



Introduction

In response to the critical need for sustainable waste management practices within the agri-food sector, the AgroCycle project emerges as a pioneering €8 million endeavour under the Horizon 2020 research and innovation framework. Endorsed by ca. €7 million in funding from the European Commission and ca. €1 million from the Government of The People's Republic of China, this project represents a collaborative effort involving 26 partners from 8 EU countries, alongside two partners from mainland China and one from Hong Kong. At its core, AgroCycle seeks to comprehensively address the challenge of waste valorisation within the agri-food industry, with the ultimate aim of delivering the AgroCycle Protocol—a blueprint for sustainable waste management.

Central to the AgroCycle initiative is the recognition that fostering a circular economy mindset necessitates a transformative shift in societal consciousness and behaviour. In this context, the Froebel Department of Primary and Early Childhood Education at Maynooth University Ireland assumes a pivotal role as a partner in the European Commission funded Horizon 2020 project.

The AgroCycle Kids Education Programme, conceived by the Maynooth University team made up of Dr Máire Nic an Bhaird and Dr Laoise Ní Chléirigh, represents a departure from traditional didactic approaches, opting instead for participatory sessions that engage children as active co-creators of knowledge. Through immersive experiences designed to facilitate observation and reflection, participants are invited to explore the inherent circularity present in nature—a paradigm where waste is a concept rendered obsolete by the continual recycling and regeneration of materials and energy.

The programme places a strong emphasis on experiential learning, with children given ample opportunities to design and implement solutions for a circular economy.

Spending significant time in natural environments, participants witness firsthand the interconnectedness and cyclical nature of all life forms, reinforcing the notion that nature serves as the ultimate model of sustainability.

The AgroCycle Kids Education Programme embodies a commitment to inclusivity and community member engagement, with session plans piloted in schools across Ireland and China. By inviting children as co-researchers and valuing their voices and intentions, the programme ensures that the educational content is not only relevant but also

reflective of the diverse perspectives and experiences of its participants.

Informed by a Froebelian ecofeminist theoretical framework, the research underpinning the AgroCycle Kids Education Programme is guided by a profound recognition of the intrinsic connection between environmental sustainability, social justice, and gender equity. This holistic approach underscores the programme's aspiration to cultivate not



European
Commission

Horizon 2020
European Union funding
for Research & Innovation



only ecoliteracy but also a deeper sense of ecological citizenship and responsibility among future generations.

In conclusion, the AgroCycle Kids Education Programme represents a pioneering initiative poised to catalyse transformative change in primary education, fostering a generation of environmentally conscious and mobilised global citizens. By nurturing a deep understanding of circular economy principles and their embodiment in nature, this programme holds the promise of instigating a seismic shift towards more sustainable and regenerative ways of living. For further information on the theoretical framework and analysis employed in the programme, please refer to the accompanying research document.

<https://mural.maynoothuniversity.ie/17825/1/Laoise%20N%C3%AD%20Chl%C3%A9irigh%20-%20PhD%20Thesis%20Sept%202023%20FINAL%20.pdf>

Dr Máire Nic an Bhaird

Dr Laoise Ní Chléirigh

AgroCycle Kids wishes to acknowledge the European Commission for their financial support that made this research possible. The funding provided through the Horizon 2020 programme has been instrumental in advancing our understanding of a circular economy and has enabled us to make significant strides in addressing the challenges faced by communities through embedding the circular economy concept into European curricula. We are truly appreciative of the European Commission's commitment to fostering innovation and sustainability in the field of Education for Sustainable Education through initiatives such as Horizon 2020. Míle buíochas as an tacaíocht. We also wish to thank Maynooth University, Ireland for their support of AgroCycle Kids and this timely research.



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=5yzt3zwq3l>

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.





Seisiún a hAon An Geilleagar Ciorclach

Ábhair:

Eolaíocht, Tíreolaíocht, Stair, OSPS, Na hAmharc-ealaíona, Gaeilge, Oideachas i bhForbairt Inbhuanaithe, Saoránacht Dhomhnada, Ceol

Aois na bpáistí:

11-14

Am:

60-90 nóiméad

Aidhmeanna an cheachta:

1. An téarma '**Geilleagar Ciorclach**' a roinnt leis an rang.
2. Athmhachnamh a dhéanamh maidir le **dramhaíl**. Cad is dramhaíl ann?
3. Foclóir nua a bhaineann leis an ngeilleagar ciorclach a thuiscint agus a úsáid.

