

Amaka Osisi
Awe and Wonder

I confirm that I have not presented an AI generated text as my own work. I confirm I have copies of my drafts, notes, and other resources I used before, and after the use of AI tools which I may be asked to provide in evidence.

Part 1

(Google images, no date)

Part 2

Introduction

As demonstrated in the above image a woodland area with a shallow stream running through it has been chosen as the area for the children to explore and develop their mathematical and scientific concepts. The woodland environment provides a natural setting that encourages curiosity, discovery and hands on learning. The visitors of this area will be a school-based Reception/Year 1 class, meaning the children will all be aged between 4 and 6 years old. In order to ensure that the children are safe and supported, they will all be accompanied when visiting the area by three adults, this will include the class teacher and two teaching assistants. With careful adult supervision the children can safely explore the stream and surrounding area. This natural outdoor area provides children with hands on experiences that can be child led and promote their development holistically. As well as the woodland and stream the environment includes various other interesting areas to explore. Alongside of the stream there is a slope, rocks, stones, trees, leaves and potential wildlife. This offers the children a wide range of learning opportunities to develop their early mathematical and scientific thinking through play and exploration.

General ideas

The woodland area which has a shallow stream and natural vegetation offers a rich and dynamic environment where young children can develop a wide range of scientific and mathematical concepts through play and exploration. It allows children to actively explore their surroundings and to be curious in line with the Curriculum for Wales: Foundation Phase Framework (Welsh Government, 2015). For children aged 4 to 6 it offers an ideal setting for promoting inquiry based learning and allowing them to be curious about the world around them. The children may walk along uneven ground such as hills, slopes or areas covered with a variety of natural surfaces such as rocks and roots. They may also balance along logs or step from stone to stone, developing physical coordination and spatial awareness. As they explore children will interact with a range of natural materials including stones, sticks, rocks, leaves and any other found objects. These materials can be collected and used in imaginative or investigative play. For example, children may place different objects in the water to observe which float or sink or compare their weight by lifting or holding them. they might also sort materials by size, creating sequences or

ordering from the smallest to the largest. These activities support the development of early mathematical concepts such as comparison, measurement, classification and problem solving in an engaging and hands on environment. Comparing measurements and size is a part of Curriculum for Wales (2019) it emphasises the importance of this throughout the progression steps. All of these potential experiences support the development of their mathematical and scientific understanding. These experiences encourage the children to use new vocabulary, they may naturally ask questions or say things that get them thinking. A child might naturally say things like 'this is so heavy' or 'the water goes faster here'. Adults can encourage them further by responding with things like 'I wonder if they are heavy too' or 'I wonder why that might be'. Promoting children's curiosity and encouraging them to explore and make sense of the world themselves.

Below is a list of a few objects or items and examples on how they might support the children's development:

Slope – measure the gradient/how steep it is, speed of how fast something might go down or how slow something might go up, distance and speed, compare different objects traveling down the slope

Stream – measure volume and capacity of water, identifying whether items float or sink, using amounts by filling and emptying

Stones and rocks – balancing on uneven ground or unsteady stones, measure weight and compare with other sizes or items

Leaves – life cycles, compare different seasons, compare different colour of leaves, compare types and patterns

Trees – measure height or thickness, growth of tree, what animals might live there

Uneven surfaces/slope

The uneven surfaces in the woodland such as the slopes leading down to the stream and the many different rocks and stones in the water offer lots of opportunities for children to develop both mathematical and scientific concepts. For example the slope could be used to explore how fast the different objects roll down the hill. This

will encourage children to compare the items based on their size shape and weight. The slope could also be used to see how quickly the children themselves go down the hill whether walking or running, linking to an early understanding of what speed is. The children may also try to navigate the uneven surfaces of different rock along the river which may test the children's balancing skills and coordination. This will encourage them to think about why they might feel unsteady and why certain rocks feel slippery, wobbly or stable. They may have conversations and say things like 'it's a bit wobbly by here', adults or peers could respond and say things like 'oh I wonder why that might be'. This encourages the children to think about the different concepts. Both mathematical and scientific learning is here as children can think about the effects of speed, distance, weight, gravity, spatial awareness. Uneven surfaces may also contribute to building the children's resilience and ability to risk take, encouraging further conversations which may contribute to developing their cognitive abilities. According to the Curriculum for Wales (2019) children should be encouraged to be curious and search for answers, the slopes and uneven surfaces in the water encourages this.

