Maynooth University, Ireland

English Language and Irish Language Education Programme for Primary Schools.

BioBeo's Learning Outcomes: Nurturing Sustainability and Global Engagement for a Circular Bioeconomy.

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BioBeo participants will collaborate with peers, local and international communities on BioBeo's five themes, fostering a critical understanding of the relevance of circular bioeconomy to their own and the future of the planet. The BioBeo Project encourages creativity, nature-based solutions, and exploration of possibilities in local, national, and international contexts to enhance expertise and resilience in circular bioeconomy operations.

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Information

Lesson 1: Introduction to the Circular Bioeconomy

Lesson 2: Forestry: *An Coillín Beag* (The Little Wood)

Lesson 3: Life Below Water - Let's Go Create a Pond!

Lesson 4: Food Loop: Helping *An Coillín Beag* to Grow

Lesson 5: An Artistic Adventure: What have we learnt through BioBeo's circular bioeconomy journey together?

Lesson 6: Telling the Story of our Bioeconomy Learning Journey (Creating an artistic response).

BioBeo Bioeconomy Definition:

"Bioeconomy is a systems-based approach that seeks to replace fossil resources in a sustainable manner with renewable biological resources from terrestrial and marine ecosystems – such as forests, crops, animals, fish, microorganisms, organic waste, and agricultural side streams, to produce food, feed, fibres, energy, bio-based products, and services within a circular economy framework designed to optimise resource use based on a cascading hierarchy of utilisation options. A sustainable and circular bioeconomy requires the application of education and training programmes, scientific research, technology, and innovation with the aim of not only creating economic value, but also regenerating and expanding ecosystems and biodiversity as well as improving the health and the well-being of society. By addressing these systemic changes in the economy, environment, and society, the bioeconomy contributes to achieving a better and more sustainable future where no one is left behind."

Organisation: Maynooth University
Country: Ireland

Topic: Introducing BioBeo's 5 themes of the circular bioeconomy to primary school children.

Narrative: These 5 learning sessions will be conducted in the outdoor classroom, school environs, garden, or parklands. During these sessions, the Múinteoir BioBeo will introduce the 5 themes with a special focus on a pedagogy of place. Children and teachers will explore what a bioeconomy looks like in their locality and engage with the surrounding environment.

Methodology/ies: Active Learning, Guided Discovery, Talk and Discussion, Problem Solving, Collaborative Learning, Engaging and Interacting with the Natural Environment, Free Exploration of Materials, Learning through Play, Direct Teaching, Artistic and Musical Expressions and Responses.

SDG: 3,4,11,12,13,14,15,16.

3: Good Health and Well-being, 4: Quality Education, 11: Sustainable Cities and Communities, 12: Responsible Consumption and Production, 13: Climate Action, 14: Life Below Water, 15: Life on Land, 16: Peace, Justice and Strong Institutions.

Age group: 5th/ 6th classes, Primary.

Curriculum integration: From the NCCA Draft Primary Curriculum Framework: 1. Language 2. Science, Technology, Engineering, and Mathematics (STEM) Education 3. Wellbeing 4. Arts Education 5. Social and Environmental Education.

The following themes are addressed by this Material:

Inter-connectedness	Interconnectedness ☒	**Interconnectedness** reflects the role of the biosphere and natural environments in human well-being and holistic health and the undisputed ecological interconnectedness of all living things.
Outdoor Learning	Outdoor learning ☒	**Outdoor learning** is active learning in the outdoors where participants learn through what they do, through what they encounter and through what they discover.
Food Loop	Food Loop ☒	**Food Loop** encompasses farming, hospitality, retail, and energy production sectors. In terms of the circular economy, it focuses on the efficient use of by-products, and the overall reduction of food waste.
Forestry	Forestry ☒	Whilst **forestry** products are increasingly attractive in terms of sustainability, and are a major part of the circular economy, there are massive global disparities in the governance of forestry activity.
Life Below Water	Life Below Water	**Life below water** refers to the conservation and sustainable use of all water bodies (like oceans, and marine resources but also rivers and lakes) for sustainable development.

Rationale for BioBeo Primary Education Plans

Introduction

Contextualising Bioeconomy Education in Primary Schools

The escalating environmental challenges of the 21st century necessitate a transformative approach to education, particularly in fostering an understanding of the bioeconomy among young learners. The bioeconomy encompasses the sustainable production and conversion of biomass into a spectrum of products, including food, energy, and materials, aiming to reduce reliance on fossil resources and mitigate climate change (European Commission, 2018). Integrating bioeconomy concepts into primary education aligns with global sustainability initiatives, such as the European Green Deal (European Commission, 2019) and the United Nations Sustainable Development Goals (SDGs) (United Nations, 2015), by promoting environmental literacy and responsible citizenship from an early age. Research suggests early exposure to sustainability concepts encourages long-term engagement with environmentally responsible behaviours (Sterling, 2001).

Building Upon the AgroCycle Kids Programme

The BioBeo primary lesson plans build upon the AgroCycle Kids education programme, which demonstrated the efficacy of outdoor learning in enhancing environmental awareness and engagement among children. AgroCycle Kids highlighted that experiential learning in natural settings bolsters cognitive development and fosters a deeper emotional connection to the environment (Dadvand et al., 2015). By expanding upon this foundation, BioBeo emphasises outdoor experiential learning as a core pedagogical strategy, facilitating immersive experiences that cultivate a profound appreciation for nature and sustainability. Studies show that children who engage in nature-based learning demonstrate improved wellbeing, creativity, and problem-solving skills (Louv, 2008; Malone & Waite., 2016).

Froebelian Ecofeminism: A Pedagogical Foundation

The integration of Froebelian ecofeminism is central to the BioBeo lesson plans. This philosophy underscores the interconnectedness of all living entities and advocates for a nurturing, relationship-based approach to education. Friedrich Froebel, the progenitor of the kindergarten concept, posited that education should holistically address a child's development's physical, intellectual, social, emotional, and spiritual dimensions (Froebel, 1887). This perspective aligns with ecofeminist principles, emphasising the symbiotic relationship between humans and nature and advocating for educational practices that reflect care, empathy, and environmental stewardship (Plumwood, 2002). By embedding these principles, BioBeo fosters a pedagogy of love and interconnectedness, encouraging learners to recognise and value their intrinsic relationship with the natural world.

Systems Thinking and Community Engagement

The BioBeo bioeconomy themes are meticulously designed to promote systems thinking, encouraging students to comprehend the intricate interdependencies within ecological and economic systems (Capra & Luisi, 2014). Sterling (2003) emphasises the growing importance of systems thinking as a fundamental competency in sustainability education. This approach enables students to transcend simplistic linear cause-and-effect paradigms, fostering a more profound comprehension of natural systems' intricate and dynamic interrelationships. This approach extends learning beyond the individual to encompass the school community, fostering collective consciousness and collaborative action towards sustainability. By engaging various stakeholders—including educators, students, families, and local communities—BioBeo cultivates a holistic educational environment that mirrors the complexity and interconnectedness of real-world systems.

Integrating Music and the Arts

Recognising the pivotal role of the arts in education, BioBeo integrates music and artistic expression into its curriculum to enhance creativity, emotional engagement, and cultural appreciation. Arts-based pedagogies have been shown to foster deeper emotional connections to environmental issues, making them powerful tools for sustainability education (Eisner, 2002; Somerville, 2010). These authors contend that integrating arts-based learning approaches facilitates a multisensory and imaginative engagement with sustainability themes. This pedagogical strategy enhances critical thinking and creativity with bioeconomy concepts, allowing learners to form deeper connections and understandings of these complex ideas.

Conclusion

The BioBeo primary lesson plans culminate in a thoughtful and reflective educational design rooted in extensive European-level research and progressive pedagogical frameworks. By integrating outdoor experiential learning, Froebelian ecofeminism, systems thinking, and the arts, BioBeo offers a comprehensive and holistic approach to bioeconomy education. This initiative not only equips young learners with the knowledge and skills necessary for sustainable living but also instils a profound appreciation for the interconnectedness of all life, preparing them to be conscientious stewards of the planet.

2. Theoretical & Pedagogical Framework

Outdoor learning significantly benefits children's cognitive, social, and emotional development (Harris, 2023).

Cognitive Development:

Nature-based learning has significantly enhanced attention and cognitive abilities, as being in natural surroundings helps learners improve their concentration and focus (Brussoni et al., 2015). Outdoor environments provide rich opportunities for inquiry-based activities that promote problem-solving and creative thinking, creating joy, wonder, and imagination (Harris, 2023). Such experiences can also foster a sense of self-confidence and efficacy, particularly in adolescents.

Experiential learning in outdoor settings ensures abstract concepts become more tangible. For instance, mathematical principles can be illustrated through activities like measuring trees, while historical lessons can come to life during visits to historical sites. Waite (2011) suggests that this

connection may lead children to perceive classroom learning as distinct from learning in the real world, which can impact how transferable the knowledge gained in each context is. Incorporating natural elements such as sticks and stones into learning can support language development as children converse about the meanings they associate with these objects. Overall, outdoor learning enhances various pre-academic skills, cognitive abilities, language development, and motor skills, offering a holistic approach to education (Kuo, Barnes, & Jordan, 2019).

Social Development:

Harvey et al. (2020) argue that outdoor learning significantly enhances children's social competencies and communication skills. This modality fosters crucial traits such as perseverance and self-regulation. The natural environment serves as a catalyst for teamwork, thereby cultivating children's sense of responsibility, competence, and social-emotional development (Kuo, Barnes, & Jordan, 2019). Engaging in outdoor play enables children to appreciate the significance of interactive play, imaginative role-play, physical activity, and cooperative observation with peers. Being outdoors also encourages children to take on leadership roles, allowing them to become more aware of the wellbeing and safety of their team members (Zamani, 2016). Teachers have observed that children in an outdoor setting tend to pay greater attention and ask more in-depth questions, leading to richer learning experiences (Kuo, Barnes, & Jordan, 2019).

The opportunities outdoor learning provides are viewed as more inclusive for all, facilitating their development of essential 21st-century skills like collaboration, problem-solving, and critical thinking. The opportunities it provides for social interaction help children build social language skills and develop an awareness of others, ultimately enriching their learning experience (Ashbridge & Josephidou, 2009, p.32).

Emotional Development:

Harris (2023) contents that exposure to the natural environment can profoundly impact children's mental and emotional health. Immersion in nature improves children's overall wellbeing and fosters creativity and the ability to connect with others. Outdoor environments reduce stress while promoting vitality, positivity, and creative thinking (Lee et al., 2012; Tyrväinen et al., 2014). These natural settings often elicit positive emotions, helping to diminish negative feelings (Simkin, Ojala, and Tyrväinen 2020).

Children who engage in outdoor learning frequently report having positive and enjoyable experiences (Christie, Beames, & Higgins, 2015). This enriching education leads to significant mood and wellbeing improvements sustained throughout the academic year (Harvey et al., 2020). Additionally, outdoor learning contributes to increased self-esteem and fosters a sense of independence among children (Constable, 2017).

Experiencing nature also deepens children's connection with Mother Earth. Engaging with the natural world especially when it involves empathy, love, and using all five senses is essential (Ní Chléirigh, 2023). Time spent in an outdoor classroom is particularly beneficial, as it encourages children's peacefulness, calmness, and problem-solving behaviours.

Being outdoors has been shown to boost mental health (Prisk & Cusworth, 2018). The feelings of freedom experienced in natural settings can encourage creativity, allowing children to explore and express their feelings more freely. Through outdoor learning, children connect with nature and cultivate their emotional and social skills, making it a vital part of their growth and development.

Froebelian Ecofeminism & the Pedagogy of Love & Interconnectedness

Froebelian ecofeminism emphasises nurturing healthier relationships with the planet, grounded in the idea that all things are interconnected (Ní Chléirigh, 2023). This philosophy highlights the importance of care, justice, and emotional engagement while balancing rationality to effectively dismantle the structures of domination that contribute to environmental degradation (Sobel, 1996). A loving pedagogical approach aligns seamlessly with these ecofeminist ideals. In this framework, the unique nature of every participant is acknowledged within a natural context, and the interconnectedness of all things is celebrated (Hanh, 2014). Drawing inspiration from indigenous knowledge, ecofeminist research often refers to the Earth as "Mother," reflecting its life-giving essence. The pedagogical approach promoted by Froebelian ecofeminism is child-centred, emphasising the significance of each child's individuality and their essential role in humanity. This philosophy integrates children into critical conversations about environmental degradation and imaginative solutions for climate change.

Experiential learning is also a cornerstone of Froebelian philosophy, advocating for diverse and dynamic natural learning experiences such as adventurous play and gardening. These activities allow children to explore and understand their surroundings within safe environments, leading to firsthand experiences with natural phenomena. This relational aspect of the framework emphasises "life unity," recognising all human beings as integral parts of a larger community that encompasses both society and nature. For instance, initiatives like the "Talk to an Adult Worksheet" foster intergenerational learning, extending discussions about the circular economy beyond the classroom environment.

Ní Chléirigh (2023) also suggests that a Froebelian ecofeminist approach recognises the Earth as an integrated system, highlighting the necessity of synthesising knowledge to address challenges like climate change effectively. It champions transformative action through individual "response abilities," empowering individuals to co-create a more sustainable society. This philosophy also counters patriarchal assumptions by incorporating a social justice perspective that fosters an attitude of deep care for one another and the environment. By drawing attention to the limitations of mechanistic learning modes, it advocates for a nurturing pedagogical approach. Consequently, Froebelian ecofeminism emerges as a robust framework for designing primary school lessons that inspire environmental stewardship through child-centred, experiential, and relational learning.

Systems Thinking

Fisher (2023) defines systems thinking as a method of analysis that encourages students to approach systemic problems holistically. It involves recognising the interconnections between various elements, identifying feedback loops, and understanding dynamic behaviour within systems. This approach fosters the ability to devise modifications for desired outcomes and plays a significant role in sustainability education. UNESCO emphasises that systems thinking is vital for implementing Education for Sustainable Development (ESD), as it offers a transdisciplinary view of life that emphasises relationships, patterns, connectedness, and context (Azzahra et al., 2023).

Goode and MacGillivray (2023) note how teachers and students collaboratively generate principles of systems thinking—general "rules" of systems—through their discussions. As they delve deeper into interdependent systems, they apply and refine these principles to tackle imbalances, inequalities, and injustices present in social and environmental contexts (Curwen et al., 2018). By embracing systems

thinking, students can effectively confront these issues, enhancing their cognitive abilities and critical thinking skills. This approach also equips them with the tools to navigate ambiguity and ethical dilemmas.

The BioBeo project exemplifies applying these principles by embedding Sustainable Development Goals (SDGs) into educational programmes across various levels, from preschool to secondary education and initial teacher training throughout Europe. This initiative aims to foster societal understanding and awareness of a sustainable future. Each BioBeo Bioeconomy theme promotes whole-school and community engagement. One fundamental theme is interconnectedness, which reflects the core idea of recognising relationships within systems. Additionally, the concept of a circular economy is pivotal, as it seeks to maximise the circulation of products and materials, fully integrating sustainability into everyday practices. The curriculum also emphasises an awareness of resource usage, particularly about forestry, highlighting the importance of sustainable practices in natural resource management.

The project encompasses the theme of "Life Below Water," aimed at raising awareness of marine ecosystems and the significant efforts being undertaken to protect them. Outdoor learning is another critical component, as hands-on experiences and activities outside the classroom are essential for cultivating environmentally conscious citizens. By employing arts-based methods, participants are encouraged to explore the principles of the circular economy, further integrating these vital concepts into their understanding of sustainability to develop knowledge and awareness around measures we can take through education for sustainable development to heal Mother Earth. The concept of circularity draws attention to including children's voices, meaning they participate in creating the futures that affect them.

Arts and Music in Environmental Education

The lesson plans are structured around key educational principles, utilising an inquiry-based, active, and reflective approach. This framework encourages students to engage deeply with the material, fostering a hands-on learning environment that promotes exploration and critical thinking. The rationale for employing place-based and experiential learning approaches is rooted in their effectiveness in making education relevant and meaningful (Ison & Lalor, 2023). By connecting learning to the local environment and experiences, students can better relate to the content and see its real-world applications. This approach enhances engagement and encourages a sense of responsibility towards their surroundings. Several studies on arts implementation in Environmental Education have been conducted internationally at various levels of the education system (Hallam, Gallagher, and Owen, 2022 Inwood, 2024; Inwood & Taylor, 2012). These studies highlight the relationship between the arts and nature by focusing on the senses, imagination, and emotions gained through firsthand experiences. The findings from these studies have demonstrated that the arts help deepen knowledge of nature, create emotional connections to it, and reveal the human-nature connection. Additionally, environmental activities using the arts have been shown to produce a stronger connection with nature than activities that do not use the arts (Arbuthnott & Sutter, 2019; Gray & Thompson, 2024).

The potential of art to strengthen the human-nature connection, encourage pro-environmental behaviours, and serve as an effective educational tool for a deeper understanding and creative expression of environmental issues is significant. Papavasileiou et al. (2020) noted that when children

engage with nature, they often express an emotional connection—such as admiration and awe—through eco-arts. Furthermore, as Shrivastava and Ivanaj (2012, p. 29) stated, "Art has the unique ability to symbolise complex abstractions in concrete ways, which yields the potential for... bringing about a shift in mindset, necessary for sustainability." Consequently, incorporating the arts into Environmental Education may provide a means to evoke emotional responses that are crucial for nurturing and maintaining the human-nature connection. This connection is vital for fostering pro-environmental attitudes—such as care and concern—and actions that support sustainability (Abson et al., 2017; Ives et al., 2018).

The BioBeo programme aligns well with national curricula, ensuring students receive a comprehensive education that meets educational standards while promoting environmental awareness.

3. Lesson Design and Methodology

The BioBeo Primary Lesson Plans are designed to provide a rich, engaging, and experiential approach to bioeconomy education, ensuring that young learners develop a deep connection to nature, sustainability, and circularity. The lessons are underpinned by a child-centred, inquiry-based methodology that integrates outdoor learning, systems thinking, and cross-curricular engagement. Drawing from research on nature-based education, ecofeminism, and active learning pedagogies, these lessons aim to foster critical thinking, creativity, and environmental stewardship in primary school students.

This section outlines the pedagogical rationale behind the lesson plans, their structural design, and the methodologies employed to support meaningful learning experiences.

3.1 Lesson Structure and Pedagogical Rationale

Each lesson within the BioBeo programme follows a carefully structured format that balances guided exploration, hands-on activities, and reflective learning. The lessons are designed to be adaptable across diverse learning environments while ensuring consistency in their delivery.

Core Elements of Each Lesson:

- Thematic Focus: Every lesson is centred around one or more BioBeo bioeconomy themes: Interconnectedness, Outdoor Learning, Forestry, Food Loop, and Life Below Water. These themes provide a systems-thinking approach to helping students understand the interdependence between nature, society, and sustainable development.
- Outdoor Learning Component: All lessons occur in outdoor settings such as school gardens, woodlands, ponds, or local community spaces, reinforcing the place-based education model. Research has demonstrated that outdoor learning enhances cognitive development, fosters wellbeing, and strengthens children's emotional connection to nature (Waite et al., 2016).
- Inquiry-Based Learning: The lessons begin with an open-ended question or problem scenario, encouraging students to observe, predict, and investigate. This aligns with constructivist learning theories, emphasising that children learn best when actively engaged in meaning-making experiences.

- Experiential and Hands-On Activities: Learners engage in sensory-based exploration, experimentation, and problem-solving activities to deepen their understanding of bioeconomy concepts in real-world contexts.
- Creative and Reflective Components: Each lesson incorporates opportunities for creative expression, such as storytelling, drawing, music, or drama, to reinforce learning and allow for multiple modes of knowledge representation.

This multi-layered structure ensures that students experience bioeconomy concepts rather than passively acquiring knowledge, leading to deeper learning and long-term retention.

3.2 Key Methodologies Used in BioBeo Lesson Plans

The BioBeo lessons integrate several wellbeing pedagogical approaches to create meaningful, engaging, and transformative learning experiences.

Outdoor and Place-Based Learning

A fundamental principle of the BioBeo lesson design is learning through direct interaction with nature. Outdoor learning has increased students' engagement, curiosity, and environmental awareness while improving their mental and physical wellbeing (Louv, 2008). The lesson plans encourage learners to explore biodiversity, ecosystems, and natural resources firsthand, making abstract bioeconomy concepts more tangible and relevant.

Key outdoor learning strategies employed in the lessons include:

- **Observation and Fieldwork:** Students explore local habitats, study native species, and investigate natural decomposition or water filtration cycles.
- **Sensory Engagement:** Lessons incorporate touch, smell, sound, and sight, helping children form a multisensory connection with the environment.
- **Seasonal Awareness:** Activities are designed to be adaptable across different seasons, reinforcing the idea that nature is constantly changing and interconnected.

Systems Thinking Approach

BioBeo lessons are designed to shift students' perspectives from isolated facts to interconnected systems. This aligns with eco-literacy frameworks that emphasise understanding the relationships between living organisms, resources, and sustainable practices (Capra & Luisi, 2014).

- Interconnected Learning: Lessons are structured to help children recognise patterns, cycles, and dependencies within nature. For example, students track how a tree supports multiple species, demonstrating the complexity of ecological networks.
- Problem-Solving Activities: Many lessons present students with real-world sustainability challenges, such as reducing food waste or improving biodiversity in their local area, encouraging them to think critically about solutions that integrate both natural and human systems.

Inquiry-Based and Child-Led Exploration

BioBeo lessons employ an inquiry-driven methodology, where students assume the roles of scientists, explorers, and problem-solvers. Instead of receiving direct answers, children are encouraged to ask questions, form hypotheses, and test ideas through guided discovery.

- **Active Exploration:** Teachers act as facilitators, allowing students to lead investigations, conduct mini-experiments, and draw conclusions.
- **Collaborative Learning:** Many activities involve peer discussions and teamwork, fostering communication skills and social learning.
- **Critical Thinking Development:** Lessons include open-ended questions that require students to analyse, predict, and justify their thinking.

Arts and Creativity in Sustainability Education

Recognising the importance of emotional engagement in learning, BioBeo integrates music, storytelling, and the arts into its lesson design. This aligns with research suggesting that arts-based learning deepens understanding, enhances memory retention, and strengthens personal connections to sustainability topics (Nicholson et al., 2022).

- **Music and Songwriting:** Some lessons incorporate song creation and rhythmic exercises to help reinforce key messages memorably.
- **Storytelling and Drama:** Students are encouraged to imagine alternative futures, role-play scenarios, and create environmental narratives that connect knowledge with personal experience.
- **Visual Arts and Nature Crafts:** Hands-on art projects allow children to express their learning creatively, making bioeconomy concepts more accessible and engaging.

3.3 Cross-Curricular Integration

The BioBeo lesson plans are designed to integrate seamlessly with national primary curricula, making them adaptable across different educational systems. The lessons align with multiple subject areas, including:

Science and STEM	Ecosystem studies, sustainability challenges, biodiversity tracking.
Geography	Exploration of local landscapes, mapping outdoor learning sites.
Mathematics	Measuring plant growth, calculating water usage in food systems.
Literacy and Language	Storytelling, reflective writing on nature experiences
Arts	Eco-art projects, composing songs about sustainability, drama based on sustainability
Physical Education	Movement-based outdoor activities, nature scavenger hunts.

This cross-disciplinary approach ensures that bioeconomy education is not confined to a single subject but is embedded across the curriculum, making sustainability learning holistic and engaging.

3.4 Adaptability and Long-Term Impact

A key feature of the BioBeo lesson design is its adaptability to different school contexts. The resources are structured to be:

- Flexible: Activities can be adjusted based on available space, materials, and student needs.
- Scalable: Lessons can be expanded into whole-school projects or community engagement initiatives.
- Culturally Responsive: Teachers are encouraged to adapt examples to reflect local biodiversity, traditions, and sustainability challenges.

The BioBeo lesson plans foster a lifelong connection to nature and sustainability, providing a foundation for future eco-literate citizens who can actively contribute to a circular bioeconomy.

4. Conclusion

Integrating outdoor experiential learning ensures that students engage directly with nature, fostering a more profound sense of place and responsibility towards their environment. Grounded in Froebelian ecofeminist principles, the lessons encourage a pedagogy of care and interconnectedness, reinforcing the idea that humans and nature are intrinsically linked. The application of systems thinking further enables students to explore complex ecological relationships, empowering them to understand and address sustainability challenges holistically.

Moreover, the cross-curricular nature of the lesson plans ensures that bioeconomy concepts are woven into diverse subject areas, making sustainability education accessible and relevant across multiple disciplines. Including music, storytelling, and the arts enhances emotional engagement, providing students with creative avenues to express their learning and connect personally with environmental themes.

As global environmental challenges intensify, the need for meaningful and research-based bioeconomy education has never been greater. The BioBeo Primary Lesson Plans provide a scalable, adaptable, and impactful model that supports educators and learners and fosters whole-school and community engagement in sustainability initiatives. These resources' continued evaluation, refinement, and expansion will further strengthen their role in shaping a new generation of eco-literate, solution-oriented citizens prepared to lead the transition towards a sustainable and circular bioeconomy.

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Learning outcomes for Primary Schools

Lesson 1: Introduction to the Circular Bioeconomy

Participants will be enabled to:

1. Explore habitats outdoors.
2. Experience the ecological interconnectedness of all living things.
3. Develop an understanding of new circular bioeconomy terms and vocabulary and to use them in dialogue.
4. Carry out a simple habitat survey and grow an understanding of biodiversity and a circular bioeconomy in the school environment.

Lesson 2: Forestry: *An Coillín Beag* (The Little Wood).

Participants will be enabled to:

1. Develop an understanding of new circular bioeconomy terms and vocabulary and to use them in dialogue.
2. Reimagine the concept of the forest and witness natural examples of the circular bioeconomy every day in our school outdoor environment.
3. Collaborate in the design and planting of a mini forest and create their own school's little wood, *An Coillín Beag.*
4. Respond to a selection of woodland folklore and traditional music in order to create their own *An Coillín Beag* celebration ceremony.

Lesson 3: Life Below Water - Let's Go Create a Pond!

