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4373 words

Awe and Wonder- Science, Mathematics and The Outdoors.

Part 1



Part 2

Three practitioners took a group of 10 children out to explore this setting. Four of these children are four years old and the six other children are five years old. This group of children love exploring the outdoors and experiencing new exciting things within nature. The first place that the children wanted to explore was the stone circle. The practitioners allowed the children to play on the stones but spoke to the children before hand and stated that they must be careful on the stones as they can be slippery and only one child is allowed on a stone at a time. Aswell as this, the practitioners made sure that the children had the correct shoes on to allow the children to balance on the stones. Four of the girls made a game. This game consisted of timing each other to see how long it takes to complete a full circle. This elaborates children's scientific skills. One of the girls shouted "Wow, it is harder to jump over the stones then I thought it would be!"

Whilst the four girls were playing the timing game within the circle, the six other children started playing a different game. The practitioners could hear one of the boys shouting, "Everyone go try find five sticks and bring them back to the middle stone!" So, off the children went and they were trying to find five long sticks. The children race back to the middle but one of the girls declares, "there is a ladybird on my stick!" By the time the children race to see this ladybird it flew off into the sky. The children placed all the sticks around the middle stone and pretended that they were making a campfire. Some of the children found leaves and placed them on the end of the sticks and imagined that they were marshmallows getting toasted on the fire. This game encourages children's mathematical skills and their imaginary skills. The practitioners did not want to get involved as it is children's free play and child led.

After the children were finished with their games, the practitioners suggested a new game called hide and seek. The practitioners had 10 different coloured shapes and they got the children to wait behind the stone circle and they hid them in the surrounding area. One of the practitioners counted "three, two, one, go!" and off the children ran to find the shapes. The practitioners tried to help the children by shouting "look higher, look lower." The practitioners stated that the children must count that they have found all the shapes! Once the children found the shapes, the practitioners got them to sit on a stone each and take it in turns to say what shape they found and what colour it was. Once the children did that, the practitioners got the children to do it again but in Welsh. The practitioners asked the children one at a time, "can you see your shape in the surrounding area?" One of the children yelled "yes, the sun is my circular shape!" This activity encourages scientific and mathematical skills. The Curriculum for Wales- Progression Code (2021) implies that "Learners should understand that the symbols they are using are abstract representations and should develop greater flexibility with the application and manipulation of an increasing range of symbols".

Once the children had finished playing in the stone circle, they moved onto the tyres. The children wanted to bring all the tyres to the top of the hill and push them all the way down to the bottom of the hill to see how fast they can roll. Before the children were allowed to do this, the three practitioners spread out. One of the practitioners was at the top of the hill, one was stood halfway down the hill, and one was at the bottom for safety reasons. The practitioners told the children that they must not carry the heavier tyres up the hill, and they must ask for help as it can be dangerous. The children started to push the tyres down the hill and observed whose tyre went the fastest. One child asked the practitioner, "Why does my tyre go slower than the other boys' and girls' tyres." The practitioner voiced that "It is because your tyre is going over more bumps in the ground." The practitioner stated, "why don't you move your tyre over to where the other boys and girls are and see if it goes just as fast." So, the child moved over, and it went just as fast. Some of the children then asked the practitioners if they could roll down the hill and then practitioners said yes. They

repeated this a lot and thoroughly enjoyed. One of the children declared, "I am tired, I have used all my energy!" The children then sat on the tyres for a break and had a drink of water. This activity encourages children's scientific skills as they are rolling the tyres up the hill, using their bodies to push them down and they are rolling down the hill with force. This links to The Curriculum of Wales- Progression Code (2021), as it states that "I can communicate the effect forces have on myself and on objects. Learners will develop the capacity to apply their learning in science and technology to inform their thinking and action beyond the classroom."

After this activity, some of the children wanted to use their tyres to plant some flowers. The children placed their tyres flat and one of the practitioners got some soil, seeds, and tools for the children to use. One by one, the children and a practitioner use a spade to get the soil, fill the tyre up halfway, plant some seeds and then placed more soil on top. The practitioners teach the children that you need to care for nature, for example watering the plants, to allow the plants to grow healthily. This is a great activity for children as they can watch plants grow overtime and learn about what plant/flower is growing. One of the children asks the practitioner, "why do we water the seeds and how long does it take to grow?" The practitioner tells the children, "One of the most important things for plants to have is sunlight and water, it helps them grow! It will take a good few weeks for the plant to come out but we can visit and see the progress!" This activity can encourage children's scientific and exploration skills.

