

Section 1



(Source: Martin, 2021).

Section 2 - Word Count - 1558

9.15am

"Everyone gather around! Today we are going to be investigating this area. There are lots of living things here, can anyone guess what they might be?"

Bella shoots her hand up and shouts "Animals!", "Well done Bella, that is exactly what I was thinking. What kind of animals would be found here? Do you think animals like sharks would live here?". Bella and Joe both laugh and say "No miss".

"Well why not? There is water here", "Sharks live in the sea, there isn't enough water here for them. Sharks are big!" explains Joe.

"Well done Joe, you are so clever. Everyone put their listening ears on, let's be super quiet and try and listen out for some animals".

Moments later the sound of tweeting became clear. Bella exclaimed "Birds miss, there are lots of birds". "Good job Bella, We can hear birds. There are also other animals here that we might not be able to hear like squirrels, rabbits and even tadpoles in the water". Bella and Joe were given pictures of each animal and were instructed to walk around the area in search for clues about where the animals live and what they eat. The Curriculum of Wales (2022) emphasises personal and social development. This activity promotes teamwork, cooperation, and communication among Bella and Joe as they work together to explore and learn from their natural surroundings.

Starting with Birds, Bella and Joe pointed out a nest in a tall tree.

"Good find guys, what is a nest?", "It is where birds live," said Bella. "Yes. they live there and it's made out of twigs!" claimed Joe.

"Fantastic, Now I want you both to take these buckets and try and collect as many small twigs and sticks as you can. Go, Go, Go!".

Bella and Joe return with a bucket full of twigs and sticks.

"Awesome work, Now I want you to use the twigs and sticks and try and build a bird nest. Exactly like the one in the tree!".

Bella and Joe start building a bird's nest, "Why is this so hard?" Bella questioned.

"Yeah, our nest looks nothing like a real bird's nest," Joe agreed.

"I know right, it's super tricky. If we can't do it, I wonder how birds can do it?".

"Maybe the birds buy the nests" stated Joe.

"That would be cool but they actually make it themselves. Birds are really smart and know how to build nests because they have special instincts. They use their beaks and feet to collect twigs, leaves and grass and then they weave them together to make a strong and cosy home for their eggs and babies. How amazing is that?"

"Wow. So what do they eat?" asked Bella.

"Maybe they eat fruit!" answered Joe.

"Good guess Joe, some birds eat fruit. They also eat things like berries, worms and other insects. Some birds even eat seeds from trees. Speaking of trees, let's move on to our next adventure and try to find more life around here".

9.50am

Bella shouts "I know what else is alive, the trees and these leaves".

Bella picks up a Leaf and Joe states "No Bella, that leaf isn't alive anymore because it is brown". Bella pointed and replied "But the leaves on that tree are brown".

"Why do you think the leaves are brown Joe?", "Maybe the trees didn't drink enough water and that's why their leaves are falling off",

"What about you Bella, why do you think the leaves are brown?".

"I don't know Miss, there are even some red and orange leaves over here. Look!".

"That's right! You know how each of us is different and special in our own way? Well, leaves are like that too! They come in different colours and sizes because they are just as unique as we are. When the weather gets colder in the autumn, some leaves start to paint themselves in beautiful red, orange, or brown colours. It's like they're getting ready for a cosy winter nap.

So, let's go on a leaf colour hunt to find some of these colourful leaves. Take your buckets from earlier and start collecting all the different coloured leaves that you can find!". The Curriculum of Wales (2022), promotes experiential and outdoor learning, recognizing the value of hands-on experiences in deepening understanding. This activity took Bella and Joe outside into the natural environment, allowing them to directly engage with science concepts.

Bella and Joe eagerly started collecting leaves of different colours. They carefully placed them into their buckets, feeling the leaves' textures as they went along.

Joe begins to jump on the leaves and notices how the brown leaves are crunchy when he steps on them. He then continues to jump on green leaves and seems disappointed when he did not have the same outcome.

"Brown leaves are more crunchy than green ones, Joe. Remember what I said earlier about the leaves changing colour when it gets colder? Well the leaves start to lose water and dry out. This makes them more crispy, just like the crunchy snacks we enjoy."

"My bucket is filled!" Bella cried out. "So is mine," said Joe.

"Amazing, now pour your buckets into one big pile and sort the leaves into different piles by colour".

Bella and Joe start categorising the leaves based on their colour.

"Bella, what colour leaf do you think we will find in the summer?"

"Yellow?" answered Bella. "Some leaves can be yellow but what colour do we see most? Remember what I said about when it's cold and when it's hot".

