning Outcomes:

1. To identify an example of the circular economy in nature.

2. To draw/sketch their chosen natural examples outdoors.

3. To develop an understanding of new terms and vocabulary and to use in dialogue.

Materials and Preparation:
(All worksheets & video links available on AgroCycle Kids website)

- Ensure access to the chosen amenity and ensure a risk assessment survey is done beforehand.
- **Recording Our Observations** worksheet from previous session.
- Word Search (Session 3)
- A selection of art materials – crayons, pencils, colouring pencils, charcoal, chalk.
- A4/A3 sheets on clipboards.
- Access to video links https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s and https://www.youtube.com/watch?v=5yzrT3zwq3I

Word Bank:
(Add these terms to the word bank)

Zero waste, amenity, gallery, meditation, mindful, natural, observe

Introduction

- Recap on previous session and word wall. Introduce new words and add to word wall
- Play the **word search** in pairs.

- The natural world creates little or no waste. Before leaving the school building, advise the participants you are exploring natural examples of a circular economy.

- Recall the definition of a biological nutrient and a technological nutrient and the differences between the two from session two. Proceed to the natural amenity for further observation, and use nature as a stimulus.

Development

Walk to the nearest natural amenity, observing as you go.

- On arrival, stand still, and observe the natural world.

- Be mindful and quiet.

- Using all senses available, get a sense of the natural world.

- After visually observing, close your eyes should you wish. Be mindful in the surroundings.

- Following this short meditation, reflect on what has been discussed to date.

- See if you can apply this knowledge to the outdoor environment.

- Draw or sketch examples of a circular economy - an organism or eco system that uses all parts, and leaves no waste as all elements are valorised.

Discuss your choices and reflect on the artwork in a circle before returning to the indoor classroom. On return, add colour or any further decoration to the artwork should you wish.

Conclusion

When complete, place artwork on each individual table, creating your own **Circular Economy Gallery**. With their chairs tucked away and their artwork on view, tour the gallery together, analysing and discussing the artwork. After sufficient time, distribute the **'Recording Our Observations'** sheets. You may record any new or old information that has occurred to you.

SESSION FOUR
Designing a Circular Economy System

Content:
Science, Geography, History, SPHE, Visual Art, English, Education for Sustainable Development, Physical Education, Global Citizenship, Music

Age Range:
11-14

Time:
Approximately 60-90 minutes

Learning Outcomes:

1. To explore the UN sustainable development goals, specifically – Goal 11, 12 and 13.

2. To plan individual or group art projects that will illustrate a proposed circular economy system.

3. To ensure the participants understand and agree on the given art task directives.

4. To develop an understanding of new terms and vocabulary and to use in dialogue.

Materials and Preparation:
(All worksheets & video links available on AgroCycle Kids website)

- **Recording Our Observations** worksheet – 1 for each participant
- A selection of art materials – crayons, pencils, colouring pencils, charcoal
- A3 pages
- **AgroCycle Kids** Website https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s agus https://www.youtube.com/watch?v=5yzrT3zwq3I
- The PowerPoint presentation (Session 4)

Word Bank:
(Add these terms to the word wall)

United Nations, Sustainable Development Goals, innovative, rice bran

Introduction

Recall that the natural world creates little or no waste.

- Look at the **artwork** of the last session now hanging in the classroom.
- Share this thought with participants and discuss the artwork:

"We need to reimagine how we produce and use products, we are generating too much avoidable waste. With nature as our guide we can create an efficient-circular bioeconomy" *Dr Tom Oldfield* (Scientist, UCD, The AgroCycle Project)

- Play the **AgroCycle Kids** rap: https://www.youtube.com/watch?v=5yzrT3zwq3I Encourage participants to sing along, move, dance & learn the lyrics and melody – the essence of the AgroCycle message.

Development

- Introduce the **UN sustainable development goals (SDGs)** in relevant PowerPoint on AgroCycle Kids website. Can you identify the goals the **AgroCycle** research belongs to? Discuss.