Participants will be enabled to:

1. Ensure the conservation of, and sustainable interactions with, all water bodies in their school environments.
2. Collaborate in the creation of a mini pond in *An Coillín Beag*.
3. Identify the Irish animals who need our help in the interconnectedness of all life: e.g. natterjack toads and common frogs.
4. Develop an understanding of new circular bioeconomy terms and vocabulary and use them in dialogue.

Lesson 4: Food Loop: Helping *An Coillín Beag* to Grow.

Participants will be enabled to:

1. Collaborate in the seasonal planting of an edible garden in *An Coillín Beag* and identify ways to reduce food waste in a circular bioeconomy.
2. Plant some pollinator friendly bulbs and seeds and discuss why bees also need food in the garden.
3. Discuss the interconnectedness of all the different trees, plants, flowers and insects in the newly planted school garden.
4. Develop an understanding of the interconnectedness between the Irish language and the landscapes of Ireland.

5. Develop their own wellbeing practice in nature and be introduced to the concept of a “Sit Spot”.

Lesson 5: An Artistic Adventure: What have we learnt through BioBeo’s circular bioeconomy journey together?

Participants will be enabled to:

1. Collaborate, create and compose a story of interconnectedness using *An Coillín Beag* “Story Stones”.
2. Respond to their BioBeo journey through painting and drawing using bio-based resources (make an evergreen paintbrush, make some natural, bio-based paint and use bio-based paper).
3. Exhibit, present, observe and respond to their own and classmates’ art works.
4. Develop an understanding of new circular bioeconomy terms and vocabulary and use them in dialogue.

Lesson 6: Telling the Story of our BioBeo Learning Journey (Creating an artistic response). The Emergent Voice of the Student.

Participants will be enabled to:

1. Investigate An Coillín Beag for signs of life.
2. Collaborate, create and compose an artistic response to the bioeconomy learning journey.
3. Consolidate and revise their understanding of new circular bioeconomy terms and vocabulary and to use in dialogue.
4. Investigate and explore the possibilities of working and having a future career in the bioeconomy.

Lesson Plan 1: Introduction to the Circular Bioeconomy.

Subject(s): Language, Science, Mathematics, Geography, Visual Arts, Music, Education for Sustainable Development, Global Citizenship	**Title of Lesson: Introduction to the Circular Bioeconomy.** **No. of Lesson: 1 of 6**	
Date: Autumn term	**Class: 5th/6th**	**Duration: 2.5 hours** **Guided by your class, take breaks when necessary**
BioBeo Theme: Interconnectedness	**Keywords/Phrases: bioeconomy, natural resource, bio-based resource, habitat, sustainable, ecosystem, ecological, renewable, interconnectedness, biodiversity**	

***Learn the BioBeo song in the weeks coming up to the sessions outdoors. See additional BioBeo Song notes in appendix*.**

Learning Outcomes:

Participants will be enabled to:

1. Explore habitats outdoors.
2. Experience the ecological interconnectedness of all living things.
3. Develop an understanding of new circular bioeconomy terms and vocabulary and to use them in dialogue.
4. Carry out a simple habitat survey and grow an understanding of biodiversity and a circular bioeconomy in the school environment.

Resources/Materials/Equipment:

Bio-based resources: paper, pencils/colouring pencils/crayons/charcoal, wool, stones, Irish apples, a *cipín* (twig), chalk for each child to use for answering and drawing in clay, a blackboard made from a repurposed storage crate, repurposed mini clipboards for children, a *Bata Taistil* ("journey stick"), reusable shopping bags to sit on, BioBeo sound chimes made from repurposed materials.

Introduction: **(25 mins)**

- Co-create a class outdoor learning contract of respect: We need to show respect to each other and all the other living things. We practise good listening.
- Let's go for our first morning in the outdoor classroom together. Take your time and enjoy all the sights and sounds on the way to the outdoor classroom.
- Assemble and sit in a circle. We start each session each day with 'The BioBeo Song'. Teacher can sing the song and play the guitar. and sing along with the children.

The BioBeo Song

BioBeo, ó BioBeo, BioBeo, yeah BioBeo!
Following nature's way, following nature's way
For a bioeconomy

Learning to see those interconnections,
All of nature is interconnected,
And that's how we roll,
With BioBeo, yeah BioBeo

Tagaigí linn go dtí an coillín beag,
Ó tagaigí linn go dtí an coillín beag!
Anáil isteach an ocsaigin
Ó na crainn, na crainn, is iad ag cabhrú linn
Ag cabhrú linn!

BioBeo, ó BioBeo

Sa choillín beag, we plant an edible garden
We'll sow the seeds and watch them grow
Food for the bees and for you and me
The food loop is circularity
Interconnectedness for all to see
We celebrate nature now,
Ó, with BioBeo

BioBeo, Ó Biobeo,

A magical world, it's life below water
Full of living things, life below water
Our little pond, who's making a home there now?
A natterjack toad, and the dragonfly! O Fly dragonfly!

BioBeo, yeah BioBeo

We're following nature's way, it's the bioeconomy
With BioBeo,
Learning to see those interconnections,
We're all in nature interconnected,
Circularity is how we roll, we're with BioBeo!

- Write the word 'bioeconomy' on the BioBeo box's blackboard. This is a repurposed wooden box painted with sustainable blackboard paint.
- Each student is given a small hand-sized *Cipín (*twig*)* as an object to show a response to questions: YES - *cipín* up (like thumbs-up), NO - *cipín* pointed down. The *cipín* can also be used to trace or write words in the earth/ clay where they sit.
- Think–Pair–Share: Discuss this term in pairs now (2–3 mins): Ask children:
    - Have you seen this word before?
    - Can you read it?
    - What do you know about it?
- Invite the pairs to briefly share the fruits of discussion. Explain that the *Bata Taistil* is given to each speaker to receive good listening from others. Write their keywords on the blackboard box.
- Teacher reads out this definition of the circular bioeconomy for the children, based on BioBeo's definition:

A circular bioeconomy is a way of using natural resources to produce food, energy, and products for living while taking care to protect the Earth at the same time.

Using renewable bio-based resources or gifts from the Earth, and reducing our waste in the circular bioeconomy supports a sustainable, healthy future for the planet and all living things.

Each and every one of us needs to choose and use resources wisely and gently for the sake of our shared home – The Earth.

- Ask children if they can think of examples of a circular bioeconomy in the natural world. *Cipín suas* if you think you know why we call it a circular bioeconomy? We will learn the answers together today.

Development: Part 1: Nature walk to investigate our local place, our school 'habitat'. (35 mins)

All stand in a large circle, pass the BioBeo ball of wool around the circle, children take some thread as the ball is unfurled around the full group. The wool connects the group. We are in a circle so that no one is left out, all of us are here to learn respectfully as a team.

- **Find a comfortable space, feel your feet rooting you to the ground. Feel how the wool thread sits in your hand.**
- **Now close your eyes, and find some calm out here in nature.**
- **Take 3 to 5 nice deep breaths in silence.**
- **Can you hear any sounds of nature?**
- **Stand still and quietly be aware of yourself and of what you can hear.**
- **Are the leaves rustling in the trees as the breeze blows through them?**

- **Can you hear the birds singing?**
- **Are there any other natural sounds?**
- **Take three more gentle, deep breaths in through your nose, out through the mouth.**
- **We are connected to the planet with our senses; touch in our feet, air touching our skin, hearing sounds of nature, light in our eyes, even when your eyelids are closed, some light gets in, our noses help us smell the wonderful scents around us in nature.**
- **Reopen your eyes and slowly move your fingers and toes again.**

Now we will go on a *Siúlóid sa Nádúr*.

We will explore what is living and growing in our school environment. We will walk around in small groups to observe and record what's growing in our school habitat, our school ecosystem.

- **Introducing children to the scientific nature code by explaining: "We do no harm as much as is humanly possible when working or walking in nature".**
- **Lead the group to a preselected tree, place a white sheet on the ground under a suitable branch. Give the branch a good shake and everyone can observe what *feithidí* fall onto the sheet.**
- **Let's observe! Does anyone know the names of the creatures? Collect the various creatures in the bug viewers for identification.**
- **The children look at the insects in the bug viewers and learn to identify some of the insects using a bug chart provided from the BioBeo box of resources.**
- **Demonstrate the careful releasing of the *feithidí* back to their habitat afterwards.**

Before we go off in our groups to explore the natural world around us, gather around for a moment of poetry:

Éistigí leis an dán álainn seo!

When I Am Among the Trees
by
Mary Oliver

When I am among the trees,
especially the willows and the honey locust,
equally the beech, the oaks and the pines,
they give off such hints of gladness.
I would almost say that they save me, and daily.
I am so distant from the hope of myself,
in which I have goodness, and discernment,

and never hurry through the world
but walk slowly, and bow often.

Around me the trees stir in their leaves
and call out, "Stay awhile."
The light flows from their branches.

And they call again, "It's simple," they say,
"and you too have come
into the world to do this, to go easy, to be filled
with light, and to shine."

So, who is ready 'to go easy, to be filled with light and to shine?' Let's get to work together!

- Divide the class into groups of four and assign each group a unique task of having a walk-about to survey and use their five senses to explore all the various elements of nature and living things around their school environment:
    - **Groups: 1. Trees, 2. Plants, 3. Birds and Wildlife**
- Each group is equipped with a clipboard, pencil and colouring pencils. When possible in each school context, children will use cameras or iPad to take photos of discoveries in their field work. Be sure to divide up the tasks fairly.

***An dtuigeann sibh an obair seo? Cipín suas?* Let's go and do our field work.**

<u>Grúpa na gCrann /Trees Group:</u> Explore and identify the different trees in the local habitat. Collect leaves off the ground for later identification. Draw them. Take a photo. Can any of your team name the trees?

<u>Grúpa na bPlandaí/ Plants group</u>: Try to identify the different wildflowers or plants/ grasses/ bushes in your local habitat. Draw them. Take a photo. Can any of your team name the plants?

<u>Grúpa na nÉan agus an Fhiadhúlra/ Birds & Wildlife Group</u>: Observe, listen, photograph, and also draw the different birds, bugs, minibeasts or any other feithidí you find in your local habitat. Can you name any of the birds, bugs or feithidí you discover?

After 15 minutes, sound the BioBeo chimes and everyone gathers back.

Explorers share their findings and show their drawings and photos and experience with the group. Use the *Bata Taistil* as the talking stick.

Break for the bioeconomy explorers **(15 mins)**

Teacher provides a tasty, locally sourced, Irish apple for each of the bioeconomy explorers to enjoy with a break. We chat about our experiences so far in the morning. Collect all the apple cores for the compost heap.

Development: Part 2: What is Interconnectedness for the circular bioeconomy? (40 mins)

- Review the morning's work: What have we learnt about the circular bioeconomy? What did you enjoy most in the work? Use the *Bata Taistil* for children to share their ideas and responses to the learning.
- Our final activity is the Interconnectedness Game.
- All stand in the circle again. Teacher, with ball of wool in hand, starts the game with the question:

- **Where do all living things on our planet get their energy from?**
  (Clue: It's 93 million miles away (almost 150 million kilometres) from our planet at the centre of our solar system).
- **The first child who answers the first question is given the end of the wool thread to hold.**
- **On to the next question and the child who answers receives the unfurled wool thread from the ball to hold, and becomes connected to the first child, and on we go with questions and answers so that a web of wool is formed between all the children as they answer questions based on the morning's learning and discoveries.**
  Sample questions:

- **What part of the tree takes in the energy from the sun for the tree to grow? (leaf)**
- **What is this process called? (photosynthesis)**
- **When do the leaves fall off the trees? (Autumn)**
- **As the leaves break down and rot, which *feithidí* and minibeasts live underground or on the ground and help to break the leaves down? (minibeasts: worms & woodlice)**
- **Name a *feithid* that we found in our exploration today?**
- **Which other living things help to break down the old leaves? (woodlice/worms)**
- **What animal eats insects in our garden? (bird)**
- **Where do many birds like to build their nests?**
- **What birds did we identify today?**
- **In an oak tree, the seed that comes in Autumn is called an? (acorn)**
- **What animal likes to eat nuts and seeds like acorns? (squirrel)**
- **True or false: Birds love to eat nuts and seeds also? (true)**

- **When all children have received the thread to hold from their answering of a question, we pause to look at the zig zag interconnected pattern:**

- **This is the web of interconnectedness in the bioeconomy. Draw the children's attention to the fact that there is no waste in nature's food web, or food loop. <u>Everything is used in a circular way in the bioeconomy.</u> There is no throwing away or dumping in nature, no waste, but a circle of life that we can observe in our school habitat. The energy from the sun is always passing along and through the food loop, and this is our circular bioeconomy in action. All of the natural world is interconnected. And that means us too! Humans are very much part of this web.**

- **Ask the children what they think of the Interconnectedness web that they are connected to in the circle.**

- **Gather the wool into a ball again as children share thoughts.**

Conclusion: **(30 mins)**

Return to sit in a circle and give a bag of pebbles and chalk to each group. Invite the children to write the letters needed to construct the word 'bioeconomy' and to then arrange the stones to spell the word 'bioeconomy'. While they do this, discuss the definition of a bioeconomy as you assist them. For early finishers they can play a game to make smaller words out of 'bioeconomy'. Show them 'biome' for example.

To conclude the session: Using the *Bata Taistil* for the speakers:

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

Lesson concludes with all of us sitting in a circle to sing the BioBeo song together. Children can sing along with the chorus. Teacher thanks everyone for their wonderful participation.

Assessment for Learning:

- Digital photographic evidence/ teacher's Ipad and/ or class camera in use.
- Documented information: such as notes, photographs, videos, and learning stories, notes made by the teacher in lesson flow.
- Art works produced by children and photos of processes.

Lesson 1: Bioeconomy	**Definition**
bioeconomy	A way of using natural resources to produce food, energy, and products for living while taking care to protect the Earth at the same time. Using renewable bio-based resources or gifts from the Earth, and reducing our waste in the bioeconomy supports a sustainable, healthy future for the planet and all living things. Each and every one of us needs to choose and use resources wisely and gently for the sake of our shared home – The Earth.
bio-based products	Items that are made wholly or partially from renewable biological resources found in nature.
habitat	Home for plants, animals and other living things such as microorganisms, where they interact with each other. Habitat could be forests, oceans, deserts, grasslands, and even school gardens.
sustainable	Acting sustainably means acting in a way that does not harm the environment and does not use up all of its natural resources. Being sustainable in our actions and in our use of resources means that there will be enough of these essential resources for people living in the future.

ecosystem	Community of living things like plants, animals, or even tiny organisms where living things interact with each other and with the non-living things around them. They rely on each other for things like food, shelter, and even the air they breathe.
ecology	The study of the relationships between plants, animals, people, and their environment, and the balances between these relationships.
renewable	Something that can be replenished naturally, like having a never-ending supply. Renewable resources mean things that we can use over and over again without causing harm to the environment such as sunlight.
interconnectedness	Everything in the environment is connected to one another. It shows how different living things and nonliving things depend on each other and work together.
biodiversity	The variety of plant and animal life in the world or in a particular place or habitat, and all the complex ecosystems that support and give life to all of the organisms on our planet.

Literature and links

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www.engagewithnature.ie

Parental engagement tips:

Share the definition of bioeconomy with the families beforehand so that they are aware of what the programme is about. An information leaflet is sent home to help families understand more and instruct children to show their parents the BioBeo website at https://www.biobeo.eu/ so that the BioBeo definition can be explored more at home from the outset.

Explain the basic rules of a nature walk and encourage them to do it in their own neighbourhood/parks and gardens. Share the website for families and encourage the children to read the '7 Principles of Leave No Trace' with their families: https://www.leavenotraceireland.org/education/education-introduction/

Encourage families to expand the concept of interconnectedness to their own family and community.

Encourage families to create a memory card set together with the phrases/ definitions and the plants/animals and the names they know.. New cards can be added to the set after each lesson.

Lesson Plan 2: *An Coillín Beag*

Subject(s): SESE, SPHE, Language, Arts education, Mathematics	**Title of Lesson: *An Coillín Beag*** **No. of Lesson: 2 of 6**	
Date: Autumn term	**Class: 5th/6th**	**Duration: 2 hours 30 mins** **Guided by your class, take breaks when necessary**
BioBeo Theme: Forestry	**Keywords/Phrases: native forest, symbiosis, environmental awareness, reforestation, soil health, carbon dioxide, oxygen**	

Learning Outcomes:

Participants will be enabled to:

1. Develop an understanding of new circular bioeconomy terms and vocabulary and to use them in dialogue.
2. Reimagine the concept of the forest and witness natural examples of the circular bioeconomy every day in our school outdoor environment.
3. Collaborate in the design and planting of a mini forest and create their own school's little wood, *An Coillín Beag.*
4. Respond to a selection of woodland folklore and traditional music in order to create their own *An Coillín Beag* celebration ceremony.

Resources/Materials/Equipment:

- *Cipín* and *Bata Taistil.*
- Garden tools for digging and planting: spade, hand tools.
- Tree saplings in pots: Native species to include oak, hazel, holly, mountain ash, and fruit trees like pear or apple.
- Two bags of good compost (40 litre bag/ peat-free).
- Bluetooth speaker, *Ceol.*

Introduction: **(25 mins)**

- Welcome, remind ourselves of the respect contract and recap on the previous session. What did we experience and learn last week? *Cipín suas* to answer: The speaker holds the *Bata Taistil.*
    - Who can recall what the term circular bioeconomy means?
    - What were those different trees, plants, birds and animals that we encountered?
    - What fun facts can you remember?

- Today we are going to plant *An Coillín Beag*. Let's take our time and take in all the sights and sounds we meet on the way to our outdoor classroom.
- Assemble and sit in a circle. We start each session each day with 'The BioBeo Song'. Teacher will sing the song and play guitar.
- **The BioBeo Song** (see lesson 1 for lyrics)
- Begin with a discussion on the importance of forests as ecosystems that support diverse plant and animal life.

A forest or woodland is a place that provides shelter, food and safety to a rich abundance of life.

- Did we encounter many animals and plants in our first lesson? Who can name some woodland animals for us? (squirrels, birds, badgers, bats and bugs or insects etc.) Which *feithidí* and minibeasts did we identify last week?
- Link back to previous lesson's new vocabulary: What is meant by the term 'biodiversity'?

The variety of plant and animal life in the world or in a particular place/ habitat, and all the complex ecosystems that support and give life to all of the organisms on our planet.

- Explain that the natural world works in **symbiosis**. This is where two organisms have a close relationship with one another.
- What did we learn about the word interconnectedness?

Everything in the environment is connected to one another. It shows how different living things and nonliving things depend on each other and work together. They are interconnected.

- The worms and woodlice have a symbiotic relationship with the tree.
- Can you recall what the woodlice and worms do with the leaves when they fall in Autumn? Leaves fall on the ground, making food for the minibeasts. The leaves break down or biodegrade. They become the food for insects and minibeasts like woodlice and worms. This whole process makes the leaves return into the soil which provides nutrients and food for more plants and the tree's growth.

Development: **(25 mins)**

- Begin with a discussion about the natural history of trees and their folklore (stories, legends and music) in Ireland and how important woodlands were for our ancestors in Ireland.

'A woodland of native trees is one of the richest ecosystems anywhere. Our native trees (e.g. Oak, Rowan, Holly, Hawthorn, Birch, Hazel) have been with us in Ireland since the last ice-age, anything up to 10,000 years ago! Under an oak tree, in the rich brown soil, in one

square metre there could be 260 earthworms. Beetles, bats, badgers, birds are all woven into a teeming web of life that takes even the dead trees of the woodland into a cycle of renewal and rebirth'. (Michael Viney).

- How many trees' names from last week can you recall? Work with your partner now to recall the names.
- Show the collection of leaves (from last week): talk about the varied autumn colours and shapes, try and identify the leaves in pairs.
- Pass around a bag of acorns collected from oak trees. Children take one each to examine and describe them (Use *Bata Taistil*). Give each child a cleaned, used, compostable paper coffee cup:

Everyone is going to plant an oak tree today!

Known as the king of trees in the folklore of the forest. Oak was the sacred tree of the Druids. It was also considered sacred by the Hebrews (way back in the Old Testament times) and also the Germanic people. As the tree of Zeus/Jupiter, it was forbidden to cut it down in the Ancient Greek and Roman times. In Scotland, a highlander would draw a circle around himself with an oak sapling to protect himself from the fairies! In ancient Irish laws, the oak tree had a very important and sacred standing, known as a noble of the woodland. If you cut down an oak that was not on your land, you were in big trouble!

There are two types of oak: Sessile (our national tree in Ireland) and Pendunculate. The oak gives a home to more wildlife than any other, but all trees have special purposes and give host to different kinds of insects and wildlife.

To plant your oak tree with your acorn:

- **Fill your cup ⅘ full of the peat free compost.**
- **Use your finger or a pencil to make a nice home for the acorn to go into.**
- **Pop it in (should be at about the central point of the cup) and re-cover with soil to the brim and smooth over.**
- **You can take your planted acorn home and tell your family and friends all about the Great Oak and your little acorn.**

Break for the bioeconomy explorers **(15 mins)**

Time for a break! Teacher provides a tasty, locally sourced, Irish apple for each of the bioeconomy explorers. Collect all the apple cores for the compost heap.

Let's go and plant *An Coillín Beag* together! **(50 mins)**

Show the children each of the labelled tree saplings in pots. Explain why they were chosen for *An Coillín Beag* (**Native variety, good size and attractive mix**). Ask children to name the different parts

of the trees: hold up a sapling with roots out of the pot: from the ground up: **roots/ trunk/ branch/ buds/ leaves.** Who can tell me what the roots do for the tree? **Give stability and absorb food and water.**

- Talk about the design of the forest. Which trees will grow the tallest? Where should each tree be planted? Which trees will give most shelter for the smaller trees and plants? If you plant the trees closer together, they will grow faster and taller in competition to get the best light and energy from the sun.
- Demonstrate how to prepare the site. Agree on a planting plan, guided by short instruction on the different height considerations of each tree. Teacher has prepared the site and marked the spaces where holes are to be dug. Each child takes turns to dig and help prepare the site. Teacher supports the safety of all.
- Plant the saplings together according to the plan.

Conclusion: **(30 mins)**

- Let's now celebrate and welcome each other to our beautiful, newly planted *An Coillín Beag,* by listening to a traditional Irish song and enjoying an Irish dance in response to the music and tree planting.
- Teacher models and teaches the group the basic '1,2,3/ 1,2,3' step in *Rince Gaelach – céim a haon-a dó- a trí/ Céim a haon-a dó -a trí.*
- Ask the children if there are dancers in class? Practise the basic step as a group and then the teacher divides the group into teams of four to go and create a celebratory short dance for the woodland. They work for five minutes in groups to create and practise a short dance routine for their woodland celebration. Encourage everyone to give it a go.
- Return as a group and the children are given a chance to demonstrate their dance ideas first, then everyone is encouraged to do their best. To finish the dance session, the whole group can join hands in a large circle around the mini woodland and we will dance in simple circuits to the left and right in a *ciorcal mór* (loop), and then in and out in a loop with the lively traditional Irish music playing. (Use a Bluetooth speaker or similar)
- Reflect on the significance of our actions: discuss how planting trees contributes to our local school and also the wider environment. Trees have a really positive impact for the whole community, greatly improving the air quality, absorbing carbon dioxide and giving out oxygen for us all to breathe.
- To conclude the session: Using the *Bata Taistil* for the speakers:
    - When planting trees, did anything occur to you that you would like to share?
    - Did anyone hear or learn anything new today?
    - Are you wondering about anything now?

Lesson concludes with all of us sitting in a circle to sing the BioBeo song together. Teacher thanks everyone for their brilliant participation.

Assessment for Learning: (Teacher observation, portfolio, photographs/video, self-assessment):

- Digital photographic evidence/ IPad or class camera in use.
- Documented information: such as notes, photographs, videos, and learning stories, notes written by the teacher in lesson flow.
- Art works produced by children and photos of processes.

Lesson 2: Forestry	**Definition**
native forest	A special kind of forest that is home to many different types of trees, flowers, animals, and insects. It belongs to a particular region or country.
symbiosis	Symbiosis is where two organisms have a close, mutually beneficial relationship with each other.
environmental awareness	Understanding and concern for the natural world and the impact of human activities on the environment.
reforestation	Process of planting new trees in an area where there used to be a forest that was cut down, lost or destroyed.
soil health	How healthy and fertile the soil is for the plants and organisms that live in it. Maintaining good soil health helps plants and animals grow well and helps keep the water and air clean. Healthy soil is the foundation of healthy nutrition.
carbon dioxide	Odourless and colourless gas that is released when we breathe out. It is also produced by engines which burn fossil fuels, by deforestation and industrial processes.
oxygen	Gas that is essential for all living things, including humans, animals and plants. It is one of the main elements that make up the air we breathe.

Literature and links

Bord Bia Irish Food Board (n.d.) Planting a Native Hedgerow or Woodland, available: Planting a Native Hedgerow or Woodland

Ecoliteracy (n.d.) Ecological Education, available: Center for Ecoliteracy

School Earth Education (n.d.) Audit, plan and design school garden & grounds, available: Audit, plan and design school garden & grounds

Parental engagement tips:

Encourage families with different cultural backgrounds to present their own myths, music, songs, dance connected to forests**.** This could all culminate in a school celebration at the end of the programme as part of the children's exhibition of their artworks and garden.

Cooperate with the families and the literature/history/drama/music teachers to create a special Forest/Oak art project where various art productions can be presented.

Encourage families to plant/adopt trees. If they have space, they can plant a tree in their own garden, if not, they can plant it in common areas or the school premises (if possible). Encourage them to celebrate the planting of each tree. There are many national tree organisations helping communities to plant trees. Crann is one such group and has a good tree planting guide here for community groups: https://crann.ie/trees/tree-planting-tips/

In some communities (villages, towns) the birth of each child is celebrated by the planting of a tree. Discuss with families /school management and local authorities if it is possible to introduce such a tradition.

Lesson Plan 3: Life Below Water: Let's go build a pond!