"Green, bright bright green!" exclaimed Bella.

"Well done Bella, perfect answer. Now Joe, what colour do we see most in the autumn?"

"That's easy" said Joe "It's brown".

“Impressive!”

“What colour leaves do we see in winter?” asked Joe.

“Well In winter, many trees lose their leaves, and you'll mostly see bare branches. It's like they're taking a long rest, and their leaves are resting on the ground. But some trees, like evergreen trees, keep their green leaves all year long. So, each season brings its own special colours to the leaves, and that's why we see different colours in different times of the year. It's one of the amazing things about trees and the seasons! Let's carry on walking and see what else we can find.”

(Source: National Geographic Kids, No date).

10.30am

"Can I jump in the water, miss?" asked Bella.

"Oh, Yes! Me too, Me too" said Joe eagerly.

"Yes of course you can, just make sure you are super careful because some of the stones in the stream might be slippery!"

Bella and Joe continue to carefully step into the cool, shallow water.

"Why is this stream even here? It isn't even that deep." asked Bella.

"Did you know that the water in this stream is on a never-ending journey called the water cycle? The sun makes water from rivers, lakes, and oceans turn into invisible steam in the air. It forms clouds that can make rain when they get heavy. Some rain soaks into the ground, some flows into streams and rivers, and it keeps going in a circle. So, the water you see here today might be a cloud tomorrow!"

"Wow, that sounds complicated," Said Bella.

"Hey Bella shall we make boats out of these big leaves and have a race?" asked Joe.

"Yes, let's race!" shouted Bella.

Bella and Joe begin to prepare for their boat race by collecting leaves and twigs.

"My boat is ready!" shouted Joe. "So is mine," said Bella.

"Okay put your boats at the top of the stream and on the count of three, let go. One, Two, Three!"

Bella and Joe let go of their boats. Bellas' boat is moving quickly but Joe's boat is starting to tip over.

"Why is my boat not floating!" asked Joe.

"Well, the weight and balance of objects on the boat can make a difference. If a boat is too heavy on one side, it might tip over or move more slowly. If it's balanced and evenly loaded, it's likely to move more smoothly. If you look at your boat Joe you have more sticks on one side of the boat. This is why it has tipped over".

"My boat is moving so fast," said Bella. "Yes Bella it is, Do you think it would move that fast if we turned it in a different direction?"

"Yes it will be fast in any direction because It is a super boat" stated Bella.



“Okay let's try it, try and push your boat across the stream instead of down the stream”. Bella continues attempting to make her boat sail across the stream, to her surprise, the boat turns and continues sailing down the stream. “You can't do it, it only wants to go down,” said Joe.

“Why do you think this is Bella?”, “maybe because it's windy today and the wind is blowing it that way” answered Bella. “Yes, that could be it. It could also be because of the currents in the water and gravity. Gravity is pulling the boat downhill”. This activity aligns with the Curriculum for Wales (2022) as it encouraged Bella and Joe to predict, observe, and discuss the factors influencing boat movement. This helped develop a range of skills including observation, critical thinking, problem-solving and communication.

Section 3 - Word Count - 621

RISK BENEFIT ASSESSMENT

Location / Activity:	Woodland Area with stream	Date:	24/09/2023
Assessor:	Lydia Webster	Review date:	24/01/2024

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.

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
Walking near and through the stream	Teaching stream safety allows children to gain a practical understanding of water dynamics, currents, and hazards. It promotes water safety skills and awareness, which are valuable for later life.	Apart from water safety, there may be other stream-related risks, such as slippery rocks and banks.	Adults and Children.	Educate children about stream safety rules, including not entering deep water without adult supervision. Supervise children near the stream. Wear appropriate footwear and waterproof clothing.	L

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
Encountering insects or animals	Encounters with wildlife offer opportunities for children to learn about animals, animal behaviour, and ecological balance. It promotes curiosity, respect for nature, and an understanding of the importance of coexisting with wildlife. It aligns with the goals of the Curriculum for Wales (2022) as the curriculum encourages students to engage directly with the environment, fostering a deep understanding of the natural world.	While most wildlife in woodland areas is harmless, there may be encounters with animals like insects, snakes, or small mammals that could cause minor concerns. Insect bites.	Adults and children.	Teach children about wildlife safety and first aid for minor injuries like insect bites. Ensure close adult supervision to monitor wildlife encounters and guide children's interactions. Have a basic first aid kit on hand to address minor insect bites or stings if necessary. Educate children about responsible behaviour in natural environments, such as not littering or disturbing wildlife.	L