Ábhair agus áiseanna:

(Beidh na bileoga agus físeáin ar fáil ar shuíomh AgroCycle Kids)

- **Taifead Breathnóireachta:** Bileog A3
- **An Bleachtair Timpeallachta:** Bileog A4
- Ábhair ealaíne – criáin, pinn luaidhe, pinn luaidhe daite, cailc, gualach
- Bileoga A3
- Bileoga don obair gharbh
- Físeáin ar an idirlíon - <https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s> agus <https://www.youtube.com/watch?v=5yzt3zwwq3I>

An Balla Foclóra:

(Tosaigh Balla Foclóra ag baint úsaide as na focail seo a leanas)

An geilleagar ciorclach, breathnóireacht, maireachtáil inbhuanaithe, dramhaíl, luach a chur ar dhramhaíl, athchruthaigh

Tús:

Gníomhaíocht 1 – An Geilleagar Ciorclach

- Scríobh ‘**Geilleagar Ciorclach**’ ar an gclár bán.
- An bhfaca tú an téarma seo cheana? - An dtuigeann tú é?
- Iarr ar na páistí an téarma ‘**Geilleagar Ciorclach**’ a phlé i mbeirteanna. Iarr orthu na tuairimí a bhí acu a roinnt leis an rang. An raibh aon rud ar eolas acu faoin téarma seo?
- Ealaín: ‘**Taifead Breathnóireachta**’ (Bileog A3)
 - (I mbosca 1) Tarraing pictiúir de na coincheapanna seo a leanas
 - geilleagar ciorclach
 - maireachtáil inbhuanaithe
 - feasacht agus cúram imshaoil
 - Is féidir leo scríbhneoireacht a chur leis freisin.
- Tá cead ag na páistí na téarmaí a phlé agus iad á dtarraingt. Tagann siad le chéile mar ghrúpa chun an ealaín a phlé.

Gníomhaíocht 2 – An Bleachtaire Timpeallachta

- Cluiche: Tabhair an bhileog **An Bleachtaire Timpeallachta** amach do gach páiste. Bogann na páistí timpeall an tseomra ag cur ceisteanna ar a chéile. Roinneann siad na smaointe le chéile ag deireadh an chluiche.

Forbairt

- Labhair leis an rang faoin gcód timpeallachta. **Na 3 R-anna ‘Laghdaigh, Athúsáid, Athchúrsáil’**
- An mbíonn siad ag caint faoin gcód seo sa bhaile agus ar scoil?

- An bhfuil cód ar bith eile ar eolas acu?

- Roinn coincheap nua leo:

Na 5 R-anna 'Diúltaigh, laghdaigh, athúsáid, athchruthaigh, athchúrsáil.'

-

Taispeáin an **fhíseán 'AgroCycle Kids'** faoin nGeilleagar Ciorclach don rang. (ar shuíomh: www.agrocycle.eu nó anseo: <https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s>)

- Iarr ar na páistí na téarmaí nua a scríobh síos. M.sh. an téarma Béarla 'Valorise' (luach a chur ar dhramhaíl) nó dramhaíl (waste)

-

Iarr ar na páistí teachtaireacht an fhíseáin a phlé ag díriú ar na ceistanna seo a leanas:

- Cad é príomhtheachtaireacht an fhíseáin?
- An aontaíonn tú leis?
- An bhfuil tú in ann an téarma 'Luach a chur ar dhramháil' a mhíniú?

-

Tabhair 2 nóiméad dóibh an bhileog breathnóireachta (bosca 2) a líonadh.

Críoch:

-

Cuir na ceistanna seo a leanas ar an rang:

- Ar fhoghlaim aon duine aon rud nua inniu?
- An bhfuil aon cheist agat faoin bhfíseán?