Sink, float, splash

The children may use the natural materials around them such as stones, rock, leaves, sticks or any other readily available loose parts they might find to test whether they will sink or float in the water. Supporting their mathematical and scientific understanding as they begin to think about the weight of certain items and the type of material they are made from. Another way the children may use loose parts is by throwing them into the water getting them to observe and think about how big of a splash an item might make. Encouraging a cause and effect activity for the children to create themselves. Children might notice that heavier objects make a bigger splash and say things like 'that was a big splash' the adult can respond with questions like 'I wonder why that made a big splash'. Children also use their gross motor skills to pick up and throw objects testing their strength. Children might think about and compare how heavy different objects are and might notice the speed of which the materials hit the water, they might say things like "that leaf took a long time to hit the water' adults may encourage children and say things like 'I wonder if a stone would be quicker' encouraging them to test out other materials and think about why that might be.

Additional materials

The children's learning could also be extended by bringing other resources such as loose parts. An example of this could be different size, shapes and weights of balls to roll down the slope which would encourage them to further think about uneven surfaces and what size weight and shape may have to do with how quick they roll. This supports their thinking and may deepen their understanding of why some items may go quicker than others. Additional resources that could be brought are baskets or buckets which would provide children with various opportunities to collect different items such as conkers, sticks and stones. Buckets would also enable children to collect water, and this may encourage them to use language such as 'full', 'empty', 'more' and 'less'. This supports their understanding of mathematical concepts. Practitioners could also bring fishing nets and magnifying glasses allowing them to explore the wildlife in the area which might make them think about habitats and life cycles which will support their understanding of scientific concepts.

Part 3: Risk Assessment

Location / Activity:	Woodland Area with a Shallow Stream	Date:	15/09/2025
Assessor:	Amaka Osi	Review date:	15/03/2025 or when next visiting

Experience exploring outdoor space in photograph	How will young people benefit from this activity?	Hazards and associated risks	Who is at risk?	Precautions in place to reduce the risk of injury	Overall risk after precautions RATING: L/M/H
Outdoor in different weather conditions	Supports children in understanding different weather patterns and how the seasons change. Supports their understanding of temperature changes. Encourages new language like hot, cold, windy, foggy. Might notice how the water levels in the stream change depending on the weather. Helps them to understand and make sense of the world around them.	Sunburn, heatstroke and overheating when the weather is hot or hyperthermia if it is extremely hot. If it is extremely cold hypothermia. Slipping and falling if the ground is icy or wet. If winds are high could cause trees or branches to fall which could potentially cause a head injury and could even mean death in extreme cases. If the weather is foggy visibility may be low	Children and adults	Check the weather forecast beforehand and continue to monitor any forecast changes or weather warnings and in extreme cases plans would be postponed. Ensure appropriate clothing is worn, wellies, waterproofs, sun hat, gloves, warm or extra layers. Ensure sunscreen is worn and reapplied. Stay in shaded areas. Stay under shelter. Supervise closely and ensure all children are present regularly.	M

Exploring the stream and playing with water	Children can learn about water flow and how fast or slow the water might go. Children learn that some things sink, and some things float. Children learn that different objects might make a bigger splash in the water than others. Children might measure water in containers. Children may also measure the depth of water along the bank. Encourages ne language like fast, slow, deep, shallow, full, empty.	Risk of falling into the shallow stream. Water might be cold, or it could be contaminated. Risk of slipping and injuring themselves.	Children	Discuss with children beforehand where is safe to go avoiding any deep or fast flowing parts of the stream. Close supervision when children are near the water. Demonstrate how to safely use items, objects and materials. Handwashing to be carried out straight after activity.	M
Uneven ground and slopes within the area	Supports the development of children's balance and spatial awareness. Challenges them to take risks and build resilience. Children can start to think about gradients	Children could slip, trip or fall causing injuries like cuts, bruises and minor sprain.	Children	Children are required to wear appropriate shoes such as boots or trainers. No dolly shoes or open toe shoes. First aid kit readily available for any small injuries.	M