- Introduce the art and design task, based on sustainable living and the valorisation of all links in a process.

- Divide participants into groups of 3 or 4 but there may be participants who prefer to work as individuals.

The Task

Look at the recent advances in the valorisation of **rice bran** on the **AgroCycle** project. Show the edible straw photo (resource available on **AgroCycle Kids** website) accompanying this lesson plan, to the groups. Show on interactive whiteboard. This is an example of something which was seen as waste (rice bran) but has now been **valorised** and used to make an edible straw. This can aid the participants in their task ahead.

Directions for participants:

- Look at your own environments, homes, school settings, any other environment you can think of. Find an example or suggest an opportunity where a more circular approach could be implemented.

- You may choose to invent your own imaginary circular economy model.
- Design and represent your design through visual art.
- Ask is there 'waste' left behind in your design? Does every link in the chain have value?
- To which of the SDGs does your design respond?
- Examine the difference between a consumer and a user. Keep this in mind as you design for a circular economy.
- Identify the difference between a linear process and a circular process. Remember - in a circular process we close the loop, and everything is valorised.

After preliminary discussions in their groups or individually, participants have until session five to complete the task. Please facilitate time in school for research and discussion.

Conclusion

Add to your **Recording our Observation** sheets if you wish. You may see an idea that could be the catalyst for the art and design task.

Ensure there is time for questions in relation to the task ahead.

In session five, you will be invited to present your art and design tasks to the group. This is an opportunity to ask questions and discuss the innovative designs produced.

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SESSION FIVE
Create, Innovate, Discuss, Reflect

Content:
Science, Geography, History, SPHE, Visual Art, English, Education for Sustainable Development, Physical Education, Global Citizenship

Age Range:
11-14

Time:
Approximately 60-90 minutes

Learning Outcomes:

1. To present and explain their circular economy designs to the group.

2. For the participants to have the opportunity to question each other about their designs.

3. To share and reflect as a group on the five sessions.

4. To develop an understanding of new terms and vocabulary and to use in dialogue and their presentations.

5. To explain the 'Talk to an Adult' worksheet.

Materials and Preparation:
(All worksheets & video links available on AgroCycle Kids website)

- **Recording Our Observations** worksheet.
- **Talk to an Adult** worksheet.
- A selection of art materials – crayons, pencils, colouring pencils, charcoal.
- The **designs** of the participants for presentation.

Word Bank:
(Add these terms to the word bank)

Innovative, circular systems, global issue, seasonal, innovation

Introduction

Welcome all to the final session. Distribute the **Recording our Observations** sheets and invite the participants to add any new information they wish to include in the applicable box. Discuss the task:

- Did you enjoy it?
- Did you manage to design for a **circular economy**?
- Was it difficult?
- What helped you the most?

Development

The participants will present from the most visible point in the room.
Points to consider:

- Why is the material you chose a waste? What causes it?
- Is there much of it? Is it a global issue? Is it seasonal?
- How soon could their **innovation** be ready?
- What can they do next in the war against waste?

Ensure time is allocated for questions and discussion after each presentation. Ensure that each participant hears positive responses and encouragement for all efforts made. The designs can be displayed in the school.

Conclusion

You may record information from the final session today or anything that resonates with you on the 'Recording our Observation' sheets. Discuss your findings. Finish session with a viewing of the AgroCycle video, including a sing along to the rap if you wish.

Final Task

'To teach is to learn twice' Joseph Joubert (Moralist and Essayist)

The final task is a **'Talk to an Adult'** worksheet.
- Read through the questions together.
- With the worksheet, share, reflect on, and discuss the 5 sessions with a significant adult in your life after school.
- Relay to an adult what you have learned throughout the project.
- Answer the questions on the worksheet asked by the adult.
- The adult writes the answers.

The teacher may choose to collect these worksheets on completion and discuss them with

the group. Alternatively, this is an opportunity for participants to engage with others in the wider school community and spread the AgroCycle message, promoting alternatives to waste products that were once seen as useless. Thus, one step at a time, moving towards a more sustainable treatment of the planet.