Subject(s): SESE, SPHE, Language, Arts education, Mathematics	**Title of Lesson: Let's Go Build a Pond!** **No. of Lesson: 3 of 6**	
Date: Autumn term	**Class: 5th/6th**	**Duration: 2.5 hours** **Guided by your class, take breaks when necessary**
BioBeo Theme: Life Below Water	**Keywords/Phrases:** **water quality, amphibians, overfishing, marine plastic, coral reefs**	

Learning Outcomes:

Participants will be enabled to:

1. Ensure the conservation of, and sustainable interactions with, all water bodies in their school environments.
2. Collaborate in the creation of a mini pond in *An Coillín Beag*.
3. Identify the Irish animals who need our help in the interconnectedness of all life: e.g. natterjack toads and common frogs.
4. Develop an understanding of new circular bioeconomy terms and vocabulary and use them in dialogue.

Resources/Materials/Equipment:

- Tools for digging, tape measure, waterproof pond liner material, rocks/stones/gravel, aquatic plants.

Introduction: **(35 mins)**

- Welcome, remind ourselves of the respect contract and recap on the previous session.
- What did we experience and learn last week? *Cipín suas* to answer: The speaker holds the *Bata Taistil.*
- Today we are going to learn how to build a mini pond for *An Coillín Beag.* Let's take our time and take in all the sights and sounds we meet on the way to our outdoor classroom.
- Assemble and sit in a circle. We start each session each day with 'The BioBeo Song'.

- **The BioBeo Song** (see lesson 1 for lyrics)
- Have a recap on the two previous sessions of learning and refresh new vocabulary: What have we learnt so far about a circular bioeconomy? Who can recall what the native trees we planted are called? What fun facts can you remember about the noble native tree of the Irish woodland, the Great Oak?

"How is an oak tree like a circular bioeconomy?"

Nothing goes to waste with a tree. It provides a home for insects, birds and even other plants like mosses and lichens. It also lives in harmony in a circular system with its surroundings. The leaves and nutrients go back to enrich the soil for other living things, like mushrooms and fungi. Everything natural around this habitat lives in harmony with the oak tree.

Explain that we are going to build a tiny pond to create a mini ecosystem. Over time in *An Coillín Beag* we will be able to observe and explore life below water growing and flourishing as the pond habitat becomes established and some interesting creatures will make their homes here.

- Does anybody here live near a water body? Maybe the sea? Or a river? What other water bodies can we find in Ireland? *Cipín suas!*
- Who can give an actual place name of a water body they know/ or live beside? Can anyone give me the place name *as Gaeilge?*

Children share their ideas using the *Bata Taistil*. Write the names of water bodies on the BioBeo board (canal, lake, pond, river, stream, fjord, etc.). Discuss place names (*as Gaeilge* along with the English names) e.g. Lough Owel (*Loch an Uail* – Lake of pride) in Mullingar. The town's drinking water reservoir which can be 21 metres deep in places. A lake rich with history: a hermit monk called St Loman lived all alone on Church Island for many years and is said to have eaten only the edible plants growing there called 'Alexanders'.

- Why are our water bodies so important? Who lives in our Irish water bodies?
  There are countless numbers of creatures that live in all the many water habitats, there are fish, insects, and mammals.
- Water covers more than 70 percent of the Earth's surface. Our bodies are about 60% water. It is essential for all life!

Let's do one more 'think-pair-share' to talk about water bodies, both at home in our local environment, and in other places on the planet.

Development **(60 mins)**

What is an amphibian? *Cipín suas!* Have you ever met one? And where?

Amphibians are cold blooded vertebrates (a vertebrate has a backbone, just like humans!) and can live part of their life below water and part of it on land e.g. frogs, toads and salamanders or newts. They eat insects and other small creatures such as slugs, helping to control their populations.
Fun facts about amphibians: There are 3 kinds of amphibians in Ireland: The common frog (Rana temporaria), the smooth newt and the natterjack toad. Toads are only found in two special places or habitats in Ireland: the Dingle Peninsula (can anyone tell us what county that's in? Kerry) and they love to live near sand dunes so they were introduced to a place near Curracloe (In county Wexford).

Discuss best locations near *An Coillín Beag* for a mini pond.

The healthy pond requires a 50/50 balance of light and shade: too bright gives algal bloom, which makes it look gloopy, like a pea soup, and if the location is too dark, it will be stagnant and lifeless.

Break for the bioeconomy explorers **(15 mins)**

Time for a BioBeo break! Teacher provides a tasty, locally sourced, Irish apple for each of the bioeconomy explorers. Collect all the apple cores for the compost heap.

- Discuss and show children the components for the pond and "let's build it!"

Everyone will have a job to do through the whole construction stage. Ask children to stand in a good space back from the area to allow plenty of room for everyone both to see the processes and to walk forward and assist in pairs at each stage of construction.

- Water safety is always the top priority so the pond place will be at the lowest area and in full, safe view of the teachers.

Construction:

- **Use our wool again to mark the outline of the pond.**
- **Dig a stepped hole, 150mm to 200mm with a minimum depth of 450mm. Why this depth? This will avoid overheating in summer and freezing over in winter.**

- **Run a measuring tape through the contours and add 1 metre to calculate the size of liner needed. Place some old carpet or cardboard in the hole first to prevent a puncture to the liner.**
- **Stretch the liner flat across the pond, weigh down with the rocks around the edge then fill with water and allow the water to stretch the special liner material into the shape of the pond.**
- **Cover the edge of the liner with some rocks, a sod of turf or two, and a branch but ensure easy access for wildlife.**
- **Add some native pond plants: moss/ rocks/ grasses.**
- **Ideal is to collect some natural local pond water in the area and bring it to the pond when it is settled after a week and add it to the water. This will kick start the pond, give it a strong foundation for living things to grow.**
- **Discuss the significance of water quality and encourage children to do research and to learn how to identify the different pond organisms that might make the freshwater pond their home.**

Discuss safety measures and explain that this pond is only for the wildlife of *An Coillín Beag!* For wading, swimming and playing, humans can go to the swimming pool or beach. Amphibians and *feithidí* only in this pond please!

Conclusion: **(30 mins)**

Information you can share with the children:

- Conserving water habitats and protecting the organisms that live under water is an essential action we can all take to help our local and global ecosystem. Some people are organising regular coastal/ canal or river plastic clean ups in their localities. This can be an effective, practical group activity which can make a real difference for the animals and fish that live below the water. It can also be a fun activity to join.
- Frogs and many other amphibians are becoming endangered for a wide range of reasons, such as water pollution, and habitat destruction or loss because of human activities such as construction. Bees and other insects and birds will also be delighted to find a safe drinking place. Our Irish wildlife needs all the help we can give them, and that starts right here today with our new school pond!
- Encourage the children to regularly observe the pond and notice the changes that occur over time: Observe how more living things come to inhabit the pond and how they contribute to enhancing the ecosystem. You could keep a notebook/digital compilation of notes and photos/social media page of observations you make in the pond throughout the year.
- Final point is to remind and guide children to always be vigilant of water safety.

Even a shallow water body needs to be treated with respect. So, our motto is: "**Always be safe around a water body, even the small ponds!"**

To conclude the session: Using the *Bata Taistil* for the speakers:

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

Lesson concludes with all of us sitting in a circle to sing the BioBeo song together. Teacher thanks everyone for their brilliant participation.

Assessment for Learning: (Teacher observation, portfolio, photographs/video, self-assessment):

- Digital photographic evidence/ IPad or class camera in use.
- Documented information: such as notes, photographs, videos, and learning stories, notes made by the teacher in lesson flow.
- Art works produced by children and photos of processes.

Lesson 3: Life Below Water	**Definition**
water quality	The condition or state of the water, for example, is it unpolluted, healthy and clean? If so, then it is a very good water quality. It tells us if the water is suitable for plants and animals to live in or not, and whether it is suitable as human drinking water.
amphibians	These are cold blooded vertebrates (a vertebrate has a backbone, just like humans) and can live part of their life below water and part of it on land e.g. frogs, toads and salamanders or newts. They eat insects and other small creatures, helping to control their populations.
overfishing	When people catch too many fish from the oceans or other water bodies like rivers. This affects future fish populations and the entire ecosystem.
coral reefs	Coral reefs are underwater structures made up of tiny animals called coral polyps. The animals live in big groups and stick to a hard surface. Together, they create a bright and colourful ecosystem that provides food and shelter for many marine animals, like turtles, fish, sharks, and more. Coral reefs can be found in shallow, warm, clear waters around the world.

marine plastic	Plastic waste that ends up in the ocean or other water resources. This can be big things like bottles and bags, or really tiny pieces called microplastics. Microplastics are little bits that break off from larger pieces of plastic.

Literature and links

The Herpetological Society of Ireland (2022) How To Build A Simple Pond, available: **https://thehsi.org/publications-and-resources/how-to-build-a-simple-pond/**

School Earth Education (n.d.) Making a Wildlife Pond, available: **https://www.schoolearthed.ie/worksheets/Making-a-wildlife-pond.pdf**

United Nations Educational (n.d.) SDG Resources for Educators - Life Below Water, available: **https://en.unesco.org/themes/education/sdgs/material/14#primary**

Parental engagement tips:

Encourage families to organise trips to nearby water bodies and explain how/what to observe together. Waterways Ireland have a good guide for family walks here: https://www.waterwaysireland.org/things-to-do/walking

Encourage families from different cultural backgrounds to share their water myths/ introduce their mythical water creatures.

Cooperate with the families and the literature/history/drama/music teachers to create a special water art project where various art productions can be presented and lectures can be given (eg. the importance of ports and marine travel in history).

Try to organise a family/school visit to a harbour or a ship or encourage families to do so.

Lesson Plan 4: Helping *An Coillín Beag* to Grow.

Subject(s): SESE, SPHE, Language, Arts education, Mathematics	**Title of Lesson: Helping *An Coillín Beag* to Grow.** **No. of Lesson: 4 of 6**	
Date: Autumn term	**Class: 5th/6th**	**Duration: 2.5 hours** **Guided by your class, take breaks when necessary**
BioBeo Theme: Food Loop	**Keywords/Phrases:** **Food loop, local and seasonal food, carbon neutral farming, compost, food waste, carbon footprint, food miles**	

Learning Outcomes:

Participants will be enabled to:

1. Collaborate in the seasonal planting of an edible garden in *An Coillín Beag* and identify ways to reduce food waste in a circular bioeconomy.
2. Plant some pollinator friendly bulbs and seeds and discuss why bees also need food in the garden.
3. Discuss the interconnectedness of all the different trees, plants, flowers and insects in the newly planted school garden.
4. Develop an understanding of the interconnectedness between the Irish language and the landscapes of Ireland.
5. Develop their own wellbeing practice in nature and be introduced to the concept of a 'Sit Spot'.

Resources/Materials/Equipment:

- Tools for gardening and harvesting, compost, bulbs, seedlings and edible plants, watering cans, labels for plant identification.

Introduction: **(30 mins)**

- Welcome, remind ourselves of the respect contract and recap on the previous session.
- What did we experience and learn last week? *Cipín suas* to answer. The speaker holds the *Bata Taistil.*
- Who can recall what kind of creatures in wildlife love to live in or near a pond? What fun facts can you remember about water bodies?

- Let's go out for our fourth morning in the outdoors classroom together. Let's take our time and take in all the sights and sounds we meet on the way to our outdoor classroom.
- Assemble and sit in a circle. We start each session each day with 'The BioBeo Song'.

  The BioBeo Song (see lesson 1 for lyrics)

Introduce the concept of a food loop and write the word on the BioBeo board. Ask several children what they think the term food loop means. Use the *Bata Taistil* for speakers.

A sustainable and healthy *food loop* is one where we are sure that the food we eat is healthy and not grown too far away (low in food miles). Some fruits and vegetables in our supermarkets today could come from the other side of the world! You can see the origin of your food on the labels in the shop e.g. New Zealand, Chile, Peru.

Food is at its healthiest when it is grown with care and not sprayed with harmful chemicals. Huge energy, care and time goes into growing good food, and so we in turn must work to cut down the amount of food going to waste. By growing our food with care, then storing it well, and cooking in a way that we get the best out of it, we can make delicious meals that ensure all of the food is eaten. Does anyone here have a food garden at home in their home garden?

Give the children time to share some of their food growing stories.

Development: **(70 mins)**

Explain how planting a food forest or food garden at school and at home is one of the best ways to create a sustainable and circular bioeconomy in our lives.

Show the children the plants we will grow in *An Coillín Beag:* kale, garlic, onions, and oriental salad leaves.

The seasonal fruits we will plant are: rhubarb, strawberries and currants.

Ask children to examine each plant and familiarise themselves. The apple tree and hazel tree will also provide their fruit and nuts.

Discuss who likes different vegetables in their meals? And also which fruits are the favourites?

Does anyone know a recipe for cooking that uses kale? onions? garlic?

How about rhubarb? strawberries? black or red currants?

Instructions for planting and layout of garden:

Everything likes to have enough space to grow. Think about being in a crowded room, jam-packed with noisy people, you can't even hear yourself think! Well, it's like that for plants in the garden. They need space to get enough sunlight for energy and soil/water for growth and stability.

As with previous sessions, instruct everyone to stand well back so that all can see and walk forward safely to take their turn in the planting tasks. Children observe and actively assist the teacher in pairs and everyone will get to do at least two of the important tasks (digging, adding some compost, planting and covering over, watering).

- Our final job today is to plant some flower bulbs. Who or what will the flowers that grow in spring help as a source of food and energy?

Bees and insects act as pollinators. This means that they go about collecting nectar, their food and energy from the flowers. In this process they are also helping the flowers to pollinate by spreading pollen from flower to flower and this helps the plants to make seeds for more plants to grow.

Show the children some different bulbs and explain that different flowers will prefer to be planted in special places in *An Coillín Beag* (some prefer shaded, some prefer full sunlight). The children are asked to guess/ discuss in pairs where they think each bulb will be happiest to be planted, and in pairs they discuss where best to plant each kind of bulb. Teacher presents the bulbs along with a picture of their flower for all to see and discuss.

1. Snowdrops
2. Crocuses
3. Snakes head fritillaries
4. Alliums
5. Irish native bluebells (for example, these like shaded areas and they are an important early source of pollen and nectar for bees and other pollinators).
6. Wood anemones

Every child will have their turn to plant some bulbs with teacher support as needs arise.

When all the gardeners are happy that everything has been successfully planted, guide them in tidying up their tools and work space.

Break for the bioeconomy gardeners **(15 mins)**

Teacher provides a tasty, locally sourced, Irish apple for each of the bioeconomy explorers. We chat about our experiences so far in the morning. Collect all the apple cores for the compost heap.

Explain and show how the apple cores and other organic food waste is recycled in the composter or compost heap and how this will biodegrade and become nutrient rich compost which is used to feed the soil and gives new life to the garden for the plants and crops growing there each season. Food waste becomes a valuable resource in the circular bioeconomy when it is turned into good compost for the garden.

Conclusion: **(35 mins)**

- Does anyone know what being mindful, or mindfulness means? *Cipín suas.* After all our hard work planting our food forest, we will now pause and have a mindfulness moment. We are all going to stop and sit and do a short nature meditation, a time to be still, calm and peaceful for a while. *Cipín suas* if anyone here has ever meditated? Has anyone ever meditated outdoors in nature?
- Has anyone got a favourite place where they like to go and just sit and think, to be quiet and 'get away from it all'?

A 'sit spot' is when you choose a special place in the great outdoors, a place that is special for you personally. Meditating in nature at a 'sit spot' can really help us to feel good and connected again to the Earth and to oneself.

- All return to sit in a large circle for a short meditation exercise together. See ***Draíocht Dara*** for the Irish language version of the meditation on page 18 https://mural.maynoothuniversity.ie/id/eprint/16684/

Teacher leads the meditation like so:

1. **Close your eyes everyone.**
2. **Breathe in through your nose for 4 seconds.**
3. **Let your breath out through your mouth for 5 seconds.**
4. **Let's do that two more times: in through your nose, 4 seconds, out through your mouth, 5 seconds.**
5. **Now breathe in through your nose for 5 seconds.**
6. **Breathe out through your mouth for 7 seconds.**
7. **Let's do that two more times. In for 5, and out for 7.**
8. **Now put one hand over your heart, chest area, and your other hand on your stomach.**
9. **Now breathe in through your nose for 5 seconds.**
10. **Breathe out through your mouth for 7 seconds.**
11. **Let's do that two more times. In for 5, and out for 7.**
12. **Now let's listen to all the sounds around us.**
13. **Can you hear the wind blowing?**
14. **Can you hear the sound of the leaves in the wind?**
15. **Can you hear the sound of the birds' singing?**
16. **Now open your eyes.**
17. **What do you see?**

18. **Do you see the trees moving in the breeze?**
19. **Do you see a bird flying?**
20. **Do you see the clouds moving in the sky?**
21. **What else can you see and hear for yourself?**
22. **Do you feel still and connected to the ground?**
23. **To finish off now, let's close our eyes and breathe in for 5 seconds through your nose, and out for 7 seconds through your mouth.**
24. **Let's do that two more times.**
25. **Gently open your eyes again. Well done everyone! That was a great meditation you just did.**

You can start to move your bodies slowly again and we can stretch out or stand up for a minute if you need to.

- Well done everyone, I could see you all really did your best to listen and meditate and just be in the moment. Great job everyone!
- Before we conclude our fourth lesson today with BioBeo, I'd like to tell you all a short story about Interconnectedness and my friend in Westmeath who writes books and lives in a very unusual house.

This friend lives in a very unusual house near a lake in county Westmeath. You will never guess what material he built his house with. It's not the usual bricks and mortar.
Cipín suas if you want to try and guess what material he built his house out of?… (Answer is straw).

Now my friend Manchán is a very clever person, he writes books and also makes radio and TV programmes and documentaries about nature, the Irish landscape and our own unique and wonderful language, Gaeilge.
One of his books explains how in the Irish language we have 32 names for a field. I couldn't believe it at first, but it's true! For example, there is a field in Tipperary called **Skeheenarinky.** Repeat the sound of the placename for the children, get them to try sounding it out, and the teacher pronounces it dramatically. Ask the children if they can guess what the Irish name might mean: ***Sceichín an Rince*** (the little thorn bush for dancing).

Another place name, this time over in County Leitrim, is called Faslowart. Let the children repeat and play around with the sounds. Can anyone imagine what that name might mean?
To understand the place names we need to go back to their original Gaeilge, that is how we can crack the code and understand how we are connected to the landscape throughout the many thousands of years of people living on this island. Faslowart *as Gaeilge* is ***Fás Lúghoirt***. Repeat and let the children get a sense of the sounds. Can anyone make an attempt at what it might mean? Take the word Fás? The old Irish translation means 'the deserted herb garden'. So there's

a story in the name, at some point the people living there may have had to leave that place, it became deserted. I wonder why?
Ask the children if they know any nice place names in their locality which have nice sounds, or interesting Irish words in their ***Logainm*** (place name).

Our Irish language is very special because it contains all the history and the connections that people made with nature and place or the landscape in which they lived. In an Irish place name you can find myths, legends, stories and often the natural world too. When we look at the world through the Irish language, we can see our world more beautifully, more magically. We can find the interconnections our ancestors had with nature and their home place.
Many people had strong superstitions that the Síogaí, the fairy people, could put a spell on certain fields or patches of land and if you walked in or stepped on them, you would lose your way! You might not regain your sense of direction until the fairies tired of their game and released you from the spell! Manchán wrote all about these mysterious fields that were called *Fóidín Mearaí*. So be sure none of you wander across a *Fóidín Mearaí* on your way home from school!

Challenge for the week ahead:

Work in your classroom together to create your own name *as Gaeilge* for *An Coillín Beag.* You could work in groups and then vote for your favourite *Logainm* (place name).

- Final conclusion: Discuss and recap on the benefits of an edible food forest garden, such as providing fresh and healthy food, supporting local biodiversity, building nice connections and creating community and fostering sustainable practices.
- Water the plants and wash up the equipment together.

Assessment for Learning: (Teacher observation, portfolio, photographs/video, self-assessment):

- Digital photographic evidence/ IPad or class camera in use.
- Documented information: such as notes, photographs, videos, and learning stories, notes written by the teacher in lesson flow.
- Art works produced by children and photos of processes.

Lesson 4: **Food Loop**	**Definition**

food loop	For humans, the food loop includes all the areas of food such as farming, hospitality, shopping, and the energy that is used in all these areas. In a bioeconomy it's really important to use all the food resources and energy efficiently and to reduce the huge amounts of waste that we see in our world today.
local and seasonal foods	Types of food that are grown or produced nearby and are available during specific times of the year.
carbon neutral farming	A way of growing food and raising animals that doesn't release more carbon dioxide into the atmosphere than it removes.
compost	Fertiliser that is made from organic waste that can be used to help plants grow.
food loss and waste	Food that is not eaten or used and ends up being thrown away or spoiled. It can happen at different stages from farming and production to distribution, storage, and consumption.
carbon footprint	A way to measure the amount of carbon dioxide and other greenhouse gases that are released into the atmosphere because of human activities.
food miles	The distance that harvested and ready-to-eat food must travel from the farm to the dinner table. The shorter the distance from farm to fork is best because the food will be fresher and less energy will be used in transporting and keeping it fresh.
feed	The material or product that is used as food for animals.

Literature and links

https://www.bordbia.ie/globalassets/lifestyle/resources/organic-gardening-english/planting-winter-vegetables.pdf

https://www.farmergracy.co.uk/blogs/farmer-gracys-blog/top-10-flower-bulbs-for-bees

https://mural.maynoothuniversity.ie/16684/1/MaireNicAnBhairdDra%C3%ADocht%20Dara2021.pdf

https://www.irishtimes.com/culture/heritage/uncovering-ireland-s-lost-field-names-before-it-s-too-late-1.4172606

Waters, A. (2008) *Edible Schoolyard, A Universal Idea*. San Francisco: Chronicle.

Parental engagement tips:

- Encourage families to write shopping lists before going shopping to avoid food waste. Share the website: https://stopfoodwaste.ie/. There is great potential for curricular integration also here for Mathematics and Home Economics.
- Encourage families to plant herbs in pots (if they do not have enough space or a garden). Families might donate pots of herbs to the school that can be placed in the school canteen and children can use them to season their food.
- Encourage families to measure their own carbon footprint and come up with ideas on how to reduce it. Share website for children to show families and raise awareness at home: https://climatehero.me/calculate/
- Encourage families to calculate the food miles of a regular meal. This could be a great mathematics project with many opportunities for parental involvement for exploring the question of food miles at mealtimes. Share website: https://www.foodmiles.com/food/ireland for children to share their new knowledge at home and investigate food miles with their families.
- Take the children to a local food or farmers' market to experience the differences from a supermarket and invite families along.

Lesson Plan 5: An Artistic Adventure with BioBeo

Subject(s): SESE, SPHE, Language, Arts education	**Title of Lesson: An Artistic Adventure with BioBeo.** **No. of Lesson: 5 of 6**	
Date: Autumn term	**Class: 5th/6th**	**Duration: 2.5 hours** **Guided by your class, take breaks when necessary**
BioBeo Theme: All 5 themes	**Keywords/Phrases:** **bio-based products, recycling, climate change, consumption, resource efficiency**	

*Using our 'Bioeconomy Paints' resource, conduct an enquiry-based lesson before this to create the paints for this lesson. The children will also create a selection of these bio-based paints for themselves during the lesson.

Learning Outcomes:

Participants will be enabled to:

1. Collaborate, create and compose a story of interconnectedness using *An Coillín Beag* "Story Stones".
2. Respond to their bioeconomy journey through painting and drawing using bio-based resources (make an evergreen paintbrush, make some natural, bio-based paint and use bio-based paper).
3. Exhibit, present, observe and respond to their own and classmates' art works.
4. Develop an understanding of new circular bioeconomy terms and vocabulary and use them in dialogue.

Resources/Materials/Equipment:

- "Story stones" (smooth pebbles), a bag and bio-based coloured pens for writing.
- A set of photographs of ancient cave art from around the world as an art stimulus.
- Examples of pre-made evergreen paint brushes prepared for the children to examine before making one for themselves. *Cipíní* or branches for handles, pine tree needles for brush heads (e.g. Lelandia, Scots Pine and Sitka spruce), strong bio-based twine to bind brushes.
- Three different coloured soils with which to mix water to make natural brown paint and mixing bowls, whisks
- Samples of Jiminy bio-paint
- Bio-based clipboards for artwork

- Ingredients and mixing bowls for making bio-based paints (see below).

Ingredients for making natural plant-based paints:

- **Red/pink**: 1/2 teaspoon of beet root powder or 1 to 2 raspberries, strawberries or cherries, or red rose powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Yellow:** 1/2 teaspoon of turmeric powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Orange:** 1/2 teaspoon paprika powder or chilli powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Green**: 1/2 teaspoon of matcha powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Blue/purple:** 1 to 2 blueberries, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Brown:** 1/2 teaspoon of cocoa powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **White:** 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Black:** 1/2 teaspoon of charcoal powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water

Introduction: **(20 mins)**

Welcome, remind ourselves of the respect contract and recap on the previous session.

- What did we experience and learn last week? *Cipín suas* to answer: The speaker holds the *Bata Taistil.*
- What were your learning highlights in planting an edible *gáirdín sa Choillín Beag*?
- How will planting the native flowers like the bluebells help wildlife in *An Coillín Beag*?
- Did anyone create a special logainm as Gaeilge for *An Coillín Beag*?
- Let's all go out for our fifth session in the outdoor classroom together.
  Don't forget to engage the senses!
- Assemble and sit in a circle. We start each session each day with 'The BioBeo Song'. Teacher will sing the song and play guitar.
- **The BioBeo Song** (see lesson 1 for lyrics)

Begin the session:

We've been exploring what a circular bioeconomy is and learning all about the 5 BioBeo themes: forestry, life below water, food loop and interconnectedness, all in our outdoor classroom.

We have seen how the natural world is made up of interconnections.

We have helped our school ecosystem and its wildlife by creating *An Coillín Beag* and an edible garden for ourselves, the humans and also for the bees and pollinators in our school ecosystem. And also we built a wildlife pond.

Biodiversity will be greatly enriched and supported by our work. We have made stronger connections with nature in our school environment. We have reconnected with nature which is all around us.