• Iarr ar na páistí a smaointe a roinnt leis an rang agus siúlaim timpeall an ranga le chéile ag féachaint ar na bileoga a bhaineann le **'Taifead breathnóireachta.'**

Tasc don chéad seisiún eile:

- Bígí cruthaitheach! Tugaig na smaointe seo libh chuig an gcéad seisiún eile.

- An bhfuil tú in ann smaoineamh ar rudaí atá ar siúl againn cheana féin a chabhraíonn linn aire a thabhairt don timpeallacht?
- An bhfuil aon rud ar scoil a chuireann dramhaíl ar fáil? Ach an dramhaíl é?
- An bhféadfá an dramhaíl a úsáid i mbealach eile?





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=5yzt3zwq3l>

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.





Seisiún a dó

An Geilleagar Ciorclach sa tionscnamh AgroCycle

Ábhair:

Eolaíocht, Tíreolaíocht, Stair, Gaeilge, Oideachas i bhForbairt Inbhuanaithe, OSPS, Na hAmharc-ealaíona, Ceol

Aois na bPáistí:

11-14

Am:

60-90 nóiméad

Aidhmeanna an Cheachta:

1. An tábhacht a bhaineann le luach a chur ar dhramhaíl a thuiscint.
2. Foclóir nua a bhaineann leis an ngeilleagar ciorclach a thuiscint agus a úsáid. 3.

Anailís chriticiúil a dhéanamh ar éifeacht an chine dhaonna ar an bplainéad.

Áiseanna agus ullmhúchán:

(Beidh na bileoga agus físeáin ar fáil ar shuíomh AgroCycle Kids)

- **Taifead Breathnóireachta** ó sheisiún 1.
- Ábhair ealaíne – criáin, pinn luaidhe, pinn luaidhe daite, cailc, gualach
- Bileoga A3
- Bileoga A5
- Cur i láthair **Powerpoint – AgroCycle**
- Suíomhanna idirlín a thaispeáint -
<https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s> agus
<https://www.youtube.com/watch?v=5yzt3zwq3l>
- Cuardach Focal – Seisiún 2

Balla Foclóra:

(Cuir na focail seo a leanas ar an mBall Foclóra)

Luach a chur ar dhramhaíl, cuthaitheach bitheolaíoch, cuthaitheach teicneolaíoch, geilleagar líneach

Tús:

- Dul siar a dhéanamh ar sheisiún 1 agus ar an mballa foclóra. Cuir na focail nua ar an

mballa foclóra agus taispeáin do na páistí iad.

- Cluiche: **Cuardach Focal** i mbeirteanna.
- Tá na páistí ag déanamh taighde ar an timpeallacht, ar dhramhaíl agus ar an bhforbairt inbhuanaithe. Tá taighdeoirí eile sa tionscnamh AgroCycle ag féachaint ar na rudaí seo freisin. Tá siad ag déanamh iarrachta dramhaíl a sheachaint. Ní chaitheann siad dramhaíl amach. Déanann siad iarracht dramhaíl a athrú agus é a úsáid i mbealach cliste. Athraíonn siad an dramhaíl agus ní bruscar é a thuilleadh ach rud luachmhar. Cuireann siad luach ar dhramhaíl.
- Taispeáin an físeán seo ón gcomhlacht Biobean i Sasana chun an téarma ‘luach a chur ar dhramhaíl’ a athmhíniú.

- **Fís - Grounded Coffee Beans (2:04)**

<https://www.youtube.com/watch?v=BW8yfabtp6o>

- Ceisteanna do na páistí

- Cad a cheapann tú faoin smaoineamh seo?
- Ar cheap tú go bhféadfá é seo a dhéanamh le pónairí meilte?
- Cén fáth go ndearna siad é seo?
- An féidir leat smaoineamh ar aon rud eile a chuireann ‘dramhaíl’ ar fáil?

- Tabhair áiseanna ealaíne do na páistí. Tabhair bileog A3 do gach grúpa. Iarr ar na páistí na rudaí a d’fhoghlaim siad faoin ngeilleagar ciorclach ón bhfíseán a tharraingt ar an mbileog. Tá cead acu téacs a chur leis an ealáin. Tagaigí le chéile mar ghrúpa chun na smaointe ealaíne a bhí acu i dtaobh an gheilleagair chiorclaigh a phlé.

