

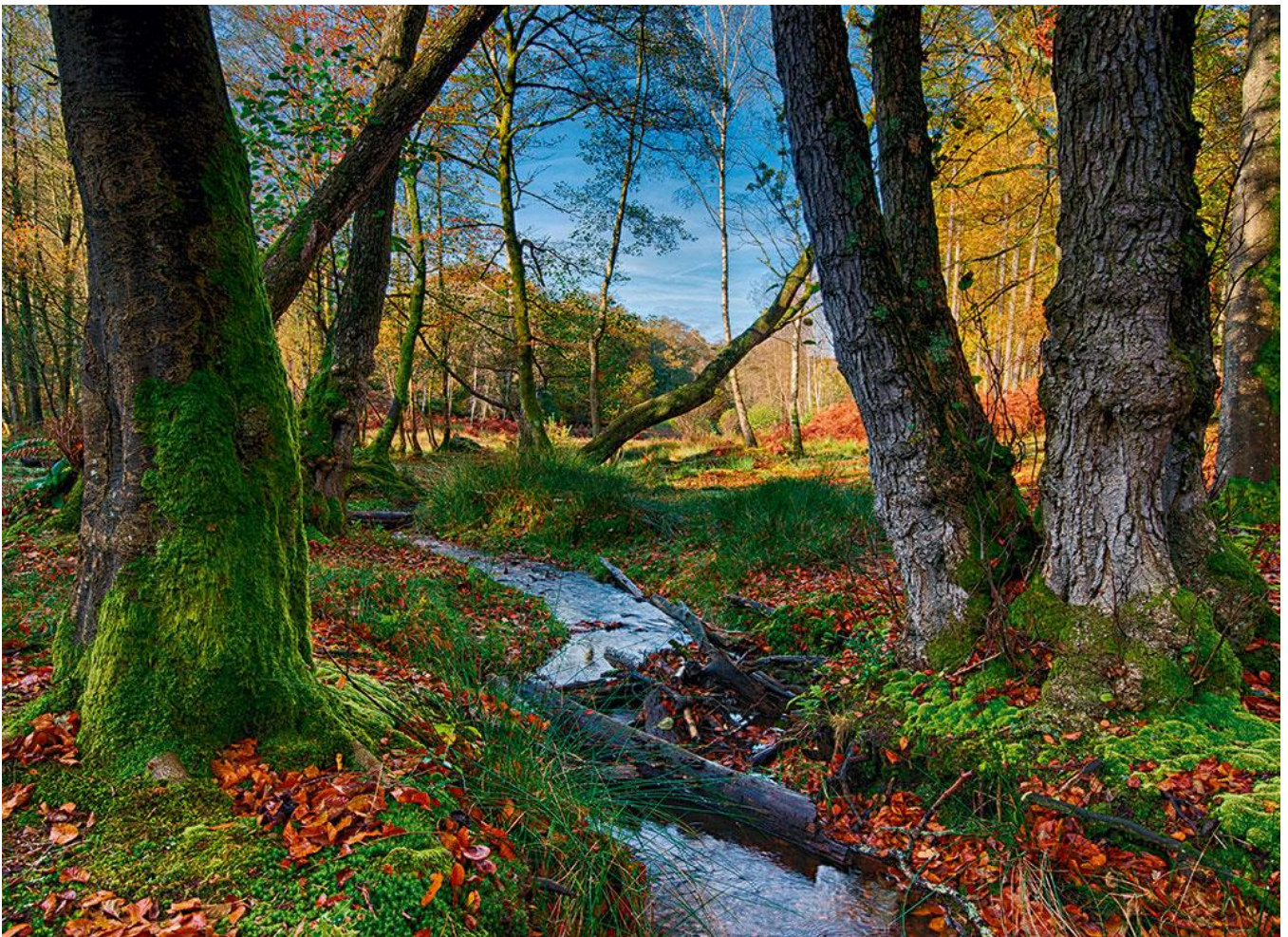
Awe and wonder - Science, Mathematics, and the Outdoors.