Today we are going to celebrate your brilliant work by going on some artistic adventures together using bio-based art materials. It will be a nice way for you all to reflect on the journey over the last five weeks. The first thing we will do is work together to create a story using the "Story Stones".

Telling a story with *An Coillín Beag* "Story Stones" (30 mins.)

All sit in a circle. We are in a magical storytelling circle that will take us all on a unique and enchanting journey, a lot like the storytellers of old, the *Seanchaí* in Ireland.

- Teacher walks around the circle with a bag of smooth pebbles, of several different sizes, shapes and colours (one for each student). Each child chooses their own pebble without looking into the bag, but by touch and texture. Give children a few moments of getting to know it by taking note of its shape, colour, texture and weight.
- Ask children to draw or write an image or word, anything they wish on their pebble, based on some of their favourite moments in the four lessons with BioBeo (an animal, a plant, a tree, water for example). Anything that you felt a connection with in our lessons here. Then return the pebble back to the bag. Teacher shows some prepared pebbles for anyone who is not sure how to start.
- To begin the story, each child draws a pebble from the bag, and uses it as an inspiration to begin a story, saying a sentence inspired by the image drawn on it. They place the pebble in the middle of the circle. Continue storytelling, passing to the next child around the circle, allowing each to choose a pebble and contribute when they feel ready. All are encouraged to make a contribution. Teacher supports if anyone is struggling with an idea for the story.
- Once the last person has ended the story, everyone stands up to admire the uniqueness of each pebble and celebrate the magical tale they created. Children are welcome to take their pebbles home if they wish. People can respond in turn to say how they enjoyed the story/ give feedback.
- Invite the children to discuss the significance of each pebble's picture or word and share their favourite parts of the story, and explore the role of storytellers in history, such as the Viking *skalds* and the Irish *seanchaí.*

Development: Making Artworks Naturally (65 mins)

- Present the art activities that we will engage with. Divide the class into groups of four who will discuss their art ideas, examine the pictures of ancient cave paintings and drawings from all over the world and then collaborate in painting activities. How did they create their artworks on the cave walls all those many thousands of years ago, do you think? What instruments do you think they could have created and used for their paintings?
- Suggest that they can focus on one or all of the five BioBeo themes in their artworks (interconnectedness, outdoor learning, forestry, life below water, the food loop).

Task organisation:

Using the prepared set of evergreen paintbrushes to show children and model their construction. Also prepared in advance are some natural pre-mixed paints and a selection of Jiminy's bio-paint and other mark-making materials such as charcoal. While a group works with a teacher in a workshop to make their own brush, and mix natural paints, the other groups can begin to engage in making their art with the prepared materials. The groups circulate from múinteoir BioBeo for paint mixing and evergreen paintbrush construction to move on to independent art-making activities with support and guidance from class teacher.

Teachers also circulate to discuss with children how their endeavours are going. Two of the groups can start making drawings or paintings with the bio-based materials straightaway (bio-based paper and Jiminy bio-paints, charcoal and bio-based writing tools). Children are given as much independence in their work as possible. Assist in a minimal way to foster independence and creativity.

Conclusion: **(25 mins)**

Each group or individual presents and describes their artwork.

To conclude the session:

- Are there any leftover materials or elements that could be considered waste?
- What could be done with those leftover materials to minimise waste?

Final conclusion:

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

Lesson concludes with all of us sitting in a circle to sing the BioBeo song together. Múinteoir BioBeo thanks everyone for their brilliant participation over the five weeks.

Assessment for Learning: (Teacher observation, portfolio, photographs/video, self-assessment):

- Digital photographic evidence/ IPad or class camera in use.
- Documented information: such as notes, photographs, videos, and learning stories, notes written by the teacher in lesson flow.
- Art works produced by children and photos of processes.

Lesson 5: Artistic Adventure	Definition
bio-based products	Items that are made wholly or partially from renewable biological resources found in nature.
recycling	Process of transforming used materials into new products. It is a way to give new life to things that would otherwise be thrown away and would end up in landfill dumps.
climate change	Long-term changes in the Earth's climate patterns, such as higher and lower temperatures and amounts of rainfall.
consumption	Process of using resources and goods to fulfil our daily needs and demands, like eating, drinking and using energy.
resource efficiency	Making the most out of the resources we have like finding ways to do things more efficiently and effectively while using fewer resources.

Parental engagement tips:

Encourage families to create pebble artworks together

Encourage families to create nature-based artworks together

Encourage families to check out the artwork of Giuseppe Arcimboldo

Literature and links

Jiminy eco-toys (n.d.) Jiminy bio-paint - edible ingredients finger paint for all ages, available:

https://jiminy.ie/products/finger-paint-eco-conscious-packaging-free?variant=36707733897384&currency=EUR&utm_medium=product_sync&utm_source=google&utm_content=sag_organic&utm_campaign=sag_organic&gclid=CjwKCAjwzo2mBhAUEiwAf7wjklngiky3zqnejqCQQJQY6c0JoF1TTX_r6CpDYQ9YVatpZopdD3bBSRoCYJkQAvD_BwE

Storniolo A. (2021) How to Make Plant Paints: Zero Waste Art, available: How to Make Plant Paints: Zero Waste Art - Greenify Me

Worroll, J. & Houghton, P. (2018) 'A Year of Forest School, Outdoor Play and Skill Building for Every Season', London: Watkins

Making Natural Paints:

https://www.greenify-me.com/2021/10/plant-paints-zero-waste-art.html

Also:
https://jiminy.ie/products/finger-paint-eco-conscious-packaging-free?variant=36707733897384&currency=EUR&utm_medium=product_sync&utm_source=google&utm_content=sag_organic&utm_campaign=sag_organic&gclid=CjwKCAjwzo2mBhAUEiwAf7wjklngiky3zqnejqCQQJQY6c0JoF1TTX_r6CpDYQ9YVatpZopdD3bBSRoCYJkQAvD_BwE

Lesson Plan 6: Telling the Story of our Bioeconomy Learning Journey: An Artistic Response.

Subject(s): ICT, Language, SESE, SPHE, Arts education	**Title of Lesson: Telling the Story of our BioBeo Learning Journey.** **No. of Lesson: 6 of 6**	
Date: Autumn term	**Class: 5th/6th**	**Time: 2.5 hours** **Guided by your class, take breaks when necessary**
BioBeo Theme: All 5 themes: Interconnectedness, Life Below Water, Food Loop, Forestry and Outdoor Learning.	**Keywords/Phrases:** **General revision of all key words and phrases from earlier lessons**	

Learning Outcomes:

Participants will be enabled to:

1. Investigate *An Coillín Beag* for signs of life.
2. Create and compose an artistic response to their bioeconomy learning journey.
3. Consolidate and revise their understanding of new circular bioeconomy terms and vocabulary and to use in dialogue.

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Resources/Materials/Equipment:

Art, drama, music materials - to be decided by class and teacher depending on their chosen artistic responses.

Introduction:

- Start off the class outside in An Coillín Beag and sing the BioBeo song together.
- Take your time and enjoy all the sights and sounds in our outdoor classroom. In Autumn we need to wrap up well for the elements! Teacher asks children to share one word with each other to describe *An Coillín Beag.*
- *Sa Choillín Beag* we take a good look at all the various living things. What is happening to all the old dead leaves that fall to the earth during Autumn?

- Using the *Bata Taistil* for each speaker, ask the children to recap and recall their favourite moments and learning memories from the previous sessions.

Development:

Creating the artistic response of our BioBeo bioeconomy journey

- Today, you will have the chance to create an artistic response to your BioBeo learning journey. You can choose how you want to share what you've learned – through art, music, or drama. Think about which one will help you express your ideas and tell your story the best!

- You can decide whether you want to work alone or in a group. If you choose to work in a group, make sure everyone's ideas are included and that everyone has a role to play. If you prefer to work by yourself, that's perfectly fine too!

- As you create your piece, remember to focus on the main ideas we have learnt in BioBeo, like sustainability, circularity, and the bioeconomy. Try to think about how you can show these important themes in your artwork, music, or drama.

- Before you start, take a moment to plan out your project. If you're working in a group, talk with your teammates about who will do what. If you're working on your own, think about what materials you'll need and how you'll express your ideas.

- Once you finish, you'll have a chance to share your work with the class. Whether it's a performance, a display of your artwork, or an explanation of your music, you'll be able to show everyone what you've created.

- Most importantly, have fun with this project and let your creativity shine. This is your chance to show what you've learned in a way that's exciting and meaningful to you!

Conclusion:

- Children share their artistic responses with the class and school community.

- Sing the BioBeo song to conclude the lesson.

Assessment for Learning: (Teacher observation, portfolio, photographs/video, self-assessment):

- Digital photographic evidence/ IPad or class camera in use.
- Documented information: such as notes, photographs, videos, and learning stories, notes written by the teacher in lesson flow.
- Art works produced by children and photos of processes.

Eolas

Ceacht 1: Réamhrá don Bhithgheilleagar Ciorclach

Ceacht 2: Foraoiseacht: An Coillín Beag (The little Wood).

Ceacht 3: Saol Faoi Uisce - Téimis chun lochán a chruthú!

Ceacht 4: Lúb Bia: Ag Cabhrú le fás '*An Choillín Bhig*'.

Ceacht 5: Eachtra Ealaíne: Cad atá foghlamtha againn trí thuras bhithgheilleagair chiorclaigh BioBeo le chéile?

Ceacht 6: Ár dTuras Foghlama BioBeo: Freagra Ealaíonta na bPáistí

Sainmhíniú Bithgheilleagar BioBeo:

"Is cur chuige córais-bhunaithe é an bithgheilleagar a fhéachann le hacmhainní bitheolaíocha in-athnuaite ó éiceachórais talún agus mhuirí a chur in ionad acmhainní iontaise ar bhealach inbhuanaithe – amhail foraoisí, barraí, ainmhithe, iasc, miocrorgánaigh, dramhaíl orgánach, agus sruthanna taobh talmhaíochta, chun bia a tháirgeadh, beatha, snáithíní, fuinneamh, táirgí bithbhunaithe, agus seirbhísí laistigh de chreat gheilleagair chiorclaigh atá deartha chun úsáid acmhainní a bharrfheabhsú bunaithe ar ordlathas cascáideach de roghanna úsáide. Chun bithgheilleagar inbhuanaithe agus ciorclach a bheith ann tá gá le cláir oideachais agus oiliúna, taighde eolaíoch, teicneolaíocht agus nuálaíocht a chur i bhfeidhm agus é mar aidhm ní hamháin luach eacnamaíoch a chruthú, ach éiceachórais agus bithéagsúlacht a athnuachan agus a leathnú chomh maith le feabhas a chur ar shláinte agus ar fholláine na sochaí. Trí aghaidh a thabhairt ar na hathruithe sistéamacha seo sa gheilleagar, sa chomhshaol agus sa tsochaí, cuidíonn an bithgheilleagar le todhchaí níos fearr agus níos inbhuanaithe a bhaint amach nuair nach bhfágtar aon duine ina dhiaidh."

Ollscoil: Ollscoil Mhá Nuad

Tír: Éire

Topaic: Ag foghlaim faoi 5 Théama an Bhithgheilleagair de chuid BioBeo do dhaltaí bunscoile.

Insint: Reáchtálfar na 5 cheacht seo sa seomra ranga lasmuigh, i dtimpeallacht na scoile, sa ghairdín nó sna páirceanna. Le linn na seisiún seo, cuirfidh an Múinteoir BioBeo na 5 théama i láthair le fócas speisialta ar oideolaíocht áite. Fiosróidh daltaí agus múinteoirí an chuma atá ar an mbithgheilleagar ina gceantar féin agus rachaidh siad i ngleic leis an timpeallacht máguaird.

Módheolaíochtai: [m.sh. fiosrúchán-bhunaithe; dearadh innealtóireachta]

Foghlaim ghníomhach; Fionnachtain faoi threoir; Caint agus plé; Réiteach fadhbanna; Foghlaim chomhoibríoch; Rannpháirtíocht agus idirghníomhú leis an imshaol nádúrtha; Iniúchadh saor in aisce ar ábhair; Foghlaim trí shúgradh; Teagasc díreach; Léirithe agus Freagraí ealaíne agus ceoil.

SDG: 3, 4, 11, 12, 13, 14, 15, 16.
3: Dea-shláinte agus Folláine; 4: Oideachas ar Ardchaighdeán; 11: Cathracha agus Pobail Inbhuanaithe; 12: Tomhaltas agus Táirgeadh Freagrach; 13: Gníomhú ar son na hAeráide; 14: Saol Faoi Uisce; 15: Saol ar Talamh; 16: Síocháin; Ceartas agus Institiúidí Láidre.

Aois ghrúpa: Rang 5 agus 6 (Bunscoil).

Comhtháthú curaclaim: [cur síos ar na hábhair a bhfuil an topaic seo oiriúnach lena chomhtháthú]

Ó Dhréacht-Churaclam na Bunscoile NCCA: 1. Teanga 2. Oideachas Eolaíochta, Teicneolaíochta, Innealtóireachta agus Matamaitice (STEM) 3. Folláine 4. Oideachas Ealaíon 5. Oideachas Sóisialta agus Imshaoil.

Tugann an tÁbhar seo aghaidh ar na téamaí seo a leanas: Don léiriú Ghaeilge, féach thíos:

	Idirnascthacht **Is léiriú í an idirnascacht ar ról an bhithsféir agus imshaoil nádúrtha i leas an duine agus i sláinte iomlánaíoch agus ar an idirnascthacht éiceolaíoch a bhaineann le gach ní beo.**
	Foghlaim faoin aer **Foghlaim ghníomhach amuigh faoin aer is ea an fhoghlaim lasmuigh ina bhfoghlaimíonn rannpháirtithe tríd an méid a dhéanann siad, tríd an rud a bhíonn acu agus tríd an méid a aimsíonn siad.**
	Lúb Bia **Cuimsíonn an Lúb Bia na hearnálacha feirmeoireachta, fáilteachais, miondíola agus táirgthe fuinnimh. Ó thaobh an gheilleagair chiorclaigh de, dírítear ar úsáid éifeachtach seachtháirgí agus laghdú iomlán ar dhramhaíl bia.**
	Foraoiseacht **Cé go bhfuil táirgí foraoiseachta ag éirí níos tarraingtí ó thaobh na hinbhuanaitheachta de, agus gur cuid mhór den gheilleagar ciorclach iad, tá éagsúlachtaí ollmhóra domhanda i rialachas na gníomhaíochta foraoiseachta.**
	Saol Faoi Uisce **Tagraíonn saol faoi uisce do chaomhnú agus d'úsáid inbhuanaithe gach dobharlach (cosúil le haigéin, agus acmhainní mara ach aibhneacha agus lochanna freisin) don fhorbairt inbhuanaithe.**

Torthaí foghlama do Bhunscoileanna

Ceacht 1: Réamhrá don Bhithgheilleagar Ciorclach

Cuirfear ar chumas na rannpháirtithe:

1. Iniúchadh a dhéanamh ar ghnáthóga lasmuigh.
2. Taithí a dhéanamh ar idirnascthacht éiceolaíoch gach ní beo.
3. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.
4. Suirbhé simplí gnáthóige a dhéanamh agus tuiscint ar bhithéagsúlacht agus ar an mbithgheilleagar ciorclach i dtimpeallacht na scoile a mhéadú.

Ceacht 2: Foraoiseacht: *An Coillín Beag*

Cuirfear ar chumas na rannpháirtithe:

1. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.
2. Coincheap na foraoise a athshamhlú agus samplaí nádúrtha den bhithgheilleagar ciorclach a fheiceáil gach lá inár dtimpeallacht lasmuigh den scoil
3. Conas comhoibriú i ndearadh agus i bplandáil mionfhoraoise agus *Coillín Beag* a scoile féin a chruthú.
4. Rogha a dhéanamh maidir le béaloideas na coille agus cinneadh a dhéanamh mar gheall ar an gceol traidisiúnta don searmanas ceiliúrtha

Ceacht 3: Saol Faoi Uisce - Téimis chun lochán a chruthú!

Cuirfear ar chumas na rannpháirtithe:

1. A chinntiú go gcaomhnaítear dobharlach ina dtimpeallacht scoile agus go bhfuil idirghníomhaíochtaí sláintiúla leis.
2. Comhoibriú le linn mionloch a chruthú sa *Choillín Beag*.
3. Ainmnigh na hainmhithe Éireannacha a dteastaíonn ár gcabhair uathu in idirnascadh an tsaoil uile: m.sh. an buafadach cnáimh agus an frog coitianta.
4. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.

Ceacht 4: Lúb Bia: Ag Cabhrú le fás '*An Choillín Bhig*'.

Cuirfear ar chumas na rannpháirtithe:

1. Comhoibriú le plandáil séasúrach gairdín inite sa *Choillín Beag* agus bealaí a aithint le cur amú bia a laghdú i mbithgheilleagar ciorclach.
2. Bolgáin agus síolta a chur atá cabhrach agus cáirdiúil do phailneoirí agus an fáth a bhfuil bia agus cabhair de dhíth ar ár mbeacha sa ghairdín a phlé freisin.

3. Plé a dhéanamh ar idirnascthacht na gcrann, na bplandaí, na mbláthanna agus na bhfeithidí éagsúla ar fad i ngairdín na scoile nua-phlandaithe.
4. Tuiscint a fhorbairt ar an idirnascthacht idir an Ghaeilge agus tírdhreacha na hÉireann.
5. A gcleachtas folláine féin a fhorbairt sa nádúr agus coincheap darb ainm an 'Ionad Suí' a thabhairt isteach.

Ceacht 5: Eachtra Ealaíne: Cad atá foghlamtha againn trí thuras bhithgheilleagair chiorclaigh BioBeo a dhéanamh le chéile?

Cuirfear ar chumas na rannpháirtithe:

1. Comhoibriú ar scéal idirnascthachta a chruthú agus a chumadh ag úsáid "Clocha Scéil" An Choillín Bhig.
2. A dturas Biobeo a fhreagairt trí phéinteáil agus líníocht ag baint úsáid as acmhainní bithbhunaithe (déan scuab péinte síorghlas, déan péint nádúrtha bithbhunaithe agus bain úsáid as páipéar bithbhunaithe).
3. A saothair ealaíne féin a thaispeáint agus a chur i láthair dá gcuid comhdhaltaí. Freagróidh siad ceisteanna mar gheall ar a gcuid saothar chomh maith.
4. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.

Ceacht 6: Ár dTuras Foghlama BioBeo: Freagra Ealaíonta na bPáistí

Cuirfear ar chumas na rannpháirtithe:

1. Iniúchadh a dhéanamh ar *An gCoillín Beag*
2. Freagra Ealaíonta a thabhairt ar an turas foghlama a bhí acu faoin mbithgheilleagar.
3. A dtuiscint ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach a chomhdhlúthú agus a athbhreithniú agus a úsáid san agallamh.

Plean Ceachta 1 - Réamhrá don Bhithgheilleagar Ciorclach

Ábhar: Teanga, Eolaíocht, Matamaitic, Tíreolaíocht, Amharcealaíona, Ceol, Oideachas don Fhorbairt Inbhuanaithe, Saoránacht Dhomhanda	Teideal an Cheachta: Réamhrá don Bhithgheilleagar Ciorclach. Uimhir Cheachta: 1 de 6	
Dáta: Téarma an Fhómhair	Rang: 5 & 6	Fad: 2.5 uair an chloig Glac sos le do rang nuair atá sé ag teastáil
Téama BioBeo: Idirnascthacht	Eochairfhocail/Frásaí: , acmhainn nádúrtha, acmhainn bhithbhunaithe, gnáthóg, inbhuanaithe, éiceachóras, éiceolaíocht, inathnuaite, idirnascthacht, bithéagsúlacht.	

*Foghlaim amhrán BioBeo. Féach ar an aguisín, 'An tAmhrán BioBeo'.

Torthaí Foghlama:

Cuirfear ar chumas na rannpháirtithe:

1. Iniúchadh a dhéanamh ar ghnáthóga lasmuigh.
2. Taithí a dhéanamh ar idirnascthacht éiceolaíoch gach ní beo.
3. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.
4. Suirbhé simplí gnáthóige a dhéanamh agus tuiscint ar bhithéagsúlacht agus ar an mbithgheilleagar ciorclach i dtimpeallacht na scoile a mhéadú.

Acmhainní/Ábhair/Trealamh:

Acmhainní bithbhunaithe: páipéar, pinn luaidhe/pinn luaidhe dathúcháin/criáin/gualaigh, olann, clocha, úlla Gaelacha, cipín (cipín) le húsáid ag gach páiste le húsáid chun freagairt agus líníocht i gcré, clár dubh déanta as cliathbhosca stórais athchruthaithe, athdhéanta gearrthóga beaga do dhaltaí, Bata Taistil (bata turais), málaí siopadóireachta plaisteacha ath-inúsáidte le suí orthu, clingíní fuaime BioBeo déanta as ábhair athdhéanta.

Réamhrá: (25 nóim)

- Comhchruthaigh conradh ranga um fhoghlaim amuigh faoin aer: Caithfimid meas a léiriú ar a chéile agus ar gach rud beo eile. Cleachtaimid éisteacht mhaith.
- "Rachaimid le haghaidh ár gcéad maidin sa seomra ranga lasmuigh le chéile. Tóg do chuid ama agus bain taitneamh as na radharcanna agus na fuaimeanna go léir ar an mbealach chuig ár seomra ranga lasmuigh".

- Bailígí agus suígí i gciorcal. Cuirfimid tús le gach seisiún gach lá leis an amhrán BioBeo. Canfaidh an múinteoir an t-amhrán agus seinnfidh sé giotár.

An tAmhrán - BioBeo

BioBeo, ó BioBeo, BioBeo, yeah BioBeo!

Following nature's way, following nature's way

For a bioeconomy

Learning to see those interconnections,

All of nature is interconnected,

And that's how we roll,

With BioBeo, yeah BioBeo

Tagaigí linn go dtí an coillín beag,

Ó tagaigí linn go dtí an coillín beag!

Anáil isteach an ocsaigin

Ó na crainn, na crainn, is iad ag cabhrú linn

Ag cabhrú linn!

BioBeo, ó BioBeo

Sa choillín beag, we plant an edible garden

We'll sow the seeds and watch them grow

Food for the bees and for you and me

The food loop is circularity

Interconnectedness for all to see

We celebrate nature now,

Ó, with BioBeo

BioBeo, Ó Biobeo,

A magical world, it's life below water

Full of living things, life below water

Our little pond, who's making a home there now?

A natterjack toad, and the dragonfly! O Fly dragonfly!

BioBeo, yeah BioBeo

We're following nature's way, it's the bioeconomy

With BioBeo,

Learning to see those interconnections,

We're all in nature interconnected,

Circularity is how we roll, we're with BioBeo!

- Scríobh an focal 'bithgheilleagar' ar chlár dubh bhosca BioBeo. Is bosca adhmaid athdhéanta é seo atá péinteáilte le péint clár dubh inbhuanaithe.
- Tugtar cipín beag (twig) do gach dalta chun na ceisteanna a fhreagairt: TÁ - cipín in airde (cosúil le hordóga), NÍL - luaigh cipín síos. Is féidir an cipín a úsáid freisin chun focail a rianú nó a scríobh sa chré /talamh agus iad ina suí.
- Smaoinigh/ Gabh i mbeirteanna/ Roinn: Pléigh an téarma seo ina mbeirteanna anois (2-3 nóim): Cuir ceist ar na daltaí:

-An bhfaca tú an focal seo roimhe seo?

-An féidir leat é a léamh?

-Cad atá ar eolas agat faoi?

- Tabhair cuireadh do na beirteanna torthaí an phlé a roinnt go hachomair. Mínigh go dtugtar an Bata Taistil do gach cainteoir chun éisteacht mhaith a fháil ó dhaoine eile. Scríobh na heochairfhocail atá acu ar an mbosca ar an gclár dubh.
- Léann Múinteoir BioBeo an sainmhíniú seo ar an mbithgheilleagar do na páistí, bunaithe ar shainmhíniú BioBeo:

Is bealach é an bithgheilleagar ciorclach chun acmhainní nádúrtha a úsáid chun bia, fuinneamh agus táirgí maireachtála a tháirgeadh agus cúram a ghlacadh chun an Domhan a chosaint ag an am céanna.

Trí úsáid a bhaint as acmhainní bithbhunaithe in-athnuaite nó bronntanais ón Domhan, agus ár ndramhaíl sa bhithgheilleagar ciorclach a laghdú, tacaíonn sé le todhchaí inbhuanaithe, sláintiúil don phláinéid agus do gach ní beo.
Ní mór do gach duine againn acmhainní a roghnú agus a úsáid go ciallmhar agus go réidh ar mhaithe lenár dteach comhroinnte - An Domhan.

- Fiafraigh de na daltaí an féidir leo smaoineamh ar shamplaí de bhithgheilleagar sa domhan nádúrtha. Is geilleagar ciorclach é . "Cipín suas má cheapann tú go bhfuil a fhios agat cad chuige a dtugaimid geilleagar ciorclach air? Foghlaimeoidh muid na freagraí inniu!"

Forbairt:

Cuid 1: Siúlóid dúlra chun ár n-áit áitiúil, ár 'ngnáthóg' scoile a fhiosrú (Am: 35 nóim)

- Seasann siad go léir i gciorcal mór, agus téann an olann timpeall an chiorcail. Tógann na páistí an olann chun an liathróid a chur timpeall an ghrúpa. "Déanann an olann nasc linn mar ghrúpa. Táimid i gciorcal ionas nach bhfágtar aon duine ar leathtaobh, táimid ar fad anseo le foghlaim mar fhoireann, le meas."