After the children were done playing with the tyres, they then moved onto the bug hotel. The children were curious of what animals and insects lived in the bug hotel, so they explored. The children found spiders, ladybirds, bees, woodlice, ants, worms, slugs, all kinds of mini beasts. The children were so intrigued on what the mini beasts eat, what colour is each mini beast, do all mini beasts fly and how they live in the outside world? Until one of the children asked, "can we please make a bug hotel?" So, one of the practitioners went inside the shed and gathered wood, dead wood, loose bark, grass, hay, bamboo sticks, leaves, soil, and reeds. Before the children were allowed to start building, the practitioners made sure that the children knew that they cannot put anything in their mouths and that they clean their hands before and after making it. The children loved making the bug hotel, they were balancing varied materials on top of another and trying to make the bug hotel as homely as possible. This links to The Curriculum of Wales- Progression Code (2021), it states that "I can design, using my knowledge of materials and existing products, and suggest design improvements. Investigation, exploration, analysis, problem-solving, and design are key skills required as learners work along the continuum of learning in this are." Making a bug hotel is beneficial for children as children learn about nature, the natural environment, animals' life cycles, as well as building physical and team skills.

Risk Benefit Assessment

Location/Activity: Outdoors Experience in the Woodland Area	Date: 25 th March 2024
Assessor: Camryn Clark	Review Date: 16 th April 2024

Experiencing 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
Stepping Stones	Children will benefit from being in the outdoors and being surrounded by nature. Children will get fresh air. Children will apply their gross motor skills and learn to balance on the stones. Children will hear different noises such as birds chirping and learn about different animal life cycles with the nature surrounding them. Children will practice their numeracy skills such as how many stones can I step on. Children can time themselves jumping around the	Children could fall off the stepping stones and injure themselves. The stones could be sharp. The stones could be Slippery due to harsh weather conditions and it would not be safe for children to climb on them.	Children and Practitioners	Practitioners should make sure children are wearing the correct clothing and shoes such as wellies or sturdy shoes when sitting and stepping onto the stones. Practitioners should always check the weather before they go out for an outside activity. If it is a hot summers day, children must be wearing sunscreen, wearing hats and have water bottles near them. Practitioners should always have a register and headcount children as well as having the right ratios for each group of	Medium/High

	circle. Children can use the stones to use their imagination and play games such as hide the object.			children. Practitioners should always have a first aid kit with them. Practitioners should always help the less physically able children. Practitioners should make sure that all children have a spare pair of clothes and each child's medical records.	
Tyres	Children can use their imagination and play games around and on the tyres. Children will use their gross and fine motor skills as they can balance and hop onto the tyres. Children can use the tyres as a place of rest, or they can play games such as whose tyre gets down the hill the fastest. Children can make obstacle races using tyres and time each other and see	The tyres could be too heavy for the children to lift. The tyres could be unhygienic and have animal faeces on them. Tyres could contain toxic chemicals which is harmful to the environment and the children. Children could fall over whilst playing with the tyres and could injure themselves and other children. The tyres could be Slippery for the	Children	Practitioners should always be present whilst children are playing with the tyres to observe that the children are safe and to help children carry the tyres if they are too heavy. Practitioners can help the less physically able children to join in. Practitioners can help the children tip the soil into the tyres as it could be heavy. Practitioners should make sure children are in the	Low

	how can get to the finish line the fastest. Children can use tyres for counting games such as hopscotch, they can stack the tyres for climbing games or use the tyres for plant pots. Children can learn how to plant seeds and learn about the lifecycle of the plant they are potting. Children can develop motor skills.	children to be jumping on.		correct clothing to be handling soil as it could be messy. Practitioners should make sure that children are wearing waterproofs if it is wet outside. If it is a muggy day, practitioners should always make sure that the children have suncream on and that there is shade and water nearby. Practitioners should always have a register and headcount children as well as having the right ratios for each group of children. Practitioners should always have a first aid kit with them. Practitioners should also make sure with each group of children playing with the tyres, they are in ratio. Practitioners	
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				should make sure that all children have a spare pair of clothes and each child's medical records.	
The Bug Hotel	Children can learn about different bugs and about their lifestyles. Children can learn what assorted colours are on specific bugs. Children can learn which bugs fly and can count how many legs are on certain bugs. Children can learn how different bugs hibernate and learn about their habitats. Children can learn how you must handle bugs gently and to treat all living bugs and animals kindly. Children can learn how to construct a bug hotel and can make their own with different resources.	Children could injure themselves lifting heavy items when constructing the bug hotel. Heavy items could fall onto children or practitioners. When children are using tools for the construction of the bug hotels, the misuse of tools could lead to injury. If children are using or touching wood, children could injure or graze themselves. Animals or bugs could leave faeces on children.	Children and Practitioners	Practitioners should state the golden rule of not putting anything in your mouths to every child. Practitioners should ensure that there are no heavy objects for the children to handle. Practitioners should make sure children wash their hands straight away once they go inside. Practitioners should make sure children are in the correct clothing and have the correct footwear on such as wellies for building a bug hotel as they might get dirty. Practitioners should make sure that all tools are cleaned once	Low