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Part one



Part two

The Welsh government (2009) framework for children aged between three and seven years of age, promotes utilizing the outdoors and natural surroundings as a resource for children's learning. Although outdoor learning only became formally recognised in recent years, with the first forest school being introduced to the UK in 1995, and **the early years foundation**

stage (2021) including the concept, in the year 2000. Many theorists previously discovered the benefits of outdoor learning. **Frobel (1836)** began to advocate the use of outdoor learning when he opened his own school in the 1800s. Engaging with nature, and using natural resources is at the forefront of Froebel's principals. His beliefs have become widely applied throughout the world.

The **Reggio emilia approach (1963)** has been recognised as essential to a child's development. **The Reggio Emilia approach (1963)** focuses on the natural environment, and the opportunities it provides to children. The natural environment, such as the one shown above, gives children the chance for stimulation. It allows children to explore, engage and challenge themselves. Natural learning has the potential to not only benefit physical health, but also to be able to capture children's attention, and keep them interested in developing their learning (**Moser et al, 2010**).

Maynard et al (2013) states that the foundation phase for Wales, conducted research involving children in an early years setting. The study initially took place in a classroom environment and found that children alleged to be underperformers in an indoor environment, began to thrive when learning in an outdoor environment. The research project suggested that children embraced the freedom, challenges and opportunities outdoor learning provided for them. Children were given the chance to reconstruct themselves, and the study proposed that when children take part in practical outdoor learning, they are able to learn about themselves and discover their own interest.

As children are impulsively drawn to play, it is one of the best occasions to witness the potential of a child. Children's traditional learning experiences are often filled with assessments and test. These situations can cause children to become anxious, and these experiences may hinder children's creativity. When children are given the opportunity to learn through play in the outdoors, they are able to demonstrate their full capabilities without concern of failure. When children are playing, they do not feel they are being assessed or graded by their performance, and outdoor learning also allows children the freedom to discover their own abilities (**Educational play care, Unknown**)

Participating in outdoor learning in a natural environment, and engaging in play, offers children the opportunity for personal involvement. Learning in a natural environment can aid children to make the link between the concrete and the abstract. When children learn through play in these outdoor environments, they have the chance to discover several mathematical concepts

such as symmetry, counting, fractions and volume, all while using natural resources (**Natural resource Wales, 2021**)

The Welsh government curriculum for schools in Wales (2019) reveals that mathematics and science play a key part in the lives of children. Science and mathematics will also continue to be vital in later life as children become adults. How these important subjects are taught to children may define their future.

The Welsh curriculum (2022) aims to help children to develop towards the four purposes of the curriculum. The four purposes aim to inspire children to become ambitious, creative, confident individuals and learners. Outdoor learning provides children with the opportunity to fulfil these goals.

This particular environment chosen, allows children the opportunities to learn the fascination of science and mathematics in the outdoors. The environment has been chosen to support children's Mathematical and science development, whilst also being engaging and fun. The environment chosen has the potential to develop several areas of a child's mathematics and scientific knowledge. This woodland environment enables children to be involved in projects such as collecting and sorting leaves. These tasks teach children about sequences, patterns and fractions. In this environment, Children have the opportunity to play with logs, trees and twigs, and these types of activities facilitate children to explore 3D shapes, discover weights, heights, and various measurements, all these skills are essential to **the National literacy and numeracy framework (2015)**.

The natural environment also exposes children to loose parts. **Flannigan and Dietze (2018)** studies, show that providing children with loose parts, allow children full use of their imaginations. In this particular environment, loose parts may include sticks and rocks, with children being able to vision and transform them in to

Encouraging children to discover nature and natural resources also aids children's scientific knowledge. **Frobel (1836)** believed Outdoor learning offers children an insight into the cycle of life and death, he expressed that the outdoors would inspire children to take care and protect the environment they live in, along with the plants, and animals. The learning environment provided above. **Tadpoles /bugs etc, different types of seasons, link to science curriculum , floating and sinking**

The Welsh governments foundation phase outdoor learning handbook (2009) states that engaging in outdoor play activities, inspires children to learn other scientific concepts, such as, learning about the different seasons, and how animals and plants adapt to a change in temperature.