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
Encountering plants that pose minor risk	Learning to identify and avoid potentially harmful plants fosters plant awareness and safety. Children can gain knowledge about local plant life and understand how to interact responsibly with the natural environment. Discussions about responsible behaviour in natural environments and the importance of the environment align with the Curriculum of Wales (2022) goal of teaching children to be good, responsible members of the community.	Some children may have allergies to certain plants or may come into contact with plants that are poisonous or cause skin irritations (e.g., poison ivy).	Adults and children.	Adults should be knowledgeable about plants and teach children to avoid touching or ingesting unknown plants. Wear gloves when handling plants. Ensure adults can identify and prevent contact with potentially harmful plants.	L

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
Rain or cold temperatures.	Feeling cold or wet can make children more mindful of their surroundings and sensations. It encourages them to live in the present moment, appreciating the sensory experiences that nature offers. Children learn to adapt to changing circumstances, which is a valuable life skill. They discover that by making adjustments, they can overcome discomfort and continue enjoying outdoor activities.	Risk of getting wet or cold. Feeling wet and cold can cause discomfort, distress, and a negative overall experience for children. This may lead to reduced enjoyment of the outdoor activity and a desire to return indoors prematurely.	Adults and children.	Continuously monitor weather forecasts leading up to and during outdoor activities. Ensure that children and adults wear appropriate clothing for the weather conditions. This may include: Waterproof jackets and pants to keep rain out, layered clothing to ensure children are kept warm, hats and gloves, sturdy, waterproof footwear.	L

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
Environmental hazards	Awareness of environmental hazards promotes mindfulness and caution when exploring natural areas. It encourages children to develop risk assessment and problem-solving skills while staying safe.	Depending on the specific woodland area, there could be environmental hazards such as steep cliffs, unstable rocks, or areas prone to erosion. Children may trip or fall.	Adults and children.	Conduct a thorough site assessment before activities to identify and address potential hazards, such as steep terrain or unstable ground. Define safe routes and boundaries for exploration, keeping children away from hazardous areas. Appropriate clothing and footwear. Proper supervision and awareness are crucial to prevent accidents related to these hazards.	L

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
Sudden weather changes	Experiencing weather changes in a woodland environment provides valuable lessons about adaptation, resilience, and the interconnectedness of weather patterns and ecosystems. It also offers an opportunity to discuss the significance of weather in nature. Learning to navigate and manage risks, such as weather changes, builds resilience and adaptability. The Curriculum of Wales (2022) recognizes the importance of developing these essential life skills.	Weather in woodland areas can be unpredictable. Sudden rainstorms, strong winds, or changes in temperature could pose risks.	Adults and children.	Continuously monitor weather forecasts leading up to and during outdoor activities. Be prepared to reschedule or adapt activities based on weather conditions. Ensure children and adults wear appropriate clothing for the expected weather, including rain jackets, hats, or warm layers. Have access to shelter options, such as tents or covered areas, in case of sudden weather changes.	L

Section 4 - Word Count - 2012

Early childhood education has significantly changed in recent years, focusing on hands-on learning experiences that incorporate mathematical and scientific concepts. Educators and researchers recognize the benefits of outdoor environments as natural settings for fostering children's curiosity, exploration, and understanding of these concepts. Adults play a vital role in guiding the minds of young children by enabling environments, utilising loose parts, and igniting curiosity. Adults have a responsibility to support and encourage children's engagement with mathematical and scientific concepts in the natural world.

Vygotsky and Piaget, two influential theorists, have contributed to our understanding of how children learn. Vygotsky highlighted the significant role of adults in shaping children's mental development, while Piaget emphasised children as independent intellectual explorers who construct knowledge through their discoveries. Many educators advocate for a balanced approach that combines Piaget's and Vygotsky's perspectives, allowing children to follow their interests and enthusiasm while receiving intellectual challenges. Bruner, another influential theorist, was influenced by both Piaget and Vygotsky. He, too, believed that learning is an active process in which children build new knowledge upon their existing understanding (Charlesworth, 2015). Adults have a role in providing stimulating play environments that encourage curiosity, discovery, experimentation, and hypothesis. According to Jirout (2020), through curiosity, children can enhance their growth of scientific thinking. Curiosity can drive the search for information. This leads to asking questions and engaging in other information-seeking activities. This will then trigger the activation of relevant prior knowledge, which sustains deeper learning. Outdoor environments especially spark children's curiosity. Waite (2010) states that the unpredictability of the outdoors gives children the opportunity to be curious. The natural world provides an experimental foundation for curriculum growth as well as environmental values. However, Zamani (2016) highlighted a challenge that is, some outdoor environments will not have been as effective and beneficial for children's development. Children need to be exposed to natural outdoor environments, as opposed to traditional typical playgrounds. Natural areas that include natural elements such as plants, trees, and sand provide the opportunity for hands-on learning, explorative and manipulative experiences. Waite (2010 cited in Zamani, 2016) goes on to state that natural environments allow children to connect with nature, providing them with open-ended play options that stimulate creativity. This is supported by theorist Froebel, who emphasised the importance of children learning through nature. Froebel saw the significance in the environment in which children learn (Macblain, 2018). White (No date) also states that it is important for young children to have access to the outdoors as frequently as they do indoors. Children benefit from a planned, organised indoor-outdoor environment. To contrast, Austin (2007) contradicts these beliefs and claims that simply moving children outdoors will not enhance learning.

