An Early Childhood Education for Sustainability resource that embeds the Sustainable Development Goals and STEM into pedagogical practice: A Northern Ireland Context

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Introduction

This resource has been developed to support early years practitioners as they engage with babies, young children, and parents/carers in the exciting world of science, technology, engineering, and mathematics (STEM).

The Effective Provision of Preschool Education (EPPE) UK and EPPNI has shown that the quality of the early home learning environment, regardless of socio-economic family influences, remains positively correlated to attainment in school. Further studies show that this influence goes right through primary and secondary education, and into late adolescence (Sylva et al, 2010). EPPE (UK) and EPPNI also showed that high quality preschool provisions, resonating with the importance of SDG 4.7 quality education, narrowed the gap between those disadvantaged and advantaged. Microsoft Word - EPPNI Final Summary Report received 270206.doc (oecd.org)

This document will support practitioners and parents to engage with the sustainability development goals (SDGs), learning more about our responsibilities to each other and the world in which we live.

There are 17 SDGs, and this introduction draws your attention to SDG 12, specifically 12.8.1. This target is key overall: Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment.

Starting Early Matters and this resource is full of fun ideas, activities and experiences that promote the creativity and curiosity of young children.

Why is it important to introduce STEM subjects in the early years?

STEM subjects help children to make sense of the world, exploring the "what if" and the "how". Through STEM, children begin to connect with and develop a passion for the environment, for nature, their relationship with nature and the criticality of sustainability.

What do we mean by sustainability?

We all have a responsibility to sustainability, an appreciation of our relationship with the environment, a respect of the world around us, and the greater order of nature. Through this resource we have identified opportunities to embed the SDGs.

Foreword by Dr Diane Boyd

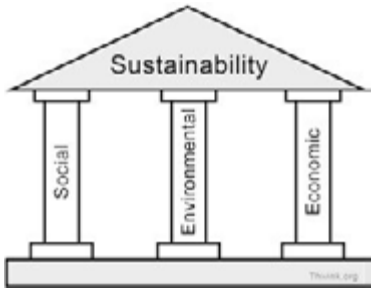
The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body responsible for assessing the science related to climate change. In August 2021, its report highlighted the urgency of solving the current crisis regarding our world and it strengthened our need as early childhood educators to be part of this solution. This resource will bring to the fore the importance of Sustainable Development Goals (SDGs) and their place in early childhood pedagogy.

Pioneering ideas of early childhood are the foundations for Early Childhood Education for Sustainability. Key pioneers such as Froebel, Montessori, Owen, and Steiner all advocated for social justice, equality, rights, and empowerment of all children – especially the disadvantaged and girls. They also recognised the importance of the environment as a valuable resource, but also the interconnectedness of the child to their world.

Early Childhood is situated in the ecological context of the family, the locality, the community, and the global world. Children need to be aware of how they are interconnected and that actions (theirs and those of others) have an impact. Children must not be framed

as "saviours" of the planet, but if the foundations are laid in early childhood, research shows that fundamental values and attitudes are formed at this time. These emphasise the importance of early childhood education.

It is commonly acknowledged that there are three pillars of sustainability (UNESCO) – environmental, economic, and socio-cultural. All three are interconnected and must not be considered in isolation. Considering only one pillar at a time drastically reduces the impact of the strategy or action.



In 2015, all United Nations Member States adopted the 2030 Agenda for Sustainable Development. It provided a clear blueprint for peace and prosperity for all people and a recognition of the importance of caring for our planet. Global partnership is key (it is the final SDG 17 Partnerships for the goals too) in taking action to end poverty, discrimination, improve health and education for all, reduce inequality, ensure clean water, and encourage economic growth. At its heart are the 17 SDGs to enable countries to devise strategies that can support and empower citizens, whilst also tackling climate change and life on land and below the sea.

The Effective Provision of Preschool Education (EPPE) UK has shown that the quality of the early home learning environment, regardless of socio-economic family influences, remains positively correlated to attainment in school. Further studies show that this influence goes right through primary and secondary education, and into late adolescence (Sylva et al, 2010). EPPE also showed that high quality preschool provisions, resonating with the importance of **SDG 4.7** quality education, narrowed the gap between those disadvantaged and advantaged.

The image below depicts the relevance of the United Nations Sustainable Development Goals to the development of more joined-up thinking and inter-agency collaboration. The UN Global Goals for Sustainability provide a comprehensive transdisciplinary framework with the potential of providing a common vision and stronger foundations for partnership working and collaboration, in the interest of every child (see Appendix A in Hindmarch and Boyd, 2021).

Appendix A in Hindmarch and Boyd, 2021

Sustainable development has the ultimate potential of offering a holistic transdisciplinary and transformative perspective that can support the integration and future development of early childhood and family services.

SchemaPlay Embodied, Ecological Early Years Pedagogy Training – SchemaPlay Community Interest Company

Hindmarch, T., and Boyd, D. (Eds.) (2021) A Path Made in the Walking: Forest Schools in Norway and in England, An OMEP Special Report, OMEP (UK) and SchemaPlay Publications.

The African proverb: "it takes a village to raise a child" remains valid, as across our communities, parents and professionals work in partnership to achieve the best outcomes for babies, children, young people and families (SDG 17).

Parents Helping Parents: It takes a village to raise a child | Nesta

UNESCO (2015) notes that education is the key to a better future and anyone working within any part of education needs to recognise this. SDG 4 specifically highlights the importance of quality education for all, starting in pre-primary. This resource provides an opportunity to embed education for sustainability, in particular the SDGs into all aspects of early childhood education, from Level 2 to Level 7.

Dr Diane Boyd
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How to use the resource

The resource includes activities and experiences for the setting, presented as provocations and learning opportunities, can be given to students, parents and carers so that reflective accounts can be included and shared in the setting. Practitioners could develop simple resource packs to support each activity for parents to borrow and enjoy with their children at the setting or at home.

Section 1

Links to the Pre-school Curricular Guidance and the Foundation Stage Curriculum in Northern Ireland

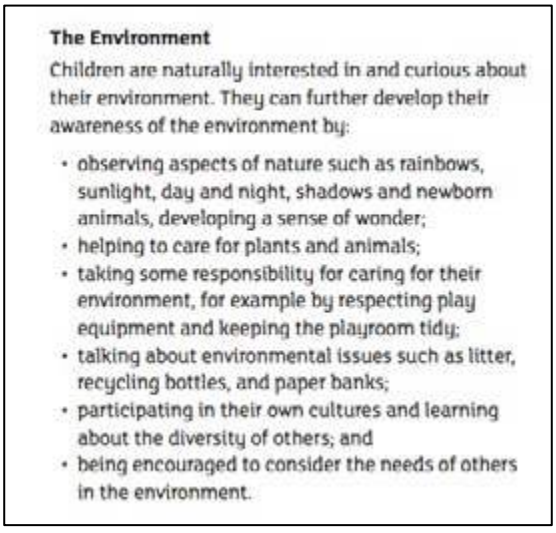
The emphasis of this resource is on education for sustainability through the 17 Sustainability Development Goals (SDGs) and STEM, exploring early scientific concepts with young children in a fun, exciting and motivating way.

It is important to note that the Early Years in Northern Ireland is divided across two distinct phases of education: a pre-school year (3-4 years) and the first two years in primary school, referred to as the Foundation Stage (FS) (4-6 years). As a result, pre-school educators and Foundation Stage teachers work from two separate curricula – the 'Curricular Guidance for Pre-School Education' (CGPSE) (CCEA, 2018), and 'The Northern Ireland Curriculum: Primary' (CCEA, 2007). This resource will explore both curricula and how they each address sustainability and the SDGs.

A key aspect of education for sustainability is creativity. This is about thinking divergently – "outside the box" – and being solution focused. Across the two curricula in NI, it is the adults' responsibility to challenge children in their thinking and in their creativity, in their curiosity, and in their imagination. Children should have the opportunity to work in stimulating environments where they have access to a range of resources to drive divergent thinking. Play is the pedagogy promoted in both curricula, where children can lead their own explorations into concepts and ideas in a meaningful and

accessible way. In 2022, CCEA updated their guidance regarding play across the Pre-school and Foundation Stage.

In the pre-school curriculum (CGPSE), there are six areas of learning including 'Early Mathematical Experiences' and 'The World Around Us' (WAU). Science is not mentioned specifically but, similar to the English context, resides under the area of learning 'The World Around Us'. Within the preschool curriculum there are abundant instances where sustainability is enshrined. For example, within The WAU, adults should encourage "children's understanding of themselves and their families, their pre-school setting (both indoors and outdoors) and the wider environment" (CCEA 2018, p.33). Interestingly, the pre-school curriculum has a standalone section identified as The Environment (see Figure 1). This highlights the importance of children learning about and developing respect for the environment in the earliest years.



The Environment

Children are naturally interested in and curious about their environment. They can further develop their awareness of the environment by:

- observing aspects of nature such as rainbows, sunlight, day and night, shadows and newborn animals, developing a sense of wonder;
- helping to care for plants and animals;
- taking some responsibility for caring for their environment, for example by respecting play equipment and keeping the playroom tidy;
- talking about environmental issues such as litter, recycling bottles, and paper banks;
- participating in their own cultures and learning about the diversity of others; and
- being encouraged to consider the needs of others in the environment.

Figure 1: The Environment in Pre-school, CCEA, 2018, p.21

Sustainability can also be seen within the strands of 'Personal, Social and Emotional Development', when discussing children's understanding of who they are, their respect for others and their environment, and in 'Health, hygiene and Safety':

"All staff should be aware of health and safety issues as children explore the environment. They should...promote good habits for life such as healthy eating, dental care and physical activity; and be aware of and foster their own positive mental health and that of the children and their parents/ guardians/carers." (CCEA 2018, p.13).

The Foundation Stage (FS) curriculum also contains many avenues to explore the SDGs. The overall aim of the primary school curriculum is to *"empower young people to develop their potential and make informed and responsible choices and decisions throughout their lives" (CCEA, 2007, p.15)*. It is skills-based, with a strong focus on the development of Cross-curricular skills (Communication, Using Mathematics and Using ICT), and Thinking Skills and Personal Capabilities, as opposed to being focused on content. According to CCEA (2007, p.8), *"thinking skills are tools that help children to go beyond the acquisition of knowledge to search for meaning, apply ideas, analyse patterns and relationships, create and design something new and monitor and evaluate their progress".* Teachers have the opportunity and flexibility to select and choose the topics they explore with their classes. In this sense, the opportunity to focus on the Sustainable Development Goals is a very real possibility.

Within the Foundation Stage curriculum (FS) there are six areas of learning, including 'Mathematics and Numeracy' and 'The World Around Us' (WAU), where science and technology is included. Despite the curriculum not explicitly mentioning the Sustainable Development Goals, 'Education for Sustainable Development' is discussed in the overall objectives of the curriculum (CCEA, 2007, p.4). Within these objectives, a wide variety of areas are developed under the titles of developing the children as Individuals, as Contributors to Society and as Contributors to the Economy and Environment. Within these strands, the areas of focus are Personal and Mutual Understanding, Personal Health, Moral Character, Spiritual Understanding, Citizenship, Cultural Understanding,

Media Awareness, Ethical Awareness, Employability, Economic Awareness, and Education for Sustainable Development. All areas are pertinent and relevant to the Sustainable Development Goals.

In addition to the general aims and objectives of the primary curriculum, the SDGs are inherent and observable in the areas of learning the World Around Us, Personal Development and Mutual Understanding, and Mathematics and Numeracy. The curriculum notes that, "children are likely to acquire and consolidate their mathematical knowledge, concepts and skills within the Area of Learning for Mathematics and Numeracy. However, they should be given opportunities to transfer their understanding, as appropriate, to other contexts across the curriculum" (CCEA 2007, p.6). In their 'using mathematics' skills, children apply their mathematical knowledge to real-life scenarios and contexts to give it purpose. STEM and the SDGs are one such context where this is possible.

When planning for STEM in NI, whether in pre-school or Foundation Stage, adults should ensure there is the opportunity to incorporate all areas of learning from the curriculum together alongside sustainability. They should reflect on the characteristics of effective teaching and learning which encourage children to investigate, have a go and be creative – key to both STEM and sustainability. Adopting an inclusive approach to learning is essential through providing stimulating and enjoyable activities.

A useful text has been developed by Montessori Europe and the Flourish Wellbeing that can be used as an introduction to the SDGs. Print off a couple of copies and leave in the reading area so the children become familiar with them.

SDGs_for_the_early_years_final.pdf (flourishproject.net)

Section 1:
Inspiring learning

A key document, Education for Sustainable Development (ESD) Goals Learning Objectives (UNESCO, 2018) highlights the aims of the SDGs.

ESD aims at developing competencies that empower individuals to reflect on their own actions, taking into account their current and future social, cultural, economic, and environmental impacts, from a local and a global perspective. Individuals should also be empowered to act in complex situations in a sustainable manner, which may require them to strike out in new directions; and to participate in socio-political processes, moving their societies towards sustainable development (UNESCO 2018, p.11).

ESD is explicitly recognized in the SDGs as part of Target 4.7 of the SDG on education, together with Global Citizenship Education (GCED), which UNESCO promotes as a complementary approach. At the same time, it is important to emphasise ESD's crucial importance for all the other 16 SDGs. With its overall aim to develop cross-cutting sustainability competencies in learners, ESD is an essential contribution to all efforts to achieve the SDGs, enabling individuals to contribute to sustainable development by promoting societal, economic, and political change as well as by transforming their own behaviour. ESD can produce specific cognitive, socio-emotional, and behavioural learning outcomes that enable individuals to deal with the challenges of each SDG, thus facilitating its achievement. In short, ESD enables all individuals to contribute to achieving the SDGs by equipping them with the knowledge and competencies they need, not only to understand what the SDGs are about, but to engage as informed citizens in bringing about the necessary transformation (UNESCO 2018, p12).

Provocations and questions reflect scientific/engineering/ mathematical and technological thinking as well as being linked to the characteristics of effective teaching and learning, and aid in the development of executive function and neuro-connectivity in their brains.

Think about the "what if", "what do you think", "I wonder if"' type of questioning to provoke curiosity and a keenness for children to think, to imagine, to participate, to contribute, to take interest, to pay attention, to enjoy, to share, to discuss and to learn.

UNESCO 2018 suggests there are three domains to reflect upon when planning your provocations. They are cognitive, behavioural, and socio emotional:

- The cognitive domain comprises knowledge and thinking skills necessary to better understand the SDG and the challenges in achieving it.
- The socio-emotional domain includes social skills that enable learners to collaborate, negotiate and communicate to promote the SDGs as well as self-reflection skills, values, attitudes, and motivations that enable learners to develop themselves.
- The behavioural domain describes action competencies (UNESCO, 2018, p.15).

It is important to consider that competencies cannot be taught, but through experiences, taking action, and reflection on the processes involved during the provocations, learners can be supported in developing the competencies themselves.

Use thinking books to show the children's visible thinking, ensure their voices are heard and the environment enriches the opportunities for further consolidation. Provide a range of

technologies to capture children's thinking or let the children capture significant moments, sharing, discussing, and reflecting. Collating a range of child-led data, including facilitated discussion, can support reflections – placing children at the centre of learning. An interesting approach to consider here may be the Mosaic approach, introduced by Alison Clarke (https://www.nicole-brown.co.uk/the-mosaic-approach-according-toclark-and-moss/).

Facilitation as a methodology to promote children's self-determination and its implication for learning.

Self-Determination Theory (SDT) is a leading theory for research on the intersection between children's behaviour and self-determination. For SDT, there are three intrinsic (innate and universal) motivations for (any) self to initiate behaviour:

1. Need for competence that allows control in the field of individual experience.
2. Need for relatedness that refers to interactions, to be connected to care for others.
3. Need for autonomy that concerns making choices that determine own life trajectory.

Intrinsic motivations interact with extrinsic motivation. Extrinsic motivations influence behaviours in terms of external demands and rewards on the individual. In SDT, they allow us to acknowledge the influence of the environment on individual attitudes. The interplay between intrinsic and extrinsic motivations defines behaviours, and it is observable in real-life situations by observing how children display objective markers such as being willing, creative, pro-active and self-confident.

For SDT, the most influential extrinsic motivation is trust. The importance of trust has been widely recognised by psycho-pedagogical research, suggesting that children's self-determination is promoted within environments where adults trust children to make choices. Children need spaces and opportunities to make choices, to have personal control to regulate their own behaviour and to feel capable of self-realisation (SDG 1.2.4).

SDT can be fruitfully applied to research the motivation of children's engagement in education. For instance, research based on SDT indicates that students' engagement decreases with more authoritarian forms of teacher control.

The Actor's System Mode (most influential in UNICEF educational planning) is based on the idea that self-determination does not only concern behaviour. Self-determination is meaningful only when it entails opportunities for reflexive construction of identity, moving between conscious and unconscious knowing, reaction, will and choice.

Pedagogy of listening, facilitation, and promotion of children's self-determination in education.

Whilst young children's participation in education is generally advocated, questions may concern the nature of young children's participation in education. In the last 20 years, a critical view of how young children participate in education has been advanced by influential research, contributing to the development of a pedagogical framework: early childhood education (ECE).

For ECE, the question is not whether children should be listened to or not; the question concerns the best way to listen and dialogue with them. The promotion of children's self-determination is therefore an ethical and methodological tenet of ECE as a pedagogy of listening.

Facilitation is a methodology that aims to create conditions of dialogic teaching, where adults and children are both positioned as authors of knowledge which is a condition for real listening to children. Facilitation aims to build knowledge with children and can favour:

1. A participative approach to learning based on equality of opportunities.
2. Empathic reflection on the background of personal memories.
3. Expectations of personal expression as the form of participation to interaction.

Facilitation expects both teachers and pupils (to) make substantial and significant contributions. In facilitation, children's thinking on a given idea or theme is helped to move forward, through which teachers can encourage children to participate actively. Facilitation invites the teacher to work not as the exclusive holder of knowledge, but as an organiser of and for learning. Facilitation aims to create the conditions for children's self-determination to make a difference in the contexts of their own, as well as adults', learning.

Results from research suggest that facilitation can combine learning with promotion of self-determination, nurturing children's trust in education, engagement, and motivations. Facilitation can transform any educational activity in an environment that enables the co-construction of knowledge between adults and children. The transition between other teaching methodologies and facilitation can be supported by reflective tools and CPD.

Facilitation can be adapted as a technique to support other pedagogical methodologies. Facilitation is thus a resource for, rather than an alternative to, other ways of working with children. The only condition is that facilitation can be utilised exclusively within activities that are interested in promoting children's active participation as personal expression.

Technical Appendix: Transitioning from teaching pupils towards facilitation with children.

The RARA Key model is utilised to support facilitators' reflection in action. The RARA Key invites the articulation of reflection across four dimensions:

1. Recognise
2. Adjust
3. Review
4. Act.

Transition between "ordinary" teaching and facilitation requires time, space and reflection for self-awareness. Based on the RARA model, a resource for reflective transition between "ordinary" teaching and facilitation has been developed.

The RARA Key model can be used as a foundation for CPD training to promote reflection on classroom talk, dialogue and communication.

	If facilitation is introduced into the classroom environment, what might be done differently and why?	Reflect and self-audit communication and engagement styles
Recognise	Recognise aspects of interactions used to engage children that may need to adjust or change when introducing facilitation. (Self-assessment and reflective stage)	**Example:** How does the adult invite or engage children to communicate or talk about their knowledge or personal experiences during facilitation? How might this differ from traditional teaching or interactions? Question: Pedagogically, who am I? What do I do and why do I do it like that?
Adjust	What action(s) or teaching approach might need to adjust if facilitation is to be engaged with? Why? (Planning to **adjust** stage)	**Example:** Adjust expectations or interpretation about: i) children's knowledge and capability ii) classroom routines or boundaries during facilitation to indicate difference between teaching/facilitation activities or outcomes iii) what knowledge is and where it comes from. Question: Do I always have to do "it" the way I always do? Why?
Review	Change needs to happen (although if change is not possible or is not working, there is a need to explore why?) Evidence or an example from practice is helpful to analyse. (Critical thinking stage)	**Example:** Facilitation did not work the way I expected. Children were not participating, they seemed to be waiting for the usual "hands up" to engage during the activity. So, how do I work with children to promote and evolve facilitation? What do I need to do differently? Maybe it is "me" who is not participating? Was I teaching or facilitating during the activity? How can I be sure? **Or** Maybe, I didn't change what I usually do in the classroom, so how should I signal a change of approach? What nonverbal cues or communication style can be used to signal a change in approach? Was I talking to the child or the pupil? Question: How does facilitation differ from teaching? Why? What do both have in common? How do both differ? Why? How do I manage teaching and facilitation during activities? Am I aware of when, why and how I switch between teaching and facilitation?
Action	Change is happening or has happened. How did change actually happen and how did facilitation evolve? Reflect in action (during the activity) or on action (after the activity). Discuss changes with children and colleagues. For example, share reflections and views about how facilitation was experienced. (Analyse, listen and do stage)	**Example:** Analyse reactions to facilitation. Encourage children to share their reactions about the use of facilitation. Teachers/facilitators reflect and share reaction towards **dialogue change** and outcomes. For instance, focus on classroom dynamics, noise, engagement, connections and relationships, body language, motivation, connections, listening, who participated and how, did the environment change? If so, how? Physical or emotional change? Did you learn something different about children and their lives; experiences; capabilities; strengths; fears; humour? How did children support or challenge your knowledge? How has facilitation impacted on your own teaching style; experience; reflections; approach?

Through our conversations with children, we can evoke a respect for the environment, move away from a humanistic perspective, reconnect to the ecosystems and to consider the lowly caterpillar or daisy!

The next section of this document presents a series of provocations you can explore with the children in your setting, in line with each of the 17 Sustainable Development Goals (SDGs). These are suggestions and 'doorways' to exploring the SDGs within the Northern Ireland context. Some internationally contextualised content is also included for extending and challenging thinking, and to inspire you in your translation of the SDGs in your practice.

Please also remember that this is part of a series of texts – other contexts include England, Australia, and Kenya.

Sustainable Development Goals (UNESCO, 2015)

End poverty in all its forms everywhere

Possible examples of No Poverty STEM provocations:

Discuss with children what the term 'poverty' means. Can you be poor in both material and non-material ways? Recognise poverty is not just about food/money, but love, security, welfare, and experiences.

1.41 Consider what this means – households with access to basic services.

Discuss with children (through resources and books); what are "services"?

List them and discuss what each service does to make their life easier.

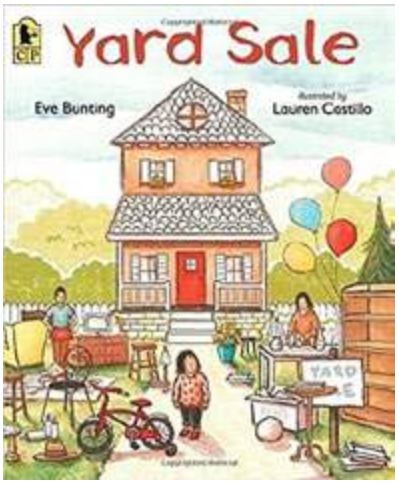
Watch this Northern Ireland Human Rights Commission video to consider child poverty in NI:
https://www.youtube.com/watch?v=1yiZJT1YnNc&t=34s

Discuss how it might feel to be the boy in the video.

Pose questions: How would you feel if...What would you do if... (For example: you had no breakfast before coming to school, or your house had no heating).

Pose questions: What would you do if... (For example: you had no water/tap or toilet). Consider homelessness – share images and ask the children to reflect upon what it must be like to have to sleep on the streets. How would they feel?

If you were on a walk and saw a homeless person sleeping in a doorway – how would you encourage children to respond?



Read together: Yard Sale by Eve Bunting. Callie's family is moving from their big house into a small apartment. They must sell almost everything they own. Even Callie's bike is for sale because there's no sidewalk outside their new apartment. Bunting and Castillo have captured the sadness of this event without causing us to feel hopeless. (Recommended for ages 3 – 7).

Reflect upon how fortunate they are to have a home (be mindful of all children's circumstances though). Look at images of homes from other countries and compare/discuss. How does community and culture impact on the design of the home? Link to SDG 12 Sustainable Cities and communities.

Can children build houses? Support children to select shapes/ materials appropriately: for example, flat surfaces for building, a triangular prism for a roof, etc. Is it easier to build a roof for a square/ rectangle/round house? Combine shapes to make new ones – an arch, a bigger triangle, etc.

Look at images of homes from other countries and compare/discuss. How are they built? What do they need to be safe and strong? What needs to be in the environment to survive? This fits with the World Around Us themes of Interdependence and Place (CCEA 2007).

Get children to consider how they can make their own homes more sustainable. Teachers can explore Keep NI Beautiful's website for EcoHomes here to support their ideas: http://www.eco-homeni.org/cgi-bin/greeting?instanceID=1

Children can visit museums such as the Ulster Folk Museum just outside Belfast, or the Ulster American Folk Park in Omagh to explore what local houses looked like in the 1800s and 1900s.



Image credit: from Museum websites

Can they compare houses in the countryside compared to town houses? For example, how does the house of the Bank Manager compare to the houses of the labourers on Tea Lane? Discuss the various features of the houses, from the range of rooms to the furnishings.

Introduce the term Celt/Celtic – what does it mean? Where did Celts live or travel from? Use Google Maps to research with the children the history of their culture and roots. What did Celts look like? Look at old images of Celtic communities and develop a role play box of Celtic costumes.

Imagine they are a Celtic community/family – how can they make their homes more sustainable/warm/dry? What do they need to be safe and strong? What needs to be in the environment to survive? What resources (services) did they need to have near their homes (for example, running water)? Look at old maps to show where early Celtic settlements were – what was nearby? Did they build on flat land by a river on a hill? Consider with the children the choices made.

Celtic Irish homes were round rather than square – discuss with the children the differences between a round house compared to a square/rectangle house. What difficulties could the children imagine? Construct an experiment of making a round/square house!

Research Celtic Irish homes: Building a Roundhouse by Hand: Celtic Roundhouse | Bushcraft Camp (PART 7) - Bing video

In Armagh, a local group built a traditional Iron Age Roundhouse during the Covid-19 lockdown. They used traditional methods and materials to create all parts of the house.

A useful video here shows the methods and materials they used: https://www.youtube.com/watch?v=xZdBvrMHFOg

Using recycled and sustainable materials, build a large-scale group round house – invite help from grandparents or parents to help, or create a small-scale version. See the following resource: How to Make a Model Celtic Roundhouse – Navigating By Joy

Image credit: Navigating by Joy

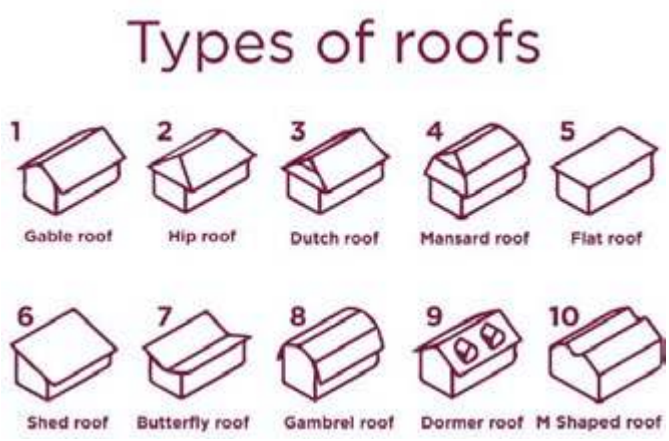
Ensure the children take an active role in the design and building of the homes.

Experiment with different materials – what will make the house sustainable and safe? See video resource: Why Celts Built Roundhouses – YouTube

Look at images of homes around the world and consider their different shapes/styles – how sustainable are they?

Links here to SDG 8 Decent Work and Economic Growth and SDG 9 Industry, Innovation, and Infrastructure.

Read the 3 Pigs story with a new focus – which house is stronger from floods/fire/ hurricanes and why?



Make three different homes and test out their strength. Use real materials. Test out strengths of bricks with no cement/with cement. Reflect upon heating and warmth in homes – what happens to you if you are cold? How can you stay warm and dry?

CGPSE (CCEA 2018, p.13) *"to come up with ideas, try things out and problem solve in a playcentred, responsive environment."*

Design and investigate different styles of roof for effectiveness. Use real materials and discuss expectations. Introduce terminology – waterproof – security.

1.5 Disasters/shocks. How can natural disasters impact upon families/homes? Terminology – flood/fire/hurricanes – link to SDG 7 Affordable and Clean Energy.

Look at images/videos of floods locally in NI. Get children to make flood barriers for paper houses. Use a range of materials to see what protects the house best.

Image credit: Rebekah Adams (Student Teacher at Stranmillis University College)

Extend this to exploring natural resources to make a flood barrier.

Put ice cubes/ an ice egg within the flood barrier and observe how the flood barrier "copes" as the ice melts.

With Northern Ireland's wet climate, children can explore water proofing experiments when building their homes also. What is the best material for the roof to keep the water out?

In modern housing in Northern Ireland, damp-proofing is a vital component. Discuss what could happen when bricks get wet every day for long periods of time. How might this impact their homes? Children can explore how to damp-proof by building sugar cube towers. In between two cubes, children can test a variety of materials to see which stops the coloured water rising through the sugar. What happens when the material is not waterproof?

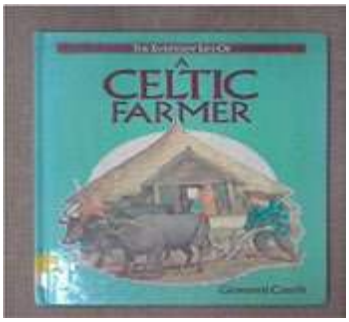
Image credit: Science Sparks

Look at floods/fire/hurricanes/earthquakes from other parts of the world – consider the damage to the environment. Use media images to support the narratives – for example, the earthquakes in Turkey/Syria or the cyclones in New Zealand during February 2023. This supports children's use of digital skills:

FS (CCEA 2007, p.7) *"Create, develop, present and publish ideas and information using a range of digital media."*

Pose questions: how do floods/fires start? Are they man-made? Research and draw on indigenous Celtic narratives and question

how Northern Ireland utilises the environment in comparison to earlier communities.



Research books that detail the life of a Celtic farmer in Ireland – what difficulties did they have in terms of providing for their family? For example, The Everyday Life of a Celtic Farmer by Giovanni Caselli.

Reflect upon how these natural disasters impact upon food production (poverty) and water (SDG 6 Clean Water and Sanitation).

Experiment with seeds – too much water/ too little water – how do you find a balance? Encourage children to plant seeds and grow plants. CCEA (2018, p.34) "care for and respect living things and handle them sensitively." This links to Froebel's key principles of freedom with guidance: unity, connectedness, and community; engaging with nature; and learning through self-activity and reflection.

Build a dam in a large water tray. Use different materials to assess strength. Look at animals in the wild that make structures, such as beavers. Pose questions of structure/materials/tools needed. Try out different real tools and see what they can do.

Who lives in the natural environment in Northern Ireland/other places in the world? What would happen if there was a flood or a fire? How can children help to protect the living and non-living environment? Discuss such images as below – Australian bush fires in 2019.

Nearly 3 billion animals were either killed or displaced. Who speaks for the non-human?

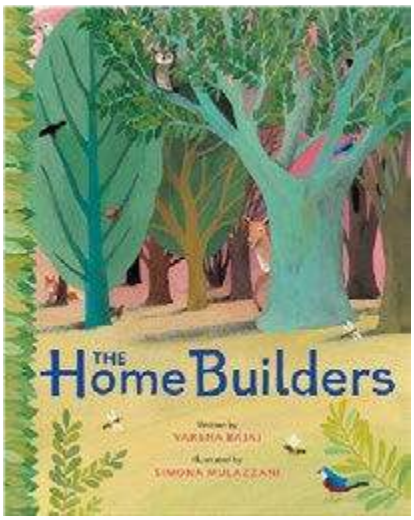
New WWF report: 3 billion animals impacted by Australia's bushfire crisis – WWF-Australia – WWF-Australia

Look at the following clip, 'I will be a hummingbird' – an African story, discussed by author and activist, Wangari Maathai. The story recounts the tale of the bold hummingbird who adopts the stance of "I will do the best I can". When other larger animals stand back and stare, watching their homes burn in a devasting forest fire, the little hummingbird carries drops of water to help put out the fire: Filme en tributo a Wangari Maathai – YouTube

SDG 2 Zero Hunger, SDG 13 Climate Action and SDG 15 Life on Land.

Brainstorm and design homes for animals/birds/insects that will give them protection, as they too are losing their homes. What do they need? Think sun, water, warmth, and food.

Read together: Home Builders by Varsha Bajaj.



Welcome to a serene woodland where lots of expectant animal parents are in their nesting phase – that is, busy preparing safe, cosy homes for their growing families. As they dig, tunnel, gnaw, and gather, they create dens, burrows, lodges, and, of course, nests. Soon the woods are full of new little ones peeping, crawling, romping, and snuggling.

Image credit: St. Anne's NS, Belfast

Can children build a minibeast home or bug hotel for the minibeasts in their setting? 'Bug-ingham Palace' or 'Crawlty Towers' could be a fun project completed by children.

Link to SDG 14: Life Below Water.

Use images that provoke and inform but that do not distress to explain that marine life is sadly dying because of eating plastics (due to human activity), embedded into the food chain of both humans and non-humans. Links to SDG 1 as it is impacting on our food chain for all ecology, as plastics are being food inside fish.

Take photographs of local familiar areas where there is rubbish, litter and pollution and share with the children. What do they think of this? Where does the litter go? What can they do to reduce this?

FS (CCEA 2007, p.4) *"understand how actions can affect the environment."*

With the children, plan a beach (or park/garden/community) campaign locally to ensure plastic/litter is not left on their beaches, using all aspects of STEM. Become community planners!

Explore how beach schools work in NI and look at some local schools' practice: https://www.beachschoolsni.com/.

Explore the 'Live Here, Love Here' local NI resource to learn about how your setting might become more involved in looking after the local community: https://www.liveherelovehere.org/cgi-bin/greeting?instanceID=1

Try to enforce that **no poverty** is not just a human stance. All living things need a healthy environment and food to survive!

CGPSE (CCEA 2018, p.21) *"being encouraged to consider the needs of others in the environment."*

CCEA (2022b, p.5) *"to observe and appreciate the world around them."*

FS (CCEA 2007, p.4) *"appreciate the environment and their role in maintaining and improving it."*

The children here were drawing their personal reflections of the local beach after discussing sea life. Reflecting upon the Reggio Emilia approach to learning through visible thinking, documentation is used to share projects with the local community. Here the children recognised that adults needed more bins to accommodate the rubbish left behind – or a different attitude!

Image credit: Our Lady of Pity Hoylake Annexe

"Adults don't care" – Rosie aged 4.

Ensure correct terminology is always used.

Consider global poverty – how can we encourage children to understand delicate issues in faraway countries? One way is by reading stories together and sharing images or videos to talk about. Explore the work of local charities who fundraise in NI and use the funds to provide support in developing countries.

We can raise money (economic sustainability) to help disaster situations and introduce them to relief organisations that help.

Examples – sending toys and clothes to children in Ukraine to help them due to the war. Help children to understand that Red Nose Day or Children in Need is not just about dressing up – what is the message?

BBC Children in Need: NI raises more than £925,000 – BBC News

Talk with the children about helping others less fortunate that do not have the services they have. As a setting, discuss with the children if they want to help someone or a community – what can they do? Cakes sales, walking to school, starting a Just Giving

page, washing cars with parents, sewing clubs, knitting and fashion clubs are just some examples to consider.

Image credit – Sarah Lazarovic designed this triangular representation of economic sustainability to follow.

No poverty means helping all children to have suitable clothing and uniforms. Fast fashion is recognised as a source of damage to the environment (SDG 13 Climate action) – encourage children and parents to swap and share clothes and uniforms rather than them going into landfill sites. At Halloween or on World Book Day, can a costume swap be set up?