- **Aimsigh spás compordach.**
- **Mothaigh conas a shuíonn an snáithe olla i do lámh.**
- **Anois dún do shúile, agus lig ort féin roinnt calma a fháil amach anseo sa nádúr.**
- **Tóg idir 3 agus 5 anáil dhomhain.**
- **An féidir leat fuaimeanna an dúlra a chloisteáil?**
- **Fan ciúin agus réidh, smaoinigh cad is féidir leat a chloisteáil.**
- **An bhfuil na duilleoga ag meirg sna crainn agus an ghaoth ag séideadh tríothu?**
- **An gcloiseann tú na héin ag canadh?**
- **An bhfuil fuaimeanna nádúrtha ar bith eile ann nó roinnt fuaimeanna meaisín?**
- **Tóg trí anáil mhín, dhomhain eile isteach trí do shrón, amach tríd an mbéal.**
- **Mothaigh an talamh faoi do dhá chosa.**
- **Táimid ceangailte leis an bpláinéad lenár gcéadfaí; tadhaill inár gcosa, aer ag baint lenár gcraiceann, fuaimeanna an dúlra inár chluasa, solas inár súile, fiú nuair a bhíonn do chuid súile dúnta, téann solas isteach!**
- **Oscail do shúile arís agus bog do mhéara agus do bharraicíní arís go mall.**

Anois Téimis ar Shiúlóid sa Nádúr !

Táimid chun iniúchadh a dhéanamh ar a bhfuil ag maireachtáil agus ag fás inár dtimpeallacht scoile. Siúlfaimid timpeall i ngrúpaí beaga chun a bhfuil ag fás inár ngnáthóg scoile, ár n-éiceachóras scoile a bhreathnú agus a thaifeadadh.

- **Treoraigh an grúpa chuig crann réamhroghnaithe, cuir bileog bán ar an talamh faoi bhrainse oiriúnach. Croith an chraobh go maith agus is féidir le gach duine a fheiceáil céard iad na feithidí a thiteann ar an mbileog.**
- **Breathnaímis! An bhfuil ainmneacha na bhfeithidí ar eolas ag éinne? Bailigh na créatúir éagsúla sna hamharcóirí fabhtanna lena shainaithint. An cód dúlra eolaíoch a chur i láthair na bpáistí trí mhíniú a thabhairt: "Ní dhéanaimid aon dochar oiread agus is féidir go daonna agus muid ag obair nó ag siúl sa dúlra".**
- **Féachann na daltaí ar na feithidí sna hamharcóirí fabhtanna agus foghlaimíonn siad conas cuid de na feithidí a aithint ag baint úsáid as cairt fheithidí a cuireadh ar fáil ó bhosca acmhainní BioBeo.**
- **Scaoileadh amach go cúramach na feithidí ar ais chuig a ngnáthóg ina dhiaidh sin.**

"Sula n-imeoidh muid chun iniúchadh a dhéanamh ar an dúlra timpeall orainn, cruinnigh timpeall don nóiméad filíochta:

Éistigí leis an dán álainn seo:

Crann ar Chnoc

Le Gabriel Rosenstock

Seasann crann ar an chnoc údaí thall;

Crann ar chnoc, an cnoc ní bhogann.

Fásann craobh, craobh ar an chrann;

Craobh ar chrann, crann ar chnoc,

An cnoc ní bhogann.

Nead ar an chraobh;

Nead ar chraobh, craobh ar chrann, crann ar chnoc,

An cnoc ní bhogann.

Ubh istigh sa nead;

Ubh sa nead, nead ar chraobh, craobh ar chrann, crann ar chnoc,

An cnoc ní bhogann.

San ubh bhí éan;

Éan san ubh, ubh sa nead, nead ar chraobh,

Craobh ar chrann, crann ar chnoc,

An cnoc ní bhogann.

Cleite ar an éan;

Cleite ar éan, éan san ubh, ubh sa nead, nead ar chraobh,

Craobh ar chrann, crann ar chnoc,

An cnoc ní bhogann.

"Mar sin, cé atá réidh "le dul go héasca, a bheith líonta le solas agus a bheith geal" agus an chéad tasc eile a dhéanamh?". Ar aghaidh linn ag obair le chéile!

- Roinn an rang i ngrúpaí de cheathrar agus tabhair tasc ar leith do gach grúpa siúl timpeall chun suirbhé a dhéanamh agus úsáid a bhaint as a gcúig chiall chun na gnéithe éagsúla den dúlra agus de dhúile beo timpeall a dtimpeallacht scoile a fhiosrú:

- **Grúpaí: 1. crainn, 2. bláthanna fiáine & plandaí, 3. éin, feithidí agus ainmhithe beaga**

- Tá gearrthaisce, peann luaidhe agus pinn luaidhe daite ag gach grúpa. Nuair is féidir i ngach comhthéacs scoile, úsáidfidh na páistí ceamaraí nó ipadanna chun grianghraif a ghlacadh d'fhionnachtana ina gcuid oibre allamuigh.

Grúpa na gCrann: "Is é an tasc atá agat ná na crainn éagsúla sa ghnáthóg áitiúil a fhiosrú agus a aithint. Bailigh cuid de na duilleoga ón talamh le haghaidh aitheantais níos déanaí. Is féidir leat iad a tharraingt, agus grianghraf a ghlacadh freisin. Féach an féidir le haon duine ar an bhfhoireann na crainn a ainmniú."

Grúpa na bPlandaí: "Déanfaidh tú iarracht na bláthanna fiáine nó na plandaí / féara / toir éagsúla i do ghnáthóg áitiúil a aithint. Is féidir leat iad a tharraingt, agus grianghraf a ghlacadh freisin. Féach an féidir le haon duine ar an bhfoireann na plandaí a ainmniú."

Grúpa na n-Éan & fiadhúlra / Birds & Wildlife Group: "Is é an tasc atá agat ná breathnú orthu, éisteacht leo, agus iarracht a dhéanamh grianghraf a ghlacadh de na héin éagsúla, agus ansin iad a tharraingt freisin. Ansin, céard iad na feithidí nó créatúir ar bith eile a aimsíonn tú i do ghnáthóg áitiúil agus iad a tharraingt. An féidir leat aon éin, feithidí nó ainmhithe a aimsíonn tú a ainmniú?"

Comhroinn na jabanna go cothrom i do ghrúpa agus glac sealaíocht ag déanamh gach ceann de na tascanna.
Lipéadaigh do líníochtaí le chéile, más féidir leat. An dtuigeann sibh an obair seo? Cipín suas? Téimis agus déanfaimis ár n-obair allamuigh"

Tar éis 15 nóiméad, fuaim na clingíní BioBeo agus bailíonn gach duine ar ais le chéile. Roinneann taiscéalaithe a gcuid torthaí agus taispeánann siad a gcuid líníochtaí agus grianghraif agus a dtaithí leis an ngrúpa. Úsáid an Bata Taistil mar bhata cainte.

Sos do na taiscéalaithe BioBeo

(15 nóim.)

Soláthraíonn Múinteoir BioBeo úll blasta Éireannach a fhaightear go háitiúil do gach taiscéalaí BioBeo le sult a bhaint as le linn an tsosa. Déanaimid comhrá faoinár dtaithí go dtí seo ar maidin. Bailigh na croíleacáin úll go léir don charn múirín.

Forbairt: Cuid 2: Cad is brí le hIdirnascthacht don bhithgheilleagar ciorclach? (40 nóim)

- Déan athbhreithniú ar obair na maidine: Cad atá foghlamtha againn faoin mbithgheilleagar ciorclach? Cad is mó a thaitin leat san obair? Úsáid an Bata Taistil chun a gcuid smaointe agus freagraí ar an bhfoghlaim a roinnt.
- Is í ár ngníomhaíocht deiridh ná an Cluiche Idirnascthachta.
- Seasann siad go léir sa chiorcal arís. Tosaíonn múinteoir BioBeo (a bhfuil liathróid olla BioBeo ina lámh aige) an cluiche leis an gceist:

- **Cá bhfaigheann gach ní beo ar ár bpláinéad a gcuid fuinnimh?**

(Leid: Tá sé 93 milliún míle ónár bpláinéad i lár ár gcóras gréine).

- **Tugtar deireadh na snáithe olla don chéad pháiste a fhreagraíonn an chéad cheist.**
- **Ar aghaidh linn go dtí an chéad cheist eile agus faigheann an páiste a fhreagraíonn an snáithe olla ón liathróid atá ag an múinteoir le coinneáil, agus nascfar é le páiste 1, agus téimid ar aghaidh le ceisteanna agus freagraí ionas go gcruthaítear gréasán snáithe idir na páistí ar fad agus iad ag freagairt na gceisteanna bunaithe ar fhoghlaim agus ar fhionnachtana na maidine.**

I measc na gceisteanna is féidir:

- **Cén chuid den chrann a thógann fuinneamh na gréine isteach chun an crann a fhás? (duilleog)**
- **Cad a thugtar ar an bpróiseas seo? (fótaisintéis)**
- **Cathain a thiteann na duilleoga de na crainn? (Fómhar)**
- **De réir mar a bhriseann na duilleoga agus a lobhadh, cé na feithidí a chónaíonn faoin talamh nó ar an talamh agus a chabhraíonn leis na duilleoga a bhriseadh síos? (péisteanna & míolta coille)**
- **Ainmnigh feithid a fuaireamar inár dtaiscéalaíocht inniu?**
- **Cé na feithidí eile a chuidíonn leis na seanduilleoga a bhriseadh síos? (míolta coille)**
- **Cén t-ainmhí a itheann feithidí inár ghairdín? (éan/ gráinneog)**

- **Cén áit ar maith le go leor éan a neadacha a thógáil?**
- **Cad iad na héin a d'aithin muid inniu?**
- **I gcrann darach, an síol a thagann san Fhómhar, cén ainm a thugtar ar? (dearcán)**
- **Cén t-ainmhí a thaitníonn le cnónna agus síolta cosúil le dearcáin a ithe? (iora)**
- **Fíor nó bréagach: Is breá le héin cnónna agus síolta a ithe freisin?**

Leanann an cheistiú agus léirítear idirnasc na ndúl beo agus na fionnachtana nádúrtha ar fad a rinne muid i rith na maidine.
Nuair a fhaigheann na páistí go léir an snáithe atá le coinneáil ón bhfreagra a thug siad ar cheist, déanaimid sos chun breathnú ar an bpatrún zigzag:

Is é seo gréasán na hidirnascthachta sa bhithgheilleagar.
Tarraing aird na bpáistí ar an bhfíric nach bhfuil aon dramhaíl i ngréasán bia an dúlra, nó sa lúb bia.
Úsáidtear gach rud ar bhealach ciorclach sa bhithgheilleagar.
Níl caitheamh ar shiúl nó dumpáil sa dúlra, gan aon chur amú, ach ciorcal den saol. Is féidir linn é seo a fheiceáil inár ngnáthóg scoile. Bíonn fuinneamh na gréine ag dul feadh agus tríd an lúb bia i gcónaí, agus is é seo ár mbithgheilleagar ciorclach i mbun gnímh. Tá an domhan nádúrtha ar fad idirnasctha, muid féin san áireamh! Is cuid mhór den ghréasán seo na daoine.

Fiafraigh de na páistí cad a cheapann siad faoin ngréasán idirnascthachta a bhfuil siad nasctha leis sa chiorcal.
Cruinnigh an snáithe olla isteach i liathróid arís agus na páistí ag roinnt smaointe.

An bhfuil a fhios ag éinne conas a chuidíonn ár bhFeithidí go léir le lúb bia an bhithgheilleagair? Cipín suas.

Is iad Feithidí, cosúil leis na míolta coille agus na péisteanna talún, i ndáiríre na laochra gan aitheantas a dhéanann an obair chrua ar fad ar son an dúlra! Trí sheanduilleoga a ithe agus ábhar orgánach a lobhadh tá siad ag cuidiú leis briseadh síos, filleadh ar an ithir agus tosú arís. De réir mar a bhriseann sé anuas déantar bia agus ithir nua do na plandaí agus na crainn le fás ann.

Conclúid: **(30 nóim.)**

Fill ar ais chun suí i gciorcal agus tabhair mála púróga do gach ceann de na trí ghrúpa. Tá litreacha aonair scríofa ar gach méaróg mhín agus oibríonn na grúpaí le chéile chun na clocha a shocrú leis an bhfocal "bithgheilleagar". Cé go ndéanann siad é seo, léigh amach arís an sainmhíniú ar bhithgheilleagar. Maidir le litriú an ghrúpa tapa, is féidir leo cluiche a imirt chun focail níos lú a dhéanamh as 'bithgheilleagar': -ag ithe- a thaispeáint dóibh mar shampla. Abair leo gur féidir leo dul chuig a bhfoclóirí: seiceáil d'fhoclóir i gcónaí chun focail agus téarmaí nua a fhoghlaim, agus cuir le d'eolas!

Mar chríoch leis an seisiún: Ag baint úsáid as an mBata Taistil do na cainteoirí:

- Ar chuala nó ar fhoghlaim éinne aon rud nua inniu?

- An bhfuil tú ag smaoineamh faoi rud ar bith anois?

Críochnaíonn an ceacht agus sinn go léir inár suí i gciorcal chun an t-amhrán BioBeo a chanadh le chéile. Is féidir le páistí canadh in éineacht leis an gcurfá. Gabhann Múinteoir BioBeo buíochas le gach duine as a rannpháirtíocht iontach.

Measúnú chun Foghlama:

Fianaise ghrianghrafadóireachta digiteach/Ipad an mhúinteora agus/nó ceamara ranga in úsáid.

Eolas doiciméadaithe: mar nótaí, grianghraif, físeáin, agus scéalta foghlama, nótaí dialainne scríofa ag an múinteoir i sreabhadh an cheachta.

Saothair ealaíne arna dtáirgeadh ag mic léinn agus grianghraif de phróisis.

Foclóir Nua	**Sainmhíniú**
bithgheilleagar	Bealach le húsáid agus aire a thabhairt d'acmhainní nádúrtha ár bpláinéad (An Domhan) chun bia, fuinneamh, agus táirgí maireachtála a chruthú. Trí úsáid ciallmhar de na hacmhainní in-athnuaite agus trí dhramhaíl a laghdú sa bhithgheilleagar ciorclach, is féidir linn todhchaí inbhuanaithe, sláintiúil don phláinéad agus do gach rud beo a chruthú.
Acmhainn bithbhunaithe	Míreanna a dhéantar as acmhainní bitheolaíocha in-athnuaite a fhaightear sa nádúr.
gnáthóg	Baile do phlandaí, ainmhithe agus rudaí beo eile ar nós miocrorgánaigh áit a mbíonn siad ag idirghníomhú lena chéile. D'fhéadfadh gur foraoisí, aigéin, fásaigh, tailte féaraigh, agus fiú gairdíní scoile.
inbhuanaithe	Ag déanamh rud éigin ar bhealach a choinníonn sé ag dul ar aghaidh go fadtéarmach gan dochar a dhéanamh don chomhshaol nó ár n-acmhainní go léir a úsáid.
éiceachóras	Comhphobal de rudaí beo cosúil le plandaí, ainmhithe, nó fiú orgánaigh bídeacha, áit a n-idirghníomhaíonn rudaí beo lena chéile agus le nithe neamhbheo timpeall orthu. Bíonn siad ag brath ar a chéile le haghaidh rudaí cosúil le bia, foscadh, agus fiú an t-aer a análaíonn siad.

éiceolaíocht	Staidéar ar na caidrimh idir plandaí, ainmhithe, daoine, agus a dtimpeallacht, agus an chothromaíocht idir na caidrimh seo.
inathnuaite	Rud is féidir a athlánú go nádúrtha, cosúil le soláthar gan deireadh. Ciallaíonn acmhainní in-athnuaite rudaí is féidir linn a úsáid arís agus arís eile gan dochar a dhéanamh don chomhshaol ar nós solas na gréine.
idirnascthacht	Tá gach rud sa timpeallacht ceangailte lena chéile. Léiríonn sé seo go mbíonn na nithe go léir- rudaí beo agus rudaí neamhbheo - ag brath ar a chéile agus ag obair le chéile.
bithéagsúlacht	An Éagsúlacht a bhaineann le plandaí agus le hainmhithe an domhain nó in áit/gnáthóg ar leith, agus na héiceachórais chasta ar fad a thacaíonn agus a thugann beatha do na horgánaigh ar fad ar ár bpláinéad

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Leideanna rannpháirtíochta tuismitheoirí:

Roinn an sainmhíniú ar an mbithgheilleagar leis na teaghlaigh roimh ré ionas go mbeidh siad ar an eolas faoina bhfuil i gceist leis an gclár.

Mínigh na bunrialacha a bhaineann le siúlóid dúlra agus spreag iad chun é a dhéanamh ina gcomharsanacht/ngarraí féin.

Mínigh cad is sneaic shláintiúil ann agus spreag iad chun oidis/grianghraif a roinnt lena chéile trí úsáid a bhaint as na meáin shóisialta (má chuirtear sneaiceanna sláintiúla in éineacht le féilire in aghaidh an lae).

Teaghlaigh a spreagadh chun coincheap na hidirnascthachta a leathnú lena dteaghlach agus lena bpobal féin. Is féidir leat an cluiche a imirt chun an snáithe olla a rith ar lá scoile áit ar féidir le rannpháirtithe an snáithe a chur ar aghaidh chuig cibé duine ar féidir leo nasc a fháil leo (m.sh. tuismitheoirí ag siopadóireacht san áit chéanna nó ag cur aithne ar a chéile ina n-óige).

Spreag na teaghlaigh le cárta cuimhne a chruthú mar aon leis na frásaí/sainmhínithe agus na plandaí/ainmhithe agus a n-ainmneacha a fhoghlaim. Is féidir cártaí nua a chur leis an tacar tar éis gach ceachta.

Cruthaigh "suaitheantas bithgheilleagair." Is féidir é a thuilleamh trí bheith gníomhach i ngníomhaíochtaí na gceachtanna. Is féidir le teaghlaigh teaghlaigh eile a ainmniú don onóir agus ansin caitheann gach duine gach vóta go seachtainiúil/míosúil.

Plean Ceachta 2: An Coillín Beag

Ábhar: OSIE, OSPS, Teanga, Oideachas Ealaíon, Matamaitic	**Teideal an Cheachta: An Coillín Beag** **Uimhir Cheachta: 2 de 6**	
Dáta: Téarma an Fhómhair	**Rang: 5/6**	**Fad: 2.5 uair an chloig** **Glac sos le do rang nuair atá sé ag teastáil**
Téama BioBeo: Foraoiseacht	**Eochairfhocail/Frásaí: foraoise dúchasach, siombóis, feasacht comhshaoil, athfhoraoisiú, sláinte ithreach, dé-ocsaíd charbóin, ocsaigin.**	

Torthaí Foghlama:

Cuirfear ar chumas na rannpháirtithe:

1. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.
2. Coincheap na foraoise a athshamhlú agus samplaí nádúrtha den bhithgheilleagar ciorclach a fheiceáil gach lá inár dtimpeallacht lasmuigh den scoil.
3. Conas comhoibriú i ndearadh agus i bplandáil mionfhoraoise agus *Coillín Beag* a scoile féin a chruthú.
4. Freagairt do rogha de bhéaloideas na coille agus de cheol traidisiúnta le searmanas ceiliúrtha *An Coillín Beag* dá gcuid féin a chruthú.

Acmhainní/Ábhair/Trealamh:

- Cipíní agus Bata Taistil
- Uirlisí gairdín don tochailt agus don phlandáil: spád, uirlisí láimhe.
- Glasóga crann i bpotaí: Speicis dhúchasacha lena n-áirítear dair, coll, cuileann, fuinseog sléibhe, agus crainn torthaí cosúil le piorra nó úll.
- Dhá mhála múirín maith (mála 40 lítear / saor ó mhóin).
- callaire Bluetooth don Cheol

Réamhrá: **(Am: 25 Nóim.)**

Fáilte, cuir an conradh measa i gcuimhne dúinn féin agus déan achoimre ar an seisiún roimhe seo.

Cad a d'éirigh linn a fhoghlaim an tseachtain seo caite? Cipíní suas chun freagra a thabhairt: Tá an bata taistil ag an gcainteoir.

Cé atá in ann a mheabhrú cad a chiallaíonn an téarma *bithgheilleagar ciorclach*? Cad iad na crainn, na plandaí, na héin agus na hainmhithe éagsúla sin a casadh orainn? Cad iad na fíricí spraiúla gur féidir leat a mheabhrú?

Inniu, táimid chun *An Coillín Beag* a phlandáil. Glacaimis ár gcuid ama agus bímis aireach ar na radharcanna agus na fuaimeanna go léir a chastar orainn ar an mbealach chuig ár seomra ranga lasmuigh.

Bailigh i gciorcal arís. Cuirimid tús le gach seisiún gach lá leis an amhrán BioBeo. Canfaidh an rang an t-amhrán le chéile.

An tAmhrán BioBeo (féach ceacht 1 do na liricí)

Pléigh an tábhacht a bhaineann le foraoisí mar éiceachórais a thacaíonn le beatha éagsúil plandaí agus ainmhithe.

Is áit é foraois nó coillearnach a sholáthraíonn foscadh, bia agus sábháilteacht do shaibhreas saibhir beatha.

- Ar thángamar ar go leor ainmhithe agus plandaí inár gcéad cheacht? Cé atá in ann roinnt ainmhithe coillearnaí a ainmniú dúinn? (iora, éin, broic, ialtóga agus míolta nó feithidí srl.) Cé acu feithidí a d'aithníomar an tseachtain seo caite?
- Nasc siar le stór focal nua an cheachta roimhe seo: Cad is brí leis an téarma "bithéagsúlacht"?

Éagsúlacht na beatha plandaí agus ainmhithe ar domhan nó in áit/gnáthóg ar leith, agus na héiceachórais chasta ar fad a thacaíonn agus a thugann beatha do na horgánaigh ar fad ar ár bpláinéad.

- Mínigh go n-oibríonn an domhan nádúrtha i siombóis. Seo áit a bhfuil gaol dlúth ag dhá orgánach lena chéile.
- Cad atá foghlamtha againn faoin bhfocal idirnascthacht?

Tá gach rud sa timpeallacht ceangailte lena chéile. Léirítear an chaoi a mbraitheann rudaí beo agus neamhbheo ar a chéile agus an dóigh a n-oibríonn siad le chéile. Tá siad idirnasctha.

- Tá gaol siombóiseach ag na péisteanna agus na míolta leis an gcrann.
- An cuimhin leat cad a dhéanann míolta agus péisteanna leis na duilleoga nuair a thiteann siad san Fhómhar? Titeann duilleoga ar an talamh – ag déanamh bia d'fheithidí mar na míolta coille. Briseann na duilleoga síos nó bithdhíghrádaíonn siad. Is bia iad d'fheithidí agus péisteanna. Fágann an próiseas iomlán seo go bhfilleann na duilleoga isteach san ithir a sholáthraíonn cothaithigh agus bia do níos mó plandaí agus fás na gcrann.

Forbairt: **(25 nóim.)**

Tosaigh le plé ar stair nádúrtha na gcrann agus a mbéaloideas (scéalta, finscéalta agus ceol) in Éirinn agus cé chomh tábhachtach a bhí coillearnacha dár sinsear in Éirinn.

'Tá coillearnach de chrainn dhúchasacha ar cheann de na héiceachórais is saibhre in áit ar bith. Tá ár gcrainn dhúchasacha (m.sh. Darach, Caorthann, Cuileann, sceach gheal, Beith, Coll) linn in Éirinn ón oighearaois dheireanach, rud ar bith suas le 10,000 bliain ó shin! Faoi chrann darach, san ithir saibhir donn, i méadar cearnach amháin d'fhéadfadh 260 péisteanna talún a bheith ann. Tá ciaróga, ialtóga, broic, éin ar fad fite fuaite isteach i ngréasán bríomhar na beatha a thugann fiú crainn mharbha na coillearnaí isteach i dtimthriall athnuachana agus athbhreithe' (Michael Viney).

- Cé mhéad ainm crann ón tseachtain seo caite gur féidir leat a mheabhrú? Oibrigh le do pháirtí anois chun na hainmneacha a thabhairt chun cuimhne.
- Taispeáin bailiúchán na duilleoga (ón tseachtain seo caite): labhair faoi dhathanna agus chruthanna éagsúla an fhómhair, déanaidís iarracht na duilleoga a aithint ina mbeirteanna.
- Gabh timpeall mála dearcáin a bailíodh ó chrainn darach. Tógann na páistí ceann lena scrúdú agus le cur síos a dhéanamh air (Úsáid bata taistil). Tabhair cupán caife páipéir atá glanta, úsáidte agus inmúirín do gach páiste:

Tá gach duine chun crann darach a chur inniu!
Ar a dtugtar rí na gcrann i mbéaloideas na foraoise. Ba í an crann darach crann naofa na nDraoithe. Mheas na hEabhraigh go raibh sé naofa freisin (Bealach siar in aimsir an tSean-Tiomna) agus na Gearmánaigh freisin. Mar chrann Zeus/Iúpatar, bhí sé toirmiscthe é a ghearradh síos in aimsir na Sean-Ghréige agus na Róimhe. In Albain, tharraingeodh Gaill ciorcal timpeall air féin le buinneán Darach chun iad féin a chosaint ó na sióga!
I ndlíthe ársa na hÉireann, bhí seasamh an-tábhachtach agus naofa ag an gcrann Darach, ar a dtugtar uasal na coille. Má ghearr tú crann Darach síos nach raibh ar do thalamh, bhí tú i dtrioblóid mhór!
Tá dhá chineál darach ann: sessile (an crann náisiúnta atá againn in Éirinn) agus Pendunculate. Tugann an dair áit chónaithe do níos mó fiadhúlra ná aon chrann eile, ach tá sainchuspóirí ag gach crann agus tugann siad ósta do chineálacha éagsúla feithidí agus fiadhúlra.

Chun do chrann darach a phlandáil le do dhearcán:
Líon do chupán ⅘ lán den mhúirín, saor ó mhóin.
Bain úsáid as do mhéar nó peann luaidhe chun poll deas a dhéanamh don dearcán le dul isteach ann.
Pop isteach é agus clúdaigh arís le hithir, timpeall orlach domhain.
Is féidir leat do dhearcán plandáilte a thabhairt abhaile agus insint do do theaghlach agus do chairde ar fad faoin gcrann Darach agus faoin dearcán beag atá agat.

Briseadh do na taiscéalaithe BioBeo **(15 nóim.)**

Am do bhriseadh BioBeo! Soláthraíonn Múinteoir BioBeo Úll Éireannach blasta a fhaightear go háitiúil do gach taiscéalaí BioBeo. Bailigh na croíleacáin úll go léir don charn múirín.