Sargent (2015) believes that the outdoor area is ideal for planning maths activities. Children develop mathematical skills by trial and error and playing with ideas. Children explore size, shape, and space and are less restricted, having the freedom to sing, talk, and shout. This encourages conversations, questions, and debates. Ultimately, the outdoor environment encourages active social learning. The significance of active social learning is emphasised by Vygotsky who believed that children's cognitive development is encouraged by social interactions and guided learning experiences facilitated by those who are knowledgeable (Macblain, 2018).

Moreover, the outdoor environment also encourages scientific engagement and thinking. According to Gove (2014), the outdoor environment provides more scientific learning opportunities than indoors. The outdoor environment encourages science-based observations. Children can witness the habitats of insects and animals, the life cycle of flowers, and weather changes. Just a fraction of examples of outdoor science learning opportunities. It is also notable that the outdoors provides sensory experiences. Using different senses is a basic skill in science. Although children can learn in natural environments, it is also important for adults to provide a well-planned environment. An enabling environment provides space, resources, and accessibility. According to Hodgman (2012), the environment plays a key role in encouraging children's learning and development. This is supported by theorist Burner, who believed that the environment plays a role in facilitating learning. Bruners 'scaffolding' theory states that adults or more knowledgeable individuals should create environments and provide support that enables learners to reach higher levels of understanding and competence. Ultimately, Bruner encouraged educators to create environments that are conducive to learning and provide the necessary tools, resources, and guidance to help children succeed (Main, 2023). However, Patchen et al (2022), highlighted some challenges and barriers that adults have encountered when attempting to indulge in outdoor play and learning. These barriers include time, student to staff ratios, physical location safety concerns and weather.

Outdoor learning has gained recognition worldwide for its positive impact on children's development and educational experiences. The Scottish Curriculum for excellence places a strong emphasis on outdoor learning throughout a student's educational journey. From early years to secondary education, students are encouraged to engage with the natural environment (Scottish Education Government, No date) . This differs from the common Core state standards in the United States as the Common Core does not specifically address outdoor learning (The Common Core Standards, No date).

Furthermore, The environment could include loose parts. The loose parts theory has gained recognition for its impact on children's development and learning experiences. The concept was initially introduced by Simon Nicholson and is now a widely accepted approach in early years settings. Loose parts refer to materials or objects that have no predetermined purpose (Casey and Robertson, 2019). These materials can be moved, combined, manipulated, and adapted in various ways by children to create their unique play experiences. Examples of loose parts include natural materials like sticks, stones, and leaves, as well as man-made items like wooden blocks, fabric scraps, and assorted containers. The defining characteristic of loose parts is their open-ended

nature, which allows children to use them in imaginative and creative ways (Daly and Beloglovsky, 2015). According to Flannigan and Dietze (2018), the utilisation of loose parts in early childhood education has extensive benefits. They foster creativity and imagination as children explore these materials without predefined rules. Loose parts also nurture problem-solving skills and critical thinking, as children encounter challenges and obstacles in their play. Moreover, handling various materials enhances both fine and gross motor skills, promoting physical development. This is supported by Spencer et al (2019), who found that loose parts play promotes cognitive development such as planning, problem-solving, communication and imagination. However Spencer et al (2019), later stated that there are challenges regarding loose parts play. Participating educators in the study revealed how the introduction of loose parts led children feeling overwhelmed and intimidated. Educators in the study also stated that they believed when these materials were introduced, the novelty would wear off, children would get bored and there would be a decrease in engagement. To contrast, theorist Montessori encourages loose parts play as Montessori's education principles align with the concept, emphasising hands-on, self-directed learning and the use of natural materials (Montessori Apprentice, no date).

