

Part 1.

(Photo of the forest, Hughes 2024)

Part 2.

It was a cold, but dry, autumn day when 10 of the preschoolers, aged 3-4, went to the forest for a day trip with the nursery. The forest is a space where young children can thrive through using their imagination and curiosity through play whilst learning about the world around them. According to Welsh Government (2022), the curriculum for funded non-maintained nursery settings states that the experiences offered to children need to be engaging, hands-on, whilst encouraging independence and real-life, uninterrupted learning. The forest is a prime example of this effective environment.

As the children walked into the forest, the first thing one of them noticed was an acorn lying on the floor.

“Miss, what is that?” asked one of the children. “Oh, WOW! That is an acorn that has fallen from the tree” the teacher replied.

All the children ran over towards the child and the teacher with the acorn to have a look.

“Look at the tree, how tall do you think it is?” the teacher asked.

The children all looked up with awe and wonder. “That one is all the way up into the clouds” said one child, whilst another child said, “That one is taller than my dad,” said another. “How is the tree so tall?” asked another child. The teacher replied by saying how trees need food and water to grow tall, just like we do. They talked about the weather and how sunshine and rain can also help a tree to grow. This is linked to the science and technology description of learning ‘being curious and searching for answers is essential to understanding and predicting phenomena’, progression step 1 (Welsh Government, 2020a).

“I wonder how many acorns we can find by here” the teacher said.

The children quickly started looking down towards their feet. They started collecting their own acorns, their hands full and their bodies running around with excitement.

“I’m going to find 100 acorns” one child said, whilst another child said, “I’m going to find as many as I can fit into my pockets”.

The children must have collected acorns for about 15 minutes when the teacher suggested that they could come together to count their acorns. Each child used their little fingers to place the acorns on the floor and they all counted out loud together. Between them they counted all the way to 100.



(Photo of acorns, Hughes 2024)

The teacher then asked the children if they could find anything else in the forest. One child ran over and found a long stick, whilst another child found a short twig. They discussed how one was long, and one was short. The teacher suggested they could all find sticks and place them down on the floor to compare the sizes. This is linked to the mathematics and numeracy descriptions of learning 'Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world' progression step 1 (Welsh Government 2020b). The children all ran excitedly around finding sticks to put in order together. They then noticed how some sticks are thicker than others, whilst some are thin and could easily break. One of the children accidentally snapped one of their sticks.

"Miss my stick has broken" they said sadly. "Wow, you must have been so strong and used some force to break that" the teacher suggested.

Then, out of curiosity, the children began searching for thin sticks that they could use their own force to snap them. The children began laughing excitedly when their sticks would snap, making shorter sticks for their collection.

One child found a bright red leaf on the floor and brought it over to the teacher.

"Why are the leaves all different colours?" the child asked.

The teacher discussed the different seasons, and how the leaves fall during the autumn season. The teacher suggested the children look up to see if any of the leaves are falling. After a few seconds, a green leaf began slowly floating down through the sky.

"Why is it falling so slowly?" one child asked. "Because it is not very heavy, it is actually very light" the teacher replied.

The children and the teachers then had a conversation about how the heavy twigs may fall faster because they are heavier and have more force behind them, whilst the leaves are lighter so can float and fall at a slower pace. This is linked to the science and technology description of learning 'forces and energy provide a foundation for understanding our universe', progression step 2 (Welsh Government 2020a).

"Let's collect some different coloured leaves" one child suggested. "I'm going to find green ones because that's my favourite colour" one child shouted. Whilst another one said, "I'm only finding orange ones".

The teacher suggested they all search for different shaped leaves to compare colours, shapes and sizes. The forest turned into a leaf treasure hunt whilst all the children

scrambled to find a variety of leaves, turning this activity into a math's lesson in the forest. The teacher pulled out some magnifying glasses out of her bag.

"Why don't we look closely at our leaves to see the variety of different patterns on them" the teacher suggested. The children helped themselves to a magnifying glass and the teacher had encouraged them to spark their curiosity to compare and look at patterns. They then frantically began running between each other to compare patterns, sizes and colours. They discussed big and small and how things looked "so huge" and "so much bigger" with the magnifying glasses.

"We could make something out of these" one child suggested. "Why don't we make a house for the little birds that live in the forest" another suggested. "Or we could make one for the fairies" another said. "We can use the sticks we all collected to help" another child suggested.