Forbairt:

(Cur i láthair PowerPoint ar shuíomh AgroCycle Kids)

- **Gníomhaíocht 1:** Taispeáin obair AgroCycle do na páistí. Bain úsáid as an PowerPoint thíos.



Téigh tríd na sleamhnáin éagsúla leis na páistí. Taispeáin obair na n-eolaithe sa tionscnamh AgroCycle maidir le luach a chur ar dhramhaíl.

Ceisteanna samplacha:

Cén fáth go gcuireann na taighdeoirí luach ar dhramhaíl?

Conas a chuirfidh tú luach ar dhramhaíl?

- **Gníomhaíocht 2:** Mínigh agus déan anailís ar na difríochtaí idir chothaitheach bitheolaíoch agus chothaitheach teicneolaíoch.
 - Maireann **cothaitheach bitheolaíoch** go nádúrtha agus go horgánach cosúil le duilleoga, féar, caora agus rachaidh siad ar ais isteach sa chré agus tabharfaidh siad cothú don phlainéad.
 - Ní ábhar orgánach é **cothaitheach teicneolaíoch**. Déanann an cine daonna iad agus tá ábhar cosúil le plaisteach agus miotail iontu.
 - Iarr ar na páistí cothaitheach bitheolaíoch nó cothaitheach teicneolaíoch ar bith a tharraingt ar na bileoga A5.
- Seasann na páistí a tharraing sampla de chothaitheach bitheolaíoch ar thaobh na láimhe deise agus seasann na páistí a tharraing sampla de chothaitheach teicneolaíoch ar thaobh na láimhe clé. Iarr orthu an ealaín a fheiceann siad a phlé.
 - An bhfuil baint ag an ealaín a rinne siad leis an ngeilleagar ciorclach nó leis an ngeilleagar líneach?

Conclúid:

Cuir na ceistanna seo a leanas ar an rang:

- Ar fhoghlaim tú aon rud nua inniu?
- An bhfuil ceist ar bith agat?
- Ar mhaith leat aon rud a roinnt leis an ngrúpa faoin obair agus faoin ealaín a rinneamar inniu?

Iarr ar na páistí na Bileoga Breathnóireachta a líonadh isteach. (Bosca 1/2/3)

Eolas don chéad seisiún eile

Beidh an chéad seisiún eile taobh amuigh ag áit nádúrtha.





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=5yztT3zwg3I>

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.



Seisiún a trí An Geilleagar Ciorclach sa Dúlra

Ábhair:

Eolaíocht, Tíreolaíocht, Stair, OSPS, Na hAmharc-ealaíona, Gaeilge, Oideachas i bhForbairt Inbhuanaithe, Saoránacht Dhomhnada, Corpoideachas

Aois na bpáistí:

11-14

Am:

60-90 nóiméad

Aidhmeanna an cheachta:

1. Sampla den **Gheilleagar Ciorclach** a aimsiú sa dúlra.
2. Samplaí den gheilleagar ciorclach sa dúlra a tharraingt.
3. Foclóir nua a bhaineann leis an ngeilleagar ciorclach a thuiscint agus a úsáid.

Ábhair agus áiseanna:

(Beidh na bileoga agus físeáin ar fáil ar shuíomh AgroCycle Kids)

- **Taifead Breathnóireachta:** Bileog A3
- Ábhair ealaíne – criáin, pinn luaidhe, pinn luaidhe daite, cailc, gualach
- Bileoga A3/A4
- Físeáin ar an idirlíon - <https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s> agus <https://www.youtube.com/watch?v=5yztT3zww3I> • Cluiche: Cuardach Focal (Seisiún a trí)
- Fás-chlár ag gach páiste.

An Balla Foclóra:

(Cuir na focail seo a leanas ar an mBalla Foclóra)

Dúlra, áit nádúrtha, dramhaíl ar bith, gailearaí, machnamh, breathnaigh ar

Tús

- Dul siar: Téigh siar ar sheisiún 2 agus ar na focail ar an mballa foclóra. Taispeáin na focail nua do na páistí agus scríobh ar an mballa iad.
- Imir an cluiche **Cuardach Focal** i mbeirteanna.