Exceeding mathematics and science, this environment allows for children to advance their social and life skills, and problem resolution skills. This environment also aids in development of fine motor skills, and it can inspire self-confidence (**Educational play care, Unknown**)

Children also need their holistic development nurtured. Holistic development is centering not only on educational development but also supporting a child's social, emotional, and physical development. The benefits of outdoor learning on holistic development have been widely recognised. **The foundation phase (2009)** state that the outdoors gives children the room to face challengers and risks, whilst being in the confines of a secure environment. Outdoor learning and focusing on holistic development can allow children to create a positive association with education and learning.

Part three

RISK-BENEFIT ASSESSMENT

Location / Activity:	Woodland area	Date:	07/05/2022
Assessor:	Nikita Johnson	Review date:	07/05/2022

The boxes in the table below will expand as you type into them; pre-entered text is simply for illustration. You should delete irrelevant items and replace with text relevant to your circumstances.

Your overall risk rating – Low, medium or high – is based on your judgement about whether the BENEFITS of the activity or opportunity outweigh the RISKS.

ACTIVITY	How will young people BENEFIT from this activity?	Hazards and risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING : L/M/H
Water tray sinking and floating	Children will benefit from this activity by learning key science terms and being introduced to different objects and showing children how some objects can float, and some objects may sink depending on the different weights of the objects.	Water is always a risk, having loose objects	Children	Practitioners should make sure there are non-slip mats underneath water tray so if any water does fall onto the floor no children are at risk of slipping and hurting themselves.	L
Weighing different loose parts Making an obstacle course- Allowing children to use different objects and work as a team to build a fun adventure course	This activity will introduce children to the different variety of loose parts and will introduce children to not only gravity but also the different types of weights that exist. Children will learn how to work as a team and learn how to build relationships with other children and have the support of their practitioner to assist with building the obstacle course, the children will learn about gravity from	Children may swallow some of the small objects and this may lead to them choking Children could lift something heavy, or something could fall if it is not properly secured	Children Children and practitioner	This exercise will be supervised at all times by a practitioner making sure that no loose objects will be used without the supervisor of a practitioner. Practitioners need to support the children with any lifting and when doing this practitioners must follow proper manual handling protocol.	M L

ACTIVITY	How will young people BENEFIT from this activity?	Hazards and risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING : L/M/H
	stacking different planks of woods and being able to climb on top of them and the children will also learn how to follow different instructions.				
Will it dissolve- this activity will introduce children to different types of ingredients and textures the ingredients will include water, salt, vitamin tablets, and flour.	Children will learn about solubility and will use different substances and see which ones will dissolve in the water this is the perfect opportunity for practitioners to ask children which substance they think will dissolve	Children swallowing the ingredients or children might be allergic to the solutions being used throughout the activity.	The children.	When planning this activity, a full health and safety check will be complete, practitioners will check for any allergies before allowing the children to take part in this activity and if children have allergies an alternative ingredient will be used, and this activity will have adult supervision throughout.	M
Block Play	Block play will help develop both mathematical and scientific skills, it offers open-ended creative play it will allow children to learn about different shapes and sizes, and	Children might put the blocks in their mouths.	The children	Practitioners will be observing the whole activity and making sure that the children are correctly using the blocks.	L

ACTIVITY	How will young people BENEFIT from this activity?	Hazards and risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING : L/M/H
	teach them how to build a tower by stacking each block.				
What is the time Mr. Wolf- This classic game is the perfect opportunity for children to learn how to count in a fun interactive way.	Children will learn different numeracy skills by asking the wolf what the time is and then taking as many steps as the wolf says this is a good opportunity for the practitioners to interact with the children and a good way for children to work as a team to win the game.	Children might get over-excited when running and may hurt themselves or run into each other.	The children	When planning this activity practitioners should think of a sensible number of children to participate in the game reducing the risk of any injuries.	L