Explore the 'fast fashion' initiative in NI where children are encouraged to consider the impact of throwing away clothing and its impact on the environment: https://www.keepnorthernirelandbeautiful.org/cgi-bin/generic?instanceID=67

Encourage children to bring in old clothes from home, which children can repurpose or reuse in dress-up for example or for

plays/concerts. Can they create sustainable fashion? Can they give old clothing a new lease of life by decorating them? Doing tie dye? Perhaps they can use items for recycling to create clothing?

Think outside the box! What about a crisp packet skirt, or a shopping bag gilet?

Image credit: Jemma Thompson and Jordan Gibson (Student Teachers at Stranmillis University College)

Link back to SDGs 12 Responsible Consumption and Production and SDG 13 Climate Action.

Perhaps children can use old clothing and learn to sew, to make a climate change buddy (as pictured).

Image credit: Chloe Davidson (Student Teacher at Stranmillis University College)

Children can also use recycling materials to make 'Recycling Mascots' (as pictured).

Image credit: Amber Morrow and Jack Allen (Student Teachers at Stranmillis University College)

As a setting, encourage parents to donate old wellington boots and raincoats to support access in all weathers, promoting an inclusive approach – link to SDG 5 Gender Equality.

Alternatively, could old wellington boots be repurposed as planters for the school?

Image credit: St Anne's NS, Belfast

Link to SDG 13 Climate Action and SDG 15 Life on Land.

Also consider bringing old lunchboxes or school bags to school, which can be repurposed in the classroom as outdoor bags with resources for outdoor learning, or for first aid kits, etc.

Kindness must be recognised as a crucial attribute and that having no love/security is another form of poverty.

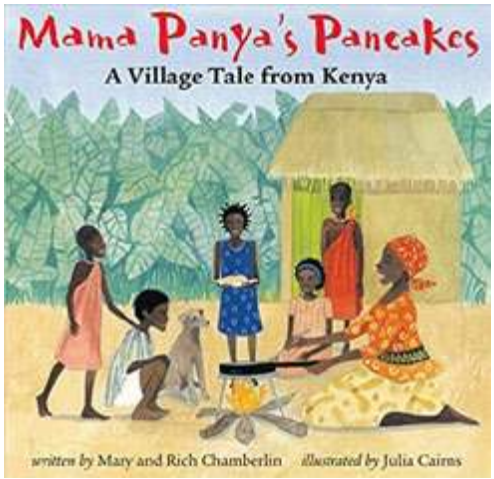
Encourage acts of kindness and support children to develop empathy for others (human and non-human). Be mindful that not all children in your setting/class will have experienced a strong secure loving family. This emphasises the importance of practitioners **knowing** their children and families in their care, and consequently, building trust.

Educator information: Early Years Specialist Services: Belfast | CommunityNI

This links to SDG 3 Health and Wellbeing.

Read together Mama Panya's Pancakes and reflect upon sharing and kindness.

On market day, Mama Panya's son Adika invites everyone he sees to a pancake dinner. How will Mama Panya ever feed them all? This clever and heart-warming story about Kenyan village life teaches the importance of sharing, even when you have little to give.



A key aspect of education for sustainability is about supporting children's numeracy and literacy (**SDG 4 Quality Education**), stressing how education must be available for all children and that education feeds their developing minds.

A lovely range of picture books to explore Global Poverty are suggested here: Picture Books about Global Poverty – Doing Good Together™

Sustainable Development Goals (UNESCO, 2015)

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Possible examples of Zero Hunger STEM provocations:

Hunger does not just impact humans!

Terminology: malnourishment/hunger. Why would you be hungry? How do you know that your body is needing food? What does your body need food for?

Link to SDG 7 Affordable and Clean Energy and SDG 3 Good Health and Wellbeing.

Pose questions such as which food is better to eat? Fresh – frozen – perishable?

Experiment with the same food tree ways (e.g. frozen fruit, tinned and fresh). Ensure children have opportunities to use real tools to cut and slice food, an important aspect of physical development and links to SDG 8 Decent Work and Economic Growth developing skills.

Link back to disasters – how can we save our crops (food) from disasters? Revisit the term disaster – what is a disaster crop wise?

Draw attention to the history of Ireland – remind children with the use of maps that NI was, up until 1921, part of Ireland.

Discuss the word famine – hunger. What does it mean? How do you know when you are hungry?

Share images with the children and ask them to reflect individually or in pairs/groups on what they think they represent.

Image credit: Famine Memorial Dublin, AlanMc 2006

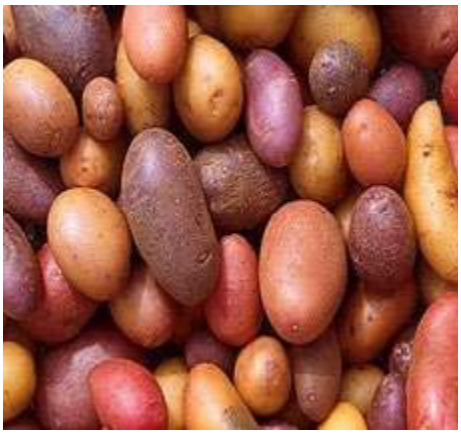
Image credit: Photo in public domain – "Irish family from Carraroe, County Galway, during the Famine"

Resource: Irish Potato Famine Facts for Kids (kiddle.co)

With the children, research images and information about the Great Irish Famine. What disease caused the potatoes to die?
Irish Famine – Kids | Britannica Kids | Homework Help

Research pictures of potato blight – look at a healthy potato and discuss how to keep vegetables free from disease. Discuss places to keep fruit and vegetables fresh and healthy.

Image credit: public domain, "Phytophthora infestans effects"



Compare healthy vegetables and different varieties/names of potatoes. Where are they grown?

With the children, plant a selection of potatoes in a container/allotment space and tend to them – to understand how plants need care and attention.

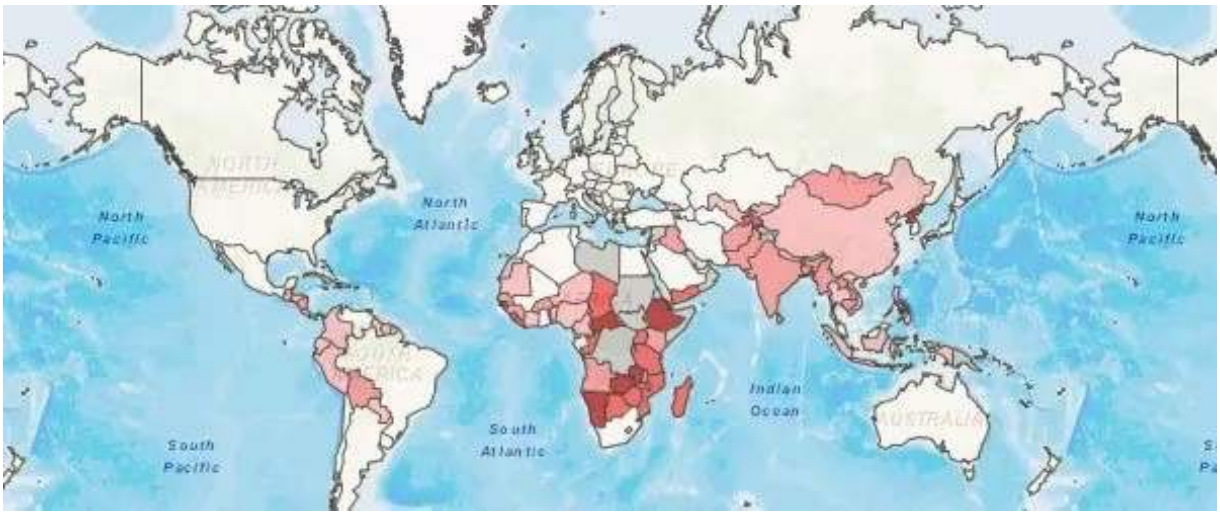
Handle the potatoes – describe them – cook them in a variety of ways.

Audit with the children their favourite ways of cooking them and share the data with the children in graph form – as this is an introduction to mathematical statistics.

Teaching children how to cook and different ways and to cook in the setting can enable them to observe first-hand the process, and they can learn important risk management in this way. In many pre-school settings, BBQs are used for cooking with the children.

Image credit: Windmill Integrated Nursery School

Teacher blog at http://nosuchthingasbadweather.blogspot.com/



Maps are a key aspect of understanding the world – discuss the UNESCO Hunger Map. Ensure you access a wide variety of maps to support their thinking – both digital and printed. Encourage children to make their own maps.

Research maps which showed where people in Ireland left due to no food – which places did they travel to? Liverpool – USA – Canada – Australia?

Teacher information/for older early years children to discuss: how do we end hunger?
Hunger | FAO | Food and Agriculture Organization of the United Nations

One in seven people on earth live on less than one dollar each day

Provoke thinking – show two images of fridges – one full and one empty.

Ask the children to discuss why it might be full/empty. Reflect upon how they would feel if they had no food in their lunch box.

Reflect upon how we need to keep food clean and fresh. Why do we need fridges? If we had no electricity, how would you keep food fresh?

Pose questions/set up provocations for exploration – it is important for children to develop critical thinking skills.

Image credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

How would you keep food fresh in the wild? Ask the children for alternative ways of keeping food fresh without the need for electricity or fuel. For example, hanging to cure, pickling, or burying in the snow – link here to non-humans saving food for the winter months.

Also link here with food to pioneers of Early Childhood who advocated for free school meals and an equal independent childhood. (Maria Montessori who advocated that children are capable learners and can prepare/ cook/clean with the right tools and Margaret McMillian who advocated for free school dinners.

The Montessori Approach to Food, Mealtimes & Children in the Kitchen – Montiplay

A brief history of the humble school dinner – BBC Bitesize

Consider new heroes – footballer Marcus Rashford (Manchester United, UK) championed for free food for children during the pandemic and highlighted the need for nutritious meals. Look at the images that were painted on walls in Manchester, UK and the

messages for him. Reflect again on SDG 1 No Poverty with the importance of kindness – hearts are used here to symbolise caring. Again, be mindful of the children in your setting and the financial/ physical situation of the family. Research with the children their own local/national 'new' heroes.

Design wall murals for your school/ community to celebrate. Reflect again on SDG 1 No Poverty with the importance of kindness – hearts are used here to symbolise caring.

Link to food banks locally – visit and support. Raise awareness by designing posters.

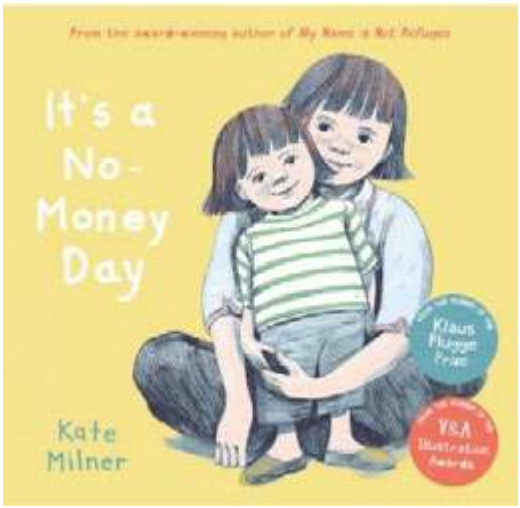
FS (CCEA 2007, p.89) *"How we might act on a local or global issue"*.

Image credit – Millie's Garden Nature Kindergarten, Bristol, UK

Discuss with children food banks – do they know what they are and where they may see them? Link to food banks locally – visit and support. See how and where the food is distributed.

Read together: It's a No Money Day by Kate Milner.

"My mum works really hard and knows lots of fun things to do that don't cost any money. But when there's nothing left in the cupboards we have to go to the foodbank. Maybe one day things will be different..."



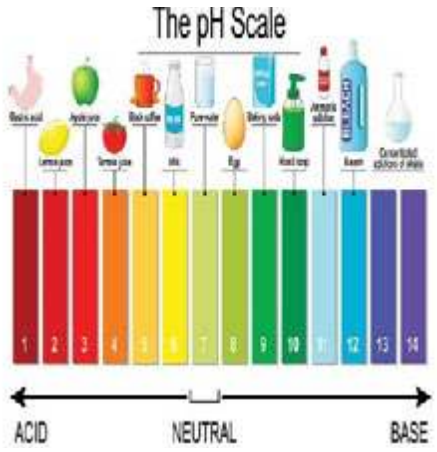
Plan to develop a community garden/allotment which the children manage and sell the produce back – so they understand economy. Raise awareness by designing posters. Here children can learn how they can *"contribute to creating a better world for those around them"* (CCEA 2007, p.4).

Pose questions about how you can share food and food supply. Who needs helping?

Use food products to demonstrate equitable food sharing – halve/quarter/slice a cake/pie. Mathematics in real contexts.

Scientifically test your soil – thriving vegetables need a pH of 7-7.5. Use a simple soil testing kit. If the number is below 7 then it's acidic and the plants can't grow. If the number is above 7.5, then the soil is too alkaline, and the vegetable cannot grow.

Support the children to investigate and analyse data.



Open Air Laboratories have developed a soil testing kit and booklet which teachers can explore and adapt for the early years: https://www.imperial.ac.uk/media/imperial-college/research-centres-and-groups/opal/SOIL-16pp-booklet_legacy.pdf

Experiment with different types of soil and different parts of your environment for planting. Where do your vegetables like to grow?

Discuss differences in countries and the differences in opportunities to grow food. Use digital technologies to compare and contrast different places (think about sun, sand, rain and snow).

FS (CCEA 2007, p.7) *"investigate, make predictions and solve problems through interaction with digital tools"*.

FS (CCEA 2007, p.7) *"share, collaborate, exchange and develop ideas digitally"*.

Can children investigate where their food comes from? Where does their milk/eggs come from? Link to the farm and have a visit to the farm to see the milking chambers, and the eggs from the chickens.

Where does the children's fruit come from? What vegetables grow in Northern Ireland? If it didn't grow here, how did it get to Northern Ireland? Why can't we grow blueberries in Northern Ireland?

2.5 – Assess traditional knowledges of environment – sort and classify indigenous seeds – look at patterns, sizes, and textures – describe them.

How and what do they need to grow?
Make seed sharing a community aspect and encourage the children to sell them. Design the packages and information about each type of seed.

Link to SDG 15 Life on Land.

Ensure you plan to introduce new vocabulary related to their exploration and encourage children to use it in their discussions through modelling, as they care for living things.

Have knowledge of the local bio-diversity and ensure educators have the knowledge to identify which plants/seeds are needed by birds/animals in the locality. If you do not know, then as a shared learning experience, research and find out! Make seed bombs to plant around the setting to encourage wildlife:

Image credit: PlayoftheWild.com

Alternatively, make seed balls for hungry birds and ensure water is readily available: https://letsgrowwild.uk/make-homemade-fat-balls-birds/

Build birds' nests with children and consider if there is sufficient food available in specific areas for the birds. Set up a sensory tray where children can explore bird seed (careful of allergies!). Include pieces of plastic and rubbish and encourage children to consider the impact of this rubbish on the birds, if they eat it.

Image credit: Dan Mairs (Student Teacher at Stranmillis University College)

Link back to SDG 9 Industry, Innovation, and Infrastructure (skills), SDG 11 Sustainable Cities and Communities, and SDG 12 Responsible Consumption and Production.

Provide materials to help birds build their nests. In St. Anne's NS, Belfast a local farmer supplies Alpaca wool for the children to leave around the setting for birds. In the image below it is left close to the bird feeder. The children were also involved in building a bird bath.

Which non-human living things are at risk of being hungry in your environment and why are they at risk?

Image credit: St. Anne's NS

Consider the importance of the bee: "An increase in urban developments and invasive farming methods has meant that many of the areas bees once called home no longer exist. These developments are as much a threat to bees as they are to trees and woodland. In the wild, several species of bee nest in hollow trees, so as more trees are destroyed so are the homes these bees live in. Wildflower meadows and other areas abundant in flowering plants are also in serious decline, meaning that bees lose an important food resource."

Why Are Bees Important? And How You Can Help Them – Woodland Trust

Develop a research project about the bee. Why are bees so important to the food supply? Without bees, the produce section in the shops would be reduced by up to 50 percent and could pose a major threat to global agriculture. Some of the foods that are produced from pollinated plants include apples, lemons, carrots, onions, and broccoli.

Pose questions to the children about how they can help the bees Why are bees in danger? Let the children lead. Design ways to tell their community of the importance of bees.

Credit: Sarah McLaughlin (Student Teacher at Stranmillis University)

Examples:

- engage in the local community with allotment participants
- plant wildflower beds and observe
- eat, make, and classify honey
- in Physical Development sessions, move like a bee and discuss their roles
- design bee hotels for the outside space
- dissect a dead bee if available and use a magnifying glass to examine it.

Research the purpose of bee bricks. How are they beneficial?

Image credit: Bee campaign Riverside Nursery, Edinburgh, Scotland

Simple bee hotel designs – and a 3D Save the Bee campaign poster!

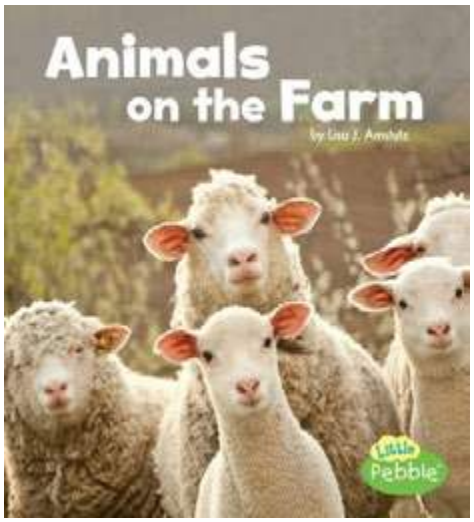
Make bee hotels from junk materials as seen in the following images.

Image credit: Sarah McLaughlin (Student Teacher at Stranmillis University)

What Is a Bee Hotel? A Beginner's Guide to Garden Bee Hotels – Gardenia Organic

Consider terminology – "domesticated" versus "wild" animals. Classify animals – which animals do we eat/farm? Where does our food come from? Which animals eat meat/ grass?

Read together: Animals on the Farm by Lisa Amstutz.

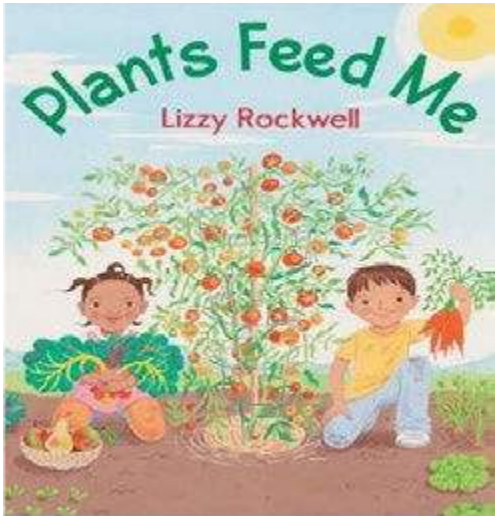


Introduce your beginner readers to seven of the most common animals on the farm with a hearty "Hello, cows!" and a "Hello, pigs!" Up-close photos and levelled text pair up for a fun meet-and-greet filled with facts, feathers, and fur.

Discuss with the children the difference between meat products and plant-based foods. Carry out a taste test – can they taste the difference?

Introduce the terms vegan/ vegetarian – are the children familiar with them? Discuss why meat products are bad for the environment and why.

Read together: Plants Feed Me by Lizzy Rockwell.



Reflect on the difference between plant-based food and animal food – what foods do they eat that is animal or plant?

Make an audit of the most popular plants eaten and introduce them to new plant-based foods. Reflect upon the culture of the community too. Invite grandparents in to share traditional plant-based foods. Ensure children taste and feel the foods.

Highlight that eating too much animal/dairy-based food is not healthy for them and the planet (links to SDG 13 Climate Action and SDG 15 Life on Land.)

Cook together – make your own cookery book of recipes reflective of your community.

Sustainable Development Goals (UNESCO, 2015)

Ensure healthy lives and promote wellbeing for all at all ages

Possible examples of Good Health and Wellbeing STEM provocations:

To ensure children understand the importance of everyone having clean drinking water and save our oceans.

3.3 – By 2030, end [...] water-borne diseases.

Experiment with different materials in water – ask questions about where diseases in water could come from. Look at images from other countries and the lack of clean drinking water (SDG 6 Clean Water and Sanitation). How far would you walk for your water? Why do some children have to walk for water?

Audit where can you get water and compare.

Set up a water walk challenge: How long can you go without safe drinking water? | UNICEF – YouTube

Ask questions such as:

- Why is it important to have clean water?
- What makes water dirty?
- Is dirty water always coloured?
- Can you clean water?

Experiment: Turn Dirty Water into Clean Water! | Chirp Science Corner – YouTube

Make your own water filter!

Image credit: St Anne's PS, Belfast

Can you undo water pollution? STEM: Can You Undo Water Pollution? – YouTube (https://www.youtube.com/watch?v=Wnn4CEpjBtk)

Set up your water tray with litter that floats and sinks, add some vegetable oil (coloured using cocoa powder to resemble oil), and provide children with a variety of tools. Set them the task of being

eco-warriors who must clean the sea ocean. Provide a range of tools to do so, for example tweezers, nets and tongs. Alternatively, include some toy fish at the bottom and get them to pretend to be ocean birds trying to get the fish. Let them consider the challenges for the birds that are trying to feed in a littered ocean/sea.

Image credit: Primarytreasurechest.com

Record the results and use correct scientific terminology. Analyse and discuss the findings.

Link to SDG 14 Life Below Water, SDG 12 Responsible Consumption and Production and SDG 13 Climate Action.

Discuss with children about the importance of staying healthy. What do they need to have energy? Link here to SDG 7 Affordable and Clean Energy and link back to SDG 1 No Poverty/SDG 2 Zero Hunger and revisit messages.

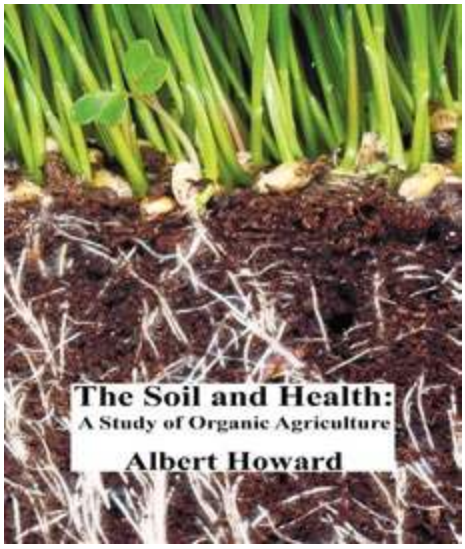
Recognise how the SDGs are interconnected.

3.9 By 2030, substantially reduce the number of deaths and illnesses from water and soil pollution and contamination. Link back to SDG 2 Zero Hunger and soil testing.

Soil needs to be strong and healthy as much as humans do! Make connections here again about the interconnectedness of the ecosystems being healthy.

Reflect upon what humans do that makes soil unhealthy?

Educators to read The Soil and Health: A Study of Organic Agriculture by Albert Howard (pictured).



What does healthy soil look like? How might we know it is healthy? Healthy soil should have worms and other organisms living in it – can children do a worm/ bug hunt in the soil? Is there a large-scale digging area for children to explore soil? (See SDG 5 for an example of this).

"The health of soil, plant, animal and man is one and indivisible." – Albert Howard.

Albert Howard and early childhood giant Rudolph Steiner are considered the first proponents of organic agriculture. Revisit this in SDG 13 Climate Change and SDG 15 Life on Land.

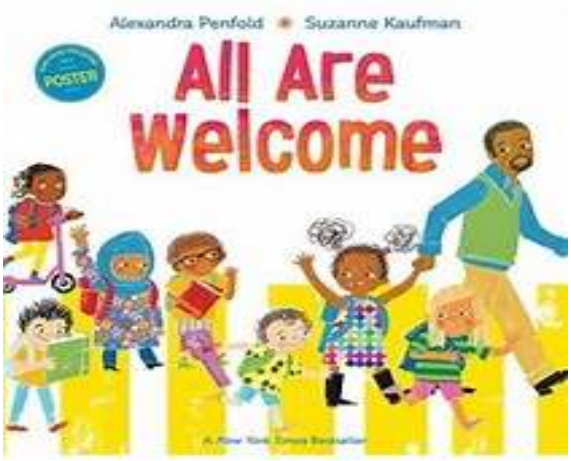
3.4 By 2030 promote mental health and wellbeing. This links to SDG 4 Quality Education – children need to be fit, healthy and happy to learn!

Revisit the importance of who they are – the history, geography, and culture of the Irish people. Be mindful of different old and new communities within your setting, for example old – Catholic and Protestants. Highlight the interconnection of all living things in the eco system and that we are together rather than apart. Consider new communities and refugee status (such as Ukrainian or Syrian) and how we can celebrate togetherness. What do we all have in common?

Read We're Better Together and reflect on:

Cooperation, helping, and working together are beautifully illustrated in this book that demonstrates the joys of community and teamwork for young readers. We're better together when we play, when we make music, and when everyone pitches in. This celebration of coming together to solve problems, support communities, and honour everyone's differences is perfect for young children who are learning about empathy and cooperation.

Links here to SDG 12 Sustainable Communities and Cities and SDG 16 Peace, Justice, and Strong Institutions.



Watch All are Welcome by Alexander Penfold. Pause and think about each sentence – how do you think they feel? Have you ever felt left out? Not welcome? Scared? Lonely?

All Are Welcome by Alexandra Penfold READ ALOUD ~RING AROUND RONINA~ - YouTube

Make a 'strength together' class community poster celebrating everyone!

Watch and listen together You Matter – You Matter by Christian Robinson READ ALOUD ~RING AROUND RONINA~ - YouTube

Ensure children are provided with healthy meals in your setting.

CGPSE (CCEA 2018, p.13) Adults should *"promote good habits for life such as healthy eating, dental care and physical activity."*

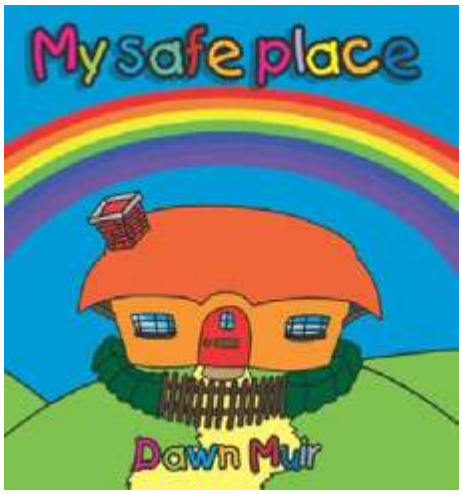
Introduce a range of different foods for the children to try. Help the children to recognise what foods are good for them and which ones are not.

Sort and classify foods which are good/bad. Link to healthy teeth and caring for themselves.

Link here to SDG 4 Quality Education – providing opportunities to question. Link to SDG 2 Zero Hunger with food choices.

Images credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

Read together: My Safe Place by Dawn Muir.



My Safe Place follows a small boy over the course of a year. A child who goes from being withdrawn with low self-esteem to believing anything is possible.

CGPSE (CCEA 2018, p.13) *"be aware of and foster their own positive mental health and that of the children and their parents/ guardians/carers."*

Develop a space in your setting either inside or outside where children can go and sit quietly – or be alone.

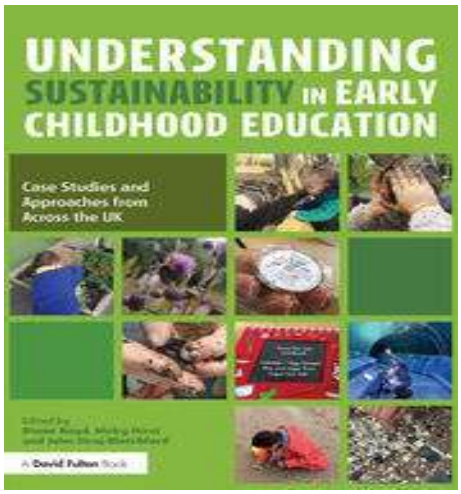
Ensure you encourage 'me' time. See: Why All Settings Should Have A Calm Down Corner – Early Years Careers

Encourage children to talk about their feelings and to recognise how it may be represented in their faces. Set up a provocation for children to experiment and visualise states of emotion.

Images credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

Encourage children to lie down outside in the grass and look up at the sky and trees, and feel the connection to their world.

Suggested reading for educators to understand sustainability across UK with a chapter on NI (Chapter 2) and how they can support children's wellbeing and healthy living:

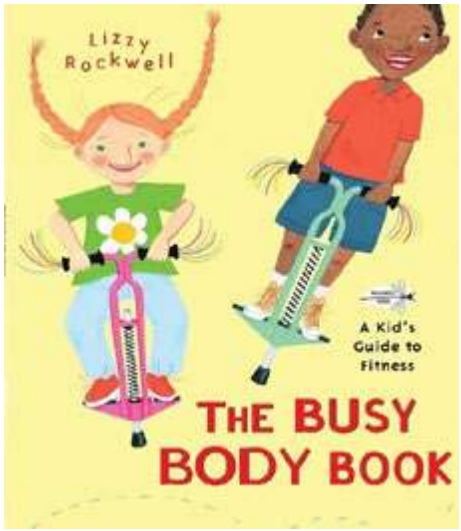


Understanding Sustainability in Early Childhood Education | Case Studi (taylorfrancis.com) Edited by Boyd et al.

A useful link here to SDG 4 Quality Education through the environment we provide.
What is Nature Play? – Nature, Our Medicine (natureourmedicine.com)

Define wellbeing and what that means. Think about the science behind their bodies.

Read together: The Busy Body Book – A Kid's Guide to Fitness by Lizzy Rockwell.



This book explains how your bones and muscles, heart and lungs, nerves, and brain all work together to keep you on the go. Link to nature and how they feel outside.

Yoga/mindful/exercise sessions can be incorporated into the daily practice. Ensure children talk about their feelings together.
Let the children monitor their progress as a science task – if they can do the poses – how do they feel before/after? Look for physical changes too – red faces, sweaty skin, and the need for clean water!

Five Minute Move for Early Years with Joe Wicks: Five Minute Move for Early Years – YouTube

The 'early years' of educating children are critical for life at school and life in general. Part of this includes helping children to have good mental health.

The Government highlights here the importance of a child's holistic health:

Image credit: GOV.UK/Image credit: the Victoria Inclusion Agency, Australia

These activities are designed to support early years children with their mental wellbeing.

Supporting children's anxiety issues should be included here – Emotionally Based School Avoidance (EBSA) and ways in which schools/settings/educators and parents could support children in gaining access to learning:

Emotionally Based School Avoidance (EBSA) | Support Services for Education

Links to SDG 4 Quality Education. Introduce the term "eco-anxiety" and ask the children what they think it is.

An interesting read for educators on eco-anxiety: A climate of anxiety – The Lancet Child & Adolescent Health

Talk with children about their fears about the planet. Be mindful when discussing 'fears'.

Discuss the wider implications of how Covid-19 impacted on the children – loss of friends, grief, or loss in general.

Educators read: Consider the research from Caroline Hickman about eco-anxiety, including recent articles for The Conversation: I'm a psychotherapist – here's what I've learned from listening to children talk about climate change (theconversation.com)

Develop a feelings tree whereby children can share their thoughts and feelings within a trusting and safe environment. Encourage both boys and girls to be open with their feelings.

Image credit: Riverside Nursery, Edinburgh, Scotland

CGPSE (CCEA 2018, p.9) *"ability to recognise and begin to manage emotions and feelings"*.

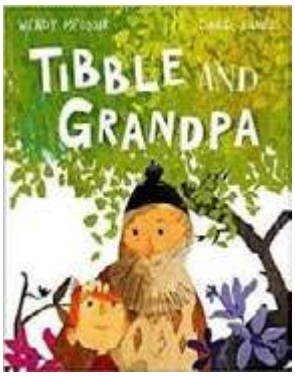
Create and maintain sensory bins enabling young children to regulate their emotions and take time away from busy social situations.

Read this Lego Book created by pupils at Glenveagh School Belfast (and recommended by EANI) to understand their emotions: https://www.eani.org.uk/sites/default/files/2020-07/STRESS%20CHECK.pdf

CCEA have also developed a range of thematic units around the topic 'To Be Me'. These encourage children to consider their behaviours, feelings and emotions and are available here: https://ccea.org.uk/learning-resources/be-me-thematic-units

Additionally, ParentNI have developed a useful website for parents and teachers to help children understand and deal with their emotions, and how to talk about mental health with young children: https://www.parentingni.org/resources/parenting-ni-app/emotions/

After Covid-19, children may need more support to discuss death and loss to help them overcome their grief.

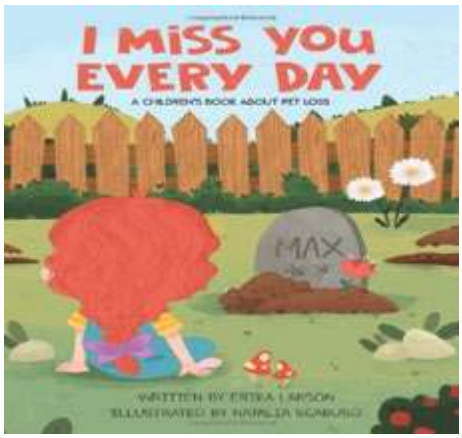


This book, Tibble and Grandpa, written by Wendy Meddour, supports children in this natural process Grandpa is grieving, he hides away in his garden. He needs time. But he also needs love. Tibble is full of love and shows Grandpa that remembering the people we love can be a wonderful, funny, poignant thing.

Link here to SDG 4 Quality Education – enabling environments and how the natural world supported children through this time.

Another useful story is Badger's Parting Gifts, which is useful for discussing grief with the youngest children.

Discuss the death of pets and the relationship children have with them. Reflect on the therapeutic benefits of a pet. Audit the group to find out who has a pet and the names given. Ask the children to share photos of their pet and how their pet makes them feel.



Reflect upon the book I Miss You Every Day by Erica Larson and discuss with the children.

Losing a pet is difficult. We grieve, we miss them, we can experience a sense of emptiness and loss. We may feel depressed, numb, lost, or angry. All the thoughts and feelings that arise are a natural response to loss.

Children are usually very emotionally attached to their pets and may not yet fully understand the subject of death. They can feel a variety of emotions after the death of a pet including sadness, loneliness, anger, or frustration that the pet couldn't get better, or guilt about times that they were mean to or didn't care for the pet as promised. This book seeks to help children understand that it's natural to feel all their emotions after they lose a pet.

Make a setting book of loss or safety – what important things both living and non-living are important to children? Consider teddies, blankets, thumbs – all the secure supporting items that children

need alongside human or non-human relationships. Do not use terminology such as "big boys don't cry" or "big girls don't need to suck their thumb" – be mindful!

Educator information: Emotional Health and Wellbeing | Department of Education (education-ni.gov.uk)

Children and Young People's Strategy Published | Northern Ireland Executive

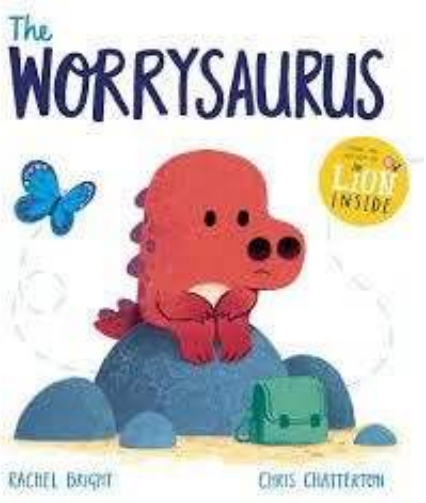
In Australia, for example, there is a website (Birdie's Tree) which supports children's wellbeing through disasters/emergencies such as Covid-19 – link to SDG 13 Climate Action (see an example below).