	and distances supporting their mathematical and scientific thinking.			Discuss with children beforehand and explain that they might want to walk slowly to begin and hold onto anything that might support them like an adult or tree trunks.	
Walking to get to woodland and stream area	Develop social skills in public areas. Allows children to be curious and observe their surroundings.		Children	One adult to remain at the front, one in the middle and one at the back at all times ensuring all children remain with the group. Discuss with children beforehand the importance that they walk and do not run. Ensure children wear appropriate shoes. No dolly shoes or open toe shoes. Ensure that they are supervised closely and all children are present.	L
Collecting natural materials such as sticks, leaves, stones, etc.	Children can sort and compare materials by shape, size colour supporting their	Lifting heavy objects could cause an injury.	Children	Discuss with children what safe materials might look like and what unsafe materials	L

	mathematical thinking. Children can explore different properties, textures and patterns of materials and what they might use them for.	Picking up sharp objects could cause cuts.		might look like beforehand. Encourage children to only collect safe items. Visit area beforehand to check for any sharp or unsafe items. First aid kit readily available for any small injuries.	
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Part 4

Learning in outdoor environments can be seen as being at the centre of early years education and care. According to the Royal Society for the Protection of Birds (2013) connecting with nature benefits children in education and has shown their physical health and well-being to be improved. Maynard, Waters and Clement, (2013) also found that outdoor play showed that those children who appeared to be underachieving were able to show how capable they are and demonstrate their skills better in an outdoor environment. Natural outdoor areas such as woodland, rivers and open fields provide rich, hands on experiences that enables and enhances children's holistic development. Sedgwick (2012) agrees and suggests that outdoor learning provides children with rich sensory experiences that support their cognitive, physical, social and emotional development. These environments promote exploration curiosity and a sense of wonder. Foundation Phase Curriculum strongly emphasises how critical outdoor learning is and it is embedded throughout (Tinney and Hirst, 2017). Similarly Welsh Assembly Government (2007) also state that outdoor learning should be implemented across all learning areas. When children are experiencing their outdoor environment, they are open to endless possibilities to explore, encouraging them to be curious and ask various questions, experiment and problem solve. When Outdoors children are able to access various materials and learn about nature helping them to make sense of the world around them. In doing so, it encourages them to start to come up with their own scientific and mathematical ideas through play.

The role of the adult plays a big part in how children interact in the outdoor environment. Bilton (2010) proposes the idea that for outdoor play to promote mathematical and scientific concepts, how the adult interacts with the children plays a role in this and it should be done carefully. They go on to say adults need to be careful that interacting with the children does not turn into interference. Therefore, adults must continue to be facilitators of the children's play and be careful not to take over. Waite (2011) similarly emphasises the importance of outdoor play but does take into consideration that the adults understanding in the value of outdoor play can contribute to how enriched the experience is for the child. If adults appreciate the value of outdoor exploration, they are more likely to plan meaningful activities and respond to children's inquiries with open ended questions that extend their learning.

Richardson (2013) agrees and goes on to say how adults need to ensure they create enabling environments in order to support child led play and support their mathematical and scientific development. This requires careful planning with flexibility and a good understanding of a child's development. Similarly White (2011) states that whilst the outdoors does encourage the learning of the children the environment still needs to be well thought out by the adult so that the area can offer children various experiences to develop their mathematical and science skills and create opportunities to extend their learning. Furthermore White (2014) emphasises that adult planning is key to providing high quality outdoor environments for the children where they can continue to develop. If planning is effective it can allow for further opportunities to plan accordingly in the future and cater to all the children's individual needs. Carefully planned activities might highlight each child's own interests supporting practitioners to plan the next step in their learning.

Adults can support children by encouraging them to create and explore their own ideas rather than providing them with an answer or outcome which allows children to be curious and enhances their learning, promoting their problem solving skills and independence, which means they can thrive in their environment (Malaguzzi, 1998, p. 67 cited in Brunton and Thornton, 2010). Similarly, Tovey (2012) draws in on Froebel's approach of adults being facilitators to children learning rather than them leading the child, they can support and encourage children to follow their own ideas. Maynard and Waters (2014) also touch on Froebel's approach and suggest that children need to connect with the wider environment helping them to make sense of the world. Sisson and Lash (2017) agree and also highlight that outdoor play helps children to connect with nature, they may start to think about life cycles or growth which builds on their scientific development. The adult's role is to nurture these moments providing new language and vocabulary, context of the topic and encouraging the child to look closer, think deeper and investigate further. This also links to the developmental pathways of the Curriculum for funded non-maintained nursery settings in Wales (Welsh Government, 2022).