That conversation sparked fresh curiosity within the children. They began asking questions about where the little birds usually live. The teacher explained how the birds usually live up high in the trees because they can fly and keep their food safe up there. They then went on to discuss how other animals that live in the forest may live underground to keep their food and families safe. This was a simple way for the teacher to age appropriately help the children understand the science of survival.

As the children continued making a home for the birds and the fairies, they went on to find a variety of different objects to help. Some found huge leaves whilst others collected different sized sticks and twigs to make the foundations of their homes. All these loose parts sparked their curiosity to create something else from. They all worked together and helped each other with their creations.

One of the children started to get upset because one of their twigs wouldn't stay upright like all the others. A few of the children tried to help, however, the twig just kept falling. The teacher went over to see what was happening. Once they explained, the teacher discussed how materials may not always work the same each time and how they are all different. The child then went to find a different twig that was a bit thicker to use instead and it worked. Whilst creating these tiny homes, the children had learnt all about balance and perseverance.

One of the children noticed a ladybird crawling next to their house.

"Miss, look at this ladybird, it wants to live in my house" they shouted and squealed with excitement. The teachers and children came over.

“Let's all move slowly so we don't scare off the ladybird” the teacher suggested. “I wonder how many spots the ladybird has on its back?” the teacher asks. “Miss let's check with the magnifying glasses”.

The children all got out their magnifying glasses to start counting all the spots. They noticed a variety of different features on the ladybird and next thing they knew, it flew away. The children did not realise that ladybirds could fly, so that was another lesson learnt.

The sun began shining through the autumn clouds, when one child shouted, “My fairy house is shining in the sun”. Another child shouted, “Look at mine, it looks all glittery”. The teacher asked the children if they could see their shadows moving as they moved in different directions around the forest. This was another science lesson for the children without them even knowing.

Once the children had finished creating their homes, the teacher went around and took some photos for the children to have to remember their special day. The children walked back to the nursery filled with awe and wonder after a day of learning through play, which is what Welsh Government (2022) suggests as a ‘fundamental right’ for children. They had measured different heights, counted a variety of different objects, discovered shadows and how they move, explored a variety of different shapes and colours all through exploration and play. This was a maths and science lesson that they had all experienced without realising, through playing in nature. What was planned as a fun day out for the children had turned into an adventure filled with curiosity, independence, creativity and exploration, which allowed them to develop holistically.

Part 3.Risk-benefit Assessment.

Location/ Activity:	The forest (Ages 3-4)	Date:	10 th October 2024
Assessor:	Sophia Hughes		

Activity/ experience.	Benefits from this activity?	Hazards and associated risks with this activity.	Who is at risk?	Precautions in place to reduce any risks.	Overall risk after precautions.
Open area.	1. Allow the children to use their imagination in an open area. 2. Give the children an adequate space to explore and use their own curiosity. 3. Allows the children to use their own creativity by finding and using resources around them. 4. Gives the children plenty of space to use their own independence.	1. Big trees in the area, children may attempt to climb and could fall or injure themselves on sharp parts. They can also restrict view, and staff may be unable to see all the children at once. 2. Animal faeces could be anywhere in the area and children could step in it or fall into it on their hands/face. 3. Low lying branches could be sticking out of the trees and children could hurt themselves or fall into them. 4. Strangers could also be in the area and staff or children do not know these people. 5. Litter – could be anything littered anywhere as it is a	Staff and children.	1. Adult to check the area before hand, check for any faeces, dangerous litter and strangers. Warn the children of the dangers of animal faeces and get them to double check before they pick anything up. 2. Warn children of the dangers of strangers and always stay with familiar people. 3. Children to be warned of the dangers of climbing trees and of low-lying branches, advise children to watch where they are walking and to be careful not to walk into any branches.	Low.