What is Birdie's Tree? (health.qld.gov.au)

Birdie's Tree is a suite of resources to help families prepare for, cope with, and recover from a natural disaster. Birdie's Tree particularly helps to support the mental health and emotional wellbeing of expectant and new parents, babies, and young children.

After Covid-19, it is important to talk about any worries and not keep worries to yourself. A suitable book that could support this is:

Read The Worrysaurus by Rachel Bright – a fun and reassuring tale about dealing with worries.



Children also enjoy the concept of the 'Worry Monster' or 'Worry Fairy' – a character or animal they give their worries to in the classroom.

3.6 By 2020, halve the number of injuries from road traffic accidents.

Watch together and discuss: CBeebies Grown-Ups: Hoof and Safety Tips for Crossing Roads - YouTube

Plan simple road safety rules for your school/setting. Ask why children think there so many road accidents. Go outside and look at the road markings outside the school/setting. Design a poster to put up outside or a safety video to share with other classes. Look at road technology – such as traffic lights – in what order do the lights change? How long do you get to cross a pelican crossing? Pose questions about how different aged people will take longer/shorter time to cross the road.

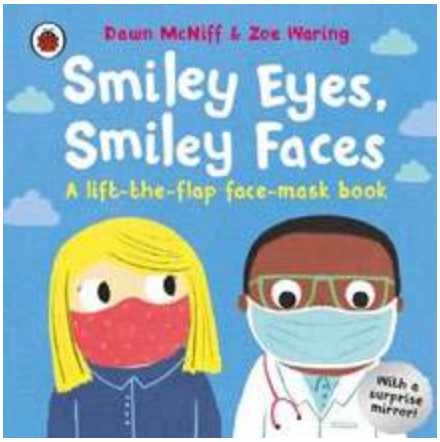
Ask the local lollipop person to come in and share their rules. Look at reflective materials and try them out in the dark. Make a reflective coat for a puppet – which colour and material is most effective?

Use small cars/lorries and different levels to see how cars can go faster or slower depending on gradient. Reflect upon the silence of the electric car and the fact it is so quiet, and discuss the importance of looking carefully and their safety as a result. Statistics show more accidents occur because of the silent electric car.

3.B Support the research and development of vaccines.
Coronavirus - advice and updates | PACEY

This is a significant target which is important to highlight, as this is linked to their mental health/mindfulness. After Covid-19, children will know or be aware of terminology around about jabs, death, isolation, and quarantine. Be open and talk about these and find out how children feel. Follow the line of enquiry.

Read together: Smiley Eyes, Smiley Faces by Dawn McNiff.



Toddlers today are growing up in a world where adults wear face masks outside the house. Everyone is wearing them – from the bus driver to the shop assistant!

Design germ posters or a video to promote hand washing, cleanliness, and food preparation.

The global pandemic has had a considerable impact on children and young people, it is important for educators to discuss this with the children in an age-appropriate manner and discuss what the language around Covid-19 means and in fact, other traumatic situations that may affect the mental health and wellbeing of the children. When words that are being heard are explained and understood, we can try to reduce the detrimental impact on the child.

See resource: Coronavirus-A-Book-for-Children.pdf (nosycrow.com)

E-Bug resources, developed by Public Health NI, include some activity inspiration to explore health and hygiene. Activities such as using squeezy sports bottles and slime to emulate sneezing, and glitter on hands to show germ transmission could be used in the early years classroom.

Links to SDG 4 Quality Education.

A key aspect of climate change is the notable increase in temperatures across the world with record highs being noted.

Explore with the children different images from around the world of sunny places and compare/observe characteristics of heat. Reflect on the news highlighting heat waves in Northern Ireland – what does it mean practically and physically? Heatwave: Northern Ireland could face highest temperature on record - BBC News

Compare heat waves in Northern Ireland with extreme temperatures in other countries. Use maps to highlight where the countries are.

Australia heatwave: All-time temperature record broken again - BBC News

For example: dry arid ground, no water and animals dying, plant life struggling, and the possibility of bush fires.

But what should the children be doing to keep themselves safe in this heat?

Ensure children understand the need to be hydrated and have suncream on. Follow the five SunSmart steps below!

1. **Slip on covering clothing**. Use loose-fitting clothing that covers as much of your child's skin as possible.
2. **Slop on SPF30 (or higher) broad spectrum, water-resistant sunscreen** to any part of their skin not covered by clothing. Apply sunscreen 20 minutes before going outside and reapply every two hours. (Note: The widespread use of sunscreen on babies under six months is not recommended. It is better to keep your baby out of direct sunlight when the UV index is 3 or higher. If

using sunscreen on babies, do so very occasionally, on very small areas of skin, and use a baby, toddler, or sensitive skin formula.)

3. **Slap on a broad-brimmed hat** that shades the face, neck and ears. Caps do not provide enough protection and are not recommended.
4. **Seek shade**. Remember some UV rays can still reach you in the shade, so continue to use all forms of sun protection.
5. **Slide on wrap-around sunglasses**. Make sure they are labelled AS 1067 so you know they have very good UV protection. Toy sunglasses do not protect the eyes are not recommended. Some retailers sell baby sunglasses with a soft band that holds them in place on baby's head; always supervise your baby to ensure they don't pose a strangulation hazard.

Sun protection is for everyone. As a parent or carer, following the SunSmart steps yourself means you are role modelling SunSmart behaviour and staying safe at the same time. Draw up a list of sensible sun strategies together such as sitting in the shade – and ask when is the hottest time of the day and why? Should we drink water – and why? Why should we check in on our friends and family – and what about our pets and wild animals? How do they stay safe?

Hot weather and child safety - Better Health Channel
Credit: Victoria Government, Australia

Watch these videos to support this message and stay safe and healthy!

Slip! Slop! Slap! - The Original Sid the Seagull Video - Bing video
Slip, Slop, Slap and Wrap Song | Learning for Kids - Bing video
Slip, Slop, Slap song (Sun Safe Nurseries national accreditation programme) - YouTube

Read together and discuss this e- book together about the dangers of sunburn!

Ouch! Sunburn Pages 1-27 - Flip PDF Download | FlipHTML5

Drawing on plant-based thinking and indigenous culture, recognise the possibility of plant-based medicinal care. Revisit Irish history and culture of the Celts: TRADITIONAL IRISH HEALING HERBS – Bucklebury

Investigate plant-based medicines and connect to nature; boost your health and heal our planet!

Home - Nature, Our Medicine (natureourmedicine.com)

CGPSE (CCEA 2018, p.21) Children should *"talk about their own personal safety, keeping safe in the home and community, safe places to play, the dangers of traffic, and dangerous features in the environment such as water or farm machinery."*

Dangerous Playgrounds is a video created by The Health and Safety Executive for Northern Ireland (HSENI) to teach children about the dangers of being on the farm. This can be shared with children specifically in rural areas. Why might we not play near tractors or other farm machinery? Why should silage and slurry pits be avoided? Why should we not play close to the animals?

Watch the full video at: https://www.youtube.com/watch?v=nQmUWTwaSeY

More information is available here: www.hseni.gov.uk/child-safety-on-farms-campaign

Sustainable Development Goals (UNESCO, 2015)

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Possible examples of Quality Education STEM provocations:

4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education.

4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations.

FS (CCEA 2007, p.3) *"Schools have a responsibility to provide a broad and balanced curriculum for all children and schools should*

aim to give every pupil the opportunity to experience success in learning and to achieve as high a standard as possible."

Fabulous eBook on children's rights to share within the setting: Lets_Explore_Our_Rights_2023.pdf

What does "access" mean in this case? Discuss "access" as a right to all. Watch together and discuss "what is a right?" What does inclusive mean? Watch: The UN Convention on the Rights of the Child (UNCRC) - YouTube

Brainstorm and discuss words and actions that offer choice, and understand consequences and rules – linked to SDG 3 Health and Wellbeing.

Pose questions with the children to support their dispositions of learning.

Image credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

STEM is an aspect of quality education as it provides transferable scientific problem solving, creativity and divergent thinking.

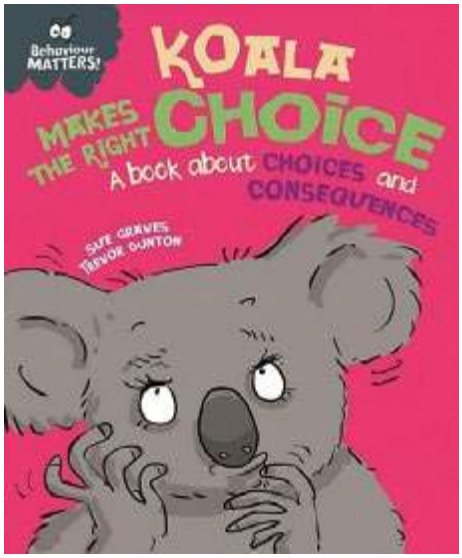
Link here to **UNCRC (1989) articles 12 and 13** that children have a right to be heard and listened to.

The Convention on the Rights of the Child explains who children are, all their rights, and the responsibilities of governments. All the rights are connected, they are all equally important and they cannot be taken away from children.

Create or display the child friendly UNCRC as a poster in your setting.

https://www.unicef.org/media/56661/file

Read together: Koala Makes the Right Choice: A Book About Choices and Consequences (Behaviour Matters) by Sue Graves.



The International Early Years Reggio Emilia approach from Northern Italy recognises children as rights holders and decision makers. The practitioners and children are equal co-researchers following lines of enquiry through multimodal ways of learning, visible thinking, creativity, and projects. The Mosaic approach (Alison Clarke) also recognises the children as decision makers and through technologies provides the children with a voice. Research these approaches and consider how you can incorporate aspects of them through children's rights and empowerment into your practice.

Technology – Mosaic approach
Interesting read for students and practitioners: Extract -The Mosiac Approach.pdf (learningaway.org.uk)

4.4 By 2030, substantially increase [...] relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship.

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including (among others) through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development.

Research has shown that all fundamental values and attitudes are formed in early childhood. Children need to be prepared for the future world and that means providing them with opportunities that are both vocational (practical use of tools) and technical (can utilise technology in multimodal ways of learning), and that through the characteristics of effective learning they can become creative, resilient, investigative, and prepared to have a go. STEM provides all these opportunities.

Educator read: https://www.eco-schoolsni.org/eco-schoolsni/documents/007191.pdf

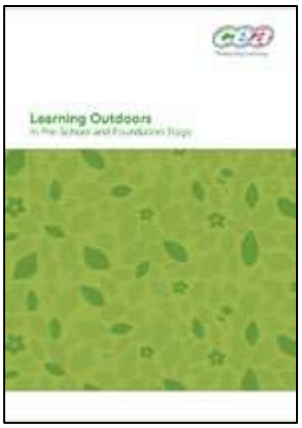
The Eco-Schools programme in NI has been running since 1994. It "provides an ideal way for fostering environmental awareness in the entire school in a way that links to many curriculum subjects. The primary aim of the Eco-Schools programme is to educate and empower young people to make positive decisions and become change makers for an environmentally sustainable world." Learn more at https://www.eco-schoolsni.org/cgi-bin/generic?instanceID=1

Similarly, the Northern Ireland Forest School Association (NIFSA), promotes children's learning in the local outdoor forest setting.

Rangers visit schools to provide sessions, there is a forest school site in Clandeboye Bangor that schools can visit, and NIFSA also offer education and accreditation for teachers to set up forest school provision across primary and pre-school settings in NI. More information is available at https://www.forestschoolsni.com/forest-school

Watch a video about Forest Schools and the Early Years here: www.youtube.com/watch?v=dvw5398udEQ&t=12s

A big push in Northern Ireland since Covid-19 has been outdoor learning, particularly in the EY. In 2022, CCEA updated and extended their Outdoor documentation to explore the progression of outdoor learning from pre-school into Foundation Stage https://ccea.org.uk/learning-resources/learning-outdoors-pre-school-and-foundation-stage



A quality education should have children learning and playing outdoors. The outdoors *"provides children with an abundance of learning opportunities to develop negotiation skills, problem-solving, self-regulation strategies, social skills, and healthy relationships with their peers and adults, while creating a sense of adventure."* (CCEA 2022, p.4)

According to CCEA (2022), young children's basic need for wellbeing and involvement, and their urge to explore and make sense of the world, are developed through high-quality play outdoors. Link back to SDG 3 Good Health and Wellbeing.

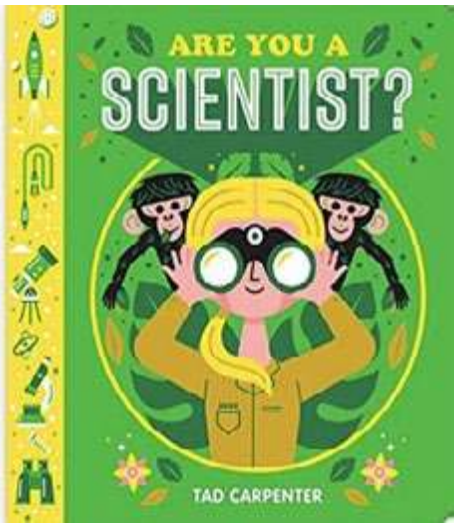
In addition, the outdoor environment presents the ideal context to explore topics associated with the environment. *"When the children are outside, they will have opportunities to think about their role in looking after the world around them in their local context. This may include having conversations about eco-awareness (litter and*

recycling), pollution, minimising waste, sustainability and climate change." (CCEA 2022, p.4).

Link to SDG 13 Climate Action and SDG 12 Sustainable Cities and Communities.

STEM is about children using both mathematical and scientific experiences to investigate and explore differences, similarities and analyse the information. Provide camouflage materials to use outside in the garden so the children can experience this – or alternatively create dens "hidden" from eyes! Ensure your reading library has books that reflect STEM activities. Encourage parents and families to engage in reading at home and share books to take home so children can extend thinking further.

Read together and discuss: Are You a Scientist? by Tad Carpenter.



An engaging and super-cute STEM-themed lift-the flap introduction to famous scientists like Jane Goodall, Stephen Hawking and Mae Jemison! Jane wants to watch the chimpanzees. What tool does she use? Binoculars! In this simple, boldly illustrated lift-the-flap board book, little readers will discover simple facts about five different scientists, each in a different field. Kids will meet Jane Goodall, Marie Curie, Stephen Hawking, Mae Jemison and Charles K Kao. Each spread describes something scientists do or study, then includes a satisfying lift-the-flap that reveals a scientist in action using a familiar tool! A perfect introduction to exciting science role models.

This links to SDG 5 Gender Equality on perceived roles.

The My First Heroes set introduces children to artists (creativity), inventors (all aspects of STEM), explorers (science), ecowarriors (science), and space (STEM). Push, pull and slide the scenes to find out about Archimedes, Patricia Bath, George Stephenson and Hedy Lamarr, and be inspired by their incredible work. With scenes to explore, fun facts to learn and bright, bold illustration by Nila Aye, this is the perfect introduction for inquisitive pre-schoolers to these amazing inventors.

Can the adult set up provocations to encourage scientific thinking and investigation? Help the children to appreciate the world's place in the universe.

Image credit: Little Mini Lighthouse Family Day Care, Victoria Australia

What is beyond our world? Can children make craters and mountains on the moon in their outdoor large scale construction area?

Image credit: College Farm Nursery, Armagh

Pose questions for them to consider, reflect and think creatively. Ensure your reading library has books that reflect STEM activities. Encourage parents and families to engage in reading at home and share books to take home so that children can extend thinking further.

Within Steiner Waldorf kindergartens, children are introduced to warm technology. These are everyday appliances which they must use, clean and mend when necessary. They learn sustainable skills such as wool felting, sewing, knitting, weaving and understand about responsibility to the planet. Examples of warm technology which you could also incorporate into practice are a corn grinder, mortar and pestle, and wool fleece brushes.

(Link here to SDG 8 Decent Work and Economic Growth)

View this easy guide to make connections to Steiner education: Guide_to_the_EYFS_in_Steiner_Wardorf_settings1.pdf (foundationyears.org.uk)

Ensure both girls and boys are given equal access to engineering activities (SDG 5 Gender Equity) within the setting. Consider your

enabling environments and ensure children have the time and space to design, create and recreate buildings and structures.

Encourage the children to create obstacle courses with recycled materials such as milk crates and tubes that demand a range of movements to complete. Design a map detailing the course using visual mark making and encourage the children to articulate the routes.

Provide resources such as complex train tracks, with loops and bridges, or water-flowing challenges with guttering that direct the flow to a water tray, which encourage children to play creatively with water and explore its properties.

Create a water wall for children to use, interact with and adapt.

Image credit: College Farm Nursery School Armagh/Image credit: Pinterest

Add guttering and piping with some shelving to adapt your water tray experience. How does the water move? Where does it move most quickly?

Image credit: St. Patrick's PS, Glen, Twitter

Encourage children to use a range of equipment – this might include wheeled toys, wheelbarrows, tumbling mats, ropes to pull up on, spinning cones, tunnels, tyres, structures to jump on/off, den-making materials, logs and planks to balance on, A-frames and ladders, climbing walls, slides and monkey bars.

Provide loose parts in children's play to encourage creativity, critical thinking and problem-solving. Bottle babies, whilst having numerous, uses are a great resource for the construction of bridges and roads:

Image credit: St Patricks' PS Glen, Twitter

Alternatively, tree stumps, planks of wood, tyres and cones can all be used by children to make their own play worlds.

CCEA (2022b, p.8) *"There should be a degree of flexibility in the environment for play. Children should be permitted to move items from one area of play to another."*

The use of loose parts in play is becoming more and more common where children can build, create and develop their own play worlds.

Image credit: Windmill Integrated Nursery School – Teacher Blog at http://nosuchthingasbadweather.blogspot.com/

Use large scale materials to build their own towns.

Resource the setting to provide different styles of building/ construction materials that challenge both gross and fine motor skills.

(SDG 8 Decent Work and Economic Growth and SDG 9 Industry, Innovation, and Infrastructure.)

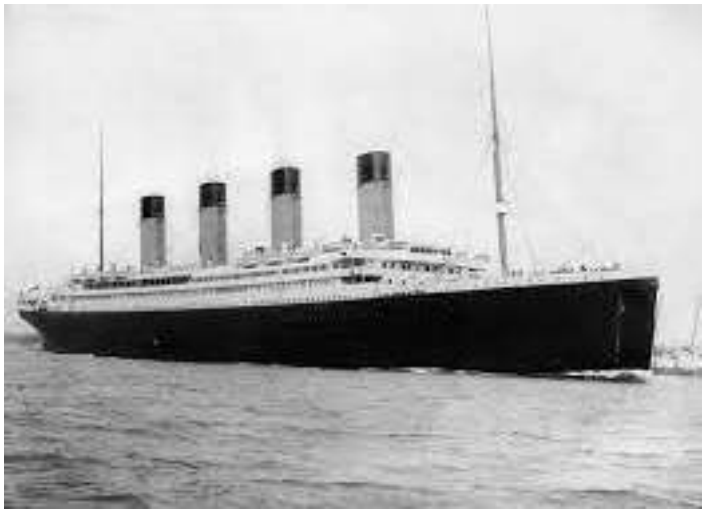
Educators' information on schematic play:

Schemas: learning through play | Learning at home | Parent Zone (education.gov.scot)

Schemas | PACEY

Original early years pioneer Froebel's gifts inspired architect Frank Lloyd Wright: https://www.froebelweb.org/web2000.html

Froebel always encouraged children "not to knock down" creations but to stop, evaluate, revisit and redesign if necessary. This is the beginning of critical reflection.



Research famous historic aspects of Northern Ireland and ensure all children understand the history behind narratives heard and seen. For example, the Titanic: Titanic Belfast.

Titanic: A child survivor's story - Bing video

Titanic | The Story Lives On | Stories for Kids - Bing video

With the children, research about the famous ship and reflect upon what happened to it. Build the Titanic using different materials. Talk about how and why things sink. Investigate sinking and floating

activities. What might have sunk or floated in the water as the ship sunk? Re-create the sinking of the ship using ice cubes. An example provided by Titanic Belfast - titanic-belfast-paper-bowl-jellyfish.pdf (titanicbelfast.com) and titanic-belfast-tin-foil-boats.pdf (titanicbelfast.com).

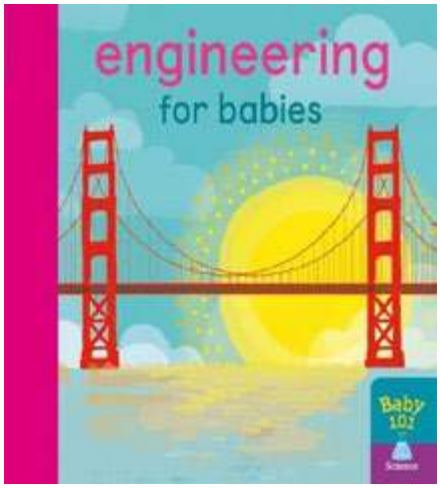
Visit the Titanic exhibition as a class group – go on the bus and use real money to pay the entrance fee and to buy Titanic pictures or other souvenirs. Visit the shop beforehand and share with the children's examples of what they could buy as a class/setting to remember the Titanic.

Economic Sustainability is one of the 3 pillars and ensuring children use real money is crucial. In place-based learning, children should engage with their communities and know them. A key element of the FS curriculum (CCEA 2007) is the recognition of place in pedagogy.

For example, visit the local Greengrocer to buy fruit and vegetables for a snack, the librarian to hear stories, the baker for bread, etc. By using real money in real contexts, children start to appreciate the value of money - revisit SDG 1 No Poverty and not just think a plastic credit card is the only method of payment.

Ensure your library or reading basket has a variety of STEM texts to engage the children – such as Engineering for Babies by Jonathon Litton.

It's never too early to get an A* in engineering! Here's a fun new board book series that introduces a wide array of non-fiction subjects to babies and toddlers. Babies will love learning all about engines, bridges, and tunnels, and how they are made.



4.6 By 2030, ensure that all [...] achieve literacy and numeracy.

All learners need to have the basic competencies to read and count. See the prime areas of communication and language and the two specific areas – mathematics, and literacy.

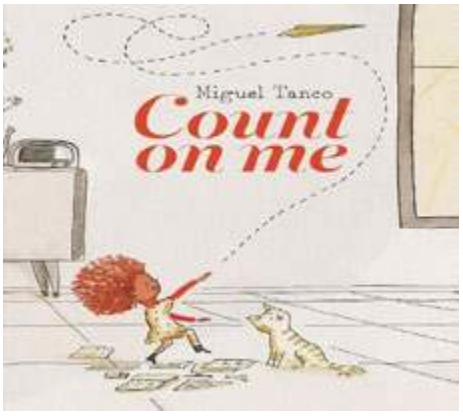
FS (CCEA 2007, p.6) *"use mathematical understanding and language to ask and answer questions, talk about and discuss ideas and explain ways of working"*.

The Reggio Emilia approach advocated the use of child-initiated projects through multimodal ways of learning. Using thinking pads (A3 art pads) provides opportunities to document investigations/ thinking visibly – but the children must make the marks. By encouraging children to articulate their thinking and see the visibility of it on paper, this will help them to make the connections between speech and literacy. Through the projects, children can engage in many ways of using both numeracy (audits/tallies/ estimations) and literacy (posters, stories, experiments) in authentic ways.

Education is about providing new experiences for all children that are not gender specific, but inclusive. Engineering tends to be seen as a male career and quality education is about smashing these inequalities (Link to SDG 10 Reduced Inequalities).

Use Google maps to research the different styles of bridges in Northern Ireland – how many shapes can you see in each structure? How do they stay up? Compare the materials used in older bridges (brick/cement) with new technologies and designs – for example, Shaws Bridge, a sandstone bridge with local history to research. Encourage children to "see" their home environment.

Links to SDG 9 Industry, Innovation and Infrastructure and SDG 16 Peace, Justice and Strong Institutions (Peace Bridge Derry or Londonderry) – reflect on language here too.



Share Count on Me by Miguel Tanco and help children to see that maths is about patterns.

A young girl sees the world differently in this beautiful picture book celebration of maths. Everyone has a passion. For some, it's music. For others, it's art. For our heroine, it's maths. When she looks around the world, she sees maths in all the beautiful things: the concentric circles a stone makes in a lake, the curve of a slide, the geometric shapes in the playground. Others don't understand her passion, but she doesn't mind. There are infinite ways to see the world. And through maths is one of them.

Maths is not just numbers, but shapes and patterns too. Look for patterns in their locality – place-based education.

What patterns are on pavements, trees, leaves, tiles, and animals? Use the correct terminology – symmetry, spiral, concentric, etc.

In your setting, provide patterned material such as gingham, polka dots, stripes etc as creative resources – and small objects to arrange in patterns. Model words like "repeated" and "the same" over and over. Use display tables to highlight research into patterns on indigenous animals and birds. Discuss the idea of camouflage as a protection in the wild. Compare animals in different habitats using digital technologies demonstrating patterns in the wild.

Research the environment in your locality and look for features of patterns. Ensure children have opportunities to feel as well as see the textures if possible. Northern Ireland is home to some fascinating environmental patterns – the most famous being the Giant's Causeway. Using Google Maps, explore the Causeway and define the different 3D shapes that make up the Causeway. Use recycled materials and recreate the Causeway – bring your Irish history and geography to life. Use different angles to explore – from the side and from above – all are mathematical language descriptors.

Giant's Causeway and Causeway Coast UNESCO World Heritage Site: Economic Analysis of Financial Worth – UNESCO UK

Revisit Inspired Learning and utilise the ideas of facilitation.

The SHARMED Project 2016-2018 Shared Memories and Dialogues

https://www.sharmed.eu/uk-international/project/

The SHARMED research project with children in schools was based on the following conceptual dimensions: narratives, meaning of memory and sharing of narratives, engagement with photographs, facilitation, intercultural communication and cultural identity, and conflict management. These dimensions were observed and explored through facilitative engagements with children. The aim was to use facilitation to open up spaces for children to share their knowledge, memories and cultural identities. Facilitation is a method that enables dialogic pedagogy to underpin communication, interactions and creative expression. Scollan (2021) argues that dialogic pedagogy is based on equality between participants who are all positioned as legitimate authors of valid knowledge. Listening to children in dialogic pedagogy positions children as agents in educational interactions, as authors of valid knowledge for them and the adults, rather than recipients of adult-led education (Dahlberg & Moss, 2005; Lansdown, 2005; Rinaldi, 2005, 2012). As suggested by Rinaldi, dialogue is not merely

a communicative exchange, but it is a co-constructed process of transformation based on authentic listening where the possibility of controlling the outcome of communication is prevented by the active role of the 'other' (Rinaldi, 2005:184).

SHARMED research was undertaken across six European countries with 987 children in 48 classroom environments in 20 schools. 192 SHARMED activities aimed to promote new experiences of teaching and learning in multicultural classrooms, with specific consideration given to respect of cultural differences and promotion of intercultural dialogue. Dialogic pedagogy underpinned engagement with children using facilitation to open up and co-create spaces for children to talk about their lived realities and experiences. 1683 photographs were either taken by children or shared by them to narrative their stories, their lives, their identities and their thoughts. The project promoted children's inclusion and learning, by encouraging children's work on their personal and cultural memories, and children's participation in dialogue in classroom, telling and negotiating stories of themselves and their background.

Facilitation was used to create environments that enable and attuned relationships to:

1. give a voice to migrant-background children and their classmates
2. foster motivation
3. provide personalised support for learning
4. develop participative approach's to learning
5. strengthen collaboration between children's families, schools and environments.

SHARMED aims were to promote children as powerful learners who can make progress in their learning, with each other through authentic listening, throwing out nets to encourage participation, guided learning and direct leading.

SHARMED findings, publications, CPD and online MOOC training to support the use of facilitation with children can be accessed free via the SHARMED webpage at: https://www.sharmed.eu/uk-international/project/

Sustainable Development Goals (UNESCO, 2015)

Achieve gender equality and empower all women and girls

Possible examples of Gender Equality STEM provocations:

As educators, helping children to recognise who they are and that they can be empowered learners, regardless of identity.

In the CGPSE (CCEA 2018, p.13) *"children should have opportunities to explore situations and express feelings in a way that is not gender specific and to challenge stereotypes."*

5.1 End all forms of discrimination against all women and girls everywhere.

Global Learning NI encourage sharing the story of Malala Yousafzai within their 'Girls in education' resource available here: https://www.globallearningni.com/uploads/general/EconomistFoundation_BC_Girls-in-Education_4.pdf.

Early years teachers can explore and use the resource in a way appropriate to the age and stage of their pupils.

5.3 Eliminate all harmful practices, such as female genital mutilation.

5.4 The promotion of shared responsibility within the household.

The preschool guidance (CCEA 2018, p.13/14) states that adults should promote *"positive role models of the sexes; encourage both sexes to take on leadership roles and to talk with adults about traditional and nontraditional roles; encourage all children to play with the full range of toys and equipment available to them in the setting; encourage all children to take part in all types of role-play; and organise routines so that they are not gender specific."*

Whilst discussing shares/sharing, highlight that participation is also equitable. Develop room/class rules and encourage all to think of how they could look after their shared space together. Emphasise the importance of community here – develop relationships with different groups, e.g. litter patrols.

In NI, the early years workforce is predominantly female, and adults must therefore be careful to consider boys in play and the types of play they set up to ensure that boys are encouraged and engaged. Consider the play narrative, resources and setup ensuring it appeals to both genders.

Image credit: St Patricks PS Glen./Image credit: College Farm Nursery School, Armagh.

5 b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of (girls) women.

As educators plan and introduce new vocabulary that is related to trades/occupation and encourage/model it to children in their speech and play. Consider opportunities to challenge gender and other stereotypes (Link here to SDG 10 Reduced Inequalities).

New terminology – empower – gender – equality.

This goal highlights the need for both boys and girls to recognise that equal opportunities must be offered to everyone. How do you demonstrate equality?

This is a maths problem – use practical means to demonstrate what is equal.

For example, a cake/pizza is cut into uneven slices – share out – discuss whether this is a fair distribution. If not, why not? How do we rectify it? Help children to understand that equal must mean shared for all. Ask them to talk about any times they felt something was not fair, or was inequitable? Try to use the correct language.

Model and help children to extend their thinking and ideas through sustained shared discussion that goes beyond what they, and you, have noticed. Consider "how" and "why" things happen.

Watch together: Equal Parts for Kids - YouTube

Maths: Give Me Half! by Stuart Murphy:
Give Me Half! by Stuart J. Murphy - YouTube

Introduces the children through a story of fractions of ½ and a whole, plus symbols = and + – consolidates fair/equal/share.

Follow on activities:
Give Me Half! (mathstart.net)

Read a selection of books together that introduce new terminology to the children. Pose questions before you start. What is a feminist? What is gender?

Read: Baby Feminists by Libby Babbot-Klein (ages 2-3).

What do Ruth Bader Ginsburg, Mae Jemison, Frida Kahlo, Barack and Michelle Obama, Gloria Steinem, Dorothy Pitman Hughes, Billie Jean King, Yoko Ono, and Malala Yousafzai have in common?

They're all feminists, and they were all once babies! This irresistible and timely board book invites you to lift the flap and discover what your favourite feminist icons might have looked like as babies and toddlers, with an inspiring message that any baby can grow up to make the world a better place for all genders.

You need to emphasise that all girls can do whatever they want (as can boys) – try to have a gender-reduced setting with boys allowed to freely draw/dress up in dresses and girls to build.

As educators, ensure you provide a variety of construction materials like blocks and interlocking bricks for creative play. Provide den-making materials. Allow children to play freely with these materials, outdoors and inside. When appropriate, model mathematical language about the shapes and how their properties suit the purpose.

Occasionally suggest challenges, so that children build increasingly more complex constructions.

Image credit: Evie Boyd

Ensure that resources reflect the diversity of life in modern NI.

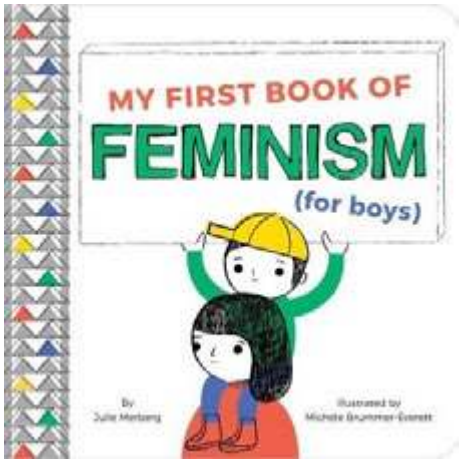
Barack and Michelle Obama are the executive producers introducing you to Ada Twist the Scientist – challenging stereotyping of roles and gender: Ada Twist, Scientist [FULL EPISODE] Cake Twist and Garden Party | Netflix Jr - YouTube

Avoid colour gender issues too – encourage boys to like pink and girls to like blue.

Find out favourite colours in the room/class, and mix and make colours in experiments. Look at catalogues and discuss the colours in toys for boys and girls. Audit favourite toys of boys and girls. Ask why they are their favourite. Unpick the idea of boy toys and girl toys. Find out if there are toys that they would like in the setting too.

Boys used to wear pink – here's when it changed:
Here's Why it All Changed: Pink Used to be a Boy's Color & Blue For Girls – The Vintage News

Read: My First Book of Feminism (for Boys) by Julie Merberg (preschool and up).

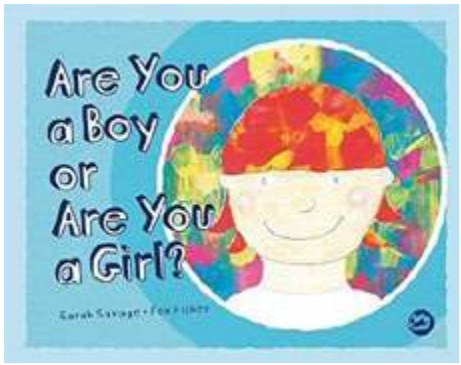


Simple illustrations paired with engaging, rhyming text make the compelling, age-appropriate argument that girls and boys are equal, plain and simple. Humorous scenarios are treated as teachable moments for very young boys (ages 0-3) who will ideally grow up without ever questioning women's equality.

Before/afterwards, talk with the children and find out roles/occupations of parents/family. Invite family members in to talk about their jobs.

Discuss with the children what jobs/activities they like and why. Develop a questioning ethos.

Read: Are You a Boy or Are You a Girl? by Sarah Savage and Fox Fisher (ages 3+).

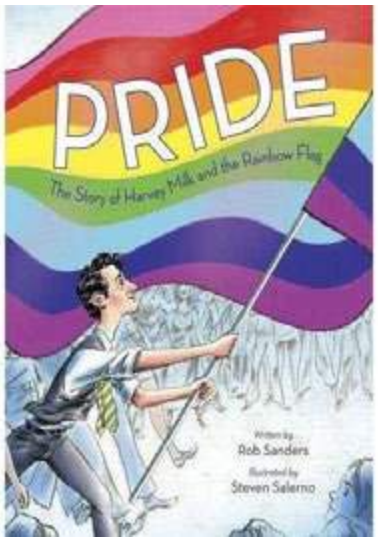


This colourful picture book follows Tiny, a child who likes dressing up and playing games, but doesn't like telling nosy people whether they're a boy or a girl. This book is a great starting point for parents to address the idea of gender identity with their children.

Before/afterwards, record with the children what they consider to be the differences or similarities of a boy and a girl. Pose questions for testing – are boys quicker at putting on their shoes? Can girls build a higher tower? All questions can have a STEM theme – but record/time and demonstrate how to visibly share results.

Link here to rainbows in SDG 13 but consider it from a LGBTQ perspective.

This text supports the discussion – read Pride: The Story of Harvey Milk and the Rainbow Flag by Rob Sanders.



The very first picture book about the remarkable and inspiring story of the gay pride flag by Rob Sanders. In this deeply moving and empowering true story, young readers will trace the life of the Gay Pride Flag, from its beginnings in 1978 with social activist Harvey Milk and designer Gilbert Baker to its spanning of the globe and its role in today's world.

Be open in your conversations – use provocations to encourage dialogue.