- Ní chuireann an dúlra dramhaíl ar fáil. Nuair a fhágann na páistí an foirgneamh scoile, abair leis na páistí go mbeidh siad ag féachaint ar shamplaí den gheilleagar ciorclach sa dúlra.
- Iarr ar na páistí cothaitheach bitheolaíoch agus cothaitheach teicneolaíoch a phlé i mbeirteanna ó sheisiún 2. Téigí ansin chuig an áit nádúrtha áitiúil agus bainigí úsáid as an dúlra mar spreagadh.

Forbairt

- Nuair a shroicheann sibh an áit nádúrtha áitiúil, seasaigí go ciúin, breathnaigí ar an dúlra.
- **Machnamh:** Bígi ag machnamh agus bígi ciúin. Bainigí úsáid as na céadfaí go léir, breathnaigí ar an dúlra. Tar éis daoibh an dúlra a fheiceáil i gceart, dúnaigí na súile. Smaoinigí ar an dúlra.
- Tar éis daoibh an machnamh gairid seo a chríochnú labhraigí mar ghrúpa faoin méid atá déanta agaibh go dtí seo sna seisiúin. Iarr ar na páistí na pointí is tábhachtaí ó na seisiúin éagsúla a phiocadh amach.
- Iarr ar na páistí an t-eolas nua atá acu a úsáid anois agus iad ag féachaint ar an dúlra.
- Bainfidh gach páiste úsáid as an bhfasc-chlár atá aige/aici nuair atá siad ag tarraingt. Iarr ar na páistí pictiúir a tharraingt den gheilleagar ciorclach atá feicthe acu san áit nádúrtha áitiúil. (samplaí den gheilleagar ciorclach nach bhfágann aon dramhaíl – cuireann na samplaí luach ar dhramhaíl)
- Iarr ar na páistí ciorcal a chruthú. Déan machnamh ar an ealaín mar ghrúpa. Téigí ar ais chuig an seomra ranga agus tá cead ag na páistí dath a chur leis an ealaín más mian leo.

Críoch

Cuirigí an ealaín ar na boird agus déanaigí **Gailearaí an Gheilleagar Chiorclaigh** as an ealaín. Cuirigí na cathaoireacha isteach agus siúlaimí timpeall an ghailearaí. Ag deireadh an tseisiúin tabhair an **Taifead Breathnóireachta** amach do na páistí. Scríobhaigí síos aon eolas nua ar na bileoga.



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=5yzt3zwwq3I>
- 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=5yzt3zwq3I>
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.





Seisiún a ceathair Geilleagar Ciorclach a dhearadh

Ábhair:

Eolaíocht, Tíreolaíocht, Stair, OSPS, Na hAmharc-ealaíona, Gaeilge, Oideachas i bhForbairt Inbhuanaithe, Saoránacht Dhomhnada, Corpoideachas, Ceol

Aois na bpáistí:

11-14

Am:

60-90 nóiméad

Aidhmeanna an cheachta:

1. Spriocanna Domhanda um Fhorbairt Inbhuanaithe a fhiosrú – sprioc 11, 12, 13 ach go háirithe.
2. Tionscnaimh dearaidh a phleanáil, a thaispeánfaidh samplaí den gheilleagar ciorclach.
3. Le cinntiú leis na páistí go dtuigtear an tionscnamh dearaidh/ealaíne.
4. Foclóir nua a bhaineann leis an ngeilleagar ciorclach a thuiscint agus a úsáid.

Ábhair agus áiseanna:

(Beidh na bileoga agus físeáin ar fáil ar shuíomh AgroCycle Kids)

- **Taifead Breathnóireachta:** Bileog A3
- Ábhair ealaíne – criáin, pinn luaidhe, pinn luaidhe daite, cailc, gualach
- Bileoga A3
- Físeáin ar an idirlíon:
<https://www.youtube.com/watch?v=359ibQ4ozz0&t=33s> agus
<https://www.youtube.com/watch?v=5yzt3zwq3I>
- Powerpoint (Seisiún 4)

An Balla Foclóra:

(Cuir na focail seo a leanas ar an mBalla Foclóra)

Na Náisiúin Aontaithe, Spriocanna Domhanda um Fhorbairt Inbhuanaithe, bran ríse, nuálach

Tús

Cuir i gcuimhne do na páistí nach bhfágtar dramhaíl timpeall sa dúlra.