		public space so the children may find something sharp or harmful.		4. Ensure regular head counts throughout the visit and always keep a register on all staff members.	
Uneven ground.	1. Developing balance skills. 2. Allowing the children a space to explore. 3. Children to be aware and able to negotiate their own risks.	1. Children and staff may fall or trip and could cause an injury.	Staff and children.	1. Ensure to bring a first aid kit. 2. Explain to staff and children that the ground is uneven and for them to be cautious. 3. Keep the children in smaller groups to monitor.	Low.
Pond in the area (the other side of the forest).	1. Exploration of a different resource (water). 2. Reflection of themselves in the pond. 3. Wildlife and flowers inside the pond.	1. Drowning is a major hazard. 2. Any of the children falling into the water. 3. Poisonous water.	Staff and children.	1. Children to be monitored at all times. 2. Staff to be given designated sections of the forest to monitor to allow the children freedom to roam but whilst also ensuring the safety of them all. 3. First aid kit to hand always. 4. Children to be prepared beforehand of the benefits and dangers of the pond. Ensure children know they need to	Low.

				always keep a safe distance from the pond. 5. Extra staff members out of ratio to ensure there is a spare adult by the pond during the visit.	
Walking to the forest along the road.	1. Children to learn the safe ways to cross the road and to learn about road safety. 2. Exploring a new environment on the way to the forest. 3. Giving the children a sense of independence.	1. Children may run onto the road. 2. Some of the children with Additional Learning Needs may struggle walking safely and holding hands.		1. Ensure the adult to child ratio is safe for the walk and make sure that there is plenty of extra staff on hand to help. 2. Bring reigns for the children that you think may struggle to walk safely next to the road. 3. Discuss road safety beforehand to prepare the children to walk safely.	Low.

Part 4.

In the United Nations Convention on the Rights of the Child, Article 31 states that every child has the right to play (Unicef, No Date). Froebel Trust (2024) discusses how Froebel believed that play is the main way for young children to learn. He believed that through play, children can build their knowledge of the world through a hands-on experience. Tovey (2012) discusses how the adult has one of the main roles when educating children. Early Years Alliance (2021) agree and suggest how children can thrive when learning through play with the guidance of an adult. They explore a variety of different roles that the adult can participate in through play to enhance learning and they place them into three different types: The Facilitator, the Scaffolder and the Teacher. They describe the Facilitator as the practitioner that provides an enabling environment, resources and opportunities to allow the play to happen. The Scaffolder is described as the adult who assists, models and encourages the children. The Education People (2021) discuss how according to Vygotsky, social interactions and language are important components of cognitive development whilst ensuring that they are culturally diverse. He discusses how the Zone of Proximal Development is the space in between what a person knows they can do and what they cannot do. Vygotsky believed that moving out of this space requires the support and encouragement of others, which is where the adult would act as the Scaffolder. The teacher is a general way of showing the various ways in which an adult can help a young child to learn (Early Years Alliance, 2021). This links in with Welsh Government (2022) and how children need adults and teachers who offer enabling and enriching environments. McLean, et al (2023) suggests how understanding what adults think play is can help children have more opportunities to learn through play in general. National Children's Bureau (2019) suggests how research on children's mathematical development during their early years reflects on the importance of having an engaging environment, such as the outdoors, as well as positive adult engagement. This would include observing the children and discussing their thought process when measuring or exploring in the outdoors to ensure the children are hearing what they are saying to better understand how mathematics and scientific reasoning works. It is also suggested how helping children understand colours and numbers from a young age, with support from an adult, can help development in mathematics, as well as holistically through later stages of life.

Garwood (1982) suggests how according to Piaget, play teaches children important skills that are essential to their cognitive growth. Adults can support this by allowing children to have time to think, giving them a safe and nurturing space to explore whilst giving them enough time to problem solve independently and with support. The Curiosity Approach (2024) discusses how it is the role of the adult to encourage and help develop curiosity in young children through creating an enabling environment, asking questions and inspiring their curious mind. They suggest ways to inspire a child's curious mind through setting up provocations for play that spark curiosity, whilst asking open ended questions to get the children to think for themselves. This is linked to Bruner's Theory, according to Harvard University (2024), as they discuss how Bruner believed that anything can be taught to anyone but at the right place and time for them. Giving them space and time to collect various things in enabling environments, with various tools and objects, not only develops their

curiosity, but it also enables the child to develop holistically. By offering enabling equipment in the outdoors, such as magnifying glasses, rulers, tape measures, scoops and buckets, children will naturally be able to develop their mathematical and scientific skills in an environment that is comfortable to them.