Credit image: Little Mini Lighthouse Family Day Care, Victoria, Australia

Reflect upon how there are different parenting and family dynamics in NI.

Text: Stella Brings the Family by Miriam Schiffere.

Stella's class is having a Mother's Day celebration, but what's a girl with two daddies to do? It's not that she doesn't have someone who helps her with her homework or tucks her in at night. Stella has her Papa and Daddy who take care of her, and a whole gaggle of other loved ones who make her feel special and supported every day. She just doesn't have a mom to invite to the party. Fortunately, Stella finds a unique solution to her party problem in this sweet story about love, acceptance, and the true meaning of family.

Northern Ireland has developed an anti-bias curriculum – this may offer some useful thinking to support SDG 5: https://www.nicie.org/schools/anti-bias/

NI has also developed guidance for relationship and sexuality education (RSE) which highlights the importance of creating a safe and inclusive environment for delivering RSE and promoting equality and respect for all children. Available here: https://ccea.org.uk/downloads/docs/ccea-asset/Resource/Relationships%20and%20Sexuality%20Education%20Guidance%20%E2%80%93%20An%20Update%20for%20Primary%20Schools.pdf

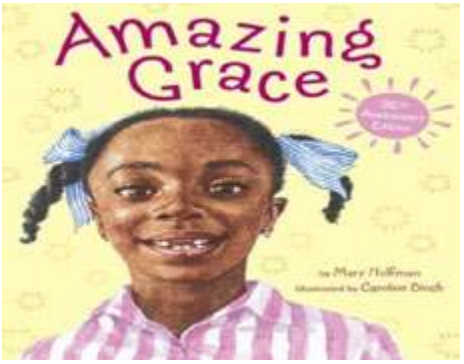
It is important children learn to think critically and challenge. Can girls and boys ask the same questions? What are the expectations of a girl/boy in school?

Ask the children to list key girls – what are they famous for? Help children here with images to help or books to read.

Consider the website - A Mighty Girl: Home | A Mighty Girl

What toys encourage gender equality? When can girls be boys – and vice versa? Reminder of parental considerations here in this sensitive topic- consider roles of girls in history – culture – what differences are there?

Read together: Amazing Grace Mary Hoffman



Grace loves to act out stories, whether they're from books, movies, or the kind her grandmother tells. Sometimes she plays the leading part, sometimes she is 'a cast of thousands.' When her school decides to perform Peter Pan, Grace is longing to play Peter, but her classmates say that Peter was a boy and he wasn't black, but Grace's Ma and Nana tell her she can be anything she wants if she puts her mind to it. Now Grace is determined to show everyone that she can soar!

Can girls be leaders? Can they think of any females that inspire? Is the Principal a lady? Invite in female community leaders to demonstrate they are as able (not good) as any man.

Can women lead a country? Consider political leaders.

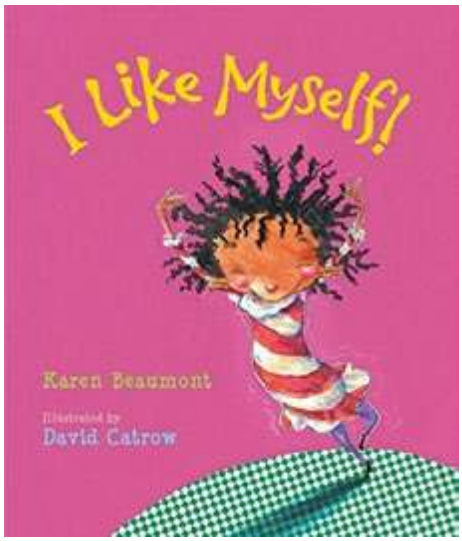
What do leaders need to be? List leadership qualities – are they gendered descriptors? Identify and research key female leaders!

To be empowered, children must be resilient, prepared to have a go and confident.

Encourage children to reflect upon themselves. Watch this video as an educator – use a mirror and flesh-coloured pastels to try the activity: Anti-bias lessons help preschoolers hold up a mirror to diversity - Bing video

Encourage celebrations of who we are. Use differences/similarities.

Read together: I Like Myself! by Karen Beaumont.



High on energy and imagination, this ode to self-esteem encourages children to appreciate everything about themselves – inside and out.

Activity to follow – ask each child to say something they like about themself and another child in their group. Decide how to record it – make a class book using different multimodal ways/technology and call it "We Like Ourselves!"

The message must be about empowerment and that we are all the same. Develop an ethos of kindness and listening.

Be open to what children say about differences and answer their questions straightforwardly. Help children develop positive attitudes towards diversity and inclusion. Help all children to feel that they are valued, and they belong.

FS (CCEA 2007, p.42) *"Understanding that everyone is of equal worth and that it is acceptable to be different"*.

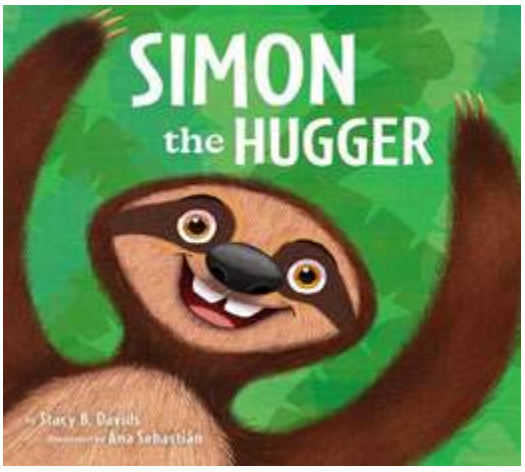
Model with the children, positive attitudes about the differences/ similarities between people, including differences in race and religion. Support children's acceptance of difference.

- Have a selection of resources which include:
- positive images of people who are disabled
- books and play materials that reflect the diversity of life in modern Northern Ireland including racial and religious diversity
- materials which confront gender and cultural stereotypes.

Introduce the idea of consent – what does it mean? Ask the children to think of times they wished the adult or other child had asked them if it was ok – to hug them/wipe their nose/tidy up. Ask the children to reflect upon how it made them feel.

Introduce the idea of rights. Revisit this if you have already discussed this in earlier SDGs.

Read together: Simon the Hugger by Stacy Davids.

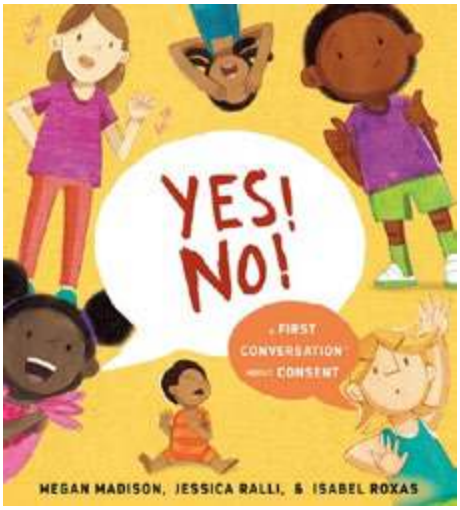


Simon the sloth loves to hug. He hugs plants. He hugs rocks. He hugs his friends. He even hugs himself! So, when his best friend, Elsa the jaguar, and others around him start saying no to his hugs, he is crushed. Why wouldn't someone want to be hugged? After being rejected several times, he learns that both he and his friends need to want a hug at the same time so they both feel comfortable.

This light-hearted story about a lovable, huggable sloth is a gentle introduction to the importance of receiving consent before offering physical affection to others, and respecting others' boundaries.

In a group discussion reflect on different ways of saying no/or yes. Remember nonverbal communication is 85% of our language. Show images to the children and ask how they might feel.

Read together: Yes! No! and Megan Madison and Jessica Ralli.



A supportive community is open, inclusive, and fair – pause and reflect on the images. Yes! No! is a first conversation about consent.

Ensure as part of the ethos of your setting you celebrate and include all religions and ways of community. When considering which texts to use in your setting reflect upon this guide, use: Guide for Selecting Anti-Bias Children's Books - Social Justice Books

CGPSE (CCEA 2018, p.10) Adults should *"organise children's learning in an atmosphere of mutual trust and respect."*

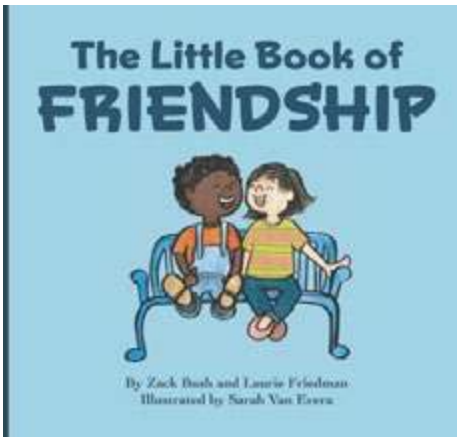
Reconciliation is a key aspect in Northern Ireland and again, drawing on socio-cultural pillars of sustainability, recognise and discuss this 'reconciliation' with the children.

What does it mean to them? Is it hard to be friends with everyone? What can stop you being friends? Sing friend songs on video – make up your own song with instruments.

Here are a variety to share! Friends Song | Verbs Song for Kids | The Singing Walrus - Bing video

This Is The Way We Make Friends | Kids Songs | Super Simple Songs - Bing video

Read together: The Little Book of Friendship by Zack Bush and Laurie Friedman.



Friendships are like flowers. If you take care of them, they grow and bloom until you have a beautiful garden! The Little Book of Friendship helps young boys and girls, pre-schoolers, and toddlers of all ages learn what they need to know about making friends, and how to be a good friend to others.

In NI, the media initiative 'Boys and Girls Come out to Play' encourages children to treat others equally, irrespective of race, religion, gender, etc.

A series of videos and sets of puppets allow teachers to introduce and explore these differences with their pupils.

Watch a sample video here: https://www.youtube.com/watch?v=dIuObteB1QE

Sustainable Development Goals (UNESCO, 2015)

Ensure availability and sustainable management of water and sanitation for all.

Possible examples of Clean Water and Sanitation STEM provocations:

Highlight the importance of clean water for all children and families.

Terminology: sanitation, pollution, conserve and contamination.

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

Discuss with the children why water is so vital for all living things, including non-human as well as human beings. Where do we get water from? Demonstrate the rain system of how we get water naturally.

Do the water cycle in a bag demonstration for the children and stick it to a window/door where children can observe what is happening.

Help children to understand the science of water.

Watch the Water Cycle Video to understand water and why to conserve it: The Water Cycle | Educational Video for Kids - YouTube

Ensure texts are available for children to reflect afterwards on the water cycle in the reading corner.

Tippy taps – image credit: Lilian Arieno Oloo, OMEP, Kenya

Discuss with the children that not everyone can have access to lots of water – in Kenya the children made tippy taps to use outside.

Tippy Taps Enhance Hand Washing in Rural Kenya | Kenya | World Vision International (wvi.org)

Make your own and help children to see how hard it is when water is restricted. Instructions can be found at: schools-challenge-ks1-tippy-tap-instructions.pdf

(wateraid.org)

To support them in developing their water systems, provide mechanical equipment to children to play with and investigate initially – for example, wind-up toys, pulleys, sets of cogs with pegs and boards.

Have a rainwater butt outside to collect water for use – water plants or water play.

Image credit: St. Anne's NS, Belfast

NI Water offers free water butts for schools and a series of lesson resources – more detail here: https://www.niwater.com/news-detail/11927/A-Wave-of-Free-LessonsWaterbutts/

NI Water also use a lovely activity where children can make their own mini water butts using milk cartons.

Image credit: NI Water

Children everywhere must understand why we must conserve water as it is scarce. Discuss what 'conserve' means and why it may be scarce. Reflect upon the impact of no water.

FS (CCEA 2007, p.89) Children should explore *"some of the ways people affect/ conserve the environment both locally and globally."*

At one nursery in Brisbane, children had to use their co-ordination to limit the amount of water they can take – one ladle of water each. Try this out and discuss how this would make you feel – compare life here in Northern Ireland, to life in Kenya/Australia. Record mathematically how long your water butt lasts.

Image credit: Sharon Kemp, Brisbane

Know that there are different countries in the world and talk about the differences they have experienced or seen in photos.

Encourage children to talk about the differences they notice between people, whilst also drawing their attention to similarities between different families and communities. Discuss how to keep their gardens watered and question which is best – hose, sprinkler, or watering can? Experiment with the amount of water used. Revisit "conserve".

CGPSE (CCEA 2018, p.11) *"Skillful adult participation can extend children's play and thinking by: introducing new vocabulary and modelling language appropriately; using open-ended questions to challenge their thinking; and observing them and building on their ideas."*

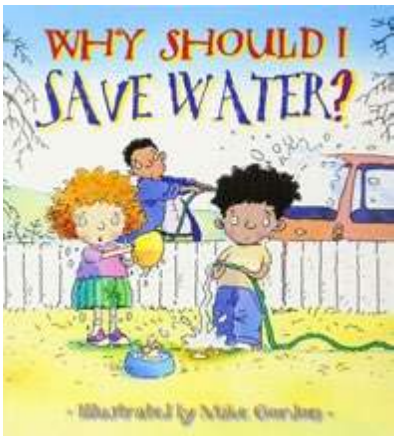
Draw on the EPPE (1999) - Research into sustained shared thinking. Watch: Iram Siraj: sustained shared thinking supporting language learning - Bing video

To understand their world, children need to be able to recognise some similarities and differences between the natural world around them and contrasting environments.

Children might pose the question, "why should I conserve water?" They can turn a tap on and water flows. These discussions will support children developing empathy towards others.

Educators understanding of sustained shared thinking- Microsoft Word - EPPNI Final Summary Report received 270206.doc (oecd.org)

Read together: Why Should I Save Water? by Jen Green.



This book by Jen Green is a starting point for developing strategies with the children on things they can do at school and home to conserve water.

Look at images of dried-up lands and think about how animals/plants can manage. Conduct basic water experiments with plants.

FS (CCEA 2007, p.4) *"Teachers should help children to become aware of the imbalances in the world around us, at both a local and a global level."*

Provide resources to help children understand important processes and changes in the natural world around them including the four seasons and changing states of matter.

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and substantially increasing recycling and safe reuse globally.

Reflect upon the news items below that discuss the water around the island of which NI is part of – use maps to show this. Get the children to think about how sea water becomes dirty and the consequences of this – links to post-humanism relational thinking about all living things and SDG14 Life Below Water.

Northern Ireland could become 'dirty corner of Europe', say campaigners | Northern Ireland | The Guardian

Sea swimming in NI: Bathing water review planned - BBC News

Introduce the idea of blue flags as a representation of clean beaches.

What are blue flags and how do they differ from green eco flags?

Watch together this water pollution video:
Water pollution | Water Contamination | Video for kids – YouTube

Read: We Need Water by Charles Ghigna.

This explores the world of water, reminding readers that it is important to keep water clean together and discuss what makes water dirty. Why should we not drink dirty water – what might happen to us? Who else needs water besides us? Experiment with different sieves to "clean" water.

Read together and watch: We Need Water Read Aloud - Bing video

Discuss with the children the text/activities and reflect on the importance of water. Experiment and turn dirty water into clean water and discuss what words like 'contamination' mean.

Watch together: Turn Dirty Water into Clean Water! | Chirp Science Corner - YouTube

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes.

Draw on the fantastic website of Northern Ireland Water and gain access to resources, examples of practice and support. Sustainable Development (niwater.com). Watch a fabulous example of how NI has supported both the ecosystems and education: Clandeboye Primary School Rainwater Garden (niwater.com)

Link to SDG 4 Quality Education, SDG 9 Industry, Innovation, and Infrastructure and SDG 15 Life on Land.

Develop with the support of your local community (intergenerationally) a water feature in your setting. Children can take responsibility for cleaning and care, helping them understand the implications of dirty water. Revisit SDG 3 Health and Wellbeing.

Discuss different types of water, such as ocean and salt water, rivers and streams, and fresh water. What is the difference? Can we drink salty sea water? Reflect on how water moves – think puddles and splashing with boots on. Revisit SDG 3 Health and Wellbeing – the importance of water hydration. Ensure children recognise that animals and plants need water too. Brainstorm how you can support your local wildlife in accessing water in droughts.

Can children make a simple drinker for animals using recycled materials?

Image credit: Sarah McLaughlin, Student Teacher at Stranmillis College

Image credit: https://www.diyncrafts.com/135809/upcycling/bird-water-feeder

Research the animals that live in fresh/sea water. Reflect on the differences – can we live in water fresh or sea water? Why? Link here to SDG 14 Life Below Water.

Invite members from your local community into the setting to talk about how historically and culturally, where water was found water in the locality – before taps, where would we go? Link back to SDG 1 Zero Poverty and consider Celtic houses and their location.

Take the children out into the locality (place-based pedagogy) to explore and understand the biodiversity of their local habitats.

By feeling the trees and observing the trunks and leaves, children will become more familiar with the local plant life and recognising when there is a water shortage. Developing relationships with the environment supports children caring for it and becoming stewards protecting it. This helps to extend the FS WAU strand of 'Place'.

Research the difference between the trees and how they find water in the environment. Why do plants/trees need water?

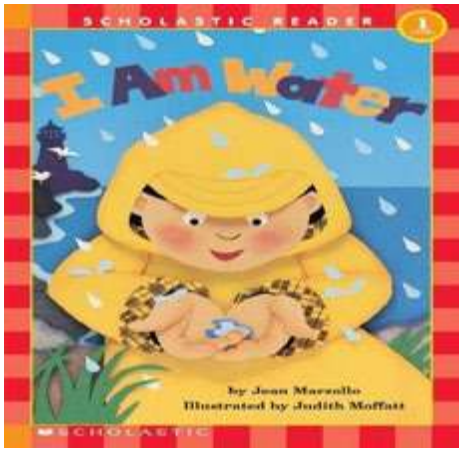
Watch together and pause and reflect: Science KS1 / KS2: What do plants need to survive? - BBC Teach

FS (CCEA 2007, p.7) *"Use ICT to handle and communicate information, solve problems, pose questions and take risks."*

Watch together and support the children to reflect: The Water. Looking after our Planet | Educational Video for Kids. - YouTube

Read: I Am Water by Jean Marzello.

A review for this highlights that this book "is a simple read about all the purposes and forms of water. The book talks about water being home for the fish, rain for the earth, humans drink it, plants use it grow, etc".



6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all [...].

6b Support and strengthen the participation of local communities in improving water and sanitation management.

Like early years pioneer Margaret McMillan in 1919, give each child their own brush/face cloth to use and care for. This is hygienic but also promotes independence.

Image credit: Sharon Kemp, Brisbane

Remind children not to use wipes (and management of settings) as they block drains and kill sea life (SDG 14 Life Under the Sea).

http://www.wateraidgames.org/

Encourage children in their own understanding of keeping clean and healthy – link back to discussions on Covid-19. Remind children of the importance of hand washing. Sing the hand washing song and wash for over 20 seconds.

FS (CCEA 2007, p.94) *"Recognising and valuing the options for a healthy lifestyle, including the benefits of exercise, rest, healthy eating and hygiene."*

https://www.wateraid.org/uk/sites/g/files/jkxoof211/files/handwashing-activities-forunder-5s-clean-hands-healthy-bodies.pdf

To help children understand water, use physical development sessions to "be" water – develop water dances and tumble, roll, and splash, in and out. You could learn songs and rhymes from parents. You could also teach parents the songs and rhymes you use in the setting to support learning at home.

Source water music or ask the children to make their own water music/instruments to go with their dance. Use all forms of technology to support this process.

Why not make up your own eco rap song?

Link to rain dances in some cultures. Watch this water dance video: Water Dance - YouTube

CGPSE (CCEA 2018, p.32) *"Learn songs, listen and respond to music, and make their own music by singing, clapping and playing percussion instruments."*

Sustainable Development Goals (UNESCO, 2015)

Ensure access to affordable, reliable, sustainable and modern energy for all.

Possible examples of Affordable and Clean Energy STEM provocations:

Support children to understand the difference between renewable and non-renewable and the influences on the environment.

7.1 By 2030, ensure universal access to affordable, reliable, and modern energy services.

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.

7.3 By 2030, double the global rate of improvement in energy efficiency.

Terminology: coal, energy, wind, powe, wind turbines and renewable.

Useful website for educators: How to Teach Kids About Renewable Energy | Greener Ideal

Discuss with the children what "energy" is – what is it needed for and how do we get it? Brainstorm and audit different sources of power to reflect on. What does "clean energy" mean?

Explore a natural fuel that is present in NI – peat. Explore the peatlands and their importance in climate control. Bring in a piece of peat to examine. More information here: https://www.myni.life/nature/ni-peatlands/

Highlight that in the past, a lot of energy came from mining coal. What does mining mean? Research local coal mines and images – ask the children to reflect upon the images. What do they think the miner is feeling/wishing?

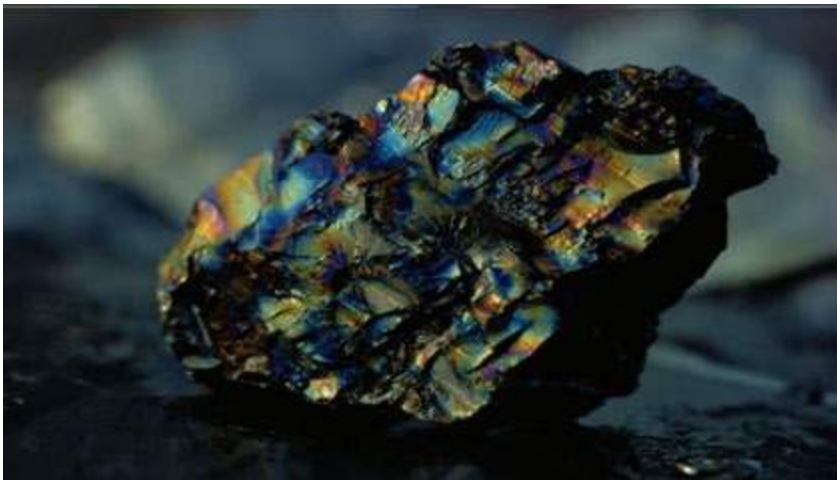
Image credit: Athlone

Make links to SDG 3 Good Health and Wellbeing – remind children of the need for fresh air/sunshine.

Image credit: Jonathon Scott

Using map technology locate mines: Mine Plans | Irish historical geological maps | GSI - GSNI - BGS

Bring in a piece of coal to examine. Ask the children to think about how this fossil can make energy.



Question – do children know what coal is used on their BBQ?

How does coal differ from charcoal? Use charcoal in art/creativity sessions. Link to SDG 13 Climate Action.

Look at images of mines and reflect on environmental issues. What is happening to the earth/land when digging and who could be living there? Consider the consequences to the environment.

FS (CCEA 2007, p.4) *"understand how actions can affect the environment."*

Discuss how a fossil is made and analyse. What happens to the coal? What are the scientific changes?

Consider old black and white films of coal mining – what are the dangers? How would you feel to be in the dark and underground? Watch this video: Coal Mining the Modern Way: Newcastle, 1957 - Bing video

Use digital technologies and research machines used at a mine. How big are they? Introduce terminology of vehicles and create in a small world play area using similar trucks/dumpsters/diggers.

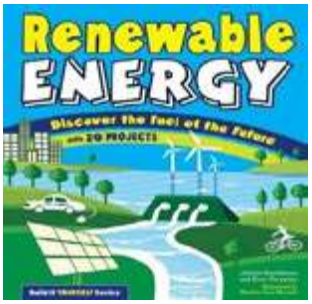
How do they move? Research and find the biggest/smallest vehicles and what energy they use? Find the first electric dumpster. Draw designs of your own and ensure they are using renewable energy!

Look at the world's largest mining truck and reflect upon the damage to the environment with such large and heavy machinery.

Link to SDG 13 Climate Action.

Ensure there are useful books to read and reflect upon.

For example: Energy Island by Allan Drummond or texts that introduce children to renewable energy.



Have a selection of research texts so that children can start to understand researching facts.

FS (CCEA 2007, p.) Children *"should also use ICT to collaborate within and beyond the classroom, to share and exchange their work and to exhibit and showcase their learning."*

With the children, explore and talk about different forces they can feel – provide resources to use outside. Model and introduce new vocabulary related to your exploration and encourage children to use it.

When they are engaging in physical exercises help them to understand energy and use their bodies to help. What energy do they need to move? How do they feel when they have no energy and why? Discuss (link to SDG 1 No Poverty and SDG 2 Zero Hunger and SDG 3 Health and Wellbeing).

Get them to feel their heartbeat – look at each other's faces after running and feel the sweat on their brow. It's important to encourage children to be highly active and get out of breath several times every day.

Energy makes things move – brainstorm things that move and consider how. Make a list of different types of energy – which are man-made, and which are natural? Introduce the idea of renewable energy.

Look at images of old windmills and how they worked. Make a water wheel and discuss how water is pushed through. Look at wind turbines – if you have some near you, go on a trip to look at them.

Let's look at air and wind: Air and Wind | Kids will Learn About How Wind and Air Affect Weather | Science for Kids - YouTube

Develop a wind box for outside play filled with different textured materials to run with.

Make a windchime using recycled materials – experiment as to where is the best place to hang them for the "wind noise effect".

Look at this windchime pictured on Rainy Day Mum.

Image credit: Recycled Wind Chime Craft for Toddlers and Preschoolers (rainydaymum.co.uk)

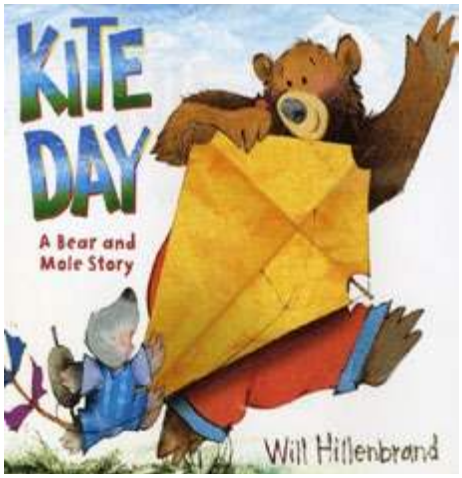
Reflect on the materials used and the different sounds made.

Read: Wind (Whatever the Weather) by Carol Thompson.

Let's play out in the wind! There's a wealth of sights, sounds, smells, tastes, and textures to discover and enjoy. In this series of richly illustrated books, Carol Thompson celebrates the immediate and sensory response of children to the natural world.

Go on a wind walk and listen to the sounds that the wind makes in the trees or windows rattling.

Read together: Kite Day – A Bear and Mole Story by Will Hillenbrand.



Rushing home, he tells Mole and the two fast friends to get to work building a kite of their own. They study, and collect, and measure, and construct – and soon, their kite is flying high above the meadow. But when a storm rumbles in – SNAP! – the kite string breaks, and all their hard work soars away. Chasing after it, Mole and Bear discover all is not lost – wedged in the branches of a tree, their kite protects a nest of baby birds from the pouring rain.

Make kites to use outside – trial and discuss why they may not work.

Provide varied opportunities to participate in pairs, or small groups, or one to-one discussions, offering their own ideas, giving reasoning, and using recently introduced vocabulary.

Understand how the tilting of the kite makes it stay up in the air!
Watch: Let's Make a Kite! | Science Project for Kids - YouTube

Make a windmill using recycled materials – again, trial them. Discuss if and how they work (or not). Always evaluate together.

Learn how to make a windmill with two paper cups:
DIY How To Make Paper Cup Windmill that Spins Easy Science Project For Kids - YouTube

See image for example of windmills made using recycled plastic milk cartons.

Image credit: Sharon Kemp, Brisbane

Explore Drumlin Wind Energy Co-op to see windmills in NI. Free teaching resources and activity sheets for adaptation available here: https://www.drumlin.coop/educational-resources/

Which source is more powerful, and which provides more energy – wind or sun? Can the children predict the outcome and why?

Read together the Aesop tale – watch the story: The Sun and the Wind | Aesop's Fables | PINKFONG Story Time for Children - YouTube

Create an energy plan with parents and children. Switch off lights, monitor classroom temperatures, don't open windows if heating is on, monitor clothes that are worn inside and outside, and have awareness of seasonal temperatures.

Access utility reduction and energy monitoring for schools, and have monitors positioned so children can see the data. The software may be used in the classroom with children from the age

of 4 upwards. Teachers are using the system in maths, science and PSHE to engage pupils with real-world energy awareness.

In staff development, discuss the settings carbon footprint and work out how you can reduce your environmentally output- from food/meals used, materials such as paper – understand all decisions make a difference! Link here to plant-based foods.

Try out this resource: Carbon Calculator - ClimateHero

With real-time, data actions and consumption can be directly linked. Link here to SDG 13 Climate Action – Mapped: How climate change affects extreme weather around the world (carbonbrief.org)

Brainstorm what sources of energy can be used in a home, including mains electricity, battery powered, solar panels and windmills. In the science area, have a tray of electrical components available for the children to investigate. Always use the correct terminology.

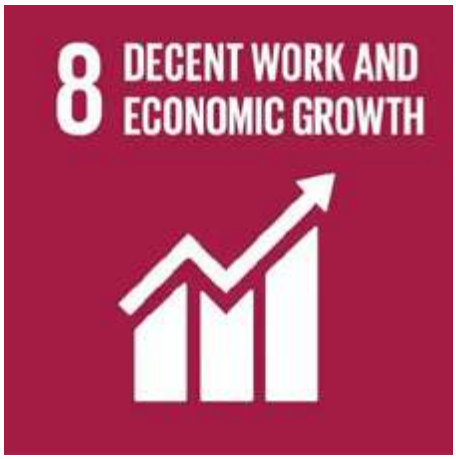
Image credit: College Farm Nursery School

Watch and learn how to make a bulb light up with potatoes:
Potato Battery Experiment - YouTube

Model and introduce new vocabulary related to the investigations and encourage children to use it. Link back to sustained shared thinking (SDG 4 Quality Education).

Image credit: Downpatrick Nursery School, Belfast

Batteries can be recycled (alongside other items) – make this a community effort with a recycling trolley in the office space for families to donate. However, please be mindful that dead batteries must not be left unattended as they are a danger to children.



Sustainable Development Goals (UNESCO, 2015)

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Possible STEM provocations for SDG 8:

Introduce children to trades, skills and cultural heritage.

Terminology: economics, entrepreneurship, creativity, and innovation.

Define what the above words mean – with the children, write your own definition in their language.

8.3 Promote development–oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

Taking the children out into the local community builds relationships and the frequency and range of children's personal experiences increases their knowledge and sense of their world around them. For example, take them to visit parks, libraries and museums, and meet care-related members of society such as police officers, nurses, firefighters and important members of the community.

As noted, a key element of education for sustainability is creativity and divergent thinking. Children need to be able to contribute to their future and the planet, and therefore practitioners must provide a wide range of opportunities that challenge, provoke, and support children's characteristics of effective learning. This goal represents children developing not just creativity but practical transferable skills, which also impact upon their physical development too.

Revisit SDG 4 Quality Education and reflect upon different jobs/ titles – use the correct terminology including greengrocers, cobblers and butchers.

Link this to economic sustainability – take a walk down your local high street and look at the shops, and go inside to meet the workers. Use money and buy snack materials at the greengrocers so that children experience real money (maths) in the locality.

FS (CCEA 2007, p.24) Children should *"talk about things that they want to spend money on."*

Revisit economic sustainability.

Encouraging children from an early age to understand money is crucial for their future engagement with the economy. Teaching

them from a very young age the importance of saving money – not wasting it or using credit – is key. They are able to decide what to do with their profit – half goes back into the business and the class decides what they want to spend/save their half on!

This approach resonates with the economic pillar of sustainability and the interconnection of other SDGs - SDG 9 Industry, Innovation and Infrastructure, SDG 11 Sustainable Cities and Communities, SDG 3 Health and Wellbeing, SDG 4 Quality Education, SDG 2 Zero Hunger and SDG 1 No Poverty.

At Ysgol San Sior In Llandudno Wales, every class from the nursery (3-4 years) to Year 6 (10-11 years old) run an enterprise business.

Meet the reception shop sellers – ordering parts, calculating change from real money, and becoming economically efficient!

In the nursery, the children make from a choice of 3 templates a name place which they choose, decorate, place their letters on, and then sell.

In reception, the children make vegan honey from dandelions and make seed packets. They sit outside the school (Ysgol) and sell them to passers-by and their families and friends.

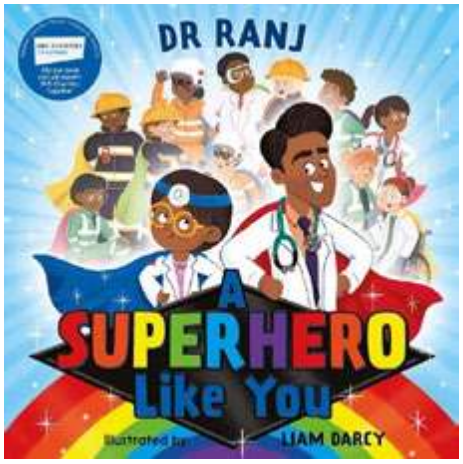
By the time they are in Year 6 they are confident users of money, using terms such as profit/loss, date/spreadsheets, credit, and the circular economy. It shows the importance of early years as a foundation.

Image credit: Ysgol San Sior, Llandudno, Wales

Introduce the idea of enterprise and each class/setting having their own business enterprise as described above. Encourage children to design and plan their own ideas for enterprise. Listen to this podcast about how Fairview Primary School in Northern Ireland has encouraged children in gardening and using their produce in enterprise: https://www.bbc.co.uk/programmes/p0fc7cfk/p0fc7bp6

Introduce employment roles. What skills are needed to be employed? Ask the children to list qualities of who they would want to work with. Does the job change the skill needed? Link here to SDG 5 Gender Equality.

Read together: A Superhero Like You by Dr Ranj Singh, which links to SDG 5 Health and Wellbeing anyone can be [...] whatever.



Join Lily as she meets the extraordinary superheroes all around us, from doctors, teachers and air ambulance paramedics to scientists, recycling truck drivers and carers. Discover the amazing work these real-life

heroes do using their incredible superpowers of kindness, care, and love. This uplifting picture book celebrates key workers, and shows little readers that we all have the potential within us to be superheroes.

In the early years, physical development is an important aspect of children's learning through play. Educators must include opportunities for gross motor skills, which provide the foundation for developing healthy bodies and social and emotional wellbeing. Fine motor control and precision helps children with their hand-eye co-ordination, which is linked to early literacy.

Provide children with lost skills that represent their culture such as weaving, knitting, sewing and woodwork. Let the children design their own sewing pattern – the adult will need to make the sewing hole, but little fingers can use large needles.

Image credit: The following three images are credited to Everton Children and Family Centre, Liverpool, UK

Encourage intergenerational learning by inviting elders from the local community to share traditions, such as knitting clubs.

Purchase large wooden weaving frames and support both cultural skills as well as fine motor abilities. Audit cultural traditions and skills from families and the community, as well as historically (Celtic) and invite in to share.

Either use a commercial lucet or knitting fork:

How to Use a Lucet (aka Knitting Fork) Two Ways with Vickie Howell - YouTube

Or alternatively make your own recycled knitting forks (from cardboard rolls and lolly sticks) and support their fine motor skills.

By involving the local community, the children will hear their stories from their community – e.g., pom poms hanging from prams by safety pins. Reflect on the different pram toys available now.

Children also like to make pom poms – use a traditional cardboard template. Some children might like to use this traditional way, and it encourages patience and commitment.

Image credit: Liverpool Football Club Skills Café, UK

Watch the video and model for them – wind the wool around three fingers, peel off slowly, tie together and snip both ends to make a three-minute one!

Watch the pom pom video here: How to Make a PERFECT POM POM Every Time - YouTube

Bring generations together – young and old to share skills and stories. This is a lovely BBC film that shows how bringing intergenerational learning into early years is so successful. Thanks to Everton Children and Family Centre (Dr Lesley Curtis) and Jessie Philips of the BBC.