Téimis agus cuirimis *An Coillín Beag* le chéile! (50 nóim.)

- Taispeáin do na páistí gach crann óg lipéadaithe i bpotaí. Mínigh cén fáth ar roghnaíodh iad don *Choillín Beag* (**crainn dúchasaigh, méid maith agus meascán tarraingteach**). Iarr ar na páistí na codanna éagsúla de na crainn a ainmniú: coinnigh buíon le fréamhacha as an bpota in airde: ón talamh aníos: **fréamhacha/trunc/ brainse/ bachlóga/ duilleoga**. Cé atá in ann a insint dom cad a dhéanann na fréamhacha don chrann? Tugann siad cobhsaíocht agus ionsúnn siad bia agus uisce. Labhair faoi dhearadh na foraoise. Cé na crainn is airde a fhásfaidh? Cá háit ar cheart gach crann a chur? Cé na crainn is mó a thabharfaidh foscadh do na crainn agus na plandaí is lú? Má chuireann tú na crainn níos dlúithe le chéile, fásfaidh siad níos tapúla agus níos airde san iomaíocht chun an solas agus an fuinneamh is fearr a fháil ón ngrian.
- Taispeáin conas an suíomh a ullmhú. Aontaigh ar phlean plandála, treoraithe ag teagasc gairid ar bhreithnithe airde éagsúla gach crann. D'ullmhaigh an múinteoir an suíomh agus mharcáil sé na spásanna ina bhfuil poill le tochailt. Tógann gach páiste seal ag tochailt agus ag cabhrú leis an suíomh a ullmhú. Tacaíonn an múinteoir le sábháilteacht gach duine.
- Cuir na crainn óga le chéile de réir an phlean.

Conclúid: (30 nóim.)

- Déanaimis ceiliúradh anois agus fáilte a chur roimh a chéile go dtí *an Coillín Beag* álainn nua-phlandaithe s'againne, ag éisteacht le hamhrán traidisiúnta Gaelach agus ag baint sult as damhsa Gaelach.
- Múnlaíonn agus múineann Múinteoir BioBeo don ghrúpa an chéim bhunúsach '1,2,3/1,2,3' i Rince Gaelach – ceim a haon-dó-trí/ Céim a haon-dó trí.
- Fiafraigh de na páistí an bhfuil damhsóirí sa rang? Cleachtaigh an bhunchéim mar ghrúpa agus ansin roinneann an múinteoir an grúpa i bhfoirne de cheathrar le dul agus damhsa gearr ceiliúrtha a chruthú don choillearnach. Oibríonn siad ar feadh cúig nóiméad i ngrúpaí chun gnáthamh rince gairid a chruthú agus a chleachtadh dá gceiliúradh coille. Spreag na leanaí cúthaile chun triail a bhaint as.
  Fillimid mar ghrúpa agus tugtar deis do na scoláirí atá níos muiníní a gcuid smaointe rince a léiriú ar dtús, spreagtar gach duine a ndícheall a dhéanamh. Ná bí cúthaileach
- Chun an seisiún rince a chríochnú, is féidir leis an ngrúpa ar fad lámh a chur le chéile i gciorcal mór thart ar an gcoillearnach mion agus beimid ag rince i gciorcaid shimplí ar chlé agus ar dheis i gciorcal lúb mór, agus ansin isteach agus amach i lúb leis an gceol traidisiúnta ghaelach bríomhar. (úsáid callaire Bluetooth don cheol).
- Déan machnamh ar thábhacht ár ngníomhartha: pléigh an chaoi a gcuireann plandú crann lenár scoil áitiúil agus leis an timpeallacht níos leithne freisin. Bíonn tionchar an-dearfach ag crainn ar an bpobal ar fad, ag cur go mór le cáilíocht an aeir, ag ionsú dé-ocsaíd charbóin agus ag tabhairt ocsaigine dúinn go léir chun análú a dhéanamh.

Mar chríoch leis an seisiún: Ag baint úsáid as an mBata Taistil do na cainteoirí:

- Agus tú ag cur na gcrann, ar tharla aon rud duit ar mhaith leat a roinnt?
- Ar chuala nó ar fhoghlaim éinne aon rud nua inniu?
- An bhfuil tú ag smaoineamh faoi rud ar bith anois?

Críochnaíonn an ceacht agus sinn go léir inár suí i gciorcal chun an t-amhrán BioBeo a chanadh le chéile. Gabhann Múinteoir BioBeo buíochas le gach duine as a rannpháirtíocht iontach.

Measúnú chun Foghlama:

Fianaise ghrianghrafadóireachta digiteach/Ipad an mhúinteora agus/nó ceamara ranga in úsáid.

Eolas doiciméadaithe: mar nótaí, grianghraif, físeáin, agus scéalta foghlama, nótaí dialainne scríofa ag an múinteoir i sreabhadh an cheachta.

Saothair ealaíne arna dtáirgeadh ag mic léinn agus grianghraif de phróisis.

Ceacht 2: Foraoiseacht	**Sainmhíniú**
foraoise dúchasach	Cineál speisialta foraoise ina bhfuil go leor cineálacha éagsúla crann, bláthanna, ainmhithe, agus feithidí atá dúchasach do réigiún ar leith nó tír.
symbiosis	Is éard is symbiosis ann ná nuair a bhíonn dlúthghaol idir dhá orgánach le chéile.
feasacht comhshaoil	Tuiscint ar an domhan nádúrtha agus suim don tionchar a bhíonn ag ghníomhaíochtaí daonna ar an gcomhshaol.
athfhoraoisiú	Próiseas chun crainn nua a chur i gceantar a bhíodh foraoise a gearradh síos, a cailleadh nó a scriosadh.
sláinte ithreach	Cé chomh sláintiúil agus chomh torthúil atá an ithir do phlandaí agus orgánaigh a mhaireann ann. Cuidíonn sláinte mhaith ithreach le fás maith na bplandaí agus na hainmhithe, chomh maith leis an uisce agus an t-aer a choinneáil glan.
Dé-ocsaíd charbóin	Gás gan bholadh agus gan dath a scaoiltear nuair a análaimid amach. Déantar é a tháirgeadh freisin nuair a dhónn rudaí mar nuair a bhíonn carr á úsáid nó ag oibriú i dtionscal.

	Is féidir téamh domhanda a bheith mar thoradh ar an iomarca dé-ocsaíd charbóin.
ocsaigine	Gás atá riachtanach do gach ní beo, lena n-áirítear daoine, ainmhithe agus plandaí. Tá sé ar cheann de na príomhghnéithe a dhéanann suas aer.

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Leideanna rannpháirtíochta tuismitheoirí:

Spreag teaghlaigh a bhfuil cúlraí cultúrtha éagsúla acu a miotais, a gceol, a n-amhráin agus a ndamhsa a bhaineann le foraoisí a chur i láthair.

Comhoibriú leis na teaghlaigh agus leis na múinteoirí litríochta/staire/drámaí/ceoil chun tionscadal speisialta ealaíne Foraoise/Darach a chruthú inar féidir léiriúcháin éagsúla ealaíne a chur i láthair.

Teaghlaigh a spreagadh chun crainn a chur/a uchtú. Má tá spás acu, is féidir leo crann a phlandáil ina ghairdín féin, mura bhfuil, is féidir leo é a phlandáil i gcomhlimistéar nó in áitreabh na scoile (más féidir). Spreag iad chun gach plándáil crann a cheiliúradh.

I roinnt pobal (sráidbhailte, bailte) déantar breith gach linbh a cheiliúradh trí chrann a chur. Pléigh le teaghlaigh/údaráis an féidir traidisiún dá leithéid a thabhairt isteach.

Plean Ceachta 3: Saol Faoi Uisce: Cruthaigh lochán!

Ábhar: OSIE, OSPS, Teanga, Oideachas Ealaíon, Matamaitic	**Teideal an Cheachta: Téimis chun lochán a chruthú!** **Uimhir Cheacht 3 de 6**	
Dáta: Téarma an Fhómhair	**Rang: 5/ 6**	**Fad: 2.5 uair** **Glac sos le do rang nuair atá sé ag teastáil**
Téama BioBeo: Saol Faoi Uisce	**Eochairfhocail/Frásaí: Cáilíocht uisce, amfaibiaigh, ró-iascaireacht, plaisteach mara, sceireacha coiréil.**	

Torthaí Foghlama:

Cuirfear ar chumas na rannpháirtithe:

1. A chinntiú go gcaomhnaítear dobharlach ina dtimpeallacht scoile agus go bhfuil idirghníomhaíochtaí sláintiúla leis.
2. Comhoibriú le linn mionloch a chruthú sa Choillín Beag.
3. Ainmnigh na hainmhithe Éireannacha a dteastaíonn ár gcabhair uathu in idirnascadh an tsaoil uile: m.sh. an buafadach cnáimh agus an frog coitianta.
4. Tuiscint a fhorbairt ar théarmaí agus stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.

Acmhainní/Ábhair/Trealamh: uirlisí tochailte, téip-thomhas, ábhar línéar locháin uiscedhíonach, carraigeacha/clocha/gairbhéal, plandaí uisceacha.

Réamhrá: **(35 nóim.)**

Fáilte, cuir an conradh measa i gcuimhne dúinn féin agus déan achoimre ar an seisiún roimhe seo.
Cad a d'éirigh linn agus a fhoghlaim an tseachtain seo caite? Cipín suas chun freagra a thabhairt: Tá an Bata Taistil ag an gcainteoir.
Inniu táimid chun foghlaim conas mionloch a thógáil don Choillín Beag. Glacaimis ár gcuid ama agus bímis aireach ar na radharcanna agus ar na fuaimeanna go léir a chastar orainn ar an mbealach chuig ár seomra ranga lasmuigh.

Bailigh i gciorcal arís. Cuirimid tús le gach seisiún gach lá leis an amhrán BioBeo. Canfaidh an rang an t-amhrán le chéile.

An tAmhrán BioBeo (féach ceacht 1 do na liricí)

- Déan dul siar ar an dá sheisiún foghlama roimhe seo agus athnuaigh stór focal nua: "Cad atá foghlamtha againn go dtí seo faoin mbithgheilleagar ciorclach? Cé atá in ann a mheabhrú cad

a thugtar ar na crainn dhúchasacha a chuireamar? Cad iad na fíricí spraíúla is féidir leat a mheabhrú faoi chrann dúchasach uasal na coillearnaí Éireannaí, an Darach Mhór.

"Conas atá an crann darach cosúil le bithgheilleagar?"

Ní théann aon rud amú le crann. Soláthraíonn sé áit chónaithe d'fheithidí, d'éin agus fiú do phlandaí eile cosúil le caonach agus léicin. Cónaíonn sé ar aon dul freisin i gcóras ciorclach lena thimpeallacht. Téann na duilleoga agus na cothaithigh ar ais chun an ithir a shaibhriú le haghaidh rudaí beo eile, cosúil le beacáin agus fungais. Cónaíonn gach rud nádúrtha timpeall na gnáthóige seo ar aon dul leis an gcrann darach.

Mínigh go bhfuil muid chun lochán beag bídeach a thógáil chun mion-éiceachóras a chruthú.

"Le himeacht ama ar an gCoillín Beag beimid in ann an saol faoi uisce a bhreathnú agus a fhiosrú ag fás agus ag bláthú de réir mar a éiríonn gnáthóg an locháin agus créatúir shuimiúla ag déanamh a dtithe anseo."

"An bhfuil aon duine anseo ina chónaí in aice le dobharlach? B'fhéidir an fharraige? nó abhainn? Cad iad na dobharlaigh eile gur féidir linn a fháil in Éirinn? Cipín suas!
Cé atá in ann fíorlogainm a thabhairt don dobharlach a bhfuil aithne acu air/ a bhfuil cónaí orthu in aice leis? An féidir le haon duine an logainm a thabhairt dom as Gaeilge?"

Roinneann na páistí a gcuid smaointe ag baint úsáid as an mbata taistil. Scríobh ainmneacha na ndobharlach ar chlár BioBeo (canáil, loch, lochán, abhainn, sruthán, fiord srl). Pléigh logainmneacha (as Gaeilge in éineacht leis na hainmneacha Béarla) m.sh. Loch Uail (Loch an Uail) sa Mhuileann gCearr. Taiscumar uisce óil an bhaile agus is féidir leis a bheith 21 méadar ar doimhneacht in áiteanna. Loch saibhir le stair: bhí manach díthreabhaigh darbh ainm Naomh Lomain ina chónaí leis féin ar Oileán na hEaglaise le blianta fada agus deirtear nár ith sé ach na plandaí inite a bhí ag fás ann ar a dtugtar 'Alexanders'.

- "Cén fáth a bhfuil ár ndobharlaigh chomh tábhachtach sin? Cé a chónaíonn inár ndobharlaigh Éireannacha?"
- Tá líon mór créatúr a chónaíonn sna gnáthóga uisce go léir: Iasc; feithidí agus mamaigh ina measc.
- Clúdaíonn uisce níos mó ná 70 faoin gcéad de dhromchla an Domhain. Tá thart ar 60% uisce inár gcorp. Tá sé riachtanach don saol ar fad!

Déanaimis 'smaoineamh/beirtí/roinnt' le labhairt faoi na brúnna agus na fadhbanna atá ar dhobharlaigh sa bhaile inár dtimpeallacht áitiúil, agus in áiteanna eile ar an bpláinéad. (m.sh. truailliú/ plaistigh mhara/ sceireacha coiréil á gcailliúint/ mianadóireacht/ teocht ag ardú/ ró-iascaireacht.

Forbairt: **(60 nóim.)**

Mínigh, in ainneoin na bhfadhbanna go léir a fheicimid leis an athrú aeráide, go bhfuil gach duine againn in ann gníomhú agus cabhrú leis an dúlra. In ionad a bheith róbhrónach agus gan dóchas, is féidir linn oibriú le chéile chun na réitigh a aimsiú.

"Cad is amfaibiach ann? Cipín suas! Ar bhuail tú riamh le ceann amháin? Cén áit?"

Is veirteabraigh eictitearmacha iad amfaibiaigh (tá cnámh droma ag veirteabrach, díreach cosúil le daoine!) agus is féidir leo cuid dá saol a chaitheamh faoi uisce agus cuid de ar thalamh m.sh. froganna, buafa agus salamandair nó niúit. Itheann siad feithidí agus créatúir bheaga eile cosúil le drúchtíní, ag cuidiú lena ndaonraí a rialú.

Fíricí spraíúla faoi fhroganna: 3 chineál amfaibiach in Éirinn: An frog coitianta (Rana temporaria), an t-earc luachra agus an cnádán. Níl cnádán le fáil ach in dhá áit nó gnáthóg speisialta in Éirinn: Leithinis an Daingin (an féidir le haon duine a insint dúinn cén contae ina bhfuil sé sin?) agus is breá leo a bheith ina gcónaí in aice le dumhcha agus mar sin tugadh isteach iad in áit in aice leis an gCurach Cluana (Sa chontae?...) -Loch Garman.

- Déan plé ar na háiteanna is fearr in aice lenár gCoillín Beag don mhionloch.

Éilíonn an lochán sláintiúil cothromaíocht solais agus scáth 50/50: má tá an suíomh rógheal, fásfaidh algaí, rud a fhágann go bhfuil cuma gruama air, cosúil le anraith piseanna, agus má tá an suíomh ródhorcha, beidh sé marbhánta agus gan saol.

Briseadh do na taiscéalaithe BioBeo **(15 nóim)**

Am do bhriseadh BioBeo! Soláthraíonn Múinteoir BioBeo Úll Éireannach blasta a fhaightear go háitiúil do gach taiscéalaí BioBeo.

- Pléigh agus taispeáin na comhpháirteanna don lochán do na páistí agus "tógfaimid é!"

Beidh jab le déanamh ag gach duine tríd an gcéim tógála ar fad. Iarr ar na mic léinn seasamh i spás maith siar ón gceantar chun go leor spáis a thabhairt do na mic léinn na próisis a fheiceáil agus siúl chun cinn agus cabhrú i mbeirteanna ag gach céim den tógáil.

- **Tá sábháilteacht uisce mar phríomhthosaíocht i gcónaí agus mar sin beidh an lochán ag an limistéar is ísle agus beidh radharc iomlán slán ag na múinteoirí."**

Tógáil:

- **Bain úsáid as ár n-olann BioBeo arís chun imlíne an locháin a mharcáil.**
- **Déan poll céimnithe, 150mm go 200mm a thochailt le doimhneacht íosta 450mm. Cén fáth an doimhneacht seo? Seachnóidh sé seo róthéamh sa samhradh agus reo sa gheimhreadh.**
- **Rith téip tomhais trí na comhrianta agus cuir méadar amháin leis chun méid an línéara atá ag teastáil a ríomh. Cuir roinnt seanchairpéad nó cairtchláir sa pholl ar dtús chun sracadh a chosc ar an línéar.**
- **Sín an línéar cothrom trasna an locháin, meáigh síos leis na carraigeacha timpeall an chiumhais ansin líon isteach le huisce agus lig don uisce an t-ábhar línéadaigh speisialta a shíneadh isteach i gcruth an locháin.**

- **Clúdaigh imeall an líneála le roinnt carraigeacha, fóid nó dhó móna, agus brainse ach cinntigh go mbeidh rochtain éasca ag an bhfiadhúlra air.**
- **Cuir roinnt plandaí lochán dúchasach leis: caonach/ carraigeacha/ féara agus fiailí.**
- **Is é an idéalach ná roinnt uisce lochán áitiúil nádúrtha a bhailiú sa cheantar agus é a thabhairt chuig an lochán nuair a bheidh sé socraithe tar éis seachtaine agus é a chur leis an uisce. Cuirfidh sé seo tús leis an lochán, tabharfaidh sé bunús láidir dó le go bhféadfaidh rudaí beo fás.**
- **Pléigh an tábhacht a bhaineann le cáilíocht an uisce agus spreag na daltaí le taighde a dhéanamh i leabhair nó ar líne agus le foghlaim conas na horgánaigh éagsúla linnte a aithint.**

Pléigh bearta sábháilteachta agus mínigh nach bhfuil an lochán seo ach le haghaidh fiadhúlra (An Coillín Beag)! Le haghaidh lapaireachta, snámha agus imeartha, is féidir le daoine dul go dtí an linn snámha nó an trá. Amfaibiaigh agus Feithidí amháin sa lochán seo le do thoil!

Conclúid: **(30 nóim.)**

- Pléigh an tábhacht a bhaineann le cáilíocht an uisce agus spreag na mic léinn le taighde a dhéanamh ar líne agus i leabhair na seachtaine amach romhainn chun na horgánaigh a d'fhéadfadh an lochán fionnuisce a dhéanamh mar bhaile a aithint.
- "Tá caomhnú gnáthóga uisce agus cosaint na n-orgánach a chónaíonn faoi uisce ina ghníomh riachtanach gur féidir linn go léir a dhéanamh chun cabhrú lenár n-éiceachóras áitiúil agus domhanda. Tá roinnt daoine ag eagrú glantacháin phlaisteacha cósta/chanála nó abhann go rialta ina gceantair. Is féidir leis seo a bheith ina ghníomhaíocht ghrúpa éifeachtach, phraiticiúil a d'fhéadfadh fíordhifríocht a dhéanamh do na hainmhithe agus na héisc a chónaíonn faoin uisce. Féadfaidh sé a bheith ina ghníomhaíocht spraíúil freisin le bheith mar chuid de."
- **Tá froganna agus go leor amfaibiaigh eile ag dul i mbaol ar raon leathan cúiseanna, amhail truailliú uisce, agus scrios nó caillteanas gnáthóige mar gheall ar ghníomhaíochtaí daonna ar nós na tógála. Beidh an-áthas ar bheacha agus feithidí agus éin eile áit shábháilte óil a fháil. Tá gach cúnamh de dhíth ar fhiadhúlra na hÉireann agus is féidir linn cuidiú leis, agus tosaíonn sé sin anseo inniu lenár lochán nua scoile!**

Spreag na daltaí le breathnú ar an lochán go rialta agus na hathruithe a tharlaíonn le himeacht ama a thabhairt faoi deara: "Breathnaigh ar an gcaoi a dtagann níos mó nithe beo chun cónaí sa lochán agus conas a chuireann siad le feabhsú an éiceachórais. D'fhéadfá leabhar nótaí/cnuasach digiteach nótaí agus grianghraif/leathanach meáin shóisialta a choinneáil de na breathnuithe a dhéanann tú sa lochán ar feadh na bliana."

Is é an pointe deiridh ná cur i gcuimhne do leanaí agus iad a threorú le bheith airdeallach i gcónaí ar shábháilteacht uisce.
"Ní mór caitheamh le hómós fiú le dobharlach éadomhain. Mar sin, is é ár mana:

Bí sábháilte i gcónaí thart ar dhobharlach, fiú na linnte beaga!"

Mar chríoch leis an seisiún: Ag baint úsáid as an mBata Taistil do na cainteoirí:

- Ar chuala nó ar fhoghlaim éinne aon rud nua inniu?
- An bhfuil tú ag smaoineamh faoi rud ar bith anois?

Críochnaíonn an ceacht agus sinn go léir inár suí i gciorcal chun an t-amhrán BioBeo a chanadh le chéile. Gabhann Múinteoir BioBeo buíochas le gach duine as a rannpháirtíocht iontach.

Measúnú chun Foghlama:

- Fianaise ghrianghrafadóireachta digiteach/Ipad an mhúinteora agus/nó ceamara ranga in úsáid.
- Eolas doiciméadaithe: mar nótaí, grianghraif, físeáin, agus scéalta foghlama, nótaí dialainne scríofa ag an múinteoir i sreabhadh an cheachta.
- Saothair ealaíne arna dtáirgeadh ag mic léinn agus grianghraif de phróisis.

Ceacht 3: Saol Faoi Uisce	**Sainmhíniú**
Cáilíocht uisce	Bail nó staid an uisce, mar shampla, an bhfuil sé neamhthruaillithe, sláintiúil agus glan? Más amhlaidh, is cáilíocht uisce an-mhaith é. Insíonn sé dúinn an bhfuil an t-uisce oiriúnach do phlandaí agus d'ainmhithe cónaí ann nó nach bhfuil.
amfaibiaigh	Is veirteabraigh fola fuar iad seo (tá cnámh droma ag veirteabrach, díreach cosúil linne!) agus is féidir leo cuid dá saol a chaitheamh faoi uisce agus cuid de ar thalamh m.sh. froganna, agus salamandair nó niúit. Itheann siad feithidí agus créatúir bheaga eile, ag cuidiú leo rialú a dhéanamh ar a ndaonraí.
ró-iascaireacht	Nuair a ghlacann daoine an iomarca iasc ó na haigéin nó ó dhobharlaigh eile ar nós aibhneacha. Bíonn tionchar aige seo ar dhaonraí éisc sa todhchaí agus ar an éiceachóras iomlán.
plaisteach mara	Dramhaíl plaisteach a chríochnaíonn suas san aigéan nó acmhainní uisce eile. Is féidir rudaí móra a bheith anseo cosúil le buidéil agus málaí, nó píosaí i ndáiríre bídeach ar a dtugtar micreaphlaistigh. Is beag iad na micreaphlaistigh, na píosaí a bhriseann amach as píosaí plaisteacha níos mó.
sceireacha coiréil	Is struchtúir faoi uisce iad sceireacha coiréil atá comhdhéanta d'ainmhithe bídeacha ar a dtugtar polapaí coiréil. Maireann na hainmhithe i ngrúpaí móra agus cloíonn siad le dromchla crua. Le chéile, cruthaíonn siad éiceachóras ata geal agus ildaite a

	sholáthraíonn bia agus foscadh do go leor ainmhithe mara, cosúil le turtair, iasc, siorcanna, agus go leor eile. Is féidir sceireacha coiréil a fháil in uiscí éadomhain, te agus soiléir timpeall an domhain.

Litríocht agus naisc

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School Earth Education (n.d.) Making a Wildlife Pond, available: https://www.schoolearthed.ie/worksheets/Making-a-wildlife-pond.pdf [accessed 15 July 2023].

United Nations Educational (n.d.) SDG Resources for Educators - Life Below Water, available: https://en.unesco.org/themes/education/sdgs/material/14#primary [accessed 15 July 2023].

Leideanna rannpháirtíochta do na tuismitheoirí:

Spreag na teaghlaigh le turais a eagrú chuig dobharlaigh in aice láimhe agus mínigh cad ba cheart daoibh a thabhairt faoi deara le chéile.

Má tá aon duine den teaghlach go maith ag iascaireacht, tabhair cuireadh dóibh an trealamh a thaispeáint agus labhairt faoin bhfáth ar mhaith leo é.

Spreag na teaghlaigh chun oidis/grianghraif bia mara a roinnt as líne/ar líne agus pléigh an éifeacht thairbheach a bhaineann le hithe éisc (seachas feoil).

Spreag teaghlaigh ó chúlraí cultúrtha éagsúla a gcuid miotais uisce a roinnt/ a gcuid créatúr uisce miotasach a thabhairt isteach.

Comhoibriú leis na teaghlaigh agus leis na múinteoirí litríochta/staire/drámaí/ceoil chun tionscadal speisialta Ealaíne Uisce a chruthú inar féidir léiriúcháin éagsúla ealaíne a chur i láthair agus léachtaí a thabhairt (m.sh. an tábhacht a bhaineann le poirt agus taisteal mara sa stair).

Déan iarracht cuairt teaghlaigh/scoile a eagrú ar chuan nó ar long nó teaghlaigh a spreagadh chun é sin a dhéanamh.

Plean Ceachta 4: Lúb Bia - Ag Cabhrú leis an gCoillín Beag le Fás.