Moreover, Casey and Robertson (2019), states that loose parts play a pivotal role in children's holistic development, stimulating cognitive, physical, social, and emotional growth. They provide opportunities for children to explore, experiment, and express themselves freely, fostering independence, resilience, and a love for learning. This aligns with the goals of the Curriculum for Wales (2022), which emphasise holistic development, individualised learning, and the promotion of critical thinking and creativity. Loose parts are especially ideal for children when engaging in mathematical and scientific concepts. As stated by Joe (No Date), engaging in loose parts play nurtures several essential scientific skills in children. These skills encompass activities such as investigation, exploration, the formulation and testing of hypotheses, the construction and deconstruction of ideas, and active engagement with their environment. Loose parts play naturally fosters these skills, encouraging children to conduct a variety of experiments. While some experiments may occur spontaneously during play, others can be more structured, allowing children to gain valuable scientific insights using basic found objects. This is supported by Truce Teachers (No Date) who state that Loose parts engage children in basic mathematical and scientific concepts such as volume, measurement, cause and effect, friction and patterns. Truce Teachers (No date), also goes on to state that it is important for adults to model curiosity and analytical thinking. Adults can ask questions such as 'did you notice how..' or 'what do you think will happen when..'. These questions encourage children to think about future outcomes of events, making guesses and engaging in simple experiments to enhance their knowledge on these mathematical and scientific concepts.

This being said, Educators in early years settings can effectively utilise loose parts by providing a diverse range of materials, creating inviting play spaces, observing and encouraging children, and documenting their learning experiences. As previously stated, loose parts play is open-ended and through curiosity and discovery, children will ask questions and start conversations about the ideas they have (Rahardjo, 2019). This links to metacognitive talk. Metacognitive talk means talking about how you think, solve problems, and

understand things on purpose. It is done by speaking thoughts out loud, asking questions, or talking with others about your thoughts (Cambridge Community, No date). According to Sword (2017), Metacognitive talk offers a range of advantages that significantly enhance the learning process and cognitive development. One key benefit is enhanced self-awareness; when individuals engage in metacognitive talk, they gain a deeper understanding of their cognitive processes by expressing their thoughts and strategies aloud. This heightened self-awareness becomes a valuable tool for personal growth and development. Another notable advantage is the improvement in learning strategies; metacognitive talk encourages learners to assess the effectiveness of their strategies. Identifying successes and failures builds resilience. Finally, engaging in metacognitive talk, especially in group settings, fosters effective communication and collaboration skills.

The outdoor environment offers a rich and stimulating backdrop for children to explore mathematical and scientific concepts. As they engage with nature, the role of adults becomes crucial in guiding and supporting their learning experiences. Observations serve as a fundamental tool in facilitating children's engagement with mathematical and scientific concepts in outdoor settings. They involve actively watching, documenting, and reflecting on children's behaviours, interactions, and discoveries. According to Ward et al (2012), observing learners engaging in science concepts is vital, judgement can be made about children's ability to carry out investigations and their cooperation with others. Performing observations also supports adults when planning activities based on children's individual needs as learners. Adults can then create an environment that extends children's development and learning (Palaiologou, 2012). This is supported by Davies et al (2014), who states that observing and documenting children's learning are vital for several reasons. For instance, Observations help adults gain insights into children's interests and curiosities regarding the natural world. Additionally, Observations align with the principle of child-led learning. The Curriculum for Wales (2022) promotes child-centred learning experiences, where educators take into account children's interests, needs, and preferences. Teachers are encouraged to observe and respond to children's cues, allowing them to take the lead in their learning. This is further emphasised by Theorist Montessori. Montessori teachers are encouraged to observe from a distance, recording children quietly, allowing children to behave freely (Macblain, 2018). This is supported by Lamont (2021) who found that by guiding children through structured activities led by adults, we can introduce them to fresh concepts and create chances for them to enhance their abilities and acquire knowledge. Nevertheless, it becomes clear that children should subsequently have the chance to delve into their own thoughts, interact with diverse materials, explore their surroundings, and express their creativity. These encounters enable children to gain a more profound insight into the world that surrounds them.

To conclude, In the evolving landscape of early childhood education, the role of adults in facilitating children's engagement with mathematical and scientific concepts is paramount. Whether through outdoor exploration, loose parts play, or metacognitive talk, educators, inspired by theorists like Vygotsky and Piaget, guide young learners on a path of discovery and understanding. Through

careful observations, adults can tailor their guidance to individual needs, adhering to child-centred principles promoted by curricula like the Curriculum for Wales and the Reggio Emilia approach.

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