Watch The Legacy Cafes (Boyd, 2018): BBC Family & Education News - The cafe solving loneliness | Facebook

Ensure children use real tools, not plastic imitations – mending punctures teaches children about science as well as sustainability. Link here to SDG 5 Health and Wellbeing and SDG 10 Reduced Inequalities to demonstrate that all skills/modelling mending is by both male and female practitioners/parents (SDG 5 Gender Equality).

Examples here include mending punctures together and pairing/ scaffolding real tools.

FS (CCEA 2007, p.38) *"be aware of everyday uses of technological tools and know how to use some of these safely."*

Teach children how to mend and sustain their toys and items and encourage parents to support these ventures and learn new skills as this encompasses all three pillars of sustainability.

Do an audit of parents/carers/grandparents to see what skills they have they can share. Invite them into the setting to support the development of sustainable mending skills! Link here to early years pioneer Steiner with mending and using tools.

Educators might be interested in this academic paper which explores Steiner and Montessori through a sustainable lens. Both pioneers encouraged community ethos and also advocated for

practical life skills to be an integral part of early childhood. Read here: (10) (PDF) Early childhood education for sustainability and the legacies of two pioneering giants (researchgate.net)

Through his pedagogical theory of occupations, another early years pioneer – Froebel – recognised young children needed to understand their world through skills, trades and tools. This link provides valuable support in different ways such as sewing, woodwork and cooking.

There are also free pamphlets that encourage other aspects of the SDGs: Froebel Trust | Pamphlets and guides

Offer opportunities for the children to develop and further refine their small motor skills. Suggestions include: threading needles and cotton reels; early sewing; woodwork; cookery skills such as pouring, stirring and weighing; planting and caring for plants; constructing and playing with small world toys; and designing models with junk materials, construction kits and malleable materials like clay.

The Northern Ireland Forest School Association (NIFSA) promote the use of real tools in the early years, in activities such as whittling. More ideas here https://www.forestschoolsni.com/

Link here to SDG 15 Life on Land.

Immerse the children in cultural language and symbols that were used in Celtic. Use a sand tray to encourage hand eye co-ordination to recreate them.

Celtic Knot Meaning: Celtic Knotwork Designs And Tattoo Ideas (symbolsandmeanings.net)

Revisit Celtic history through storytelling and research and celebrate the Celtic past of Northern Ireland with their years of knowledge and traditions used historically to make tools and weapons – reflect on the woods/materials used to make them.
Celtic Warrior | Ancient Celtic Warriors | DK Find Out

Image credit: Shoe, last Celt tool, Wikipedia

Research together or with elders/historians/librarians from the community in your locality the tools, weapons and cooking utensils used by Celts. If possible, allow the children opportunities to see and handle them so they can reflect upon traditional style tools.

Compare the materials they are made from – stone and wood: Celtic Weapons | Ancient Celtic Weapons | DK Find Out

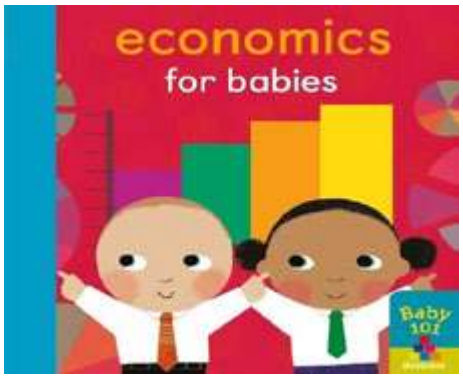
FS (CCEA 2007, p.38) *"Pupils should be enabled to explore how has this place changed."*

Engage in community economics – children can make items or grow food, either in school or at home. Sell them to raise money, and as a group the children decide what to buy that they need. Start to teach about the economy and, using the right language, talk about how everyone is entitled to work in a fair world. Ask the question – what is a fair world?

Examples could be cake sales, making celebration/ Christmas cards – but always help children to understand the economical process involved.

Read together: Economics for Babies by Jonathon Litton.

Children will love to read about economics and how it affects their daily lives.



Sustainable Development Goals (UNESCO, 2015)

Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.

Possible examples of Industry, Innovation and Infrastructure STEM provocations:

Support children to understand trades and how they support the economy.

Terminology: industry and infrastructure. Revisit terminology: creativity, entrepreneurial and innovation.

Revisit previous thinking around creativity and research – a key element of not just future living, but education for sustainability. Link back to SDG 8 Decent Work and Growth and revisit economy – jobs.

9.1 Develop quality, reliable, sustainable, and resilient infrastructure, including regional and transborder infrastructure, to support

economic development and human wellbeing, with a focus on affordable and equitable access for all.

Discuss with the children what infrastructure means and brainstorm different methods of travel/transport. Read useful information books that highlight different transport vehicles.

Things That Go! by Stephen Lomp is an exciting way to introduce babies to the many different vehicles that fly, drive, sail, race, dig, and dump. What an exciting, fastmoving world we live in!

Do an audit and make a graph to see which modes of transport are used the most frequently. Pose questions about the potential link to renewable energy, (SDG 7 Affordable and Clean Energy), and ask if children have seen any electric cars/buses. Link back to the mining trucks.

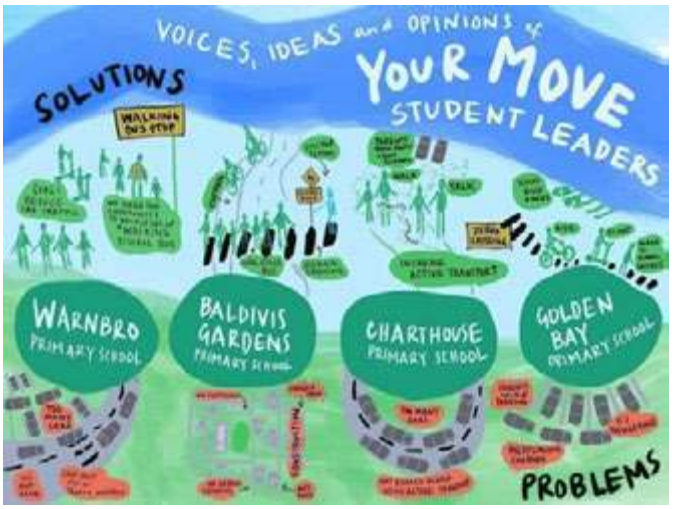


Image credit: 'Your Move and Millennium Kids' example poster by Zoe Street, Perth, Australia.

Mathematically discuss with the children the different ways they might record quantities, such as tallies, dots and using numeral cards.

Have a walk to school or nursery – emphasis how it is not just good for the planet but health-wise too. Design a poster about ways of helping the environment and coming to school. Who walks and why? Who travels by bike? Discuss the best carbon footprint.

Do an audit of how many types of transport vehicles go past the setting each day.

Listen to the different noises they make. Record them and discuss. Electric cars are quieter – is that good?

Place-based – SDG 4 Quality Education – take a group/class bus/ ferry trip and use real money. Use your locality to support children's understanding of their community.

Continue to reflect upon your carbon footprint – highlight to the children how simple actions are having an impact upon the living world. Twinkl provides free downloadable resources to help understand your carbon footprint: Calculating Your Carbon Footprint Interactive Activity (twinkl.co.uk)

Ask the children what they think their town needs – does it have a railway station, bus stops or an airport? Do an audit of what is there. Look on Google Earth and see the resources that are available.

FS (CCEA 2007. p.4) Children should *"use critical and creative thinking to solve problems and make decisions."*

Read The Tomorrow Book by Jackie French.

This is a book about the possibilities from the greener world of tomorrow and is suitable for ages 4-8. It's a timely picture book about a young prince who is determined to rule over a country where the future is filled with

environmental hope and practical solutions, such as common usage of solar and wind power. Lively, fun and positive, this book serves to give young people information about their world and shows them that a lot of environmental solutions are simple and relatively easy to put in place. Produced on recycled paper to reflect the message within, this is a beautiful book. Winner of the Wilderness Society's Environment Award for Children's Literature.

The image below is from a Tomorrow Town Project in a kindergarten in Sydney, Australia.

Image credit: Rebecca Bonar, Belrose Public School, Sydney, Australia

Encourage children to build 'Sustainable Towns'.

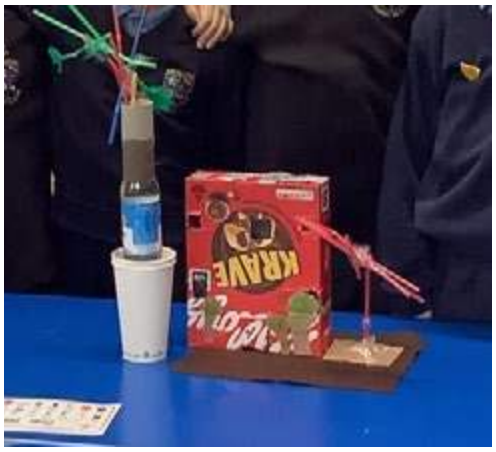


Image credit: Emma Cousins (Student Teacher at Stranmillis University College).

Use multimodal ways of thinking (SDG 4 Quality Education) and develop a town with infrastructure and energy (SDG 7 Affordable and Clean Energy). Take time – it can be added to – and involve parents/grandparents and the local community. Provide resources that support children's understanding of transport systems.

Create designs with a variety of media/natural materials, ask them to share their creations and encourage them to articulate and explain the process they have used.

Mathematics: select, rotate, and manipulate shapes to develop spatial reasoning skills. As noted, creativity is crucial for sustainability and children need opportunities to design structures.

Image credit: Jenson Boyd

This is an example of the early design of a bird table. When designing items, pose questions about design – such as which materials to use.

Question and evaluate the process as the children develop and make their creations. Link here to Froebel again with the idea of evaluating and amending designs rather than just starting again.

This example is a combination of all aspects of STEM.

This is mathematics, engineering, science, and technology in action authentically, as well as rich communication and language. Real tools are used – modelled by adults and scaffolded in the process.

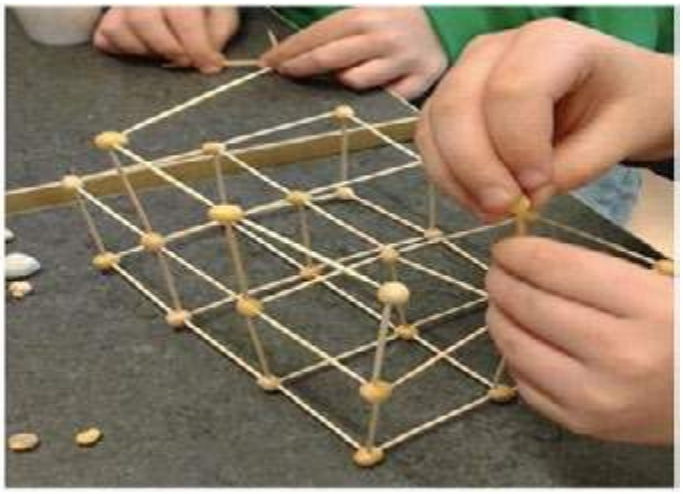
Why is STEM so important?

Because while science, technology, engineering, and mathematics skills are important for current workforce entrants, Professor Tom Lowrie, Director of the STEM Education Research Centre at the University of Canberra and program director for a large pilot study called ELSA (Early Learning STEM Australia), says that today's pre-schoolers will use STEM thinking in jobs that haven't yet been imagined.

See this website to support your understanding of STEM in the early years: STEM in early childhood | First Five Years

Image credit: Rebecca Bonar, Sydney – children designing their own future homes.

Allow children time to reflect upon their design and allow for thinking time. Let the children share and celebrate their town – make a video (utilising technology).



Froebel's gifts introduced children to construction – use different materials such as his "pinpoints" to understand structures.

Engage in mathematical talk with children as they design, plan, and construct – think about ways of comparing size, length, weight, and capacity. Model more specific techniques, such as lining up ends of lengths and straightening ribbons. Link here to Montessori rods and discuss accuracy: "Is it exactly...?"

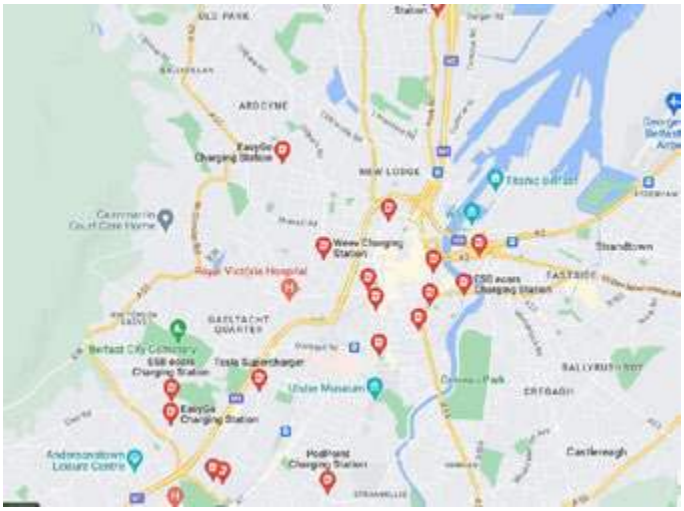
Intergenerational learning – ask grandparents/elders of your community to talk about transport in their early years.
Compare images and energy use – revisit your carbon footprint, demonstrating the interconnectedness of the SDGs.

Using the local natural environments, encourage the use of natural materials and to design/construct dens – revisit SDG 1 No Poverty and the concept that everyone needs a home that is dry and warm. Encourage children to evaluate their constructions and adapt/ amend to develop thinking skills and creativity.

Consider all forms of transport, such as cars, bicycles, aeroplanes, boats.

Can they build a sustainable car? Use junk materials with children to make cars with sustainable features.

Use Google Maps to see how many electric vehicle charging points there are in their local area:



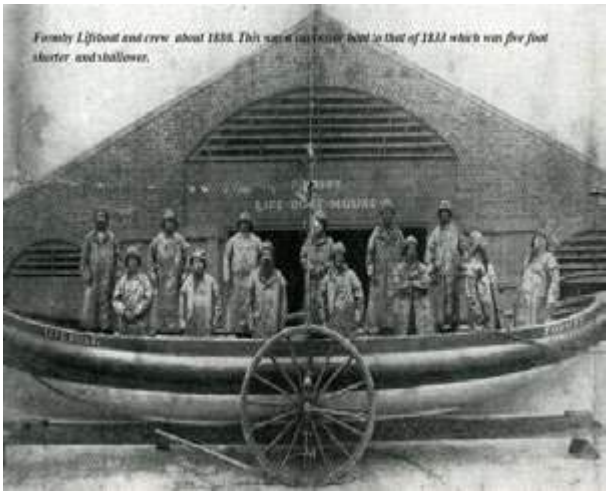
Visit museums that have 'transport through the ages' displays. The Ulster Transport Museum is a fantastic location to see transport across the years.

Present children with pictures, stories, artefacts, and accounts from the past, explaining similarities and differences.

Offer hands-on experiences that deepen children's understanding, such as visiting a local area that has historical importance. Include a focus on the lives of both women and men (SDG 5 Gender Equality and SDG 10 Reduced Inequality).

Show images of familiar situations in the past, such as homes, schools, and transport.

Look for opportunities to observe children talking about experiences that are familiar to them and how these may have differed in the past.



Ask children to compare old and new transport systems – how are they different? How do they move? To help children understanding their world, ensure there is a regular weekly/daily range of children's personal experiences and opportunities to increase their knowledge and sense of the world around them – from visiting parks, libraries, and museums to meeting members of their community (in this case the local lifeboat men).

Discuss issues of safety in the water using Royal National Lifeboat Institution resources: https://rnli.org/youth-education/education-resources/lower-primary

Being part of and engaging with the community will help children to become active citizens and decision makers. This links to the philosophy of Reggio Emilia again – revisit SDG 4 Quality Education.

Use Google Maps to ask children to look at their town/community. Following this, design a map of their community – add the

pathways and access points. Look at old maps and compare how it has changed.

Design 'towns of tomorrow' and make maps of their designs. Use map terminology - this example was from the Tomorrow Town Project, highlighted earlier.

Image credit: Rebecca Bonar, Belrose Public School, Sydney, Australia

9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries – in particular developing countries – including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

When starting these projects, remember to follow the children's thinking rather than your own. Encourage researching at home, work with parents and grandparents to develop co-researching, and visit local libraries – as well as researching in the setting/ nursery. Group collaboration encouraged conversations and sustained shared thinking.

A key element of early childhood must be to offer opportunities for children to create and think critically, they must develop their own ideas, be able to make links between ideas, and then through evaluating, develop strategies for doing things.

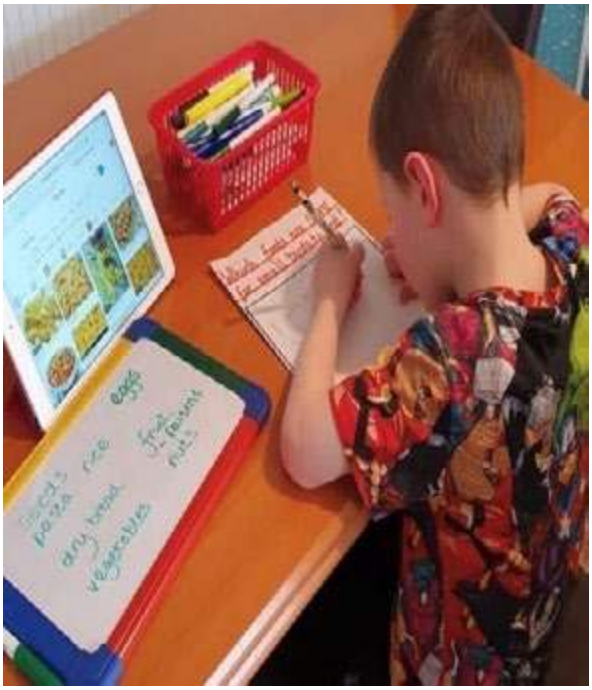


Image credit: Jenson Boy

Explore this interesting read about creativity in the universe: https://creativesystemsthinking.wordpress.com/2014/10/16/how-we-participate-in-the-creativeexperience-of-the-universe/

The following image reflects a group of children's views on a lack of beach bins and poor adult choices in where they threw away their rubbish – "adults don't care" (Rosie, aged 4, previously noted). This was their voice about the resources in their community.

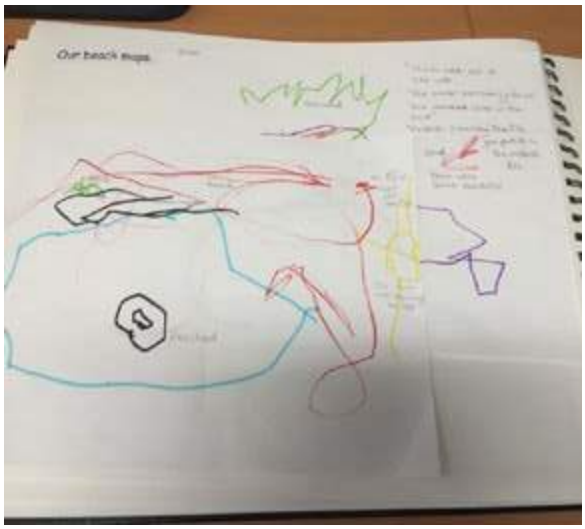


Image credit: Our Lady of Pity Pre School, Wirral, UK

Develop a beach bin campaign and engage the community. Listen to the ideas of the children. A beach bin campaign covers all aspects of the curriculum and is led by them! This also links to all three pillars of sustainability.

Remember! Language comprehension (which is necessary for both reading and writing) starts from birth. This is why when adults talk and model dialogue with children about their world around them, and read and share books (stories and non-fiction) to support this, quality education is being provided. This is why the books you choose to share are important (link to SDG 4 Quality Education).

In NI, children can hear about Wright Bus, a company based in Ballymena which is leading the way in the global transport industry. Their goal is to leave a legacy that will inspire the next generation to move towards a better, sustainable tomorrow. In their development of the electric bus, they have demonstrated innovation and creativity. Excellent images and information for adults is available on their website: https://wrightbus.com/en-gb/our-history.

Sustainable Development Goals (UNESCO, 2015)

Reduce inequality within and among countries.

Possible examples of Reduced Inequalities STEM provocations:

For children to understand fairness.

New terminology: reconciliation, reclamation, refugee and migration.

10.2 By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

Link back to SDG 4 Quality Education and SDG 5 Gender Equality – revisit equality, and fairness and choices made.

Help children to build relationships and encourage sensitivity to both their own and to others' needs.

Reflect on the Black Lives Matter campaign and discuss what it means to them. Consider the community/locality. Consider images of players "taking the knee".

Wales was the first country in the UK to embed Black Lives Matter into their curriculum (2022) – it is a mandatory "statement of what matters". Discuss what "matters" means, and ask what matters to them? Reflect on both human and non-human matters.

Revisit SDG 5 Gender Equality and Leadership. Should it matter who is your leader?

Debate as if in Stormont (share image) – link to SDG 9 Industry, Innovation and Infrastructure and SDG 11 Sustainable Cities and Communities – and ask about being fair and equal in all aspects of life in Northern Ireland.

For example, in Stormont the leaders discuss important issues. Introduce the idea of debating with children, starting with any issues that bother them.

Children need agency, so reflect on contentious images and challenge bias. For example – should street names be in Irish or English or both? Go on a neighbourhood walk and look for

plurilingual signs. Use NICE resources and locate integrated schools: Find Your School (Interactive Map) - NI Council for Integrated Education (nicie.org)

Use images to create opportunities to challenge and question. What are the integrated schools? Reflect how you would support children's understanding of this topic. This is about being connected to each other and encouraging children to see their friends and family, and not a religion. Watch together and use dolls to help create an awareness of identity and diversity: Anti-Bias in Education - NI Council for Integrated Education (nicie.org)toil

online-version-Bias-Busting-for-Beginners-Anti-Bias-in-Education-NICIE-2021.pdf

To be empowered, children must be resilient, prepared to have a go, and confident. Discuss images of peace walls and revisit peace bridge SDG 4 Quality Education. Link here also to SDG 16 Peace, Justice, and Strong Institutions.

What does this wall height/width show? Who is behind – who is in front? Ask the children to reflect on why we have fences/barriers /walls? Why are they needed? Go on a neighbourhood walk and identity any walls/fences. When do you need to make peace?

As a diverse and equal leader, how would you encourage peace?

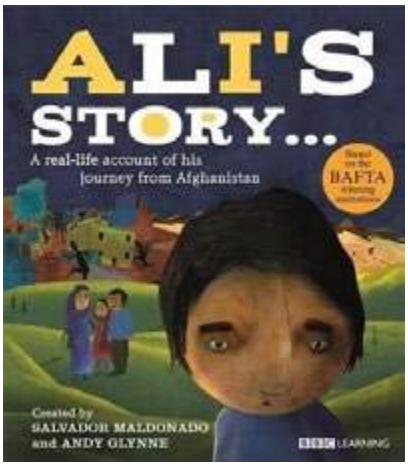
CGPSE (CCEA 2018, p.13) Adults need to *"acknowledge and respect the culture, beliefs and lifestyles of the families and children in the setting."*

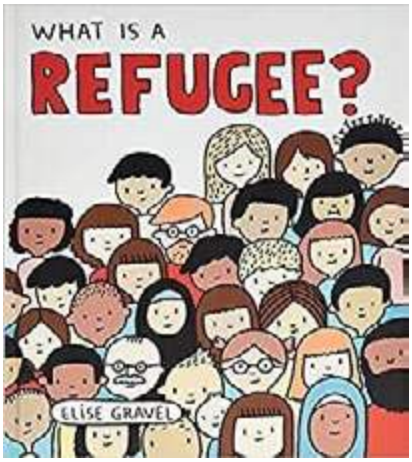
Ask, what are barriers to fairness?

Consider the English channel as a barrier: Migrant mum explains why she risked death to cross Channel in dinghy with baby girl – Mirror Online

Help children to build relationships and encourage sensitivity to both their own and to others' needs.

Reflect upon different children's experiences through provocations, such as through Ali's Story – a documentary that could be shared with young children. This is an animated documentary following the plight of a young ten-year-old boy and his grandmother during the war in Afghanistan (BBC.co.uk Seeking Refuge Series).





Read together and discuss: What is a Refugee? by Elise Gravel.

This illustrated, accessible book introduces young readers to the term "refugee." This timely picture book answers questions children may have about refugees, including who they are, why they leave their own country, and why they are sometimes not welcome in their new country (suitable for ages 3-7).

Brainstorm how they felt when they did not feel comfortable. What services do we need to feel comfortable? Revisit SDG 1 No Poverty. Which services are free, and which depend on money? Is it fair?

Look at maps and see where refugee children have travelled from. Please be mindful of the community you are in – are there refugee children in your setting/nursery? Celebrate their culture and their identity if so – give them a voice.

The CHILD-UP research project is a European research project that addresses the issue of migrant children in Europe through an innovative perspective, based on the concepts of children's agency and hybrid cultural integration (see https://www.child-up.eu/).

In order to investigate the social inclusion of migrant children, CHILD-UP puts children's social participation at the centre. By taking into primary account the gender dimension, the research focuses on the agency of boys and girls as a way to promote negotiated constructions of cultural identity as well as changes in their socio-cultural context.

Following a non-essentialist perspective, CHILD-UP focuses on hybrid integration, i.e. on the ways in which cultural identities are negotiated within interactions. In analysing interventions that improve the children's agency and enhance their hybrid integration, attention is directed towards dialogic practices in schools. To gather and analyse these practices, the perspectives of families, teachers, facilitators, and social workers are also taken into account.

The collection of data is based on the use of mixed methods: questionnaires, video and audio recording of schools' activities, focus groups and interviews with children, teachers, educators, social workers and mediators. 3959 children were surveyed along with 421 teachers, 2341 parents and 455 social workers and

mediators. 1305 children were interviewed along with 164 teachers and 120 social workers.

CHILD-UP publications, CPD, MOOC teacher training and the final project summary and research report offer new evidence to the research community through substantial field research and impact evidence analysis of current policies, thus supporting both policy makers and civil society in establishing more integrated and effective inclusion policies, benefitting not only migrant children but the whole local and wider contexts. The Child-UP project and resources can be accessed free at: https://www.child-up.eu/

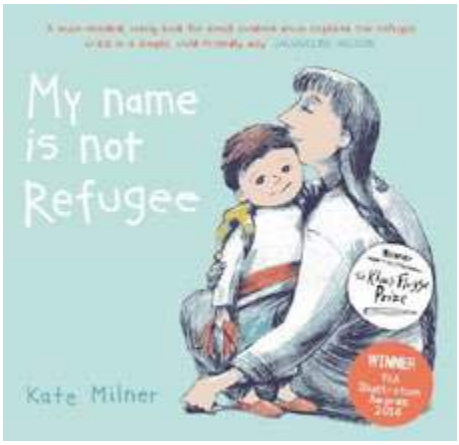
Revisit SDG 4 Quality Education and the introduction to the Celtic history of Ireland/Northern Ireland.

Reflect upon the map of historical Ireland – consider the culture of Celts and the tribes/languages (revisit SDG 2 Zero Hunger and the Potato Famine). Look at the map of the path of Irish to escape the famine – how is it different today? What makes people need to leave their home? What do they need?

FS (CCEA 2007, p.4) Children should *"understand some of their own and others' cultural traditions."*

Global Learning NI offers a suite of resources to support schools in inclusivity and becoming global citizens. These are available here: https://www.globallearningni.com/resources/video-resources

10.7 Facilitate orderly, safe, regular, and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.



Read together and discuss: My Name is Not Refugee by Kate Milner.

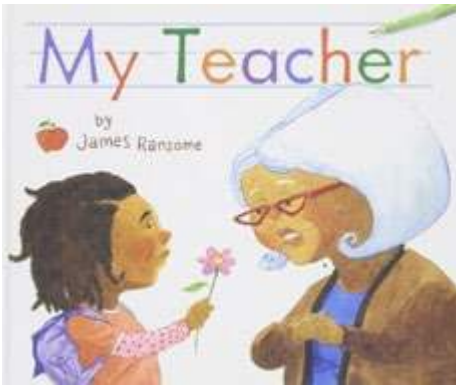
A young boy discusses the journey he is about to make with his mother. They will leave their town, she explains, and it will be sad but also a little bit exciting. They will have to say goodbye to friends and loved ones, and that will be difficult. They will have to walk and walk and walk, and although they will see many new and interesting things, it will be hard at times too.

A powerful and moving exploration that draws the young reader into each stage of the journey, inviting the chance to imagine the decisions he or she would make.

Watch and listen: My name is not Refugee | Children's Books Read Aloud - YouTube

Reflect upon ageism and discuss with the children – what does old age mean? Do children have stereotypes of the elderly? Challenge these biases through your discussions.

Read together: My Teacher by James Ransome.



With your developing relationship with the community elders, reflect upon that not all children will have a grandparent – they may live far away, and this initiative will support intergenerational learning.

Another example of working together across the generations: How children and elderly people come together in UK's first intergenerational care home - YouTube

Further useful reading – Global Dignity Report/SDGs: Digital 2021: Global Overview Report — DataReportal – Global Digital Insights

When children start to understand their world through people, culture and communities, conversations that explain some similarities and differences between life in this country and life in other countries are important – especially by drawing on knowledge from stories, non-fiction texts and maps.

It is important to remember to consider the non-human world – what and who else migrates?

CGPSE (CCEA 2018, p.21) Children should be "encouraged to consider the needs of others in the environment."

Reflect upon how habitats are being destroyed and consequently birds and animals are losing their homes.

Think about foxes coming into towns looking for food and houses being built on green spaces.

Research campaigns about different habitats and get involved – for example, hedgerows.

Why and how do birds migrate? Look at the patterns (maths) birds make as they fly together.

Familiarise yourselves with the native birds that live in your locality over the year. Observe their migration patterns and use picture charts to help the children observe them in their bird hides. Recognise the seasonal changes that occur in the garden/setting. Devise a tally system to support their understanding of counting observations. Discuss how you could help birds during this period and notice any birds that seem to not be returning – keep year by-year tallies to analyse as a group. Pose questions – what does this mean and why?

Image credit: Jenson Boyd.

Read together this lovely migration story: Coming Home by Michael Morpurgo.

A plucky little robin sets out on an epic journey. Through dark forests, driving rain, clapping thunder, and flashing lightning. Across frozen wastes, huge mountains, and stormy seas he flies. And all the while he's dreaming of home. Of her. But will he ever get there?

Again, when children start to understand their world, try to provide experiences that support important processes and changes in the natural world around them, including the seasons and patterns of seasonal migration.

Talk about how birds migrate at different times of the year and why.

Watch Migration of Birds: Migration of Birds , Animals for Kids -Lesson - YouTube

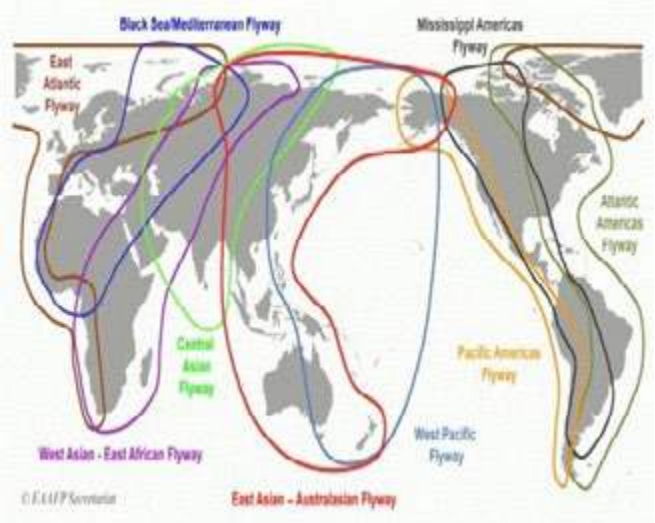
Use images, video clips, shared texts, and other resources to bring the natural world into the setting. Encourage children to reflect and listen to what children say about what they see.

Audit birds in the garden at home or school/nursery – when do they arrive and leave? Link to SDG 13 Climate Action and SDG 15 Life on Land – how do we care for our birds in the winter months?

Make bird feeders using crushed up Cheerios and lard on toilet roll tubes.

Image credit: St Anne's Primary School, Belfast

Observe the garden/outside and discuss where is best to place them. What else do birds need?



Track birds' migration path – introduce terminology of north-south-east-west and include in outside play. Use binoculars and cameras to record/classify and audit birds in your setting.

CGPSE (CCEA 2018, p.12) Children should *"find out about and identify the uses of technology in their everyday lives so that it becomes integrated into their play."*

The RSPB has a great website for teachers to explore specifically within the NI context: https://www.rspb.org.uk/about-the-rspb/at-home-and-abroad/northern-ireland/

Sustainable Development Goals (UNESCO, 2015)

Make cities and human settlements inclusive, safe, resilient and sustainable.

Possible examples of Sustainable Cities and Communities STEM provocations:

Introducing children to understand their community needs.

New terminology: culture and inclusive. Revisit: safe – sustainable.

11.1 By 2030, ensure access for all to adequate, safe, and affordable housing and basic services and upgrade slums. Revisit SDG 1 No Poverty.

11.2 By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons. Revisit SDG 1 No Poverty.

11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage. Revisit Reconciliation and what this means in Northern Ireland.

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

11.7 By 2030, provide universal access to safe, inclusive, and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities. Revisit SDG 5 Gender Equality and SDG 10 Reduced Inequalities.

Revisit SDG 7 Affordable and Clean Energy and the impact of coal. Look at houses in the community- record on a neighbourhood walk chimneys. Why do some houses have chimneys? What are they for?

Consider the historical aspect of chimneys – young children were sent to clean them! Revisit SDG 10 Reduced Inequalities of children past and present globally.

Victorian Child Labor and the Conditions They Worked In (victorianchildren.org)

What It Was Like to Be a Chimney Sweeper In the Victorian Era - Bing video

Reflect upon your community – with the children identity what matters to them in their environment. Revisit 'matters' through a non-human lens.

Brainstorm how you can design parks or towns that are accessible to all – how can someone in a wheelchair navigate a town? See if you can borrow a wheelchair for the children to try and use. Reflect on how life would be different. What structures are needed to help? Can you build structures to test out?

An example of how businesses are now trying to be more sustainable: NHS Property Services | Getting NHS property to net zero

Audit the community and generate information on how different businesses are aiming for 2030. Invite community businesses in to talk or be interviewed by the children on changes they are making.

Audit your own practice and ensure you are as sustainable as you can be.

Revisit SDG 7 Affordable and Clean Energy.

Make connections with the community allotments – invite gardeners in to talk about how to grow plants/vegetables.

Design a garden area in the setting – involve parents/grandparents.

Make regular trips to the local park – watch how the seasons change – look at the natural habitats of all living things.

CGPSE (CCEA 2018, p.33) Children should talk about *"the weather and the seasons at appropriate times during the year."*

Remind children that trees/green spaces are important for us – we need the trees:

What happens if you cut down all of a city's trees? | The Kid Should See This

Link here to SDG 3 Health and Wellbeing and why being outside in natural environments is so good therapeutically.

With the children (as decision makers) plan and design an outside garden – or if space is limited a living wall garden or planting containers. Recycle and create! See examples below.

Image credit: Sharon Kemp Brisbane/ Image credit: West Launceston Primary, Tasmania

Try to reuse/recycle materials to develop your area, for example, cardboard rolls for seedlings, cut in half plastic bottles and make a fence garden, plastic bottles make a fabulous greenhouse or build a wall with old milk containers!

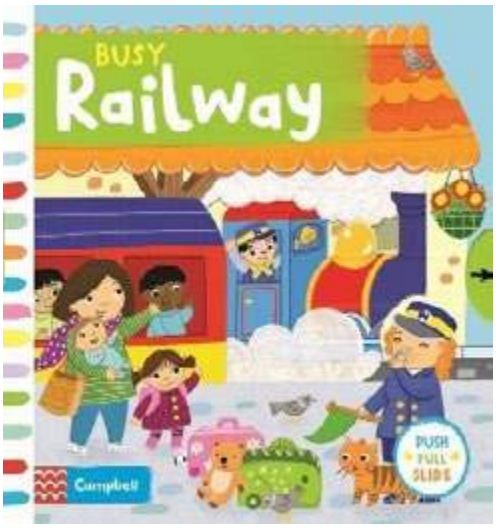
Build sustainable walls using old milk cartons – then concrete over them! Always emphasise the term "sustainability".