Ábhar: OSIE, OSPS, Teanga, Oideachas Ealaíon, Matamaitic	**Teideal an Cheachta: Ag Cabhrú leis an gCoillín Beag le Fás. Uimhir Cheachta: 4 de 6**	
Dáta: Téarma an Fhómhair	**Rang: 5/6**	**Fad: 2.5 uair** **Glac sos le do rang nuair atá sé ag teastáil**
Téama BioBeo: Lúb Bia	**Eochairfhocail/Frásaí: Lúb bia, bia áitiúil agus séasúrach, feirmeoireacht neodrach ó thaobh carbóin de, múirín, cur amú bia, lorg carbóin, míle bia.**	

Torthaí Foghlama:

Cuirfear ar chumas na rannpháirtithe:

1. Comhoibriú le plandáil séasúrach gairdín inite sa Choillín Beag agus bealaí a aithint le cur amú bia a laghdú i mbithgheilleagar ciorclach.
2. Bolgáin agus síolta a chur atá cabhrach agus cáirdiúil do phailneoirí agus an fáth a bhfuil bia agus cabhair de dhíth ar ár mbeacha sa ghairdín freisin a phlé.
3. Plé a dhéanamh ar idirnascthacht na gcrann, na bplandaí, na mbláthanna agus na bhfeithidí éagsúla ar fad i ngairdín na scoile nua-phlandaithe.
4. Tuiscint a fhorbairt ar an idirnascthacht idir an Ghaeilge agus tírdhreacha na hÉireann.
5. A gcleachtas folláine féin a fhorbairt sa nádúr. Réamheolas ar choincheap darb ainm an 'Ionad Suí'.

Acmhainní/Ábhair/Trealamh: Uirlisí le haghaidh garraíodóireacht agus fómhar, múirín, bleibíní, síológa agus plandaí inite, cannaí uisce, lipéid chun plandaí a shainaithint.

Réamhrá:

- Fáilte, cuir an conradh measa i gcuimhne dúinn féin agus déan achoimre ar an seisiún roimhe seo.
- "Cad a d'fhoghlaimíomar an tseachtain seo caite? Cipín suas chun freagra a thabhairt." Tá an bata taistil ag an gcainteoir.
- "Cé atá in ann a mheabhrú cén cineál créatúir san fhiadhúlra ar breá leo cónaí i lochán nó in aice le lochán? Cad iad na fíricí spraíúla gur féidir leat a mheabhrú faoi dhobharlaigh?"
- "Téimis amach don cheathrú maidin againn sa seomra ranga lasmuigh le chéile. Glacaimis ár gcuid ama agus bímis aireach ar na radharcanna agus na fuaimeanna go léir a chastar orainn ar an mbealach chuig ár seomra ranga lasmuigh. Bailigh i gciorcal arís. Cuirimid tús le gach seisiún gach lá leis an amhrán BioBeo. Canfaidh an rang an t-amhrán le chéile.

An tAmhrán BioBeo (féach ceacht 1 do na liricí)

Tabhair isteach coincheap lúb bia agus scríobh an focal ar an gclár BioBeo:

Fiafraigh de roinnt páistí cad e an tuiscint atá acú ar an téarma lúb bia? Bain úsáid as an mbata taistil do na cainteoirí.

Is éard atá i gceist le lúb bia inbhuanaithe agus sláintiúil ná ceann ina bhfuilimid cinnte go bhfuil an bia a ithimid sláintiúil agus nach bhfástar rófhada uaidh (íseal i mílte bia). D'fhéadfadh roinnt torthaí agus glasraí inár n-ollmhargaí inniu teacht ón taobh eile den domhan! Is féidir bunús do bhia a fheiceáil ar na lipéid sa siopa m.sh. an Nua-Shéalainn, an tSile, Peiriú.

Bíonn bia ar a shláinte is fearr nuair a fhástar go cúramach é agus ní spraeáiltear é le ceimiceáin díobhálacha. Téann fuinneamh, cúram agus am ollmhór isteach i bhfás bia maith, agus mar sin ní mór dúinn oibriú chun an méid bia a chuirtear amú a laghdú. Trí ár mbia a fhás go cúramach, ansin é a stóráil go maith, agus cócaireacht ar bhealach a bhainimid an leas is fearr as, is féidir linn béilí blasta a dhéanamh a chinntíonn go n-itear an bia ar fad. An bhfuil gairdín bia sa bhaile ag éinne anseo ina gharraí baile?

Tabhair am do na páistí cuid dá scéalta a roinnt.

Forbairt: **(70 nóim)**

- Mínigh conas atá plandáil foraoise bia nó gairdín bia ar scoil agus sa bhaile ar cheann de na bealaí is fearr chun bithgheilleagar ciorclach inbhuanaithe a chruthú inár saol.
- Taispeáin do na páistí na plandaí a fhásfaimid ar an gCoillín Beag: **cál, gairleog, oinniúin agus duilleoga sailéad oirthearacha.**
- Is iad na torthaí séasúracha a chuirfimid ná: **biabhóg, sútha talún agus cuiríní.**
- Iarr ar na daltaí gach planda a scrúdú agus iad féin a chur i dtaithí. Cuirfidh an crann úll agus an crann coll a gcuid torthaí agus cnónna ar fáil freisin.
- Pléigh cé a thaitníonn glasraí difriúla ina gcuid béilí agus cad iad na torthaí is fearr leo freisin?
- An bhfuil oideas cócaireachta ar eolas ag éinne a úsáideann cál, pónairí? oiniúin? gairleog?
- Cad mar gheall ar bhiabhóg? sútha talún/ cuiríní dubha nó dearga?

Treoracha don phlandáil agus leagan amach an ghairdín:

"Is maith le gach rud go leor spáis a bheith ann le fás. Smaoinigh ar a bheith i seomra plódaithe, pacáilte le daoine callánacha, ní féidir leat tú féin a chloisteáil ag smaoineamh fiú! Bhuel, tá sé mar sin do phlandaí sa ghairdín. Teastaíonn spás uathu le go leor solas na gréine a fháil le haghaidh fuinnimh, agus ithir/uisce le haghaidh fáis agus cobhsaíochta."

Mar a tharla i seisiúin roimhe seo, abair le gach duine seasamh siar go maith ionas gur féidir le gach duine é a fheiceáil agus siúl ar aghaidh go sábháilte chun a seal a ghlacadh sna tascanna plandála. Breathnóidh na páistí agus cuidíonn siad go gníomhach leis an múinteoir ina mbeirteanna agus beidh

ar gach duine dhá cheann de na tascanna tábhachtacha ar a laghad a dhéanamh (tochailt; cur; roinnt múirín; plandáil agus clúdach; ag tabhairt uisce).

- "Is é an post deiridh atá againn inniu ná bolgáin bláthanna a chur. Cé nó cad a chuideoidh na bláthanna a fhásann san Earrach mar fhoinse bia agus fuinnimh?"

Feidhmíonn beacha agus feithidí mar phailniú. Ciallaíonn sé seo go dtéann siad ag bailiú neachtar, a gcuid bia agus a gcuid fuinnimh ó na bláthanna. Sa phróiseas seo tá siad ag cabhrú leis na bláthanna pailniú freisin trí phailin a scaipeadh ó bhláth go bláth agus cabhraíonn sé seo leis na plandaí síolta a dhéanamh le go bhfásfaidh níos mó plandaí.

Taispeáin roinnt bolgán éagsúla do na páistí agus mínigh gur fearr bláthanna difriúla a chur in áiteanna speisialta ar an gCoillín Beag (Is fearr le cuid acu scáthú, b'fhearr le cuid eile solas na gréine). Iarrtar ar na páistí buille faoi thuairim a thabhairt/plé a dhéanamh ina mbeirteanna cén áit a gceapann siad go mbeidh gach bolgán níos sona le cur, agus i bpéirí, pléann siad cén áit is fearr le gach cineál bolgán a chur. Cuireann an múinteoir na bolgáin i láthair chomh maith le pictiúr dá bhláth do chách le feiceáil agus le plé:

1. plúiríní sneachta
2. cróchanna
3. fritileáin ceann nathrach
4. Bláthanna Allium
5. Cloigíní gorma dúchasacha na hÉireann (mar shampla, is maith leo seo limistéir scáthaithe agus is foinse thábhachtach pailin agus neachtar iad do bheacha agus do phailneoirí eile).
6. Anemóin adhmaid

Beidh seal ag gach páiste bolgáin a chur le tacaíocht an mhúinteora nuair is gá.

Nuair a bhíonn na garraíodóirí go léir sásta go bhfuil gach rud curtha go rathúil, iad a threorú i slacht a chur ar a gcuid uirlisí agus spás oibre.

Briseadh do na taiscéalaithe BioBeo **(15 nóim)**

Am do bhriseadh BioBeo! Soláthraíonn Múinteoir BioBeo Úll Éireannach blasta a fhaightear go háitiúil do gach taiscéalaí BioBeo.

Bailigh na croíleacáin úll go léir don charn múirín. Déanaimid comhrá faoinár dtaithí go dtí seo ar maidin. Bailigh na croíleacáin úll go léir don charn múirín. Mínigh agus taispeáin conas a dhéantar na croíleacáin úll agus dramhaíl orgánach eile bia a athchúrsáil sa mhúiríneoir nó sa charn múirín agus conas a dhéanfaidh sé seo bith-dhíghrádú agus a thiocfaidh chun bheith ina mhúirín saibhir cothaitheach a úsáidtear chun an ithir a bheathú agus a thugann beatha nua don ghairdín do na plandaí agus na barra atá ag fás ann gach séasúr. Éiríonn dramhaíl bia ina hacmhainn luachmhar sa bhithgheilleagar ciorclach nuair a dhéantar múirín maith don ghairdín as.

Conclúid:

- An bhfuil a fhios ag éinne cad is brí le bheith aireach, nó meabhrach? Cipín suas. Tar éis ár n-obair chrua ar fad ag cur ár bhforaois bhia, cuirfimid stop anois leis an obair, agus beidh nóiméad meabhrach againn. Táimid go léir chun suí agus machnamh gairid dúlra a dhéanamh, am le bheith socair, suaimhneach ar feadh tamaill. Cipín suas an ndearna éinne anseo machnamh riamh? An ndearna aon duine riamh machnamh amuigh faoin aer sa dúlra?
- An bhfuil áit níos fearr do dhuine ar bith ar mhaith leo dul chun suí agus smaoineamh, a bheith ciúin agus 'éalú uaidh ar fad'?

Is éard is 'ionad suí' ann nuair a roghnaíonn tú áit speisialta amuigh faoin aer, áit atá speisialta duitse go pearsanta. Is féidir le machnamh a dhéanamh sa dúlra ag 'ionad suí' cabhrú linn mothú go maith. Cuidíonn sé linn baint a bheith againn arís leis an Domhan é féin agus leat féin freisin!

- Filleann siad go léir chun suí i gciorcal mór don chleachtadh gearr machnaimh le chéile. (***Ó Dhraíocht Dara)*** https://mural.maynoothuniversity.ie/id/eprint/16684/

Stiúrann Múinteoir BioBeo an machnamh mar seo:

- **Dún do shúile gach duine.**
- **Ionáilaigh isteach trí do shrón ar feadh 4 shoicind.**
- **Lig d'anáil amach trí do bhéal ar feadh 5 shoicind.**
- **Déanaimis é sin dhá uair eile: isteach trí do shrón, 4 shoicind, amach trí do bhéal, 5 shoicind.**
- **Anois breathnaigh isteach trí do shrón ar feadh 5 shoicind.**
- **Anáil amach trí do bhéal ar feadh 7 soicind.**
- **Déanaimid é sin dhá uair eile. Isteach ar feadh 5, agus amach ar feadh 7.**
- **Anois cuir lámh amháin thar do chroí, ar do chliabhrach, agus do lámh eile ar do bholg.**
- **Anois breathnaigh isteach trí do shrón ar feadh 5 shoicind.**
- **Anáil amach trí do bhéal ar feadh 7 soicind.**
- **Déanaimis é sin dhá uair eile. Isteach ar feadh 5, agus amach ar feadh 7.**
- **Anois éistimid leis na fuaimeanna go léir timpeall orainn.**
- **An gcloiseann tú an ghaoth ag séideadh?**
- **An gcloiseann tú fuaim na nduilleog sa ghaoth?**
- **An bhfuil tú in ann fuaim chanadh na n-éan a chloisteáil?**
- **Anois oscail do shúile.**
- **Cad a fheiceann tú?**
- **An bhfeiceann tú na crainn ag bogadh sa ghaoth?**
- **An bhfeiceann tú éan ag eitilt?**
- **An bhfeiceann tú na scamaill ag bogadh sa spéir?**
- **Cad eile is féidir leat a fheiceáil agus a chloisteáil duit féin?**
- **An mbraitheann tú socair agus séimh? An mbraitheann tú go bhfuil tú fréamhaithe leis an talamh?**
- **Le críochnú anois, déanaimis ár súile a dhúnadh agus anáil isteach ar feadh 5 shoicind trí do shrón, agus amach ar feadh 7 soicind trí do bhéal.**
- **Déanaimis é sin dhá uair eile.**

- **Oscail do shúile arís go réidh. Maith sibh gach duine! Ba mhachnamh iontach é sin a rinne tú díreach.**

Is féidir leat do chorp a bhogadh go mall arís agus is féidir linn síneadh amach nó seasamh suas ar feadh nóiméid más gá duit.

- Maith sibh gach duine, d'fheicfinn go ndearna sibh go léir bhur ndícheall éisteacht agus machnamh a dhéanamh. Jab iontach déanta ag gach duine!

- Sula gcuirfimid ár gceathrú ceacht i gcrích inniu le BioBeo, ba mhaith liom gearrscéal a insint daoibh ar fad faoi *idirnascadh* agus faoi mo chara i gcontae na hIarmhí a scríobhann leabhair agus a chónaíonn i dteach an-neamhghnách.

Tá an cara seo ina chónaí i dteach an-neamhghnách in aice le loch i gcontae na hIarmhí. Ní dhéanfaidh tú buille faoi thuairim go deo maidir le cén t-ábhar a thóg sé a theach. Ní gnáth-bhrící agus moirtéal é.
Cipín suas más mian leat iarracht a dhéanamh a thomhas cén t-ábhar a thóg sé a theach as?… (Freagra: tuí).
Anois is duine an-chliste é mo chara Manchán, scríobhann sé leabhair agus déanann sé cláracha raidió agus teilifíse agus cláir faisnéise faoin dúlra, faoi thírdhreach na hÉireann agus faoinár dteanga uathúil agus iontach féin, an Ghaeilge.
Míníonn ceann dá leabhair conas atá 32 ainm againn i nGaeilge ar pháirc. Níorbh fhéidir liom é a chreidiúint ar dtús, ach tá sé fíor!
Mar shampla, tá páirc i dTiobraid Árann ar a dtugtar Skeheenarinky. Déan fuaim an logainm arís do na scoláirí, iarr orthu triail a bhaint as é a fhuaimniú, fuaimníonn an múinteoir go mór é.
Fiafraigh de na daltaí an bhfuil siad in ann buille faoi thuairim a thabhairt faoin ainm Gaeilge: Sceichín an Rince (the little thorn bush for dancing).
Faslowart a thugtar ar logainm eile, an uair seo i gCo Liatroma. Lig do na páistí athrá agus súgradh leis na fuaimeanna. An féidir le haon duine a shamhlú cad is brí leis an ainm sin?
Chun na logainmneacha a thuiscint caithfimid dul ar ais go dtí an bun-Ghaeilge atá acu, is é sin conas is féidir linn an cód a bhriseadh agus a thuiscint conas atáimid ceangailte leis an tírdhreach leis na mílte bliain. Faslowart as Gaeilge is Fás Lúghoirt atá ann. Déan arís agus lig do na daltaí tuiscint a fháil ar na fuaimeanna. An bhfuil a fhios ag éinne cad is brí leis? Tóg an focal Fás? Ciallaíonn an seanaistriúchán Gaeilge ‘an gairdín luibh thréigthe’ (‘the deserted herb garden’). Mar sin tá scéal san ainm, am éigin b’fhéidir go raibh ar na daoine a bhí ina gcónaí ann an áit sin a fhágáil, d’éirigh sé tréigthe. N'fheadar cén fáth?
Fiafraigh de na páistí an bhfuil aon logainmneacha deasa ar eolas acu ina gceantar a bhfuil fuaimeanna deasa acu, nó focail spéisiúla Gaeilge sa logainm.
Tá ár nGaeilge an-speisialta mar tá an stair ar fad agus na ceangail a rinne daoine leis an dúlra agus leis an áit nó leis an tírdhreach ina raibh cónaí orthu inti. I logainm Gaeilge is féidir leat miotais, finscéalta, scéalta agus go minic an domhan nádúrtha a aimsiú freisin. Nuair a fhéachaimid ar an domhan trí Ghaeilge, nochtar saol níos áille agus níos draíochtúla dúinn. Is féidir linn teacht ar na hidirnaisc a bhí ag ár sinsir leis an dúlra agus lena n-áit chónaithe fein.
Bhí piseoga láidre ag go leor daoine go bhféadfadh na sióga geasa a chur ar pháirceanna áirithe nó ar phaistí áirithe talún agus dá siúlfá isteach nó céim orthu, chaillfeá do bhealach! Seans nach bhfaighidh tú do chiall ar threo arís go dtí go mbeidh na sióga tuirseach dá gcluiche agus

go scaoilfidh siad ón sprid thú! Scríobh Manchan faoi na réimsí mistéireacha seo, na 'Fóidín Mearaí'. Mar sin bí cinnte nach dtéann aon duine agaibh trasna ar *Fhóidín Mearaí* ar do bhealach abhaile ón scoil!

Dúshlán na seachtaine atá romhainn:

Bí ag obair i do sheomra ranga le chéile chun do logainm féin a chruthú don Choillín Beag. D'fhéadfá a bheith ag obair i ngrúpaí. Ina dhiaidh sin, beidh ort vóta a chaitheamh ar son an logainm is fearr leat.

Conclúid dheireanach: Pléigh agus gabh siar ar na buntáistí a bhaineann le gairdín foraoise bia inite, amhail bia úr agus sláintiúil a sholáthar, tacú le bithéagsúlacht áitiúil, agus cleachtais inbhuanaithe a chothú.

Tabhair uisce do na plandaí agus nigh suas an trealamh le chéile.

Tabhair am do na mic léinn a gcuid machnaimh a chríochnú agus a scríobh ag baint úsáid as GIY.ie: an Duillín Amach 3-2-1.

Measúnú chun Foghlama:

Fianaise ghrianghrafadóireachta digiteach/Ipad an mhúinteora agus/nó ceamara ranga in úsáid.

Eolas doiciméadaithe: mar nótaí, grianghraif, físeáin, agus scéalta foghlama, nótaí dialainne scríofa ag an múinteoir i sreabhadh an cheachta.

Saothair ealaíne arna dtáirgeadh ag mic léinn agus grianghraif de phróisis.

Ceacht 4: Lúb Bia	Sainmhíniú
lúb bia	Do dhaoine, cuimsíonn an lúb bia na réimsí bia go léir ar nós na feirmeoireachta, an fháilteachais, na siopadóireachta, agus an fuinneamh a úsáidtear sna réimsí seo go léir. I mbithgheilleagar ciorclach tá sé fíorthábhachtach na hacmhainní bia go léir a úsáid go héifeachtúil ó thaobh fuinnimh de agus chun na méideanna ollmhóra dramhaíola a fheicimid ann a laghdú inár saol inniu.
bianna áitiúla agus séasúrach	Cineálacha bia a fhástar nó a tháirgtear in aice láimhe agus atá ar fáil le linn amanna sonracha den bhliain.
feirmeoireacht neodrach ó thaobh carbóin de	Bealach chun bia a fhás agus ainmhithe a ardú nach scaoileann níos mó dé-ocsaíd charbóin isteach san atmaisféar ná mar a bhaintear as
múirín	Leasacháin a dhéantar as dramhaíl orgánach is féidir a úsáid chun cabhrú le plandaí chun fás.
caillteanas bia agus cur amú	Bia nach n-itear/nach n-úsáidtear agus a chaitear amach nó a mhilltear, ag céimeanna éagsúla ó fheirmeoireacht agus táirgeadh go dáileadh, stóráil, agus tomhaltas.
lorg carbóin	Córas chun tomhais a dhéanamh ar an méid dé-ocsaíd charbóin agus gáis cheaptha teasa eile a scaoiltear isteach san atmaisféar mar gheall ar ghníomhaíochtaí daonna.
Míle bia	An méid mhíle a bhíonn ar an mbia feirme réidh le hithe a thaisteal ó na feirme go dtí an bord dinnéir. Dá ghiorra atá an fad ón bhfeirm go dtí an forc is fearr mar go mbeidh an bia níos úire agus úsáidfear níos lú fuinnimh san iompar agus é a choinneáil úr.

Litríocht agus naisc:

https://www.bordbia.ie/globalassets/lifestyle/resources/organic-gardening-english/planting-winter-vegetables.pdf

https://www.farmergracy.co.uk/blogs/farmer-gracys-blog/top-10-flower-bulbs-for-bees

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Waters, A. (2008) *Edible Schoolyard, a Universal Idea*. San Francisco: Chronicle.

Sharkey. K, Rosenstock. G, (2024) *Mamaí Gé - Rannta Mhamaí Gé.* Dún na nGall: Éabhlóidl:

Leideanna rannpháirtíochta do na tuismitheoirí:

Tabhair cúrsa tuairteála ar mhúiríniú do theaghlaigh nó spreag iad lena chéile a mhúineadh.

Spreag na teaghlaigh le liostaí siopadóireachta a scríobh sula dtéann siad ag siopadóireacht chun cur amú bia a sheachaint.

Spreag teaghlaigh chun luibheanna a phlandáil i bpotaí (mura bhfuil go leor spáis nó gairdín acu). D'fhéadfadh teaghlaigh potaí luibheanna a bhronnadh ar an scoil ar féidir iad a chur i gceaintín na scoile agus is féidir le leanaí iad a úsáid chun a gcuid bia a shéasú.

Mol do theaghlaigh a lorg carbóin féin a thomhas agus smaointe a fháil ar conas é a laghdú.

Spreag na teaghlaigh chun na mílte bia a bhaineann le béile rialta a ríomh.

Tóg na leanaí chuig margadh bia áitiúil chun na difríochtaí ó ollmhargadh a fheiceáil agus tabhair cuireadh do na teaghlaigh teacht.

Plean Ceachta 5: Eachtra Ealaíne le BioBeo

Ábhar: OSIE, OSPS, Teanga, Oideachas Ealaíon	**Teideal an Cheachta: Eachtra Ealaíne le BioBeo** **Uimhir Cheachta: 5 de 6**	
Dáta: Téarma an Fhómhair	**Rang: 5/6**	**Fad: 2.5 Uair** **Glac sos le do rang nuair atá sé ag teastáil**
Téama BioBeo: Idirnascthacht	**Eochairfhocail/Frásaí:** **táirgí bithbhunaithe, athchúrsáil, athrú aeráide, tomhaltas, éifeachtúlacht acmhainní.**	

Torthaí Foghlama:

Cuirfear ar chumas na rannpháirtithe:

1. Comhoibriú ar scéal idirnascthachta a chruthú agus a chumadh ag úsáid 'Clocha Scéil' *An Choillín Bhig*.
2. A dturas Biobeo a fhreagairt trí phéinteáil agus líníocht ag baint úsáid as acmhainní bithbhunaithe (déan scuab péinte síorghlas, déan péint nádúrtha bithbhunaithe agus bain úsáid as páipéar bithbhunaithe).
3. A gcuid saothar ealaíne a chur i láthair
4. Tuiscint a fhorbairt ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach agus iad a úsáid san agallamh.

Acmhainní/Ábhair/Trealamh:

1. Clocha scéil (méaróga míne), mála agus pinn dhaite bithbhunaithe do na clocha.
2. Sraith de ghrianghraif d'ealaín uaimh ársa mar spreagadh ealaíne.
3. Samplaí de scuaba péinte síorghlasa réamhdhéanta mar spreagadh do na scoláirí sula ndéanann siad ceann dóibh féin. Cipíní nó craobhacha mar hanlaí, snáthaidí péine ó na crainn giúise do chinn scuab (m.sh. Lelandia, Péine Albanach agus sprús Sitceach), sreangán láidir bithbhunaithe chun scuaba a cheangal.
4. Trí ithreacha daite éagsúla chun uisce a mheascadh le péint dhonn nádúrtha agus babhlaí meascáin.
5. Samplaí de bhithphéint ón gcomhlacht Jiminy.ie
6. Gearrthóga bithbhunaithe déanta as adhmad don saothar ealaíne
7. Comhábhair agus babhlaí meascáin chun péinteanna bithbhunaithe a chruthú (féach thíos).

Ullmhóidh Múinteoir BioBeo roinnt péinteanna nádúrtha bithbhunaithe roimh an gceacht ag baint úsáide as na hoidis seo a leanas. Cruthóidh na páistí rogha de na péinteanna bithbhunaithe seo dóibh féin le linn an cheachta freisin (ó greenify-me.com):

Comhábhair chun péinteanna nádúrtha plandaí-bhunaithe a mheascadh agus a chruthú:

Dearg/bándearg: 1/2 spúnóg tae de phúdar fréimhe biatais nó 1 go 2 sútha craobh, sútha talún nó silíní, nó púdar rós dearg, 1/2 spúnóg tae de phúdar saigheada (arrowroot), 1/2 spúnóg tae d'uisce

Buí: 1/2 spúnóg tae de phúdar turmeric, 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Oráiste: 1/2 spúnóg tae de phúdar paprika nó púdar cillí, 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Glas: 1/2 spúnóg tae de phúdar matcha, 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Gorm/corcra: 1 go 2 sméara gorma, 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Donn: 1/2 spúnóg tae de phúdar cócó, 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Bán: 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Dubh: 1/2 spúnóg tae de phúdar gualaigh, 1/2 spúnóg tae de phúdar saigheada, 1/2 spúnóg tae d'uisce

Réamhrá: **(20 nóim)**

Fáilte, cuir an conradh measa i gcuimhne dúinn féin agus déan achoimre ar an seisiún roimhe seo.

- Cad a d'éirigh linn a fhoghlaim an tseachtain seo caite? Cipín suas chun freagra a thabhairt: Tá an bata taistil ag an gcainteoir.
- Cad iad na buaicphointí foghlama a bhí agat maidir le gáirdín inite a phlandáil sa Choillín Beag?
- Conas a chuideoidh plandáil na mbláthanna dúchasacha ar nós na gCloigíní Gorma le fiadhúlra sa Choillín Beag?
- Ar chruthaigh éinne logainm speisialta as Gaeilge dár gCoillín Beag?
- Téimis go léir amach don chúigiú maidin agus don mhaidin dheireanach againn sa seomra ranga lasmuigh le chéile. Glacaimis ár gcuid ama agus bímis aireach ar na radharcanna agus na fuaimeanna go léir a chastar orainn ar an mbealach chuig ár seomra ranga lasmuigh.