- Breathnaigh ar an ealaín ón seisiún deireanach atá crochta timpeall na scoile.
- Roinn an smaoineamh seo thíos leis na páistí agus pléigh an ealaín:

“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 (Eolaí, UCD, An Tionscnamh AgroCycle)

- Seinn an rapcheol ó AgroCycle Kids.
<https://www.youtube.com/watch?v=5yztT3zwq3I>
- Tabhair spreagadh do na páistí an t-amhrán a chanadh, bogadh timpeall, agus damhsa agus foghlaim na focail le chéile agus sibh ag canadh agus ag rince. Tá príomhtheachtairacht an tionscnaimh fite fuaite tríd an amhrán seo.

Forbairt

- Mínigh agus pléigh na **Spriocanna Domhanda um Fhorbairt Inbhuanaithe** leis na páistí, sa PowerPoint a bhaineann le seisiún a ceathair.
- An bhfuil tú ábalta na spriocanna a bhaineann leis an tionscnamh AgroCycle a aimsiú agus a aithint?
- Mínigh an tasc dearaidh/tasc ealaíne do na páistí.
- Roinn na páistí i ngrúpaí don tasc seo. Tá cead acu obair neamhspleách a dhéanamh freisin.

An Tasc

Féach ar na soip atá le feiceáil ar an suíomh AgroCycle Kids. Rinne na heolaithe iad as bran ríse. Seo sampla de rud éigin nach raibh úsáideach go nuige seo, ach anois, tá na heolaithe tar éis luach a chur leis. B'fhéidir go dtabharfaidh sé seo inspioráid duit do na tionscnaimh atá os do chomhair amach.

Treoracha don tasc:

- Féach ar an timpeallacht, féach timpeall sa bhaile, timpeall na scoile. Aimsigh sampla

nó deis a mbeadh oiriúnach don tasc seo. Rud nó séirbhís a chruthaíonn an-chuid dramhaíola agus tá smaointí nua agat maidir leis chun fáil réidh leis an dramhaíl.

- Nó, b'fhéidir go mbeidh smaoineamh/rud/séirbhís iomlán as an nua agat, chun é a fhorbairt i mbealach ciorclach.
- Dear agus léirigh do chuid smaointí trí ealaín.
- An bhfuil dramhaíl fágtha i do chuid tionscnaimh? An bhfuil luach ag gach nasc den slabhra.
- An bhfuil do chuid tionscnaimh nasctha leis na spriocanna forbartha inbhuanaithe? Ainmnigh iad.
- Déan imscrúdú ar an difríocht idir tomhaltóir agus úsáideoir. Bíodh feasacht agat faoi seo agus tú ag dearadh don gheilleagar ciorclach.
- Aithin an difríocht idir próiséas líneach agus próiséas ciorclach. Cuimhnigh – i bpróiséas ciorclach, dúntar an lúb, agus tá gach rud luachmhar.

Tar éis réamhphlé sna grúpaí nó le chéile, tá neart ama ag na páistí na tionscnaimh a dhéanamh idir seisiún a ceathair agus an chéad seisiún eile, seisiún a cúig.

Le do thoil, tabhair am do na páistí an taighde agus an obair a dhéanmh i rith am scoile.

Críoch

Breac síos eolas nua a d'fhoghlaim tú más mian leat. B'fhéidir go gcabhróidh sé seo leat leis an tionscnamh. B'fhéidir go bhfeicfidh tú rud éigin a spreagfaidh tú agus do chuid smaointí.

Bí cinnte go bhfuil am breise ar fáil do cheisteanna agus do fhreagraí maidir leis an tionscnamh.

Ag seisiún a cúig, beidh lán-fáilte romhat do chuid tionscnaimh a thaispeáint agus a chur i láthair. Is deis iontach é seo do chuid smaointí a roinnt agus a phlé.





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.