Ensure the children are 100% involved in the building work. Link here to SDG 8 Decent Work and Economic Growth.

Ensure you as educators' model and encourage them to use spatial words in play, including *"in"*, *"on"*, *"under"*, *"up"*, *"down"*, *"besides"* and *"between"*.

Ensure children understand how to safely use and explore a variety of materials, tools and techniques whilst experimenting with colour, design, texture, form, and function.

Again, provide texts to support children's developing brain – encourage to share both in the setting and at home.

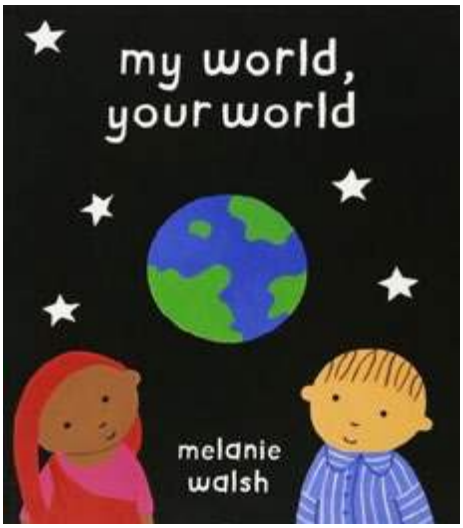


The 'Busy' books provide an early introduction to aspects of city life and revisit SDG 9 Industry, Innovation, and Infrastructure – busy garages, parks, airports, towns, and boats.

Compare different cities in different countries – look at images – how do they differ? Reflect on SDG 6 Clean and Affordable Water. Use Google Earth and zoom in and research different cities and the amenities they have – how much is green? What does that mean?

Reflect upon bins in a city – bins in a town – in a forest – what waste might be thrown away? Can it be recycled? How is waste different in different places? Introduce words rural/urban. Define different waste from these environments. Reflect on doggy bags – are they recyclable? What makes something recyclable? Compare terms eco-degradable.

Read the book My World, Your World by Melanie Walsh which emphasises both differences and similarities, or watch this video: My World Your World - YouTube



For children to understand their world, it is important that they know some similarities and differences between the natural world around them and contrasting environments. Use digital technologies to access different environments.

Utilise a range of maps of cities and discuss the images shown. Highlight roads, manmade/natural structures, rivers, and homes. Introduce children to map terminology – gradients etc.

Revisit the book The Tomorrow Book by Jackie French – building your town needs structure, not just infrastructure (SDG 9 Industry, Innovation, and Infrastructure) but using sustainable attributes such as solar (SDG 7 Affordable and Clean Energy) and thinking of our other living species (SDG 15 Life on Land).

Image credit: Rebecca Bonar, Sydney, Australia

This powerful example shows what young children want in their future towns – windmill power, trees, gardens, and spaces for nonhumans to live alongside humans together. This demonstrates authentic voices of children wanting change SDG 13 Climate Action.

They are capable empowered learners!

By allowing children to share their creations, you provide opportunities for them to explain the process they have used. Reflect upon previous discussions about their locality and culture– remember the old life – boats and the new? Discuss what "culture" means – highlight different cultural aspects.

Place-based SDG 4 Quality Education – on your regular trips into the community, what landmarks reflect culture? Discuss, feel, and take photographs. Remember the Mosaic approach – use iPads to discover their town/parks.

Examples to look out for on your neighbourhood walk: statues – architecture – roofs – churches – flags – football teams – clothes – shops – food. Reflect on culturally different styles of homes. Use digital technologies to support your researching together. Reflect after the walk on key elements that children noticed on their walk – take iPads or cameras to record.

Revisit the Legacy Cafe's ethos (SDG 9 Industry, Innovation, and Infrastructure) of involving intergenerational learning and sharing of cultures that reflect the community. This could be sharing stories whilst cooking national dishes over a fire or inviting parents/ grandparents in to highlight traditions from their family.

In Northern Ireland, the Beth Johnson Foundation - *Linking Generations Northern Ireland (LGNI) has led the way in connecting generations in communities across Northern Ireland since 2009 and is the only organisation solely focusing on the development*

and promotion of intergenerational approaches to address societal issues.

Linking Generations Northern Ireland - Beth Johnson Foundation (bjf.org.uk)

In Tasmania, Dr Emery and Dr Beasy built on the UK model (Boyd, 2018) and developed an Australian version. Listen to a webinar which discusses this:

EfS Tasmania webinar: The Tasmanian Sustainability Skills Cafes Projects: Working with communities – A story of successes with learnings to share

Skills 4 Kids Cafe – ArTELIER Tasmania

In the Education Inspection Framework (EIF)(UK), it states that your curriculum should give all learners – including the disadvantaged and students with SEND needs – the "cultural capital they need to succeed in life". (SDG4 Quality Education).What is cultural capital?

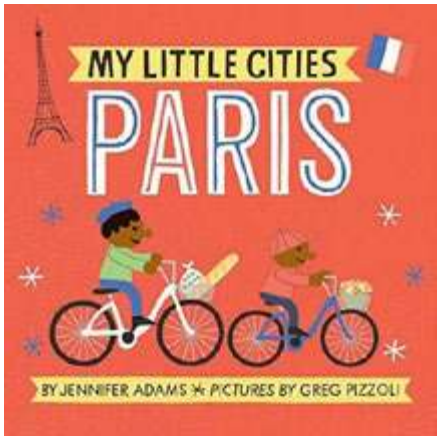
Read this interesting article UK article that explain its significance for educators: EYFS best practice: An essential guide to... cultural capital | Nursery World

Children need to know some similarities and differences between different religious or cultural communities in their community and country. Again, on your neighbourhood walk look for churches and other symbols. Invite cultural or religious leaders into the setting to talk and if possible, visit the buildings.

Look at cultural icons from international cities – what do they recognise?

What is it? Try and make a cultural icon for their town (STEM all aspects).

Read the books My Little Cities (London, New York, Paris, San Francisco) by Jennifer Adams and find the cities on a world map both on paper – atlas /globe or digitally.



Discuss how they would get there – reflect on SDG 7 Affordable and Clean Energy – carbon footprint with aeroplanes or SDG 9 Industry, Innovation, and Infrastructure- where is and how would I get there "my nearest airport?".

Use different multimodal materials/resources to recreate these iconic images – use all aspects of STEM.

Using either blocks or recycled materials design, then construct – in the process compose and decompose the shapes so that children recognise a shape can have other shapes within it, just as numbers can.

Explore and investigate how shapes can be combined together and make new shapes: for example, two triangles can be put together to make a square.

Provide high-quality pattern and building sets, including pattern blocks, tangrams, building blocks and magnetic construction tiles, as well as found materials.

Record the process from beginning to end in a thinking pad – demonstrate all the issues of building it – reflect upon Froebel's

original gifts which encouraged children to build and evaluate. He did not allow children to knock structures down but encouraged a re-evaluation of what was needed and then adapt the structure further. So, this was the beginning of engineering thinking and practice.

His "pinpoints" are another way to encourage children to create and build and understand structures.

Read this to understand the origins of structural and mathematical thinking in Froebel's kindergarten: Layout 1 (froebel.org.uk)

Read this page about Froebel's gifts and block play: Froebel's gifts and block play today (communityplaythings.co.uk)

Provide a range of natural and everyday objects and materials, as well as blocks and shapes, for children to play with freely and to make patterns with. When appropriate, encourage children to continue patterns and spot mistakes. Introduce children to ecological building materials and reflect on difference with traditional bricks, Compare weight, texture, strength, cost, and sustainability of them. Make your own eco bricks! Investigate bee bricks – what are they?

This example of a development in progress using plastic filled bottles. Link here to SDG 8 Decent Work and Economic Growth.

Image credit: Ysgol San Sior, Llandudno

Sustainable Development Goals (UNESCO, 2015)

Ensure sustainable consumption and production patterns.

Possible examples of Responsible Consumption and Production STEM provocations:

Support children to learn to be efficient.

New terminology: ecosystems, waste, consumption and classification.

12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimise their adverse impacts on human health and the environment.

Link to previous – SDG 2 Zero Hunger and SDG 3 Health and Wellbeing – soil testing.

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.

First step is to raise their awareness of recycling (Link here to SDG 13 Climate Action).

Brainstorm together what they think recycling means. Ask them what they do at home, if they recycle rubbish at home can they explain how and why they do this? Ask them to photograph and detail (with parental support) about the recycling bins at home both inside and out, and what goes in the different coloured bins.

Place-based learning (SDG 4 Quality Education) – on your daily/ weekly walks look for any large recycling bins. How are they different to the bins at home/school? Potentially research local waste centres and what's recycled there.

Invite them with their parents to look at some packaging in their home and ask if it can be recycled or not. How can you tell?

Which bin in the home does the different plastics go into?

Science experiment – have a selection of paper, plastic, and metal. Ask how they know if it is recyclable. Some packaging may have a recycling logo on it. Help them to find the logo or see where it says the packaging can be recycled.

Technology – research examples of recycling logos online. Use different materials, both artistic and technological, and make a poster for the setting/class reminding everyone to recycle their waste.

Link to recycling logos: Recycling Symbols Explained | Identify What You Can Recycle (pureplanetrecycling.co.uk)

Watch and discuss what colour bins are applicable for different materials: Early childhood journey of waste - YouTube

Encourage children to recycle their snack waste – invite parents/grandparents in to build a compost bin with recycled materials and utilise this in your gardening process. Encourage them to understand how it supports the soil's nutrition. Discuss different types of waste – food, plastic, etc.

If in a larger school setting, ask the children to sign up for a compost team – collecting fruit/scraps from each classroom. Have plenty of compost bins around to use. Design compost signs to hang above the bins.

Children can also make mini composters as shown here.
They can research the school and find the most important locations for these mini composters.

Image credit: Erin Parke, Stranmillis University College, Belfast, Northern Ireland

As you add new food scraps, cover with dry carbon materials like straw, sawdust and fallen leaves, as this will help the compost process to develop nicely.

Another type of compost to make!

During the autumn, collect all the fallen leaves – mix them with used coffee grounds and wet thoroughly. It provides nutrition for the soil but also recycles!

Image credit: Phil Pettitt, Community Greening Manager, Botanic Gardens, Greater Sydney, Australia

Make food jars/bottles with children to observe what happens when food rots. Put a balloon on top to help children see even better. What is happening as the food rots? What is in the balloon?

Image credit: Jayne Bell, Stranmillis University College, Belfast, Northern Ireland

Make a wheelie wonderful worm farm: Wheelie wonderful worm farm on Vimeo

Reflect on how worms are part of our ecological systems. Consider them as equal participants in our world – discuss this with the children.

Guide to Worm Composting - CCC BRAND.indd

Do a science experiment and compare the different three examples above of compost making. Which seems to be the most nutritious? How do you measure this?

CGPSE (CCEA 2018, p.34) Children can *"show interest in and care for their environment, and care for and respect living things and handle them sensitively."*
Peter Rabbit has become a Food Hero – the United Nations, FAO, and UN Foundation have teamed up with Peter Rabbit and his friends on

a digital campaign to encourage their fans to be Food Heroes.

PETER RABBIT™ teams up with the United Nations, FAO and the UN Foundation on global campaign to mobilize more food heroes - United Nations Sustainable Development

As a school, nursery or setting, become part of this campaign. This campaign wants to encourage youth and their families to become Food Heroes like Peter and his friends, by choosing healthy food, reducing food waste, and celebrating other Food Heroes who work hard to get food to our plate every day.

An activity that is linked to Mathematics – classification/sorting – sorting waste to introduce them to recycling. What items seem to be thrown away a lot? For example, plastic bottles.

Have a school policy that each child has their own water bottle to discourage waste.

Northern Ireland Water promotes the responsible consumption of water with children of all ages. They focus on waste in the water system and how the water is cleaned, with pre-school children being one of their target groups. A simple jar experiment allows children to see the detrimental impact of flushing items that should not be flushed.

1. Put water in two jars (could be more than two).
2. Put some toilet paper in one and a wipe in the other. You could make others with ear buds, dental floss and other random items like rubber ducks!

3. Close the lids and get children to shake both to see what happens to the material inside.
4. The toilet paper disintegrates but the wipe stays full and does not break down.
5. Explain to children that wipes can cause blockages in the sewage system, and they never break down so we should never flush them.

Image credit: Northern Ireland Water

Interesting fact: the wipe has been in this jar for **5 years** and was labelled as "flushable" on the packet. Use Northern Ireland Water's reference to the 3 Ps to remind children what they can flush; 'pee, poo or paper'. This can be linked back to SDG 6 Clean water and sanitation.

Enable the children to be decision makers in recycling at school – how many bins does a school need?

Ask children/parents to bring in items of waste from home. Ask them to save any empty boxes, paper, plastic containers or tins in the bin. Recommend that you always wash out tins and plastic containers.

When washed, place a selection of objects of each material out, making sure none of the objects have ragged or sharp edges or corners. This is perhaps better to do outside. Use plastic biodegradable gloves.

Look at the waste – talk about all of these objects being suitable for recycling and why. Explain that recycling is the process of waste being made into something new that can be used again. Give examples.

Check to see if they can identify from which material each object is made. For example, paper, plastic, metal – use correct terminology. Use all senses to examine materials. Encourage the children to sort the objects into three groups of paper, plastic, and metal.

Do a waste audit of the bins at school/nursery – this will need parental support/gloves – but ask the children to reflect upon the items found. Are there materials that keep reappearing? How can you reduce rubbish?

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

Introduce the children to the language "ecosystem". Watch together – pause and discuss the language. Make small world trays of different ecosystems. Remind the children we are part of

the ecosystem. Watch the video: Ecosystems for Kids - YouTube

Encourage focused observation of the natural world and plan *"a wide variety of learning experiences that help to develop a range of skills and concepts, including observation, experimentation and free exploration of the children's surroundings"*, CGPSE (CCEA 2018, p.33).

Ask open-ended questions like "I wonder what would happen if....?" Always encourage reflection and provoke critical thinking with longer and more detailed responses. Sustained shared thinking is especially powerful in this context. This is when two or more individuals (adult and child, or children) 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc.

Start to develop an understanding of environmental rights – we are aware of the UNCRC article 12 Rights of the child – but remember to consider our environment too. In New Zealand for instance, rights have been awarded to rivers, mountains, and land. Discuss this – what rights do children feel they have? How do they see their relationship with living things in their world?

Become part of a rights perspective – Rights of Nature is the recognition and honouring that nature has rights. It is the recognition that our ecosystems – including trees, oceans, animals, mountains – have rights just as human beings have rights. Rights of Nature is about balancing what is good for human beings against what is good for other species, what is good for the planet. It is the holistic recognition that all life, all ecosystems on our planet are deeply intertwined in a global ecosystem.

Global Alliance for the Rights of Nature (GARN)

Develop your own set of environmental rights for the non-human world- remind them all lives matters (link here to SDG 5 Gender Equity and SDG 10 Reduced Inequalities – all living things matter). Brainstorm with the children and highlight who are the non-humans. What is a human and how do they differ from other living things- reflect on both animal, bird, insect and plant life. Revisit soil – is it alive?

This target is key overall – 12.8.1 - Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment.

In staff meetings reflect on this crucial target and develop your ethos with these targets in mind. Ensure you also share this thinking with all stakeholders involved in your setting- children, parents, educators, students, Elders, and community members.

Sustainable Development Goals (UNESCO, 2015)

Take urgent action to combat climate change and its impact.

Possible examples of Responsible Consumption and Production STEM provocations:

Help children to understand the climate crisis we are in and how they can make changes.

Terminology: climate, crisis and weather.

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

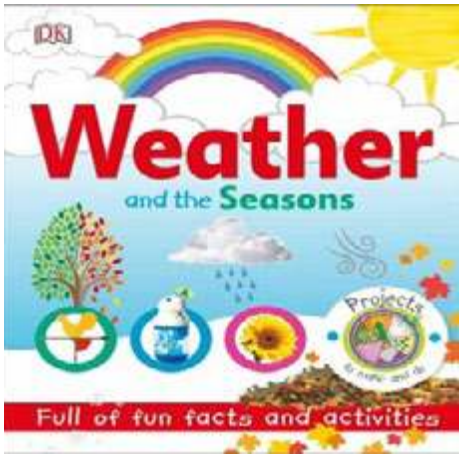
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

Ensure you have a good selection of texts in the reading area that encourages choice, investigation, and interest.

Introduce the children to the rainbow – how does it form? What colours are in the rainbow? Use mathematical language: before, next, between, etc. Make the colours of the rainbow.

Sing along to the I Can Sing A Rainbow song: Rainbow Song | I Can Sing A Rainbow & Lyrics on repeat. - YouTube

Nature-loving and crafty 3–5-year-olds will love finding out all about weather in this charming crafty science book. From sun and snow, to thunder and lightning, children will find out what goes on up in the sky, and why. They'll discover simple answers to difficult questions – what makes a rainbow?



Go on weather walks – try to ensure children experience rain, wind, snow, fog, and sun. Ask questions – for example, do they notice how fog changes perceptions of space. How does the weather affect our feelings? How does the weather affect our bodies (sweat, goosebumps) clothes and actions? Can we walk on ice? How does snow feel?

Encourage children to listen to a range of weather music and in physical education classes, dance and move to it.

CCEA (2018, p. 33) *"Children should have time to talk about the weather and the seasons at appropriate times during the year."*

Link back to rain dances SDG 6 Affordable and Clean Water.

Listen to the sound of rain if you can in your setting – especially if you have a glass roof! Splash in puddles – ensure the children can use all their senses to experience the weather.

Sing and make music to weather songs such as It's Raining, It's Pouring, Doctor Foster and Incy Wincy Spider. Whilst listening to weather music – thunder/lightning/rain – make paintings to reflect the mood. Use multimodal ways of doing, making, and recording. Be imaginative and expressive – Invent, create your own music and adapt.

Discuss the four seasons and how they are different. Make a video of the seasons in the setting garden over a year. Consider the four seasons across Northern Ireland – how do they differ? Highlight significant changes. What does the sun/heat do to the earth?

Research the different weather symbols/ calendars etc. Design your own symbols and have a weekly record of the weather. Analyse the results and discuss any implications to the planet.

Compare the traditional four Seasons of spring/summer/autumn/ winter – what are the characteristics of each season? Link to Steiner early childhood: Rudolf Steiner Press - Seasons and Festivals

Introduce terminology "hibernation" – what does it mean? Why do some animals hibernate?

Link to SDG 15 Life on Land.

This book Stories of the Seasons: Nature Stories Collection by IglooBooks explores the seasons through four different eyes.

Learn how the world changes as the year goes by with Little Acorn, Little Raindrop, Little Snowflake, and Little Bear. Identify and gather key elements of each season, for example conkers.

Make conker soap:
Smash up your conkers into small bits – add to a pan of hot water on the fire (adult supervision) - watch how the material changes into a soap texture. Add ground lavender flowers for their smell and put into recycled hand canisters and use!

Revisit rights of nature SDG 15 Life on Land and SDG 10 Reduced Inequalities and that an acorn and a snowdrop are living things too! Support the children to see important processes and changes in their natural world, including the seasons and changing states of matter. Explore how the soil changes/how water freezes if col/ when the leaves die.

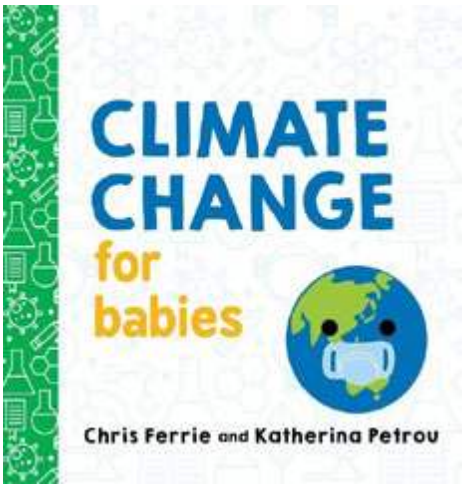
Discuss the difference between weather and climate.

Make a weather chart for a week/month. Can you notice that the weather changes – how can we record different weathers? Look at the TV weather symbols. Make links back to SDG 7 Affordable and Clean Energy.

Watch climate change and discuss: CAFOD: Climate Change Animation for Primary Schools - YouTube

Watch how the earth is heating up:

Read together and reflect on what they have already heard and seen: Climate Change for Babies by Chris Perrie and Katherina Petrou.



Climate Change for Babies is an engaging, basic introduction for youngsters (and grown-ups) to the complex questions of what climate change is and what we can do about it. Full of scientific information and written by experts, this timely instalment of the Baby University board book series is perfect for enlightening the next generation of geniuses. After all, it's never too early to become a scientist!

Brainstorm what "crisis" means. Share provocative images of a world in crisis. For example, the terrible bush fires of Australia in 2019.

Discuss this image of Australia burning from space, then show the next image and ask the children why they think the earth is getting hotter. Why are there more fires/droughts etc? How can humans stop this and help the animals live happily?

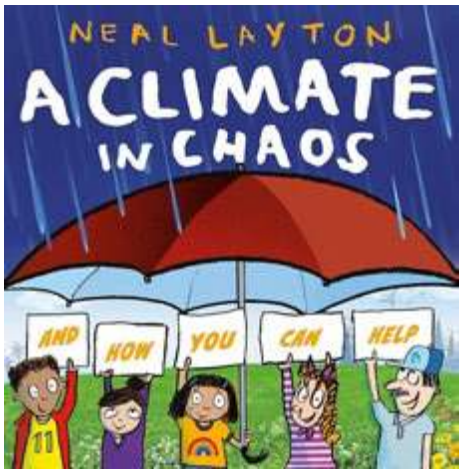
Research images of flooding across the world or melting ice caps. Do an experiment to see how and why ice melts. Make small world areas outside and use water to see how flooding occurs. Observe and interact with natural processes.

Ensure your setting is resourced efficiently with equipment to support these investigations. For example-magnifying glasses or a tablet with a magnifying app.

Encourage children to talk about what they see. Model critical and reflective observational and investigational skills. Model questions – "I wonder if...?" and introduce new vocabulary, encouraging children to use it to discuss their findings and ideas.

For example, 'melting' experiments – leave ice cubes out in the sun, see what happens when you shake salt onto them (children should not touch to avoid danger of frostbite).

Read together: A Climate in Crisis by Neal Layton - and discuss issues as they turn each page.



Our world is warming up, and it's a big problem. Award-winning author/illustrator Neal Layton is here to explain what climate change is, what's causing it and why it's dangerous for animals and humans alike. But he's also full of ideas for how you can help! From eating lots more veggies to walking and cycling and thinking carefully about what we need to buy. There is also an opportunity to open discussion around electric cars and greenhouse gases.

Make a class climate change project – discuss ways that you can help support the planet.

Make links with the community and the ecosystems.
Reflect upon nature's rights – how can animals speak? Who will care for them?

Again, use provocative images – ask the children – what do you think these kangaroos are thinking/feeling?

Interesting read for educators to use: State of Nature 2019 - National Biodiversity Network (nbn.org.uk)

Brainstorm native animals that might be in danger – ask why? Discuss how you can help.

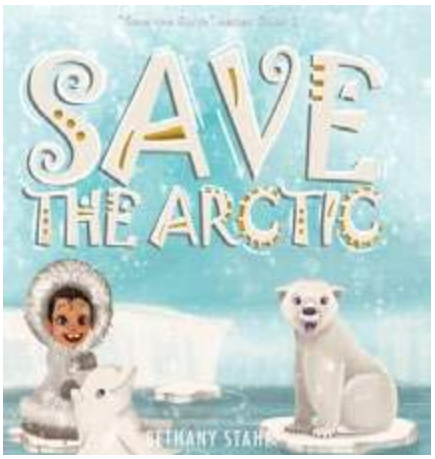
For example, it says: "The species are those deemed most important and threatened, and include hedgehogs, hares and bats, many birds such as the willow tit and the turtle dove, and insects such as the high brown fritillary butterfly".

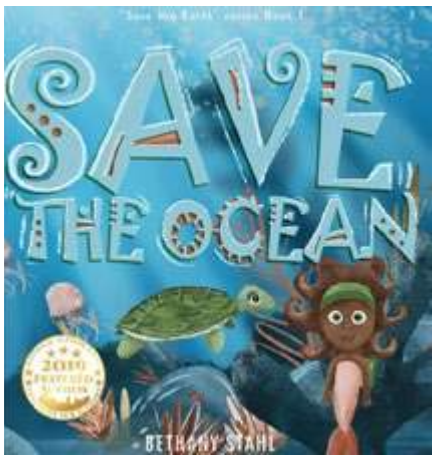
Populations of UK's most important wildlife have plummeted since 1970 | Environment | The Guardian

Also see the following link about the inspirational work of Wangari Maathai:
I will be a hummingbird - Wangari Maathai (English) - YouTube

The United Nations is asking children to become Climate Action Superheroes – there are eight different heroes with downloads and certificates to gain: Climate Action Superheroes - United Nations Sustainable Development

For example – Veggie Vindicator!
UN_Climate-Action-Superheroes_VEGGIE-VINDICATOR.pdf





Encourage children to see their role in climate action. Read the books 'Save the Bees' 'Save the Arctic' and 'Save the Ocean' and plan simple science experiments for children to explore prominent issues in each.

Make ice eggs and explore how they melt in warmer conditions (balloons filled with water and frozen), play a pollination game with wotsits, and make an oil spill then make an oil boom to "clean it up":

Image credit: Emma Cousins, Stranmillis University College, Belfast, Northern Ireland

Make 'oil spills' in class (dye vegetable oil with cocoa powder) and explore how it acts in water. How does the oil react in water? What might the impact of oil spills be at sea? Who might they impact? Use feathers to explore the impact on birds. How difficult would it now be for the birds to fly? Can children clean the feathers?

Consider how birds would feel? How difficult would it be for a bird to clean their feathers after an oil spill? Link to SDG 14 Life Below Water.



Image credit: Chloe Davidson, Stranmillis University College, Belfast, Northern Ireland

Sustainable Development Goals (UNESCO, 2015)

Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Possible examples of Life Below Water STEM provocations:

Terminology: conserve and marine life.

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

Set up table displays to support thinking and reflections.

Save the Ocean by Bethany Stahl | Children's Animated Audiobook | A Story About Recycling - Bing video

Save Our Ocean From Plastic Pollution || Talk to kids about Sea Pollution - Bing video

If you are able, take regular trips to the beach/coastline and observe the debris that has come in on the tide. Link back to your waste audits (SDG 12 Responsible Consumption and Production). Provide small scale play opportunities.

Image credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

Discuss how these items come in on the tide. Where could they have come from? How can we stop this happening? Brainstorm ideas – invite local community members in and let the children share their ideas.

Watch – pause – discuss – plastic oceans – reflect on plastic bags in shops. On a neighbourhood walk look for evidence of plastic thrown away. How does it reach the sea? What happens when plastic gets into the ocean? Reflect on the interconnectedness of the food chain.

Watch: Plastic Ocean - YouTube

How to live (somewhat) plastic free with a baby – WWF-Australia - WWF-Australia

Design litter posters and reminders of the damage debris in the sea does to marine life. Reflect on balloons and how can you celebrate a birthday without balloons. Why are balloons needed at all? Read The Starfish Story by Loren Eiseley and display at children's level. Help children to understand that every little step matters. The word "matters" is revisited.

Reflect together – invite parents and grandparents in so it is a community project.

Model different ways of writing for a purpose and motivate children by providing opportunities in a wide variety of ways. For example, provide clipboards outdoors, chalks for paving stones, boards, and notepads in the home corner. Children enjoy having a range of media to choose from (pencils, crayons, chalk, and pens). Enable children to make marks, take photos, and videos to express meanings and tell their own stories. Children are also motivated to make their own simple books, so provide different coloured paper and paper decorated with fancy frames.

This example was on the local beach – a settee cushion – the children found it hard to understand how. As a result, the children wanted to organise a beach bin campaign to highlight the debris on the beach. Sadly the educator "did not have time "as she was doing literacy and numeracy!

Use images again to provoke discussions – what damage is this waste doing to our marine life?

Reflect again on the rights of nature. Who is speaking for the sandy beach or the sea lion?

Linking back to SDG 13 Climate Action encourage children to think of solutions to the problems ecologically.

Watch together: The World Is Ours: Protect Our Seas - YouTube

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

Revisit ecosystems. Has their thinking changed because of previous conversations?

Pose questions with the children – reflect on the non-living world and recognise they too have feelings.

Link back to feelings SDG 3 Health and Wellbeing.

Image credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

Reflect on the difference between sea water and fresh water. Experiment with the density of the two types of water.

Watch Marine Ecosystems: MARINE ECOSYSTEM | Biology Animation - YouTube

Explore coral reefs: Exploring the Coral Reef: Learn about Oceans for Kids - FreeSchool - YouTube

By encouraging interactions in the outdoors educators are fostering curiosity and giving children freedom to touch, smell, taste and hear their natural world around them with hands-on experiences. Encourage the children to offer explanations for why things might happen, making use of recently introduced or revisited vocabulary.

14a Increase scientific knowledge, develop research capacity.

Ensure that you utilise the correct terminology when introducing aspects of marine life – this could be a co-researching opportunity like in Reggio Emilia where the child and teacher are equal participants.

Consider marine life that lives under water (maths, language) and those that can surface.

Read the book Baby Oceanographer by Dr Laura Gehil and Daniel Wiseman.

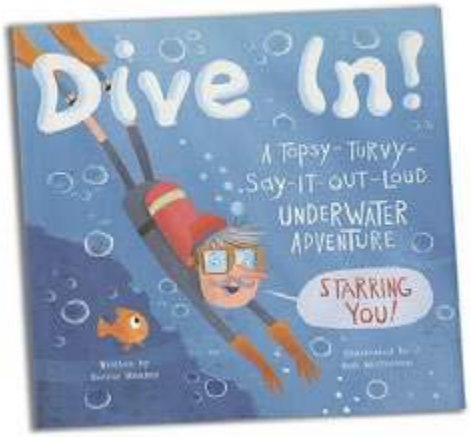
Be a baby scientist! Baby Oceanographer explores the oceans. With his snorkel and mask, he looks at the animals and plants under the sea.

What creatures are found deep down?

Are waves in the ocean like waves in the bathtub? Find out with Baby Oceanographer!

Develop a map of your coastline – identity seaweed/fish etc that live there.

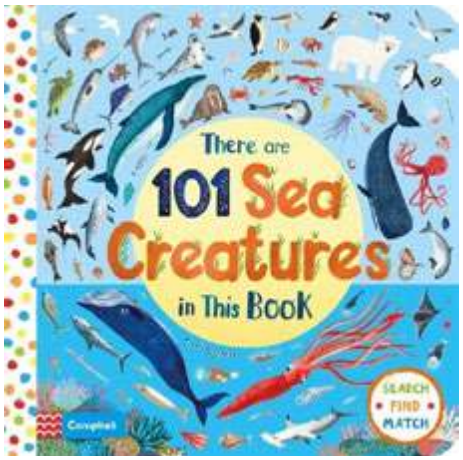
Ensure children and practitioners can name common ocean creatures. How and where they live/eat.



Provide a healthy choice of books to either read or use as research. Use digital technologies – computers, cameras, and iPads to inform their thinking.

Invite coastal rangers, divers, fishermen and lifeguards to talk about what they see in the sea.

Read the book There Are 101 Sea Creatures in This Book by Campbell Books.



This book is perfect for children aged 2+ years who are discovering the world around them. Split flip-flap pages encourage spotting and finding skills as little ones match up each set of sea creatures with their correct environment and learn the animal names.

Research shells to identify the different homes of sea creatures. Use a magnifying glass to examine and inspect its qualities. Provide creative resources to allow children to use art to recreate them. Provide a range of sensory experiences that remind children of the sea. Brainstorm smells/sounds/tastes of the sea.

For example, using the children could make sea salty dough!

Make sea-related play dough. You will need:

- 2 cups plain flour
- 2 tablespoons vegetable oil
- 1/2 cup salt
- 2 tablespoons cream of tartar
- to 1.5 cups boiling water – add until it feels right
- Blue gel food colouring or whatever colour the marine life is you are making
- A few drops of glycerine.

Adult supervision is needed when using boiling water and glycerine.

How to make it:

- Mix together the flour, salt, cream of tartar and oil in a large mixing bowl
- Slowly add food colouring to the boiling water then add into the dry ingredients
- Keep stirring continuously until the dough becomes a sticky, combined material
- Add the glycerine
- When it has cooled, the most important part of the process is to knead it vigorously for a couple of minutes until all of the stickiness has gone
- Add a touch more flour until just right
- Decorate with materials from the beach, or shape into sea horses, seaweeds, shells etc.

By offering lots of different textures for the children to explore with fingers, feet, and whole body you are giving them a holistic experience. Suggestions: wet and dry sand, water, paint, and playdough.

Watch and rap alongside Andy with his music related to the sea/ animals:
EYFS/KS1 Music: Andy Day explores under the sea environments - BBC Teach

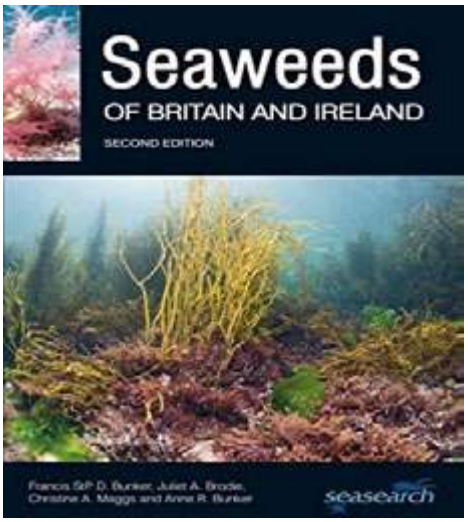
Develop your small world area with marine life materials and a large tray for play. Provide real materials – seaweed, pebbles, sand to create the environment. Take regular visits to the beach if you live near the water. Aim to become familiar with changes over the year. Know the names of the biodiversity (flora/species) so you can share this knowledge with the children.

Research the seaweed on your local beach as parts of the UK for example, have different species. Seaweed lives in the sea, dependent on the temperature. Notice if seaweed from southern waters moves up into northern seas – what does this mean? Make seaweed/flora cards to search for on the beach – do not laminate as this is not biodegradable.

Consider if seaweed is edible – remind children/educators to be mindful here of potential risk. Include them in your setting menu. Your community cookbook – revisit plant-based foods to save the planet. Explore dulse specifically, an edible type of seaweed that has been in Irish diets for more than 1000 years!

Educator read: Seaweeds of Britain and Ireland by Francis Bunker.

The cool temperate waters of the British and Irish seas contain an astonishing 6% of the world's algal species, more than 600 different seaweeds, and yet most divers, snorkelers and rock poolers can put names to only a handful of them.



Let the children use iPads to record changes in the environment.

Take the biodiversity collected back to the setting – paint their observations.

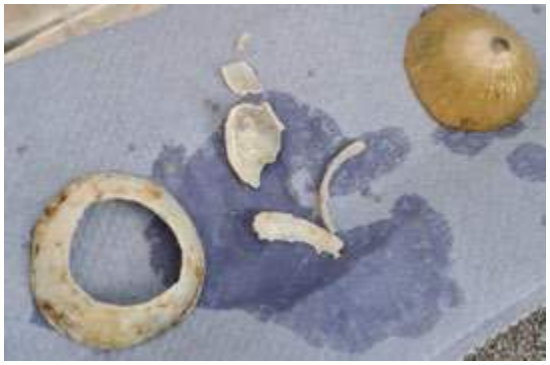
Visit the beach during all four seasons so children do not just play and build sandcastles or think picnics! Reflect on SDG 3 Health and Wellbeing with sun safety.