Bailigh i gciorcal arís. Cuirimid tús le gach seisiún gach lá leis an amhrán BioBeo. Canfaidh an rang an t-amhrán le chéile.

An tAmhrán BioBeo (féach ceacht 1 do na liricí)

Ag tosnú:

Táimid tar éis a bheith ag fiosrú cad is bithgheilleagar ciorclach ann. D'fhoghlaimíomar faoi na 5 théama BioBeo (foraoiseacht; an saol faoi uisce; an lúb bia; idirnascthacht agus an fhoghlaim allamuigh) go léir inár seomra ranga lasmuigh.
Tá sé feicthe againn go bhfuil an domhan nádúrtha comhdhéanta d'idirnaisc.
Chuidíomar lenár n-éiceachóras scoile agus a fiadhúlra tríd *An gCoillín Beag* agus gairdín inite a chruthú dúinn féin, do na daoine, do na beacha agus na pailneoirí freisin san éiceachóras scoile.
Thógamar lochán fiadhúlra freisin.

Saibhreoidh ár gcuid oibre go mór leis an mbithéagsúlacht agus tacófar léi. Tá naisc níos láidre déanta againn leis an dúlra inár dtimpeallacht scoile. Táimid tar éis athcheangal a chruthú leis an dúlra atá timpeall orainn.
Inniu táimid chun do shaothar iontach a cheiliúradh trí roinnt eachtraí ealaíne a dhéanamh le chéile ag baint úsáid as ábhair ealaíne bithbhunaithe. Bealach deas a bheidh ann daoibh go léir machnamh a dhéanamh ar an aistear le cúig seachtaine anuas. Is é an chéad rud a dhéanfaimid ná cómhoibriú le chéile chun scéal a chruthú ag baint úsáid as na 'Clocha Scéalta'.

Ag insint scéil leis na 'Clocha Scéalta' den *Choillín Beag* **(30 nóim.)**

Suígí go léir i gciorcal. Táimid i gciorcal scéalaíochta draíochtúil a thabharfaidh ar thuras uathúil sultmhar sinn go léir, ar nós na seanscéalaithe in Éirinn.

- Siúlann an múinteoir timpeall an chiorcail le mála de mhúróga míne, de mhéideanna, cruthanna agus dathanna éagsúla (ceann do gach dalta). Roghnaíonn gach páiste a mhúróg féin gan breathnú isteach sa mhála, ach trí theagmháil agus uigeacht. Tabhair cúpla nóiméad do na pháistí aithne a chur air agus cruth, dath, uigeacht agus meáchan a chur san áireamh.
- Iarr ar na páistí íomhá nó focal a tharraingt nó a scríobh, rud ar bith is mian leo ar a bpúróg, bunaithe ar chuid de na tráthanna is fearr leo sna ceithre cheacht le BioBeo (ainmhí, planda, crann, uisce mar shampla). Rud ar bith a mhothaigh tú go raibh baint agat leis inár gceachtanna anseo. Ansin cuir an méaróg ar ais sa mhála. Taispeánann an múinteoir roinnt púróga ullmhaithe do dhuine ar bith nach bhfuil cinnte conas tús a chur leis an obair.
- Chun tús a chur leis an scéal, tarraingíonn gach páiste méaróg as an mála, agus úsáideann sé é mar inspioráid chun tús a chur le scéal, ag rá abairt atá spreagtha ag an íomhá a tharraingítear air. Cuireann siad an méaróg i lár an chiorcail. Lean ar aghaidh leis an scéalaíocht, ag dul chuig an gcéad duine eile timpeall an chiorcail, ag ligean do gach duine méaróg a roghnú agus cur leis nuair a bhraitheann siad réidh. Spreagtar gach duine páirt a ghlacadh. Tacaíonn an múinteoir le haon duine atá ag streachailt le hionchur a dhéanamh sa scéal.
- Nuair a bheidh an scéal críochnaithe againn go léir, seasann gach duine suas chun uathúlacht gach méaróg a urramú agus an scéal draíochta a chruthaigh siad a cheiliúradh. Tá fáilte roimh na páistí a gcuid púróga a thabhairt abhaile más mian leo. Is féidir le daoine freagra a thabhairt ar a seal ag rá conas a bhain siad sult as an scéal/aiseolas a thabhairt.
- Tabhair cuireadh do na páistí an tábhacht a bhaineann le pictiúr nó focal gach méaróg a phlé agus na codanna den scéal is fearr leo a roinnt, agus ról na scéalaithe sa stair a fhiosrú, cosúil le na seanchaithe Gaeilge.

Forbairt: Saothair Ealaíne a Chruthú go Nádúrtha **(65 nóim.)**

- Cuir i láthair na gníomhaíochtaí ealaíne a bheidh ar siúl againn. Roinn an rang i ngrúpaí de cheathrar a dhéanfaidh a gcuid smaointe ealaíne a phlé, a scrúdóidh pictiúir de phéinteáil agus de líníochtaí ársa uaimheanna ó gach cearn den domhan agus ansin comhoibreoidh siad i ngníomhaíochtaí péintéireachta. Conas a chruthaigh siad a gcuid saothar ealaíne ar bhallaí na n-uaimheanna na mílte bliain ó shin, an dóigh leat? Cad iad na huirlisí is dóigh leat a d'fhéadfadh siad a chruthú agus a úsáid dá gcuid pictiúr?

- Mol gur féidir leo díriú ar cheann amháin nó gach ceann de na cúig théama BioBeo ina gcuid saothar ealaíne (idirnascthacht; foghlaim lasmuigh; foraoiseacht; an saol faoi uisce; an lúb bia).

Tasceagraíocht:

D'ullmhaigh an múinteoir scuaba péinte síorghlasa roimh ré chun iad a thaispeáint do na páistí. Chomh maith leis sin, ullmhaítear roinnt péinteanna nádúrtha roimh ré. Anuas air sin, tá an rogha de bhithphéint Jiminy réidh le n-úsáid agus ábhair ealaíne eile chun marcanna a chruthú cosúil le gualaigh. Cé go n-oibríonn grúpa leis an múinteoir i gceardlann chun a scuab féin a dhéanamh, agus chun péinteanna nádúrtha a mheascadh, is féidir leis na grúpaí eile tosú ar a gcuid ealaíne a dhéanamh leis na hábhair ullmhaithe. Téann na grúpaí timpeall ón múinteoir BioBeo le haghaidh meascadh péinte agus tógáil scuab péinte síorghlas chun bogadh ar aghaidh go gníomhaíochtaí neamhspleácha ealaíne le tacaíocht agus treoir ón múinteoir ranga.

Téann múinteoirí timpeall freisin chun plé a dhéanamh leis na páistí ar conas atá ag éirí leo san obair ealaíne. Is féidir le dhá ghrúpa tosú láithreach ag déanamh líníochtaí nó péinteáil leis na hábhair bhithbhunaithe (páipéar bithbhunaithe agus bithphéinteanna Jiminy, gualaigh agus uirlisí scríbhneoireachta bithbhunaithe). Tugtar an oiread neamhspleáchais agus is féidir do na páistí ina gcuid oibre. Cabhraigh leo ar bhealach íosta chun neamhspleáchas agus cruthaitheacht a chothú.

Conclúid: **(25 nóim.)**

Cuireann gach grúpa nó duine aonair a saothar ealaíne i láthair agus déanann siad cur síos air.

Chun an seisiún a thabhairt chun críche:

- An bhfuil aon ábhair nó eilimintí fágtha a d'fhéadfaí a mheas mar dhramhaíl?
- Cad is féidir linn a dhéanamh leis na hábhair atá fágtha chun dramhaíl a laghdú?

Conclúid dheireanach:

- Ar chuala nó ar fhoghlaim éinne aon rud nua inniu?
- An bhfuil tú ag smaoineamh faoi rud ar bith anois?

Críochnaíonn an ceacht agus sinn go léir inár suí i gciorcal chun an t-amhrán BioBeo a chanadh le chéile arís. Gabhann Múinteoir BioBeo buíochas le gach duine as a rannpháirtíocht iontach thar na seisiúin go léir.

Measúnú chun Foghlama:

Fianaise ghrianghrafadóireachta digiteach/Ipad an mhúinteora agus/nó ceamara ranga in úsáid.

Eolas doiciméadaithe: mar nótaí, grianghraif, físeáin, agus scéalta foghlama, nótaí dialainne scríofa ag an múinteoir i sreabhadh an cheachta.

Saothair ealaíne arna dtáirgeadh ag mic léinn agus grianghraif de phróisis.

Ceacht 5: Eachtra Ealaíne	**Sainmhíniú**
táirgí bithbhunaithe	Míreanna a dhéantar go hiomlán nó go páirteach as acmhainní bitheolaíocha in-athnuaite a fhaightear sa nádúr.
athchúrsáil	Próiseas chun ábhair úsáidte a athrú go táirgí nua. Is bealach é le saol nua a thabhairt do rudaí a chaithfí ar shiúl murach iad agus a bheadh i ndumpaí líonadh talún.
athrú aeráide	Athruithe fadtéarmacha ar phatrúin aeráide an Domhain, mar shampla teochtaí níos airde agus níos ísle agus méideanna báistí.
Tomhailt	Próiseas d'úsáid acmhainní agus earraí chun ár riachtanais agus ár n-éilimh laethúla a chomhlíonadh, ar nós ithe, ól agus úsáid fuinnimh.
éifeachtúlacht acmhainní	An leas is fearr a bhaint as na hacmhainní atá againn cosúil le bealaí a aimsiú le rudaí a dhéanamh ar bhealach níos éifeachtaí agus go n-úsáidfear níos lú acmhainní.

Leideanna rannpháirtíochta do na thuismitheoirí:

Tabhair cuireadh do na teaghlaigh chun freastal ar taispeántas BioBeo agus an scéal/saothar ealaíne a chur i láthair. Ag deireadh an chláir BioBeo d'fhéadfaimis ceiliúradh ar leith a dhéanamh chun na hamhráin a chanadh, ár saothair ealaíne a thaispeáint agus ár gcuid foghlama a thaispeáint do thuismitheoirí agus do theaghlaigh. Is feidir leis na páisti turas agus siúilóid go dtí an gCoillín Beag a stiúradh do na teaglaigh ar dtús.

Spreag teaghlaigh le saothair ealaíne méaróg a chruthú le chéile:
https://id.pinterest.com/zahfranhamzahal/pebble-art-ideas/

Spreag teaghlaigh le saothair ealaíne atá bunaithe ar an dúlra a chruthú le chéile: https://hu.pinterest.com/naturalearthpaint/nature-art-projects/

Spreag teaghlaigh chun saothair Giuseppe Arcimboldo a fheiceáil.

Litríocht agus naisc:

Jiminy eco-toys (n.d.) Jiminy bio-paint - edible ingredients finger paint for all ages, available:

https://jiminy.ie/products/finger-paint-eco-conscious-packaging-free?variant=36707733897384&currency=EUR&utm_medium=product_sync&utm_source=google&utm_content=sag_organic&utm_campaign=sag_organic&gclid=CjwKCAjwzo2mBhAUEiwAf7wjklngiky3zqnejqCQQJQY6c0JoF1TTX_r6CpDYQ9YVatpZopdD3bBSRoCYJkQAvD_BwE [accessed 29 July 2023].

Storniolo A. (2021) How to Make Plant Paints: Zero Waste Art, available: How to Make Plant Paints: Zero Waste Art - Greenify Me [accessed 29 July 2023].

Worroll, J. & Houghton, P. (2018) 'A Year of Forest School, Outdoor Play and Skill Building for Every Season', London: Watkins

Péinteanna Nádúrtha a Chruthú:

https://www.greenify-me.com/2021/10/plant-paints-zero-waste-art.html

Also:
https://jiminy.ie/products/finger-paint-eco-conscious-packaging-free?variant=36707733897384&currency=EUR&utm_medium=product_sync&utm_source=google&utm_content=sag_organic&utm_campaign=sag_organic&gclid=CjwKCAjwzo2mBhAUEiwAf7wjklngiky3zqnejqCQQJQY6c0JoF1TTX_r6CpDYQ9YVatpZopdD3bBSRoCYJkQAvD_BwE

Plean Ceachta 6: Ár dTuras Foghlama BioBeo: Freagra Ealaíonta na bPáistí.

Ábhar: TFC, Teanga, OSIE, OSPS, Oideachas Ealaíon	**Teideal an Cheachta: Ag Insint Scéal ár dTuras Foghlama BioBeo.** **Uimhir Cheachta: 6 de 6**	
Dáta: Téarma an Fhómhair	**Rang: 5/6**	**Fad: 2.5 Uair.** **Glac sos le do rang nuair atá sé ag teastáil**
Téama BioBeo: Na 5 théama go léir: Idirnascthacht, Saol Faoi Uisce, Lúb Bia, Foraoiseacht agus Foghlaim Allamuigh.	**Eochairfhocail/Frásaí:** **Athbhreithniú ginearálta ar gach eochairfhocal agus frása ó cheachtanna níos luaithe.**	

Torthaí Foghlama:

Cuirfear ar chumas na rannpháirtithe:

- Iniúchadh a dhéanamh ar *An gCoillín Beag*
- Freagra Ealaíonta a thabhairt ar an turas foghlama a bhí acu faoin mbithgheilleagar.
- A dtuiscint ar théarmaí agus ar stór focal nua a bhaineann leis an mbithgheilleagar ciorclach a chomhdhlúthú agus a athbhreithniú agus a úsáid san agallamh.

Acmhainní/Ábhair/Trealamh:

Ealaín, Ceol, Dráma - Roghnóidh an múinteoir agus na páistí an freagra ealaíonta a bheidh acu agus mar sin roghnóidh siad na háiseanna le chéile.

Réamhrá:

- Rachaimid ar shiúlóid anois sa seomra ranga lasmuigh le chéile. Tabharfaimid cuairt ar An gCoillín Beag. Tóg do chuid ama agus bain taitneamh as na radharcanna agus na fuaimeanna go léir ar an mbealach chuig ár seomra ranga lasmuigh. San fhómhar ní mór dúinn a bheith gléasta go maith don fhuacht.
- Ag baint úsáid as an mBata Taistil do gach cainteoir, iarr ar na páistí na cuimhneacháin is fearr leo agus na cuimhní foghlama ó na seisiúin roimhe seo a athchoimriú agus a mheabhrú.
- Bailigh i gciorcal arís. Cuirimid tús le gach seisiún gach lá leis an amhrán BioBeo. Canfaidh an rang an t-amhrán BioBeo le chéile.

Forbairt

Samhlaigh ar dtús, áfach, go bhféadfá gairm bheatha thar a bheith taitneamhach a fháil duit féin amach anseo agus oibriú sa bhithgheilleagar…

Tá obair iontach déanta againn le chéile inár dturas BioBeo agus rinneamar iniúchadh mór ar na cúig théama a bhaineann leis an mbithgheilleagar ciorclach inbhuanaithe le BioBeo. Cad iad na cúig théama arís? Tá féidearthachtaí móra sa todhchaí ag gach duine againn slí bheatha a shamhlú agus a bheith ag obair sa bhithgheilleagar.
Smaoinigh agus roinn le do pháirtí anois: ba mhaith liom go bpléifeadh sibh na cineálacha réimsí ar mhaith leat oibriú iontu don bhithgheilleagar seo, dar leat? Cuimhnigh, sa bhithgheilleagar ciorclach nach n-úsáidtear ach acmhainní in-athnuaite, bitheolaíocha. Cabhróidh an bealach inbhuanaithe agus ciorclach seo le maireachtáil agus le hoibriú sa bhithgheilleagar go mór leis an gcine daonna cúram níos fearr a thabhairt dár bpláinéad lómhar (an Domhan) agus na bronntanais a thugann sí dúinn le maireachtáil.

Beidh go leor múinteoirí maithe ag teastáil chun oideachas agus oiliúint a chur ar dhaoine ar go leor bealaí nua le maireachtáil agus le hoibriú agus le rudaí a dhéanamh don bhithgheilleagar. Le do pháirtí anois, pléigh na poist eile a cheapann tú atá ann do bhithgheilleagar sláintiúil? Agus samhlaigh cad iad na cineálacha gairmeacha is mó a bhfuil suim agat iontu?

Bain úsáid as na 5 théama d'fhonn machnamh a dhéanamh ar na deiseanna fostaíochta a bhaineann leis an mbithgheilleagar. Mar shampla, cad iad na poist a shamhlaíonn tú gur féidir le daoine a dhéanamh chun cabhrú le gach rud beo faoin Uisce? Agus an Lúb Bia, srl..

Mar fhocal scoir, bain úsáid as an mBata Taistil do na péirí chun a gcuid smaointe a roinnt ansin maidir le gairmeacha beatha ar féidir leo a shamhlú dóibh féin sa bhithgheilleagar ciorclach.

Freagra Ealaíonta a chruthú

- Inniu, beidh an deis agat freagra ealaíne a chruthú do do thuras foghlama BioBeo. Is féidir leat rogha a dhéanamh faoin gcaoi ar mhaith leat do chuid foghlama a roinnt – trí ealaín, ceol, nó dramaíocht. Smaoinigh ar cé acu a chabhróidh leat do chuid smaointe a chur in iúl agus do scéal a insint ar an mbealach is fearr!
- Is féidir leat cinneadh a dhéanamh ar mhaith leat oibriú leat féin nó i ngrúpa. Má roghnaíonn tú obair ghrúpa, déan cinnte go gcuirtear na smaointe atá gach duine san áireamh agus go bhfuil ról ag gach duine. Má fheileann sé duit oibriú leat féin, tá sin go breá freisin!
- Déan iarracht smaoineamh ar conas is féidir leat na téamaí tábhachtacha seo a léiriú i do chuid ealaíne, ceoil, nó dramaíochta. (Inbhuanaitheacht, timthriallachas, agus an bhitheacnamaíocht)
- Nuair a bheidh tú críochnaithe, beidh deis agat do chuid oibre a roinnt leis an rang.
- Bain taitneamh as an bhfreagra ealaíonta seo agus lig do do chruthaitheacht lonrú.

Conclúid:

Cuirfidh na páistí a bhfreagraí ealaíonta i láthair.
Can an t-amhrán BioBeo le chéile!

Measúnú chun Foghlama:

Fianaise ghrianghrafadóireachta digiteach/Ipad an mhúinteora agus/nó ceamara ranga in úsáid.

Eolas doiciméadaithe: mar nótaí, grianghraif, físeáin, agus scéalta foghlama, nótaí dialainne scríofa ag an múinteoir i sreabhadh an cheachta.

Saothair ealaíne arna dtáirgeadh ag mic léinn agus grianghraif de phróisis.

BioBeo Library

1. Finding Beo

   https://researchrepository.ucd.ie/entities/publication/d0a0d9ca-1c54-476b-92a3-0828538202c3

2. Back to the Future with Beo and Raja: A Tale from the Early Bioeconomy

   https://researchrepository.ucd.ie/entities/publication/09dd2b78-4068-4569-8baf-fe2f983e120d

3. Answering the Curlew's Call: A Beo and Raja adventure

   https://researchrepository.ucd.ie/entities/publication/1c321794-2108-4e9c-9c52-9348df6d8d15

4. There's Something about Ammonia

   https://researchrepository.ucd.ie/entities/publication/5bbd9ab0-34bc-4277-a8c7-01d20580a03d

5. BioBuzz

   https://www.biobeo.eu/biobeo-buzz-newsletter/

Leabharlann BioBeo

1. Tóraíocht Bheo

   https://researchrepository.ucd.ie/entities/publication/a4d6ced9-bd57-4a6b-831c-3e7264015dd6

2. Ar Ais chuig an Am atá le Teacht le Beo agus Raja: Scéal ón mBithgheilleagar Fadó

   https://researchrepository.ucd.ie/entities/publication/015d32a0-f632-47e7-bc4a-1c53bc59374a

3. Ag Freastal ar Ghlao an Chrotaigh: Eachtra Le Beo agus Raja

   https://researchrepository.ucd.ie/entities/publication/c8a63a9e-80d9-4f43-997e-671e7d8d1218

4. Amóinia? Amóinia? Cad faoi Amóinia?

   https://researchrepository.ucd.ie/entities/publication/5fe39d43-ca90-4dbc-a462-4c30d08bc51a

BioBeo Videos / Físeáin BioBeo

1. BioBeo: Answering the Curlew's Call. A Beo and Raja Adventure
   https://www.youtube.com/watch?v=uTyoQ3uXOvo

2. BioBeo What is Bioeconomy Teacher Intro Video
   https://www.youtube.com/watch?v=oYSOcp5hiO8

3. An Talamh Bhláfar - Connecting Communities to the Bioeconomy

   https://www.youtube.com/watch?v=k6i6wsYFEF4

4. Bioeconomy in Fabulous Forests

   https://www.youtube.com/watch?v=h1CevPst9Yc

Appendices

Appendix 1 - Making BioBased Paints

To make a bio-based red or pink paint, follow these steps:

Ingredients:

1/2 teaspoon of beetroot powder, or 1 to 2 raspberries, strawberries, or cherries, or red rose powder (for the colour)

1/2 teaspoon of arrowroot powder (for texture and binding)

1/2 teaspoon of water (for mixing and activation)

Prepare the Base Color:

If you're using beetroot powder or red rose powder, simply measure out 1/2 teaspoon of the powder and place it in a small mixing bowl.

If using fresh fruit (raspberries, strawberries, or cherries), mash the fruit thoroughly to extract the juice. For 1 to 2 berries, you'll need to crush them until you get enough liquid to represent 1/2 teaspoon of colour. If you prefer, strain the juice to remove any seeds or pulp.

Create the Paste:

Add 1/2 teaspoon of arrowroot powder to the colour base you've just prepared (whether from powdered beetroot/rose or fruit juice). Arrowroot helps thicken the mixture, giving it a smooth consistency and acting as a binder.

Stir the ingredients thoroughly to ensure there are no lumps and that the arrowroot powder dissolves well into the colorant. This will create a paste-like consistency.

Add Water:

Slowly add 1/2 teaspoon of water to the mixture. Stir well to combine and activate the arrowroot powder. The water will help thin the paste to a spreadable paint-like texture.

If the mixture is too thick, you can add a few more drops of water until it reaches the desired consistency.

Mix and Test:

Once the paint reaches the desired consistency, test it on a piece of paper or a test surface. If you want a richer colour, you can add more beetroot powder or natural fruit juice from real fruit. If the paint is too runny, add a tiny bit more arrowroot powder.

Storage:

Store the paint in a small airtight container if you plan to use it later. If you're not using it immediately, keep the paint in a cool, dry place. Keep in mind that natural paints like this might have a shorter shelf life due to the lack of preservatives, so it's best to use them within a week or so.

This recipe provides a simple, eco-friendly paint using natural ingredients. The colour may not be as intense as synthetic paints, but it gives a beautiful, subtle tint, and you can always adjust the amounts to achieve your desired shade. You are also making such a positive impact on the planet!

Additional Colour Recipes:

- **Yellow:** 1/2 teaspoon of turmeric powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Orange:** 1/2 teaspoon paprika powder or chilli powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Green**: 1/2 teaspoon of matcha powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Blue/purple:** 1 to 2 blueberries, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Brown:** 1/2 teaspoon of cocoa powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **White:** 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water
- **Black:** 1/2 teaspoon of charcoal powder, 1/2 teaspoon of arrowroot powder, 1/2 teaspoon of water

Appendix 2 – Making Nature Paint Brushes

To make a paintbrush made from natural materials, follow these steps:

Learning Outcome:

Children will learn to create their own nature paintbrushes using natural materials, like green branches, twigs, and flowers. They will then use these brushes to paint rocks outdoors, fostering creativity and appreciation for nature.

Materials:

Fresh green branches or twigs (about 6 inches long)

Natural twine or string

Wildflowers (fresh or dried)

Pine needles or similar

Small leaves, petals, or herbs (optional)

Scissors

Duration: 30 minutes

Method:

Introduction (10 minutes)

Talk about nature: Discuss with the children how nature provides many materials that can be used to make art. Ask what they think will be made with the materials they have today. Elicit that they will make paintbrushes from twigs, branches, and flowers, and then use them to paint on rocks.

Show examples: Display some sample brush ideas to assist any children who need support.

Step 1: Gather Materials (5 minutes)

Safety Tip: Explain to them that they should pick materials from the ground, not from living plants, so that the environment stays healthy. Encourage the children to gather small green branches, twigs, and any flowers or leaves they find interesting.

Step 2: Make the Natural Paintbrushes (20 minutes)

Prepare the twigs: Take a fresh green branch or twig (about 6 inches long). These will serve as the handle of the paintbrush. Attach the bristles by gathering small twigs, leaves, or flowers to act as the bristles of the paintbrush. Use the scissors to cut the twigs or leaves into smaller pieces that will work as brush “hairs.”

Wrap with twine:

Show the children how to take a piece of natural twine and wrap it tightly around the end of the twig where you want to secure the bristles. Make sure the twine is wrapped firmly to keep everything in place and then tie a knot to hold it together. Encourage the children to decorate the handle of their brushes with small flowers, petals, or extra twine. You can tie these decorations around the brush handle to make it more colorful and special.

Test the brush:

Before starting the paint session, let the children dip their brushes in water to see how they work. If the “bristles” come loose, simply wrap them tighter with more twine.

Enjoy painting!

As the children paint, encourage them to share their brushes and ideas with each other, so everyone gets a chance to try different materials.

Clean up:

Once everyone is finished, encourage the children to help clean up their brushes with water and let them dry for next time.

Note:

If you don't have access to wildflowers, you can use leaves or pine needles for decoration.

Remind the children to be respectful of the environment when gathering materials—only pick what’s available on the ground and leave nature as you found it. By the end of this lesson, the children will have a fun and hands-on experience creating natural tools and painting with them outdoors!