Grigg and Lewis (2016) indicate that the Welsh Foundation Phase curriculum encourages a balance of adult led learning and child led learning where the learning can be ongoing in order to deepen their mathematical and scientific thinking. This balanced approach allows children to explore concepts both independently and also

work closely with adults, which could mean they feel safer and more confident to take risks. Bilton and Crook (2016) found that from children simply just being outdoors they would use mathematical language and have conversations about shape, size, quantity and many other things. Similarly, Wilson (2018) found that providing children with hands on experiences in nature for example using soil or planting gets them to think about different patterns, textures, sizes which supports their mathematical and scientific thinking. Waite-Stupiansky and Cohen (2019) agree and indicate that children can test their mathematical and scientific theories through being outdoors as there are many natural opportunities for them to experience day to day. They go on to say that even in settings in more urban areas there are still opportunities for exploration outdoors like the weather or animals outside. Tucker (2014) highlights how exploring mathematical concepts in the outdoors allows children to be more free without the restriction of being indoors and make connections within their own learning. This leaves their play and learning open ended and encourages children to independently problem solve where they can develop their mathematical and scientific understand and apply it to real life scenarios. It important that practitioners have a wealth of knowledge to think about how various parts of the outdoors link to mathematical concepts (Cooke, 2007). McGrath (2014) highlights how practitioners can use storytelling to support children's mathematical thinking and how children can then be creative and use their imagination outdoors continuing with their mathematical development. It is important that adults take every opportunity to extend their mathematical learning outside by using different materials and asking open ended questions (Skinner and Dancer, 2012). For example, asking "which of these stones is heavier?" Or "how many steps does it take to cross the log?" Encourages guesses, comparison and problem solving. Yelland, Diezmann, and Butler (2014) highlight the various learning opportunities for mathematical learning outside and particularly talk about the development of spatial awareness and measuring with sand and water. This develops children's mathematical learning using a fun hands on experience with resources provided by the adult.

Despite its many benefits outdoor learning is not without its challenges. Bilton and Waters (2016) found that whilst teachers do understand and value outdoor experiences, sometimes it can become unclear what the aim of outdoor play is, and

this could inhibit further learning opportunities and chances to extend their play. Waters and Rekers (2019) highlight that practitioners may face the issue that some settings lack high quality outdoor spaces which limits the type of activities that children are able to engage in. Practitioners need to be resourceful in these situations and think on their feet using the materials or resources that are already available to them. When this is the case some creativity and flexibility is needed. By thinking outside of the box small areas can be transformed into learning environments with the right planning. For example, using shadows and sunlight can be great teaching tools that do not require any extra resources or materials. Another limitation to getting the best possible outcomes of outdoor play is having a lack of staff members. Having a lack of staff members within an outdoor setting may mean the child is not being fully supported as they may not be getting a sufficient amount of attention or supervision. Having a lack of staff could also mean there could be safety issues and as a result settings may decide against outdoor play. Therefore, children will not experience the benefits outdoor play has to offer. According to Little (2013) mothers understand and support the benefits outdoor play has to offer, however they do also worry about their children's safety and any potential harm to them. This could be another barrier in children being provided with those opportunities and experiences. It is important that practitioners reassure parents and emphasise that the benefits outweigh the risks.

Conclusion

In conclusion, the adult's role in outdoor learning is to provide children with rich meaningful experiences and opportunities that lead to curiosity and exploration. Adults must ensure that they interact in the right way by not interfering or leading the play but also not completely neglecting the child and not paying much attention to them. Adults need to find a healthy balance and support children by ensuring they have hands on experiences and extending their play where possible, with this they can help children to develop their understanding of mathematical and scientific concepts. Whilst outdoor environments can sometimes be lacking and may vary in quality and accessibility it is important that the adult finds ways to be creative and carefully plan in order to ensure children still get those experiences. If practitioners can plan thoroughly children can thrive in their environment and reach endless possibilities, developing skills that lay the foundation for lifelong learning.

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