Let the children experience the beach in winter and see the ice coming in on the tide. By doing this you will constantly build on their understanding of ecosystems and highlight marine ones.

SDG 13 Climate Action can be revisited here, considering effects of climate change on your waters and ocean pollutants.

Safety warning when close to open water.

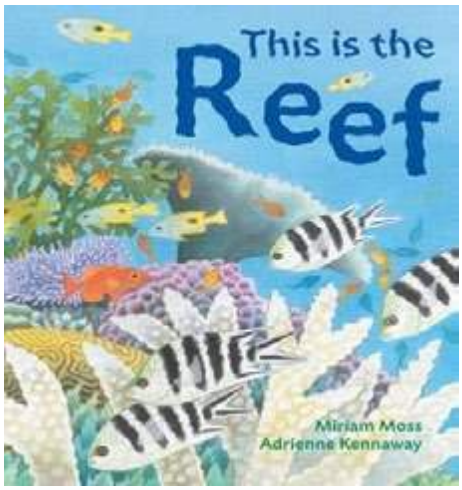
Explore the impact of acid on shells; put some shells into salt water and another set of shells in vinegar. Compare and observe what happens over a few days.

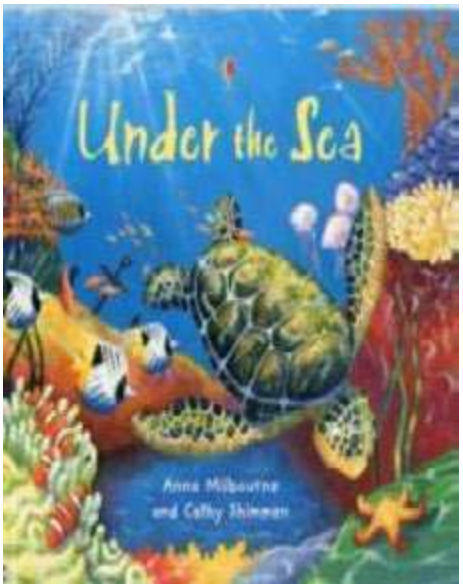


The vinegar breaks down the shells. Why? This is what is happening to coral reefs at sea. As the sea becomes more acidic (due to increased CO2 content), the seascape is destroyed.

Image credit: Jayne Bell, Stranmillis University College, Belfast, Northern Ireland

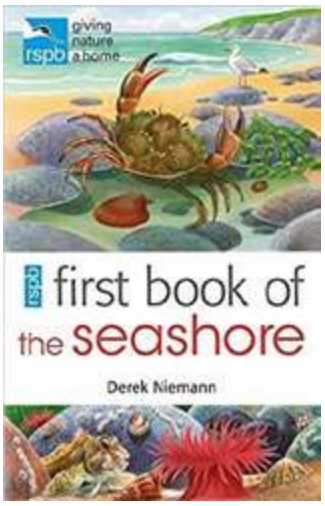
Utilise the physical environment to include objects and materials with different patterns, colours, tones and textures for babies and young children to explore.





Encourage trips to the local library to look for research books – ask the librarians to share books with them.

For example, The First Book of the Seashore by Derek Niemann. Ensure children realise there is plant life/bird life/insect life at the beach and in the sea, as well as creatures that live in the sea water.



Learn all about identifying nature at the seaside with this beautifully illustrated spotter's guide, with 35 seashore creatures and plants to learn about, the RSPB book is perfect for budding wildlife explorers and naturalists.

Use digital technologies to support your research: Sea Life - National Geographic Kids (natgeokids.com)

Help children to understand the geography of where Northern Ireland and Ireland are positioned – use maps, digital technologies, globes, and other resources that allow them to capture a feeling of where they are.

For example, after researching the positionality of Northern Ireland and Ireland a provocation was provided with a water tray, islands, plant life etc in small world play to recreate them. The children poured in water and then the small world items were added.

Afterwards the tray was placed on a lightbox to explore further including the transparent shells.

Image credit: Tugulawa Early Education, Brisbane, Australia

This links back to SDG 4 Quality Education and the international Reggio Emilia approach to learning.

CCEA (2007, p.7) *'create, develop, present and publish ideas and information using a range of digital media.'*

Sustainable Development Goals (UNESCO, 2015)

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainbly manage forests, combat desertification, and halt and reserve land degradation and halt biodiversity.

Possible examples of Life On Land STEM provocations:

Children to understand how they can help support the ecological systems of the land.

Terminology: mountain ecosystems (revisit ecosystems), degradation, desertification and conservation.

It is important that quality education recognises the enabling environment – as stated in SDG 4 Quality Education, place-based embraces all of the locality that your school/setting is located in. That locality embraces culture, geography, history, culture, and community. Life on land is the enabling environment – protect and care for it and all living/non-living organisms within it.

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains, and drylands, in line with obligations under international agreements.

15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods, and strive to achieve a land degradation neutral world.

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide benefits that are essential for sustainable development.

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species (see below).

Encourage children to become familiar with their local place and environment. As the Education and Training Inspectorate in NI (2015) suggests, children should have experiences on their doorstep. Go on a scavenger hunt, reminding the children to never pick or pull anything; only collect items that are already on the ground.

(L)Image credit: St Anne's Primary School, Belfast
(R)An egg box scavenger hunt – Image credit: Stranmillis Student teachers

Can they do a colour hunt for items in their "place"?

Image credit: Stranmillis Student Teachers

Use their collected items to make natural art and "photos":

Image credit: St Anne's Primary School, Belfast

Put together a sensory tray to represent a local ecosystem, for example the farm; include a sod of grass, hay, and mud. Include loose parts for the children to create new landscapes with. Explore paths and fences and how they might impact the wildlife living in the sod, for example.

Image credit: Dan Mairs, Student Teacher at Stranmillis University College

Link to SDG 9 Industry, Innovation and Infrastructure, SDG 11 Sustainable Cities and Communities and SDG 12 Responsible Consumption and Production.

Can children explore making fences in their outdoor space? Use sticks to create a repeated pattern, perhaps to keep the fox out. Reflect back on why the fox might be coming to the garden? Is there food? Why has the fox needed to leave his home? What is the impact of keeping him out?

Image credit: Lackan Cottage Farm, The Mournes

Consider traditional stone walls as an alternative.

Image credit: The Irish Road Trip

Discuss why we need fences and walls. What could the impact of these walls and fences be? For example, what happens if the fox's home has been destroyed due to local building and it needs food and shelter? Encourage children to think about the fox's experience of the fence/wall.

Link back to SDG 9 Industry, Innovation and Infrastructure, SDG 11 Sustainable Cities and Communities and SDG 12 Responsible Consumption and Production.

Consider where else there are walls in society - particularly in Belfast's Peace Walls. Continue the discussion about how walls might make people feel? What might they suggest? Link to SDG 16 Peace, Justice and Strong Institutions.

It is important to introduce children to the correct terminology alongside provoking images (degradation – desertification – reforestation).

Brainstorm how this could be happening and why? What are the consequences of the earth drying up or trees being chopped

down? Link back to SDG 13 Climate Action and melting ice caps.

Design experiments to recreate these images and test out by planting seeds/ plants. Monitor and see how they survive. Watch and learn why we need trees: Trees | Educational Video for Kids - YouTube

Design posters/make videos to demonstrate why we need trees. Look at tree identification markers – bark, bud, the leaf - and research together, both educator and children, to learn about both local native trees and nationally. Reflect on why some trees can live in the bush/desert with very little water compared to native trees in NI, such as the oak.

Research within the community opportunities to fund raise for trees and other plant life.

A simple experiment to explore how trees and plants support soil health and ultimately water cleanliness can be set up for children to explore as below (link to SDG 6 Clean Water and Sanitation and SDG 15 Life on Land).

Children can observe how plants help to filter water and prevent run off which ultimately leads to flooding (link to SDG 13 Climate Action).

The Woodland Trust UK encourages schools, nurseries and EY settings to get involved in planting more trees: Plant Trees With Your School - Woodland Trust

In St. Anne's Nursery School, Belfast, new trees were planted in the children's play area to bring more greenery to the children's immediate environment. These were planted at the children's level where they could interact and observe them closely.

Image credit: St Anne's NS, Belfast

Another example of this type of collaboration and community tree planting is Millennium kids Inc along with Wesley College Perth, WA. Its 10-week planting program at Sir James Mitchell Park in South Perth, WA, shows the success of it. Early childhood settings can collaborate with local community groups or elders and help support the redevelopment of trees.

Perth tree conference investigates ways to boost city's dwindling canopy - ABC News

Before and after! Image credi:t Millennium Kids and Catrina Aniere

RSPB First Book Of Trees by Derek Niemann (and others)

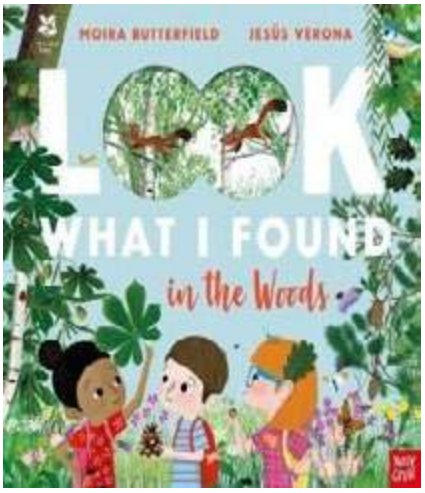
Each RSPB spotter's guide comprises 35 common garden creatures for beginner naturalists. Through beautiful full-page illustration accompanied by key information about each creature, the books are designed to encourage young children's interest in the outside world and the wildlife around them. A spotter's chart for children to fill in, and links to internet-based activities in each book, mean that children can extend the fun.

Children need to understand their world, but so must the practitioners who support them. That involves naming of trees, recognition of leaves, flowers, birds, and insects. Become nature detectives, courtesy of the Woodland Trust:
Nature Detectives - Woodland Trust

Use this OPAL resource to help with tree identification: https://www.imperial.ac.uk/media/imperial-college/research-centres-and-groups/opal/Tree-Identification-guide-8pp-chart_corrected.pdf

Go on woodland walks – place-based (SDG 4 Quality Education) to develop a regular relationship with the locality. Observe the seasonal changes and habitats. Introduce terminology – evergreen and deciduous trees.

Open your senses to a world of wonder by taking a walk through the woods! Set off on an outdoor adventure and find natural treasures, from prickly pinecones to swirly snail shells, then learn more about the plants and creatures of the forest in this fact-filled guide to the outdoors book by Moira Butterfield.



Revisit SDG 3 Health and Wellbeing, SDG 4 Quality Education and embrace the natural environment. By immersing children in the outside environment, they will naturally develop a relationship with it and therefore will care for its future.

Children can explore the legend of Finn McCool and hear about the mythical creation of the Giant's Causeway and Lough Neagh.

"Lough Neagh is a place of mystery and legend created by the giant Finn McCool according to the many stories around its origins. Fresh from causing havoc up at the Giant's Causeway, the big man scooped out a mighty fistful of earth to hurl at a retreating Scottish giant. This was likely the one and the same involved in the Causeway drama. Miscalculating, an enormous sod flew past him and landed in the sea forming Lough Neagh and the Isle of Man."

Stress children's need to care for and look after our environment.

Revisit Rights of nature here too – consider that children can be agentic in their relationship with the environment.

Consider how children interact with the materials in the environment - how water changes – how clay feels - how the dry land crunches. Introducing tracking skills and identifying natural

elements such as cow pats! Sliding along a trunk and lying on the grass with their eyes closed.

Sensory natural play is holistic place-based learning interconnecting with all aspects of children's development.

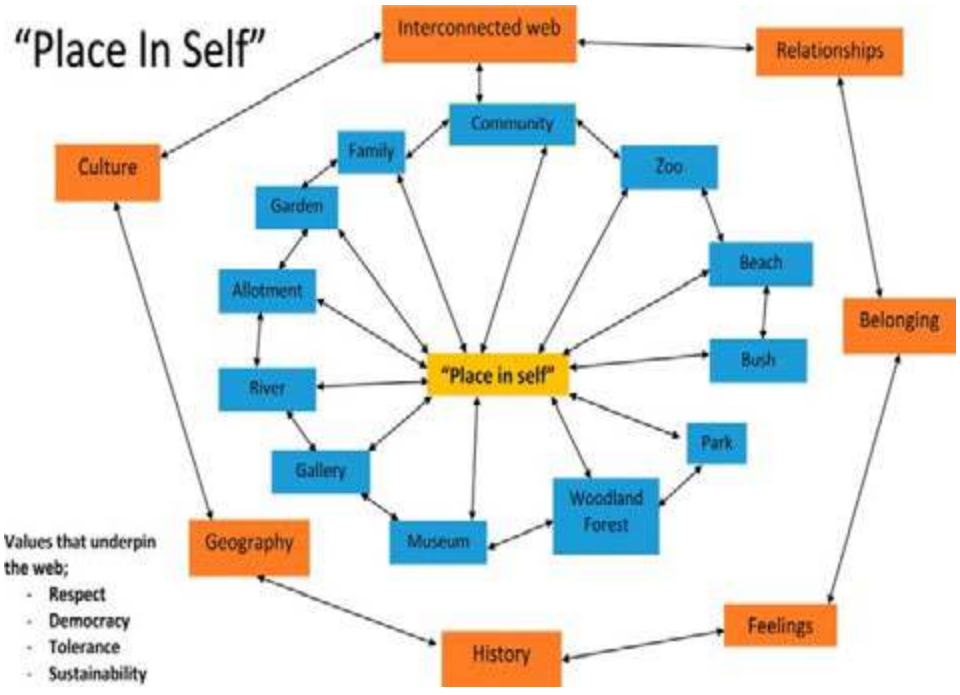
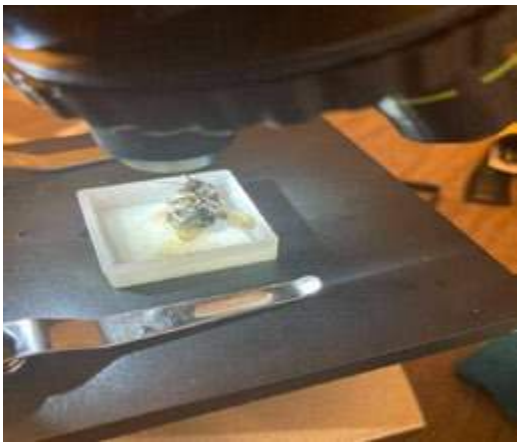


Image credit: Boyd and McNeill, 2017.

Set up display tables to engage thinking.

Image credit: Little Mini Lighthouse family Day Care, Victoria, Australia



Set up opportunities for scientific exploration both outside and inside – magnifying glasses and research books to help understand how to care for our planet. Do not pick buds or flowers but use anything 'found' on the ground to investigate. Outside the children were able to examine the finds in their natural environment, but inside can provide opportunities too! Ensure you have enough tools and materials – this image is Kenton investigating a dead bee he found outside under a microscope.

Image credit: Gemma and Kenton Plumb investigating homebased learning, England

Providing a safe space to allow children to articulate their thoughts and comment on things they have seen outside, including plants and animals, extends their learning further.

In their observations encourage interactions that foster curiosity and ensure all plants/trees/animal/insect parts are labelled and named. It must not be tree – leaf - both traditional and indigenous names must be used.

As noted earlier, it is important to recognise both human and non-human elements of the environment. Rather than focusing on a humancentric approach, develop an awareness of relational ethics where the environment has rights too.

In early childhood importance is placed on "positive relationships" but this must be across non-human environmental aspects too - revisit rights of nature.

Introduce the idea to children that trees have feelings – they breathe – like us they need water, sun, and relationships.

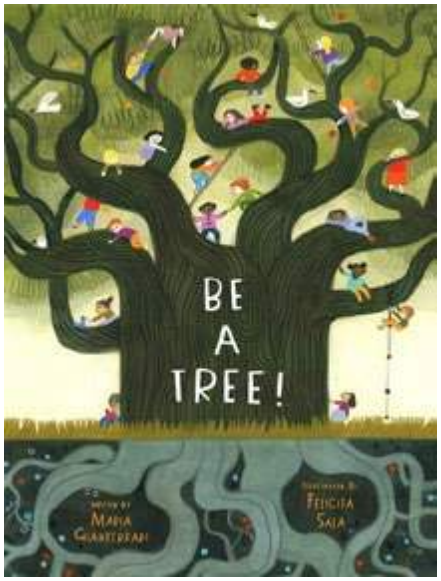
Do trees have feelings?
How Trees Secretly Talk to Each Other in the Forest | Decoder - YouTube

Read together: Be a Tree!

Stand tall.

Stretch your branches to the sun. Be a tree!

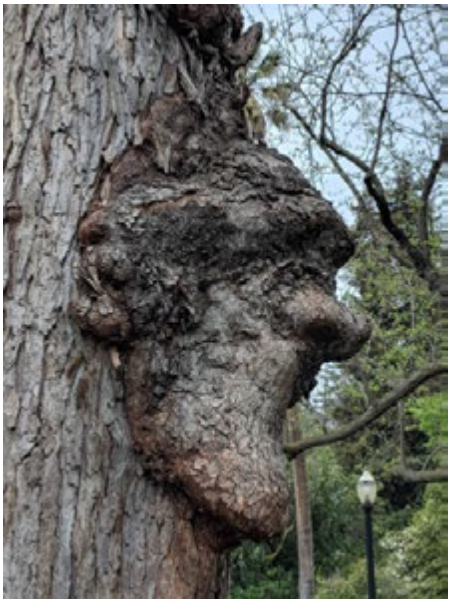
We are all like trees: our spines, trunks; our skin, bark; our hearts giving us strength and support, like heartwood. We are fuelled by air and sun.



And, like humans, trees are social. They "talk" to spread information; they share food and resources. They shelter and take care of one another.

They are stronger together.

Some adults, when doing outdoor learning with children, ask the trees for their permission to be in nature- this demonstrates their respect for nature. Can you find a tree in your setting with "facial features"?



Personal, social, and emotional development is a universal prime area, and it is crucial for children to lead healthy and happy lives, fundamental to their cognitive development. Underpinning their personal development are the important attachments that shape them in their social world (cultural capital).

The Rights of Nature embrace the Indigenous thinking from thousands of years of living alongside and in harmony with nature. Be aware of the environment by noticing – a noticing approach. "Do not pass by unseeing" (Boyd, 2018).

When walking on the beach with children, ask them to reflect upon the footprints in the sand. Pose the question – whose beach is it? Do we consider the ecological life of the beach – who has more rights? Horses – children – dogs – birds?

Pose this question. Link to SDG 14 Life Below Water, why is the beach important to marine life?

Consider the importance of clean beaches. What could we do as a community to ensure this?

Go to the coast and do a beach tidy up with parents and local community. Ensure plastic eco gloves are used.

Researching on the beach – what are your observations? What do you see /hear/ smell/ touch?

Record who has been on the sand. Analyse the prints – discuss length and weight – pressure of print suggests how heavy the animal/bird is. How long does the image stay – is it dependent on the wetness / hardness of the sand?

How often does the tide come in and sweep them away?

Start to recognise whose "feet" are these?

Consider other places you could see prints – on walks in earth in woodlands. Pose questions about changes in materials, for example, wet and dry sand/earth/riverbanks in relation to the prints made.

Revisit soil from SDG 3 Health and Wellbeing and SDG 13 Climate Action.

Audit local community members to gain local knowledge or green skills. Encourage intergenerational links across the community, providing sensory stimulation across the ages. This is an example of caring for the community – Farmer Jim comes into the setting to share his knowledge, passion, and skills. This is authentic community intergenerational learning.



Image credit: Karen Broomfield Tugulawa, Early Education, Brisbane, Australia

Here he is sharing how to make compost and why nutritious soil is important – link back to SDG 3 Health and Wellbeing of non-human things. The children reflected in their thinking pads how Farmer Jim is helping the planet and their understanding too.

As well as noticing prints, look at colours within the environment. There is not one shade of green and helping children to discriminate shades will help their pre-literacy and numeracy skills. In Montessori classrooms they use tiles showing different shades of the same

colour – possibly a resource to get or go to the local hardware store and get paint samples and make your own. This activity sharpens children's observational capacities, vital in science experiments.

Go on colour walks and get the children to find as many different shades as possible, of greens/browns etc, that they can (see colour hunt earlier). Make a colour board with pegs (as seen) - this will also help fine motor control as well as science observational skills.

Make your own shades of colours – this is not just art but again it's a skill to be able to discriminate.

Set up a creative area so children can be autonomous learners trying out shades themselves.

Image credit: Riverside Nursery, Edinburgh, Scotland

Can they make natural paints using grass? Leaves? Flowers?

Making environmental colours – understand colours. For example, there are complementary colours, which are:

- Red and green
- Yellow and purple
- Blue and orange.

It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what

children see, hear, and participate in is crucial for developing their understanding, self-expression, vocabulary, and ability to communicate through the arts.

In a 6-hue colour wheel, they can aways be found opposite from one another: Let the children experiment and make up their own colours and name them.

In their creativity sessions encourage the children to talk about the different shades between colours. Help them to explore the shades and refine their investigation of colour mixing – for example: "How does blue become green?"

Consider natural elements in the world such as mountains, rivers, valleys, forests, volcanoes – discuss with the children their (non-living) place in our shared world. Reflect upon how human activity is impacting. Understand about their creation. Transfer the learning outside in the natural world to support concrete thinking. Revisit Rights of nature – interestingly New Zealand has granted rights to rivers, mountains and volcanoes.

Use the thinking books (SDG 4 Quality Education) as a visible aid.

This example shows the children investigating everything about volcanoes – the thinking book went to the sandpit as an

information source and record keeping tool.

Image credit: Karen Broomfield Tugulawa, Early Education, Brisbane, Australia

Brainstorm their favourite animals and why. Discuss domestic versus wild animals.

Which animals are native to Northern Ireland, and which are not?

Research together to find out about them. Are they safe from extinction?

Reflect on the homes that wild animals live in. Revisit SDG 1 No Poverty in terms of habitats and SDG 13 in relation to Climate Action.

Question- why do we have zoos? Are they a positive or negative experience? Who has asked the animals? Debate between children and educators if a zoo is positive.

On the positive side, children have opportunities to see first-hand animals from the wild, providing valuable quality experiences.

But from an animal rights perspective – who asked the koala bears if they wanted to sit in a zoo shed waiting for their photo opportunity time for the human visitor? They look tired sad and lonely.

Children need to reflect and consider the rights (and feelings) of animals.

Sustainable Development Goals (UNESCO, 2015)

Promote peaceful and inclusive societies for sustainable development, provide access for justice for all and build effective, accountable and inclusive institutions at all levels.

Possible examples of Peace, Justice and Strong Institutions STEM provocations:

Help children to understand the importance of fairness, rights, and otherness.

Terminology: peace, justice and strong.

Revisit: inclusive (SDG 5 Gender Equality and SDG 10 Reduced Inequalities).

16.1 Significantly reduce all forms of violence and related death rates everywhere (including non-living and other living things not just human).

16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all.

16.7 Ensure responsive, inclusive, participatory, and representative decision-making at all levels.

Define peace – what does it mean to the children? Peace as in quiet? Introduce the idea of conflict versus peace.

Consider the effects of war and conflict violence. How can we help children to reflect? What symbols are used in peaceful or reconciliation? Reflect on white doves - white flags - red poppies. Celebrate and remember Armistice days from all wars and introduce the discussion around the Troubles. Be mindful of sensitivities.

Use imagery from the Troubles to start discussions – What are the stories of the murals? Why is it important to listen to both sides of the story?

Consider the Peace Walls in NI - The Belfast school 'peace fence': 10 years on - Investigations & Analysis - Northern Ireland from The Detail

Do walls and fences support justice and peace? Why do we need walls? Revisit Rights (UNCRC,1989). Revisit walls and fences and their impact on animals in SDG 15 Life on Land.

Create poppies to sell on Armistice day. Link to Economic sustainability.

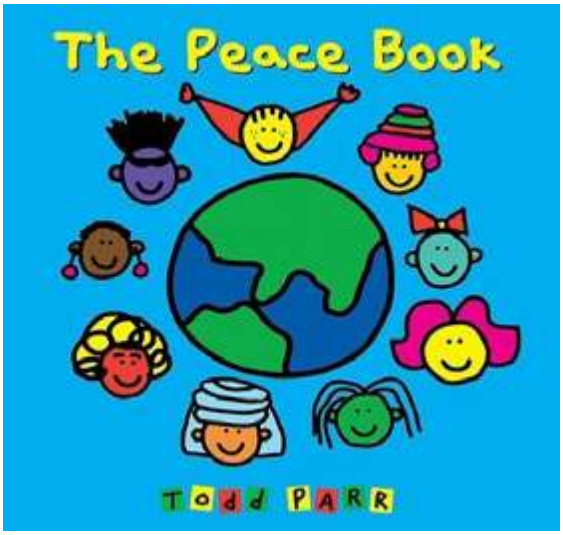
Develop peace rules – how the children can learn and play together in harmony.

It is important that children understand the reasons for rules, know right from wrong and try to behave accordingly. With the children develop your own democratic room rules.

Circle time and a special story chair also provide opportunities for children to have a voice and help children to elaborate on how they are feeling.

Read informative books such as The Peace Book by Todd Parr.

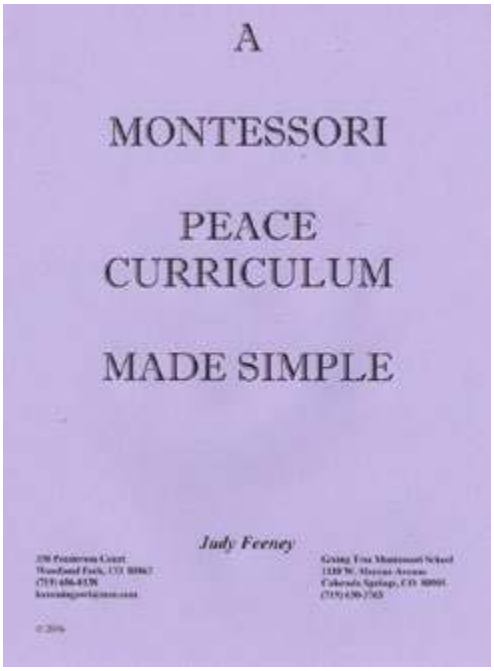
This provides positive and hopeful messages of peace in an accessible, child-friendly format. This book delivers a timely and timeless message about the importance of friendship, caring and acceptance.



Watch together/read the book: What Is Peace? by Etan Boritzer:

WHAT IS PEACE? Children's book by Etan Boritzer - YouTube

A book that gently teaches the true essence and workings of peace.



Early childhood is the time for building relationships, and helping children to work and play cooperatively, taking turns with other.

Early Years Pioneer
Maria Montessori

This curriculum gives teachers (of any age children) concrete activities to use for the continuing transformation of themselves, their children, and their classrooms on the path of peace.

It presents a year-long (or lifelong) curriculum of peace work using environmental activities, music, cultural activities from Native American tradition, storytelling, and children's books, along with extensions and resources. (Suitable for ages 3-9. Extensive resource section included).

Interesting educator read – Montessori's contribution to peace: Maria Montessori's Contribution to Peace Education (columbia.edu)

In a divided society like NI, children in the earliest years are encouraged to interact with others from different backgrounds. There are a suite of programmes and projects aimed at improving educational outcomes and good relations. These include the Media Initiative (mentioned earlier), the Sharing from the Start Project and the Rural Respecting Difference Programme, which all offer opportunities for young children to interact with others from different religions, races and communities.

The Shared Education Programme, run by the Education Authority, occurs when schools from different sectors come together in local partnerships with the objective of providing enhanced educational

outcomes for all young people through collaborative working. Partner schools and teacher attend a range of course with the aim of working on a project together, for example developing their outdoor provision.

Democracy is linked with peace and justice – ensure all children feel they are part of the decision making. Link back to justice – slavery – no voices/rights at all, both living and non-living.

Link to SDG 5 Gender Equality and SDG 10 Reduced Inequalities.

Brainstorm the definition of justice – link back to SDG 4 Quality Education and SDG 5 Gender Equality (fairness).

Justice and equity are not just a human perspective but a reminder to consider the rights of nature. Ask the children to reflect upon this image below or visit a building site near your setting. Reflect on what was there before? Who lived there? Where are they now?

This used to be a field full of trees, hedges, foxes, moles - who speaks for them? Reflect again on the value of our natural environment.

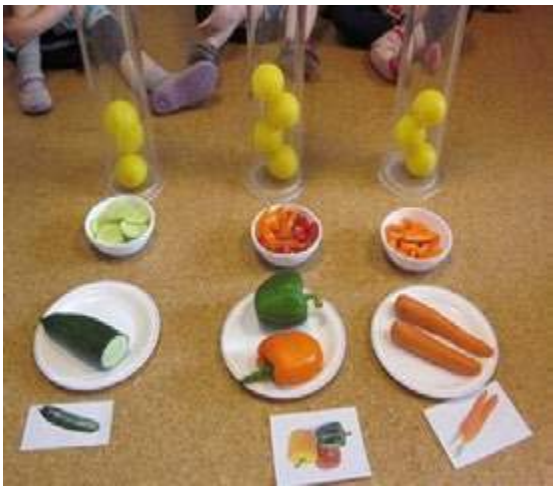
Who will stand up and shout up for trees/rivers etc? Pose questions to include conversations surrounding building on greenbelt land – SDG 11 Sustainable Cities and Communities and SDG 15 Life on Land.

Justice is about reflecting all living things. Who speaks for the non- humans?

Ensure all the children in your setting have a voice – regardless of age, gender, and culture. Consider how you could capture their voices?

For example, how could you record mathematically results from polls/ discussion groups in a democratic and fair way?

One example – use tubes/balls to represent themselves.



Favourite vegetable? – Ensure all children's selection is available – i.e., all types of favourite vegetable not just the adult selected ones. Provide opportunities and resources to support children working with quantities of up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

This is an example of how one kindergarten used the Olympics 2020 (a real event that is both cultural and global) to support children's understanding of number quantities. The children are recording the medals won by their athletes, so it is contextual and meaningful.

Image credit: Karen Broomfield Tugulawa, Early Education, Brisban, Australia

Draw on your community and reflect the thinking around culture. EYLF 2022; p 42- show empathy for those unfairly treated.

In the Legacy cafes for Liverpool Football Club, UK, the children were lucky enough to meet Margaret Aspinall, the leader of the Hillsborough Justice Campaign.

She was thrilled to meet a new generation of children and to share the intergenerational trauma. The children returned to their school and shared the story with their peers.

Discuss with parents/grandparents to draw upon local stories. How could you showcase culture? Revisit cultural icons of the community SDG 11 Sustainable Cities and Communities.

Use images again to highlight injustices – draw on the locality – street names/statues – links to slave trade for example. Discuss the idea of a "slave". Introduce words such as "choice" and "rights" again.

How would they feel if they had to work for nothing? Do they get pocket money? Do they have to do chores to get it or not? What rights do they think they have now? Link again to UNCRC article 12.

Watch /discuss – this could be as a teachers' discussion and consider how to raise this issue:
An Introduction to Slavery in the United States - YouTube

Use persona dolls.

Using persona dolls can support schools to promote pupils' spiritual, moral, social, and cultural development by providing opportunities to build self-esteem and confidence. It will also develop an understanding and appreciation of the cultural influences of the community/ locality that have shaped their experiences of life. Through developing an interest in culture, pupils can explore, understand, and learn to respect diversity, even in settings with little or no cultural diversity.

Interesting read – storytelling with persona dolls:
StoryTellingWithPersonaDolls.PDF (teachingforchange.org)

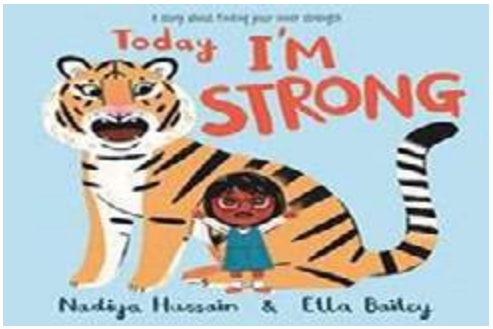
Another element of this goal is "strong institutions" – brainstorm the meaning behind "strong".

How do they define strength – do experiments to reflect strength; this could be a science and a physical development test.

How can a 'place' be strong? Link back to justice – fairness – peace.

Reflect upon the difference between strength as a physical attribute and strength of character. Highlight that strength of character means standing up for yourself- or others or nature. Reflect again on justice – fairness and peace.

Read: Today I'm Strong, which focuses on inner strength. A touching story about building the courage to overcome bullying, with a powerful reminder to always be kind.



February 2022 marked the invasion of Ukraine by Russia, and this is a sensitive topic but still needs to be addressed. Be mindful of any potential refugees from possible war zones. However, children are able, and must be offered opportunities, to reflect on such topics which they will see on all forms of media outlets.

How to talk to children about what's happening in Ukraine | Metro News

Links here to all 17 SDG – but focus can be directed initially at SDG 3 Health and Wellbeing, SDG 4 Quality Education and SDG 16 Peace Justice and Strong Institutions. Reflect again on the term strong (see above) – Ukraine is being strong standing up for itself against a bully.

Watch this very emotional video – talk about how they would feel to be in this situation - revisit SDG 5 Gender Equality and SDG 10 Reduced Inequalities regarding refugees.

What Russia-Ukraine War Unleashed for Ukrainian Kids | Newsmo - Bing video

Sustainable Development Goals (UNESCO, 2015)

Strengthen the means of implementation, and revitalise the global partnership for sustainable development.

Possible examples of Peace, Justice and Strong Institutions STEM provocations:

Children to understand that friendship, partnership, co-operation is key to the future of all those living/non-living on our planet.

17.14 Enhance policy coherence for sustainable development – this resource is about supporting early years policy in Northern Ireland.

17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilise and share knowledge, expertise, technology, and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries.

17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships, data, monitoring and accountability.

Terminology: community, neighbourhood, locality and partnerships.

This final goal literally brings everything together – reflect on the interconnectedness of all 17 goals. As a nursery/ school, develop a policy to reflect education for sustainability/SDGs. Share this with the parents and ask them to sign/agree this collaborative/co-operative way forward.

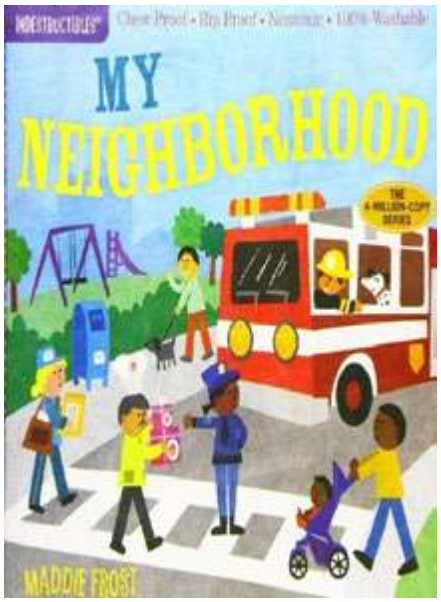
Reflect upon how community is democracy, socio-cultural sustainability, and partnership in action. Encourage parents and children to engage with and be part of all discussions reflecting their locality, culturally and historically. To listen and to recognise everyone can have equal contributions through action and communication.

Discuss with children the meanings behind the new terminology - community – neighbourhood – locality – partnerships.

Watch communities for kids: Communities for Kids - Types of Communities | Social Studies for Kids | Kids Academy

Read text to support their understanding: My Neighbourhood by Maddie Frost.