Seisiún a cúig Athmhachnamh agus Cruthaitheacht

Ábhair:

Eolaíocht, Tíreolaíocht, Stair, OSPS, Na hAmharc-ealaíona, Gaeilge, Oideachas i bhForbairt Inbhuanaithe, Saoránacht Dhomhnada, Ceol, Corpoideachas

Aois na bpáistí:

11-14

Am:

60-90 nóiméad

Aidhmeanna an cheachta:

1. Dearaí na bpáistí a chur i láthair.
2. Deis a thabhairt do chuile dhuine ceistiú a chéile agus na dearaí a phlé.
3. Athmhachnamh a dhéanamh le chéile, maidir leis na seisiúin ar fad.
4. Foclóir nua a bhaineann leis an ngeilleagar ciorclach a thuiscint agus a úsáid.
5. An bhileog 'Labhair le Duine Fásta' a mhíniú.

Ábhair agus áiseanna:

(Beidh na bileoga agus físeáin ar fáil ar shuíomh AgroCycle Kids)

- **Taifead Breathnóireachta:** Bileog A3
- **Labhair le Duine Fásta:** Bileog A4
- Ábhair ealaíne – criáin, pinn luaidhe, pinn luaidhe daite, cailc, gualach
- Dearaí na bpáistí

An Balla Foclóra:

(Cuir na focail seo i leanas ar an mBalla Foclóra)

Nuálach, córas ciorclach, ceisteanna domhanda, séasúrach, nuálaíocht

Tús

Cuir fáilte roimh chuile dhuine chuig an seisiún deireanach. Scaip na bileoga **‘Taifead Breathnóireachta’** ar na páistí. Tá fáilte roimh na páistí eolas nua a chur leis an eolas atá acu go nuige seo. Pléigh an tasc:

- Ar thaitin sé leat?
- Ar dhear tú don **gheilleagar ciorclach**?
- An raibh sé deacair?
- Céard a chabhraigh go mór leat?

Forbairt

Cuirfidh na páistí na dearaí i láthair ó áit an-sofheicthe sa seomra. Ní mór duit bheith soiléir faoi na pointí seo:

- Cén fáth gur dramhaíl é, an t-ábhar a roghnaigh tú? Cad é an rud a chruthaíonn an dramhaíl seo de ghnáth?
- An mbíonn mórán dramhaíola i gceist? An ceist dhomhanda í? An ábhar séasúrach é?
- An mbeadh **an dearadh** seo réidh go luath?
- An bhfuil tuairim eile agat maidir leis an gcogadh dramhaíola?

Bí cinnte go bhfuil go leor ama ag na páistí ceisteanna a chur ar a chéile agus cúrsaí a phlé tar éis gach cur i láthair. Bí cinnte go spreagtar gach páiste agus go gcloistear tuairimí dearfacha mar thoradh ar an iarracht iontach atá déanta acu. Taispeáin na dearaí timpeall na scoile.

Críoch

Tá fáilte roimh na páistí eolas ar bith a mbeadh suim acu ann a thaifead ar na bileoga **‘Taifead Breathnóireachta’**. Pléigh an t-eolas seo. Críochnaigh an seisiún leis an bhfíseán ón suíomh AgroCycle Kids. Can an t-amhrán arís leis na páistí. Tá an t-amhrán ag deireadh an fhíseáin.

An Tasc Deireanach

‘To teach is to learn twice’ Joseph Joubert (Morálaí agus Scríbhneoir Aistí)

Is é an tasc deireanach ná an bhileog **‘Labhair le Duine Fásta’** - Léigh na ceisteanna le chéile.

- Smaoinigh siar ar na seisiúin ar fad le duine fásta i do shaol.

- Míniú don duine fásta an méid a d’fhoghlaim tú le linn an tionscnaimh seo.

- Freagair na ceisteanna ón mbileog.
- Scríobhann an duine fásta na freagraí sa bhaile.

Agus na bileoga seo ar fad líonta, is féidir leis an múinteoir iad a phlé leis an ngrúpa ar fad amach anseo.

Is deis í seo do na páistí dul chuig an bpobal agus an teachtaireacht ón tionscnamh AgroCycle a scaipeadh. Beidh na páistí in ann na daoine fásta a threorú maidir le dramhaíl. Scaipfidh siad an t-eolas nua agus cabhróidh seo go mór leis an timpeallacht.