According to HFL Education (2023), open ended play can help children discover mathematical and scientific concepts in the outdoors. Early years children need time and room to engage in active play, explore their ideas, and be as imaginative and creative as they want to be. When children are engaged and learning on their own, adults need to be able to recognise when to step in, usually where help is needed, or to further the learning and provide curiosity through open ended questions. They also need to know when to take a step back and observe and let the children use their own minds to explore and wonder. Adults should use the opportunities to step in and support the children with their mathematical development by using the correct opportunities to add in some mathematical terms during outdoor play. These terms could include 'more, less, higher, lower, big, small', or even just adding numbers and counting to the activity. Some examples of open-ended activities in the outdoors include mud kitchens, various sized loose parts, sand and water play, and some resources unintentionally set out for den building. These activities would also help the children to naturally use schemas by using repeatable patterns in sand/water play or the mud kitchen play. Developing schemas is the basis of scientific and mathematical development. To further develop the children here, adults can also encourage the children to work in groups to help them compare various ideas and be able to work together. Wandsworth Early Years (2024) discuss how open-ended questions allow children to think more about their answers, which can encourage them to be creative, use their imagination, problem solve and elaborate on their thoughts. Furthermore, by an adult asking an open-ended question over a closed-ended question, they are naturally helping create curiosity in the child's mind, which in turn will support science, mathematical and holistic development. Linking into open-ended activities and questions would be adults encouraging the use of open-ended toys, such as Loose Parts. Play Scotland (2024) discuss how 'Loose Parts' allow children to use their imagination and creativity by creating things from a variety of different objects which has endless possibilities. They suggest that being outdoors in nature is one of the most valuable origins when it comes to using Loose Parts. Not only is it important for adults to encourage children to use Loose Parts, but by adding conversation and open-ended questions alongside this will allow room for imagination and curiosity. This is linked to Nicholson's theory of Loose Parts as discussed by LECS (No Date). They define the Theory of Loose Parts as materials that can be moved from one place to another to create endless possibilities to help interaction and curiosity, which can lead to the children being more inventive and creative. Chong & Proctor (2020) describe Gibson's concept of affordances and how if you have an area of high affordance, it would be more interesting. This goes in connection with the Theory of Loose Parts as the higher number of Loose Parts there are in an environment, then the higher the affordance interest.

Maynard and Waters (2014) discuss international approaches to education. They discuss the Scandinavian approach and how they view outdoor play as being one of their most important

values. Their curriculum views outdoor play as being crucial for a child's well-being and development by using natural resources and navigating their own risks, which in turn will help them navigate issues that may arise further on in life.

Richardson (2014) discusses how the adult has an important role when ensuring the safety of the children when outdoors. Adults should ensure that a risk-benefit assessment is made before hand and be mindful and prepared for any situations that may arise. Whilst ensuring the safety of the children, an enabling adult should be able to encourage children to take risks that are manageable, such as balancing on beams, to help them with their problem-solving skills. Allowing the children to have time after these activities to reflect on their learning is an important factor when it comes to moving forward and developing holistically. Richardson (2014) also believes how celebrating any successes linked to holistic learning is important when developing schemas and increasing confidence in children.

Education and Training Inspectorate (2021) discuss some challenges and limitations that may prevent an adult always having a positive role when it comes to children developing mathematically and scientifically in the outdoors. A lack of staff training can prevent the practitioner from understanding the importance of learning in the outdoors, which could enable them to spend less time adding provocations for learning and curiosity in the outdoors. This can also lead to inconsistent modelling in the outdoors. Being understaffed and having incorrect ratios could lead to less time and freedom for children to be able to use the outdoors safely. This is also linked to funding and not enough funds to find cover for staff holidays and staff sickness. The collection edited by Waite (2011) discusses how lifestyle changes have had an impact on the amount of time children are spending outdoors. They discuss how this keeps children away from the nature of the outdoors and therefore impacting their freedom to develop and have outdoor experiences. They disclose how children are now spending more time in Early Years settings due to increasing financial problems for mothers to be forced back to work earlier, therefore it is the role of the practitioner to ensure they are educated with the correct enabling environment to be able to offer children in their care enriching and curious environments (Waite, 2011).

In conclusion to the above, the adult has a crucial role when supporting science and mathematics in the outdoors. It has been discussed how adults should allow children the time, space and equipment to enlighten their own curiosity and exploration, whilst being prepared to step in, where necessary, to further develop their vocabulary, knowledge and confidence to create opportunities to allow the children to develop holistically.

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