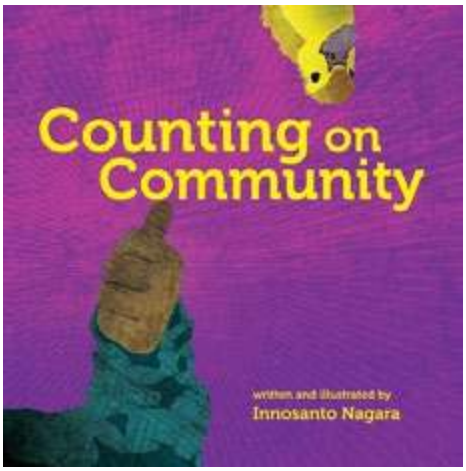
My Neighbourhood introduces babies to the concept of community as they meet the friendly people in their neighbourhood. Delightful for babies to page through on their own or with mum, dad or an older sibling, this book, with its bright pictures and minimal text, is ideal for young readers.



It is important that practitioners have knowledge of your locality/ place/community through geography, history, and culture (SDG 4 Quality Education).

Revisit cultural capital.

Read together: Counting on Community by Innosanto Nagara, which looks at community through a sociocultural lens.



Counting on Community is Innosanto Nagara's follow-up to his hit ABC book, A is for Activist. Counting from one stuffed piñata to ten hefty hens – and always counting on each other – children are encouraged to recognise the value of their community, the joys inherent in healthy eco-friendly activities, and the agency they possess to make change. A broad and inspiring vision of diversity is told through stories in words and pictures. And of course, there is a duck to find on every page!

Introduce the word "agency". What does this mean in practice? How can children have empowerment and agency? Who controls whether this happens? Link here to UNCRC (1989) and refer back to democratic ways of beings- children participating in decisions in the settings.

How are the children's views/thoughts reflected in your setting/ class? Link here to socio-cultural pillar with all voices heard – link to SDG 4 Quality Education, SDG 5 Gender Equality and SDG 10 Reduced Inequalities.

Encourage children to create their own symbols to reflect friendship, collaboration, talking, listening and reconciliation. Use sand trays to make marks to demonstrate symbols.

Celtic symbol of Friendships

Image credit: Central Art Aboriginal Art Store and Rilleycallierources.com.au

Research Circle Time as a place to share and talk together respecting time and others.

Circle Time Activity Ideas for Preschoolers | Circle Time Activities (cheqdin.com)

Research the HighScope Approach and conflict resolution –
Conflict Resolution - HighScope

Highlight the importance of being friends, making peace – having partnerships for peace. Revisit symbols of peace and hope.

Image credit: Little Mini Lighthouse Family Day Care, Victoria, Australia

Reflect on the positives of partnership and how we are all interconnected and highlight our similarities and celebrate our differences.

Celebrate authentically the differences – display different cultures and highlight positives of friendship and happiness.

Image credit: Little Mini Lighthouse Family Day Care celebrating Diwali India and encouraging the children to experiment with colours.

Celebrating First Nation Culture in Australia and the Shamrock.

Image credit: Little Mini Lighthouse Family Day Care, Victoria, Australia. Celebrating the Shamrock - Irish symbol of unity.

This English historic image reflects a local meeting point called a moot, where the local people came together to talk and vote. Reflect on how over time, all cultures use spaces and non-living aspects of their environment as a bringing together of community. Research using digital technologies to find as many different historic sites of meeting points.

This image from the Wirral (Merseyside, UK) and the meeting point symbols of Aboriginal culture, highlight an aspect of historic pre-Parliament. Knowledge of your area, and culture helps develops children's strong sense of belonging. Discuss differences in places to talk/ reflect/ share ideas and to listen to each other.

Reflect and understand that some places/sites are special to members of their community. Revisit SDG 9 Industry, Innovation and Infrastructure and SDG 11 Sustainable cities and communities.

Identify key symbolic structures of places where community makes decisions, e.g., Stormont House Belfast, Parliament House, Canberra, Houses of Parliament in London, England, and the United Nations building in New York, USA.

Ask the children if they know what the capital city of Northern Ireland is. Reflect on what 'capital' city means in practice. Consider iconic modern-day images that reflect modern Ireland/Northern Ireland.

Reflect on the importance of talking and listening- link to SDG 3 Health and Wellbeing.

Circle time is a traditional early year's activity but consider different ways of listening. In First Nation ways of listening in Australia they use a yarning circle. This links back to SDG 3 Health and Wellbeing - in that all children have a voice; all children can share their own cultural stories and celebrations. Circle time is also an opportunity to support children to learn key fundamental attitudes of society such as patience, turn taking and being part of a decision-making democratic process- link back to SDG 4 Quality Education and SDG 16 Peace, Justice, and Strong Institutions. Educator read about yarning circles - About-Yarning-Circles-A-Guide-for-Participants[4860].pdf

Invite cultural/intergenerational partners into the setting to share stories with the children.

SDG 4 Quality Education is about place-based learning, so ensure you reflect on the community groups you can engage with as a setting. On your neighbourhood walks say hello, become involved, and it becomes embedded and relational. Understand why

community is important – reflect upon different collective groups in the community or volunteer groups, such as lifeboat personnel or gardening groups. Audit community groups – library/ allotment/ parks etc and invite discussions with the children/parents on how to co-operate with members of their community.

Another symbol of partnership is a flag. The flag represents identity and partnership. Can the children identify the Northern Ireland flag? Can they articulate what the flag represents? How does it differ from the Irish flag? Reflect upon the colours used in the flags?

Ulster Flag

Flag of Northern Ireland - Wikipedia

How the UK flag is comprised of different nations: CAIN: Symbols - Flags Used in Northern Ireland (ulster.ac.uk)

What colours represent Ireland and the Troubles? Does it reflect peace and the idea behind the SDGs?

Irish flag colours-

- green – signifying Irish Catholics and the republican cause
- white – representing the hope for peace between them
- orange – standing for Irish Protestants.

This links to Reconciliation and the sensitive topic of the Trouble. Be mindful that this is a very sensitive topic, but it still needs to be included in discussions around the 17 SDGs.

Design a new flag that incorporates the flags together reflecting partnership of all of Ireland/UK.

Read together books that celebrate Ireland/Northern Ireland.

Welcome to the Emerald Isle!

This charming and educational board book gives young children an up-close and personal tour of one the most scenic and historic countries in the world. The book's enchanting pages feature some of Ireland's famous landmarks and attractions, including the Giant's Causeway, the Blarney Stone, a Saint Patrick's Day parade, the Irish Sea, fishermen, footballers, River Liffey, Dublin Zoo, Aran Islands, Irish dancers, the Rock of Cashel and more.

Peppa and George are going to Ireland for an Irish-dancing festival!

But when the band forget their instruments, will Peppa and her family be able to save the day?

This brand-new story features a glittery cover and is the perfect introduction to Ireland for little Peppa fans.

Research: are there books about Northern Ireland? Write a story class/community book to celebrate your Northern Ireland.

SDG 17 is crucial as the world must unite in partnership and work towards the SDGs. This resource will hopefully enable you to develop an understanding of them and be part of the global partnership of children around the world working towards caring for the planet.

Consider other cultural flags/banners that represent groups – what is the history behind them? Reflect on Irish football or soccer teams, for example.

Remember again the Starfish poem (SDG 14 Life Below Water) and the inspirational work of Wangari Maathai:
I will be a hummingbird - Wangari Maathai (English) - YouTube

We can all do our best to make a difference!

Section 2:
Early Years and STEM

It's important that quality education recognises the enabling environment – as stated in **SDG 4 Quality Education**, place – based embraces all of the locality that your school/setting is located in. That locality embraces culture, geography, history, culture and community. Life on land is the enabling environment – protect and care for it and all living/non-living organisms within it. At this development stage, there can be a big focus on children's **scientific observation skills**. There's a need for science-specific vocabulary to be incorporated into your pedagogy alongside observation skills through questions such as 'how are the woodlice and the worm different?' Responses can be the worm is wriggly – this is still building their scientific observation skills.

This links more to the original ideas within this document. Here learners can start to officially begin different **investigations**. Investigating different natural materials can be linked to investigating water and properties. For example, each of these materials collected could be tested to see whether they float. This could then be linked to asking children why we use different materials for different jobs. In terms of vocabulary, **solid, liquid and gas** could be introduced to help children build their scientific observations. Gas may be a difficult concept at this stage, but children would be able to apply the idea of solids and liquids. Again, this could be linked to investigations involving water. Leaving ice to melt and then evaporate is a great way of observing solid, liquid and gas in action. Furthermore, this could equally be linked to the weather (water cycle at reception level). This is a great chance to explore some **physics**. Children could investigate using a pulley to pull a toy car over different surfaces such as wood, carpets, concrete etc. Although children wouldn't be expected to talk about

friction, this would introduce them to the idea that it takes more force to pull the car along rougher surfaces. This links to the idea of forces shown below. Wind-up toys are another great example. Children could investigate how far the toy travels depending on the number of times they wind it up.

As described above, there are lots of links between these different activities that produce a clearer and more streamlined approach to science in early years.

When considering **SDG 15 Life on Land** – investigate different habitats (where plants and animals live). For example, what are the differences between animals living in trees, compared with animals living in fields? Record ideas and labelling key features (for example wings, fur, number of legs etc). This provides an opportunity for investigation and observation – to go out and spot these features, contribute to a display, or listen to sounds as appropriate.

Some initial early years ideas:

- Physics – creating parachutes to prevent eggs in a basket from breaking (the bigger the parachute, the slower the basket will fall)
- Physics – create weather-measuring devices: wind chimes, measuring buckets, sun dials etc.
- Chemistry – Milk, food colouring and washing up liquid. Adding food colouring to milk and then placing washing up liquid in a specific place causes the milk to 'dance'.
- Chemistry – testing different substances in water to see if they dissolve
- Biology – Investigating how different factors affect how plants grow. Put some in direct sunlight, some not. Give different amounts of water.
- Biology – Investigating how water moves up through a plant. Place celery sticks in water and add different coloured dyes.

After a short period of time, you can see the solution moving up through the celery (can be done with white-petalled flowers too).

Some links containing brilliant ideas are below:

- Early Years Science - Themed Activities - Science Sparks (science-sparks.com)
- 10 Early Years Science Activities EYFS (firstdiscoverers.co.uk)
- 30 Science Activities for Preschoolers That are Totally Awesome (funlearningforkids.com).

At reception level, there are fewer clear examples of science within the 'Understanding the World' content. However, based on previous examples, learners could try and link rain fall and snow to the experiment they will have completed into water melting and then evaporating.

However, children could build their investigations further at reception level as detailed below.

Summary: STEM ideas

Birth to three:
At this stage, mainly observational skills will be focused on:

- comparing differences in plant and animals
- asking open-ended observation questions to motivate children's interest in their natural environment
- matching shapes, colours, jigsaws all help build these observation skills.

3- & 4-year-olds:
Children can start doing slightly more complex investigations

building their science skills:

- Talk about differences in natural materials. This can link to investigations with water – do the different materials float? Children could compare natural with man-made materials.
- Investigating states of matter: solid, liquid and gases. Especially solids and liquids. Involve students in discussions around ice melting and what happens next. This can be extended to observing the water evaporate and talk about it turning into a gas. Children could also investigate the differences between ice and water using their observation skills – does it flow, can it be squashed etc.
- Use a pulley to investigate the effect of weight on the car, type of surface etc. This gives children opportunities to explore what makes it easier/hard to push and pull.
- Wind-up toy cars – how does the number of times the car is wound affect how far it goes? (this could be linked to the previous experiment)
- investigating factors that affect plant growth – varying amount of sunlight and amount of water
- adding food colouring to milk and then placing washing up liquid in a specific place causes the milk to 'dance'
- testing different substances in water to see if they dissolve.

Reception:
Children can build up previous experiments and complete more complex investigations:

- **Physics** - melting and evaporating water – similar to previous experiment but linking to the water cycle in terms of the weather
- **Physics** - create weather-measuring devices: wind chimes, measuring buckets, sun dials etc.
- **Physics** - creating parachutes to prevent eggs in a basket from

breaking (the bigger the parachute, the slower the basket will fall)

- **Chemistry** – As an extension to the dissolving experiment, when they dissolve salt in a small amount of water, they can leave it on the side. After a period, the water will evaporate, leaving behind the salt crystals.
- **Biology** – Investigating how water moves up through a plant. Place celery sticks in water and add different coloured dyes. After a short period of time, you can see the solution moving up through the celery (can be done with white-petalled flowers too).

Reference – Department for Education (Sep 2020) Development Matters, London: Crown copyright 2020.

Further examples of activities and experiences with young children.

Let's Investigate!	
Title of activity	H2Whoa!
Age range	3-5 years
Link to learning and development	Natural world Understanding the world
Link to Sustainability Development Goal	4 Quality education 6 Clean water and sanitation 14 Life below water
Resources	Cups Cold water (H2O) Hot water Salt Teaspoons
Health and safety considerations	Be careful handling the hot water – make sure it's not too hot! Keep the salt away from your mouth. Don't drink the solution!
Investigation 1	1. Half fill a cup with cold water 2. Add 1 teaspoon of salt into the water and stir 3. Once the salt has dissolved, add another teaspoon, and stir 4. Count how many teaspoons went in before the salt stopped dissolving. 5. Half fill a cup with hot water 6. Add 1 teaspoon of salt into the water and stir 7. Once the salt has dissolved, add another teaspoon, and stir 8. Count how many teaspoons went in before the salt stopped dissolving.
What will happen? Which cup will be able to dissolve the most salt?	
Investigation 2	1. Put a small amount of water in a cup (1cm-2cm above the bottom) 2. Dissolve half a teaspoon of salt in the water 3. Leave the cup on the side 4. Observe what's left in the cup once the water evaporates.
Next steps, reflection and opportunities	

Let's Investigate!	
Title of activity	Magic moo-ving milk
Age range	3-5 years
Link to learning and development	Natural world Understanding the world
Link to Sustainability Development Goal	4 Quality Education
Resources	Milk Washing up liquid Food colouring Shallow bowl/plate Cotton buds
Health and safety considerations	Don't drink any of the mixtures being used in the investigation! Clean up any spills. Careful when carrying the bowl and bottle of milk.
Method	1. Gently pour milk into the bowl, until it covers the bottom 2. Gently drop food colouring into the milk in different locations around the centre 3. Put a drop of washing up liquid in the centre and see what happens 4. Dip a cotton bud in the washing up liquid 5. Place it in different locations around the bowl and see what happens!
Next steps, reflection and opportunities	

Let's Investigate!	
Title of activity	Ready, steady, let's grow!
Age range	3-4 years
Link to learning and development	Natural world Understanding the world
Link to Sustainability Development Goal	2 Zero Hunger 4 Quality education
Resources	Cress seeds Soil Cardboard pot Coloured felt tips
Health and safety considerations	Make sure you wash your hands after handling the soil. Keep your hands away from your mouth when planting the seeds. Don't try and lift the pot above your head!
Decorating your cardboard pots	
Method	1. On the first cardboard pot, draw a sun with surrounded by some rain clouds 2. On the second pot, draw a nice big sun 3. On the third pot, draw a night sky full of stars 4. On the final pot, draw the night sky with some rain clouds 5. Get you 4 cardboard pots full of soil packed with lots of nutrients 6. Over the top of the soil, spread out some cress seeds 7. Press the seeds gently into the soil (don't be afraid of mucky fingertips!) 8. Place two of the pots with the sun drawn, onto the windowsill 9. Place the two pots with the night sky drawn on, in a dark place like a cupboard 10. Over a period of four weeks, make sure you water the pots with rain clouds on 11. Observe what's happened, which one's grown the most?
Next steps, reflection and opportunities	

Section 3:
Links to wider educational learning/qualifications/ assessments.

Using this resource during training for students at Level 2 and Level 3 and up to Level 7 using the early childhood degree benchmark standards and the teaching qualifications (L47) in early years and childcare.

We would strongly encourage students are made aware of the opportunities to educate children about the Sustainable Development Goals and would love to see a Sustainability Champion in every Early Years setting. Use this resource for teaching, for practical activity and experience development and in class to have fun, to learn and to be pioneers for the workforce.

Training opportunities at Level 2 and Level 3. Please use alongside the training of Level 2 and Level 3 students to raise awareness in this critical work.

Name of Qualification	Qualification Reference Number	Unit Title
Level 2 Diploma for the Early Years Practitioner	603/3723/0	EYP5 Understand how to support children's development EYP7 Support the planning and delivery of activities, purposeful play opportunities and educational programmes EYP8 Promote play in an Early Years setting EYP14 Support the needs of the child in preparing for school
Level 3 Diploma in Early Years Education and Care	601/2147/6	Unit 1.1 Support healthy lifestyles for children through the provision of food and nutrition Unit 3.1 Understand the value of play in Early Years Unit 3.2 Plan, lead and review play opportunities which support children's learning and development in relation to assessment frameworks Unit 3.4 Contribute to enabling play environments Unit 3.7 Understand the needs of the child in preparing for school

Name of Qualification	Qualification Reference Number	Unit Title
Level 3 Technical Diploma in Early Years Education and Care	601/8438/3	Unit 1.1 Support healthy lifestyles for children through the provision of food and nutrition Unit 3.1 Understand the value of play in Early Years Unit 3.2 Plan, lead and review play opportunities which support children's learning and development in relation to assessment frameworks Unit 3.4 Contribute to enabling play environments Unit 3.7 Understand the needs of the child in preparing for school
Level 3 Diploma in Childcare and Education	601/4000/8	Unit 5 Play and learning Unit 8 Professional Practice Portfolio 1 Unit 11 Preparing for school readiness Unit 15 Professional Practice Portfolio 2
Level 3 Technical Diploma in Childcare and Education	601/8437/1	Unit 5 Play and learning Unit 8 Professional Practice Portfolio 1 Unit 11 Preparing for school readiness Unit 15 Professional Practice Portfolio 2
Level 3 Diploma for the Early Years Workforce	601/2629/2	Unit 1.1 Support healthy lifestyles for children through the provision of food and nutrition Unit 3.1 Understand the value of play in Early Years Unit 3.2WB Plan, lead and review play opportunities which support children's learning and development in relation to assessment frameworks Unit 3.4WB Contribute to enabling play environments Unit 3.7WB Support children's transition to school
T Level Technical qualification in Education and Childcare (Level 3) (Delivered by NCFE)	603/5829/4	Core Element 2 Supporting Education Occupational Specialism: Early Years: PO1 Support and promote children's play, development and early education PO3 Plan, provide and review care and educational opportunities to enable children to progress Occupational Specialism: Assisting Teaching: PO1 Support the class teacher to enhance children's education, individually and in groups PO2 Plan, provide and review educational opportunities in collaboration with teachers and other adults Occupational Specialism: Supporting and mentoring in educational settings: PO2 Work with education providers and workplace colleagues to plan and implement structured and meaningful education and workplace opportunities PO4 Promote students' motivation, aspiration and engagement
Level 2 Certificate in Supporting Teaching and Learning	603/2476/4	STL2C10 Promote an effective learning environment
Level 3 Diploma in Supporting Teaching and Learning	603/2496/X	STL3C7 Support children and young people during learning activities STL3D16 Support the role of play, leisure and extra-curricular activities for children and young people

Advance Higher Education executive summary: education for sustainability in HE - UK.

Advance HE published an executive summary to support Higher Education (HE) in implementing education for sustainability into their curriculum design, and course management and delivery. The Education for Sustainable Development Guidance is intended to help UK higher education institutions incorporate Education for Sustainable Development (ESD) within their curricula. QAA and Advance HE, together with a group of experts representing academic, business and student communities, published a new version of the guidance for 2021, with the aim of supporting students from any discipline to acquire the knowledge, understanding and skills necessary to develop values and take actions to transition society towards sustainable futures. The executive summary highlights the importance of the Sustainable Development Goals (SDGs):

"It outlines the role of higher education in supporting the knowledge, skills, and competencies that students and staff develop to contribute to a more sustainable future, encouraging providers to embrace ESD and demonstrate leadership. It recognises that transforming curricula can be daunting and frames the SDGs as a starting point" (2021, p.4).

See executive summary – education-for-sustainable-development-guidance-executivesummary.pdf

Critical Reflection/Reflexivity.

Any student or practitioner working in early childhood needs to be aware of the importance of critical reflection. A key aspect of quality education is the ability to be critically reflexive in your approach. This critical reflexivity is also part of socio – cultural

– political sustainability using the provocations to question and critique any unconscious bias.

A useful tool (see below) for students and practitioners to utilise in early childhood was developed by Naomi McLeod with nine steps from being ready and open to remembering why it's important. In relation to early years practice, knowing why a particular approach to learning and teaching is taken, is a starting point for determining the meaning and value of education and taking responsibility. This can be empowering for educators and for children as educators see and understand the value of children's engagement and participation in their learning.

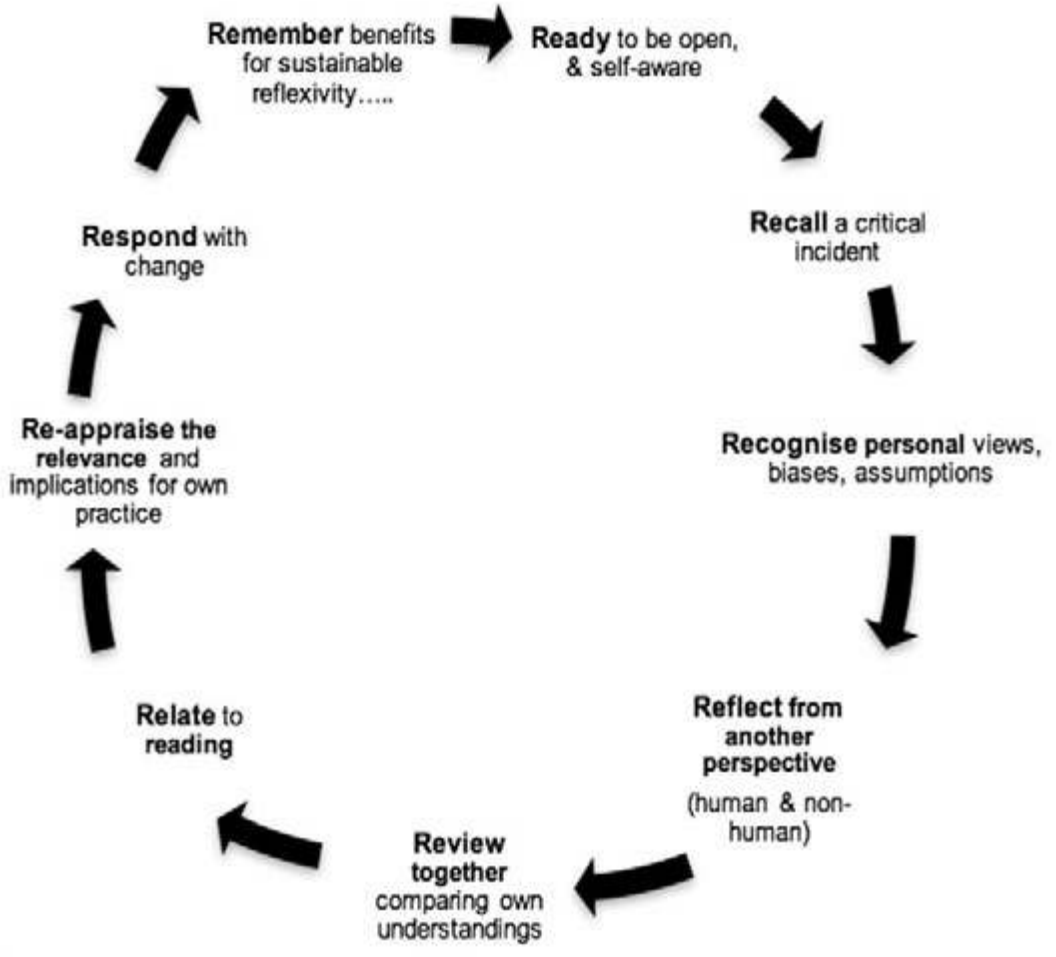
At times it may seem like there is no room for creativity and experimentation and little thought is given to how appropriate this is for preparing children for the 21st century and the need to be self-determined, critical thinkers, and independent decision makers. More than ever, is the need for both educators and children to be critically reflective or reflexive, which starts with a readiness to question personal practice, underpinned by personal values, beliefs and assumptions.

McLeod's Reflexivity framework below offers a practical set of principles for applying critical reflection in a meaningful and sustainable way. It draws on different theories such as Schön, Dewey 's attitudes (1933) and Brookfield's lenses (2017).

By examining different scenarios or incidents (as part of practice) and valuing different perspectives (particularly children's) a conscious change can be made.

Reciprocal Relationship

- **Ready** to be **open**, self-aware and conscious of own views /practice
- **Recall** a **critical incident**
- **Recognise personal** views, biases, assumptions, understandings, (stand back, after and during) (*on, in*)
- **Reflect** from another perspective, human and non-human (**a child's / another person / environment**). What are their feelings? How do you know?
- **Review together** comparing own understandings
- **Relate** to **reading** / research
- **Re-appraise the relevance** and implications for own practice
- **Respond** with **appropriate change.**
- **Remember** the **benefits** for sustainable reflexivity.....



Embedding the Early Childhood Studies Benchmark standards (QAA,2019) into the resource

The purpose of Early Childhood Studies degrees was with the aim of providing better lives for children, families, and communities, and importantly to challenge gender and other inequalities. "Early childhood studies graduates are therefore effective advocates for babies and young children; in whatever capacity they work, they facilitate the recognition of the rights of children to actively participate in their world, recognising children's needs, developmental tasks, diversity, and differences" (2019, p.6). Key to the degrees are the defining principles with 2.1 clearly highlighting a sustainable lens.

"Aim to give students an understanding of the ecology of early childhood from conception, and of children in an ecological context. Ecological context is understood as encompassing both time and geographical space, and encompassing the contexts of family and community, and children's and family services. The focus is on the development of the child in context and the implications for practice. Studying children and early childhood ecologically means that it would be inappropriate to specify an age at which early childhood ends because this will differ according to societal and cultural contexts, practices and customs. The attention to child development in an ecological context also situates young children as active participants in the lives and practices of families, societies, and cultures."

Additionally, 2.4 notes: "an understanding of the contested and changing nature of the concept of childhood, ethical principles and children's rights" (2019, p.7). Sustainability is acknowledged as fundamental to the nature of early childhood, with 3.4 highlighting the following.

3.4 A critical analysis of children as active participants, their rights and an antibias approach which considers early childhood as a site for democracy, sustainability and social justice underpins and permeates the subject (p.9).

The ECS benchmark standards are divided into three categories:

- threshold standards are the minimum standards necessary for a student to graduate with a single bachelor's degree with honours in early childhood studies
- typical standards are those that a typical early childhood studies student would be expected to attain
- excellent standards are those that the highest attaining early childhood studies student would be expected to achieve.

These are some of the benchmark standards that align with the 17 SDGs (UNESCO 2015) – Subject Knowledge Skills.

Threshold Standard	Typical Standard	Excellent Standard
Awareness of issues in relation to rights, diversity, equity, and inclusion in relation to working with babies and young children, families, and communities.	A good knowledge of issues in relation to rights, diversity, equity, and inclusion in relation to working with babies and young children, families, and communities.	Excellent knowledge of issues in relation to rights, diversity, equity, and inclusion in relation to working with babies and young children, families, and communities.
Reflect upon a range of psychological, sociological, health, welfare, educational, cultural, philosophical, legal, historical, political, and economic perspectives, and consider how these underpin different understandings of babies, young children, and childhood, nationally and globally.	Have a well-developed ability to reflect upon a range of psychological, sociological, health, welfare, educational, cultural, philosophical, legal, historical, political, and economic perspectives, and consider how these underpin different understandings of babies, young children, and childhood, nationally and globally.	Have a high-level ability to reflect upon a range of psychological, sociological, health, welfare, educational, cultural, philosophical, legal, historical, political, and economic perspectives and consider how these underpin different understandings of babies, young children, and childhood, nationally and globally.

Threshold Standard	Typical Standard	Excellent Standard
Evaluate competing positions in relation to the construction of babies and young children and childhood by different subjects, societal agents and time, place, and culture.	Analyse and evaluate competing positions in relation to the construction of babies and young children, and childhood by different subjects, societal agents and time, place, and culture.	Have a high-level ability to analyse and evaluate competing positions in relation to the construction of babies and young children and childhood by different subjects, societal agents and time, place, and culture.
Demonstrate the ability to plan for, and where appropriate implement, meeting and promoting children's health, wellbeing, protection and safety, and the conditions that enable them to flourish.	Have a well-developed ability to plan for, and where appropriate implement, meeting and promoting children's health, wellbeing, protection and safety, and the conditions which enable them to flourish.	Have a highly developed ability to plan for, and where appropriate implement, meeting and promoting children's health, wellbeing, protection and safety, and the conditions that enable them to flourish.
Explore critically the interrelationship between political, economic, cultural, and ideological contexts in the lives of babies and young children.	Have a well-developed ability to explore critically the interrelationships between political, economic, cultural, and ideological contexts in the lives of babies and young children.	Have a highly developed ability to explore critically the interrelationships between political, economic, cultural, and ideological contexts in the lives of babies and young children.
Demonstrate the ability to give voice to and, where appropriate, act as an advocate for babies and young children, families, and communities.	Have a well-developed ability to give voice to and, where appropriate, act as an advocate for babies and young children, families, and communities.	Have a highly developed ability to give voice to and, where appropriate, act as an advocate for babies and young children, families, and communities.
Demonstrate the ability to recognise and challenge inequalities in society and to embrace an antibias approach.	Have a well-developed ability to recognise and challenge inequalities in society and to embrace an antibias approach.	Have a highly developed ability to recognise and challenge inequalities in society and to embrace an antibias approach.

The generic skills offer a range of grading criteria that reflects research, academic writing, communication, and interpersonal skills. These examples can be aligned to supporting work/research on the SDGs.

Threshold Standard	Typical Standard	Excellent Standard
Communicate ideas and research findings by written oral and visual means.	Communicate ideas and research findings both effectively and fluently by written, oral and visual means.	Communicate ideas and research findings effectively, clearly, and fluently by written, oral and visual means.
Use a range of sources of information.	Use a range of sources of information critically.	Use a wide range of sources of information critically and with insight.
Use the communication skills necessary to converse, debate, negotiate, persuade, and challenge the ideas of others.	Use the communication skills necessary to effectively converse, debate, negotiate, persuade, and challenge the ideas of others.	Use sophisticated communication skills necessary to effectively converse, debate, negotiate, persuade, and challenge the ideas of others.

Full QAA benchmark standards can be found here: https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmarkstatement-early-childhood-studies.pdf

Teaching Standards in NI- GTCNI (2011)

In 2011, the General Teaching Council for Northern Ireland (GTCNI) combined their charter of Code of Values and Professional Practice, Charter for Education and a coherent statement of teacher competences to develop the document "Teaching: The Reflective Profession". This presents the competences teachers should demonstrate in their values and in their practice, from student teachers, to those in early professional development and beyond.

The Council (GTCNI 2011, p.9) considers that *those who are honoured with the title and status of teacher will be knowledgeable, skilful and reflective practitioners who will:*

- be concerned with the purposes and consequences of education, as well as what might be called technical proficiency
- be prepared to experiment with the unfamiliar and learn from their experiences; have an approach characterised by openmindedness and wholeheartedness
- be committed to professional dialogue in collaboration with colleagues, in school and beyond
- have working patterns characterised by a process of action, evaluation and revision
- and in keeping with the Council's Code of Values and Professional Practice, assume, as life-long learners, responsibility for their ongoing professional development.

A digest of this document was produced in 2018 (GTCNI 2018, p.5) and states that teacher should:

- maintain professional relationships with those pupils entrusted to their care which respect the learner as a person and encourage growth and development
- acknowledge and respect the uniqueness, individuality and specific needs of each pupil and thus provide appropriate learning experiences
- aim to motivate and inspire pupils with a view to helping each realise his/her potential; cooperate, where appropriate, with professionals from other agencies in the interests of pupils
- promote good community relations within and between schools and across the wider society in Northern Ireland
- promote social justice and equality of opportunity as fundamental to community development and well being.

All of these statements demonstrate SDG 4 Quality Education.

In 'Part 2: Professional Knowledge and Understanding', the following statements specifically relate to SDGs 1, 2, 3, 4, 5, 6, 10, 16 and 17)

2. A knowledge and understanding of contemporary debates about the nature and purposes of education and the social and policy contexts in which the aims of education are defined and implemented.
6. A knowledge and understanding of the factors that promote and hinder effective learning, and be aware of the need to provide for the holistic development of the child.
8. A knowledge and understanding of the need to take account of the significant features of pupils' cultures, languages and faiths and to address the implications for learning arising from these.
11. A knowledge and understanding of how to use technology effectively, both to aid pupil learning and to support their professional role, and how this competence embeds across all of the competences.

12. A knowledge and understanding of the interrelationship between schools and the communities they serve, and the potential for mutual development and wellbeing.
15. Plan and evaluate lessons that enable all pupils, including those with special educational needs, to meet learning objectives/ outcomes/ intentions, showing high expectations and an awareness of potential areas of difficulty.
17. Plan for out-of-school learning, including school visits and field work, where appropriate.
23. Contribute to the life and development of the school, collaborating with teaching and support staff, parents and external agencies.

"Teaching: The Reflective practitioner" (GTNCI 2011) available here: https://gtcni.org.uk/professional-space/professional-competence/teaching-the-reflective-profession

GTCNI Digest of the Teacher Competences (GTCNI 2018) available here: https://gtcni.org.uk/cmsfiles/Resource365/Resources/Publications/DIGEST_OF_TEACHER_COMPETENCES.pdf

Professional Networking

We would love to hear how this resource is being used as part of delivery and assessment. This will help us to measure any impact. We would especially love to hear about case studies, reflections and stories about how the resource has been used. Please email Dr Diane Boyd dianeboyd_23@hotmail.co.uk as she would like to gather evidence and feedback around the resource, in particular how it has increased an understanding of sustainability and the SDGs.

If you would like to discuss pedagogical and practical opportunities in more detail, please contact janetking@ncfe.org.uk or smann@cflearning.org.uk and we'll be delighted to hear from you and support

you in any way we can. We especially welcome feedback from delivery staff, mentors and workforce practitioners and students.

Thank you for taking time to consider this resource. We hope that you find it useful in your work with babies and children. Enjoy, have fun and create magical quality interactions!

Section 4: Supporting documentation.

CCEA (2022a) Learning Outdoors in Pre-School and Foundation Stage. Belfast: CCEA.

CCEA (2022b) Learning Through Play in Pre-School and the Foundation Stage. Belfast: CCEA.

CCEA (2018) Curricular Guidance for Pre-School Education. Belfast: CCEA.

CCEA (2007) The Northern Ireland Curriculum: Primary. Belfast: CCEA.

Sustainable Development Goals:

UNESCO, Sustainable Development:
Sustainable Development | UNESCO

United Nations
THE 17 GOALS | Sustainable Development (un.org)

Take Action for the Sustainable Development Goals - United Nations Sustainable Development

Triple bottom line (3 pillars): sustainability in business - YouTube

Early Years Science - Themed Activities - Science Sparks (science-sparks.com)

30 Science Activities for Preschoolers That are Totally Awesome (funlearningforkids.com)

Online Resources:

The Mosaic Approach: https://www.nicole-brown.co.uk/the-mosaic-approach-according-to-clark-and-moss/

Play in Early Childhood: The Role of Play in Any Setting
Play in Early Childhood: The Role of Play in Any Setting (harvard.edu)

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Race, R. (In press) 'Facilitating narratives of cultural identity in the classroom', In C. Baraldi, F. Farini, & A. Scollan (Eds) *Evolving Dialogues in Multiculturalism and Multicultural Education*. London: Open University Press.

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Scollan, A. & Farini, F. (2021) From enabling environments to environments that enable: notes for theoretical innovation at the intersection between environment and learning. *OMEP Irish Journal of Early Childhood Studies*. Vol 14.

Scollan, A., and Joslyn, E. (2021) 'SHARMED Training: Design and Practice', In. F. Farini, C. Baraldi & E. Joslyn. (Eds) *Promoting Children's Rights in European Schools. Intercultural Dialogue and Facilitative Pedagogy*. London: Bloomsbury.

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