				the children have used them. Practitioners should check before and after the activity that the constructions tools and equipment is safe to use and suitable for children. Practitioners should always have a register and headcount children as well as having the right ratios for each group of children. Practitioners should always have a first aid kit with them. Practitioners should make sure that all children have a spare pair of clothes and each child's medical records.	
The Woodland Area and Gardens	Children can experience all diverse types of noises such as birds tweeting and wind blowing. Children can experience fresh air. Children can	The Spread of germs and diseases. Children could pick berries that are poisonous, and they could get seriously ill if	Children and Practitioners	Anything that is unsafe in the outside area for children should be cautiously removed by adults, or they ought to inform the	Medium

	see several types of animals and insects and learn how they live in the outside. Children can use their imagination in the woodland areas and make up different games. Children can play games such as who can find the brownest leaves. Practitioners can show children that plants need sunlight and rain to grow. If the woodlands are damp, children can jump in puddles and make mud pies. Children playing outside improves their physical health as they can run around and explore exciting new things. Children can engage with one another. Children can learn about safety and	they put them anywhere near their mouths. There could be sharp hedges and plants in the area. There could be animal faeces in the woodland area. The shed doors in the woodland area could be open and unsafe. The grass and mud could be Slippery and dangerous and there could be sharp stones and twigs on the floor. Children could fall/trip over and hurt themselves.		site manager right away to take care of this. Before leaving the property, adults should make sure the outside space has been inspected and cleaned. Practitioners should try mark off any bushes that have any dangerous berries or sharp edges on them. Practitioners should tell the children that a golden rule is to not put any berries near their mouths as they can get ill. Practitioners should chat to the children before they go out and set boundaries of where they can and cannot play. Practitioners should tell the children not to pick flowers. Practitioners should continuously check the area is safe and if there is	
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	awareness of their surroundings.			anything they can improve to help the safety of the children. Practitioners should always make sure the shed is shut and locked off so there is not a chance a child could somehow get into the shed. When the shed doors are closed and secured, practitioners should make sure they are closed and secure before and after sessions. The practitioners should put cones around the shed and mark the area off from the children. The practitioners should vocalise to the children that the shed is completely out of bounds and that they are not allowed near it. Practitioners should always have a register and headcount children as well as having	
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				the right ratios for each group of children. Practitioners should always have a first aid kit with them. Practitioners should make sure that they have each child's medical records. Practitioners should make such each child has the correct clothing on and is wearing wellies.	
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Part 4

Learning in the outdoors is vital for children as children can make use of natural tools, improve their education in different areas such as mathematics and science, it improves children's wellbeing and mental health, and children can learn about the world around them and gain environmental recognition. Adults help create enabling environments for children and help them learn and develop. Waters (2019) suggests that children's outdoor play and learning demonstrates that children gain from having regular opportunities to play in a range of outdoor settings. It also illustrates the connections between the attitudes and behaviours of adults and the learning outcomes that develop from children's outdoor play. Adults who are attentive to their children's interests and who can foster their development without taking over the activity facilitate their learning when they are outdoors.

Children's outdoor play and learning demonstrates that children gain from having regular opportunity to play in a range of outdoor settings. It also illustrates the connections between the attitudes and behaviours of adults and the learning outcomes that develop from children's outdoor play. Having adults who are attentive to children's interests and who can foster their development without taking over the activity are vital when they are exploring the outdoors. It is important for adults to encourage children to use their imagination and to explore their surroundings. According to Thomas and Thompson (2004), they stated that there is a significance of allowing children to create their own meaning for locations in outdoor settings by addressing and designating them as 'special' or 'secret'. According to White (2014) playing activities in the outdoors is positive in many ways. For example, the outdoors offers chances for exploration, play and conversation to help others absorb, comprehend, and apply new experiences. Adults ought to encourage children to

interact with one another as social interactions foster relationships. Adults should offer an environment that fits all children's learning styles and adults must allow children to have the freedom to express their emotions, thoughts, and ideas. Adults should also make sure that there are several challenging activities for children to try solving in the environment and to teach children how to keep themselves safe and always remind them of the golden rules.

The Early Years Newtwork Team (2023) implies that it is adults' responsibility to encourage children to follow their natural impulses during play, such as rolling down a hill or climbing a tree, as well as offering them the means and surroundings to do so. As well as this, it has become essential that adults encourage and motivate children to move around, leap, skip, and explore their physical possibilities rather than suppressing their natural urges to lay these vital physical foundations down. Sherrell (2024) states that Piaget thought that children are like "little scientists", observing and learning from their surroundings. Piaget emphasised the environment, he believed that children would instinctively act in this way in the absence of parental guidance. He proposed that language, memory, and reasoning are acquired by children at different developmental phases. According to Piaget, each person goes through the following stages of intellectual growth. These include the motor sensory period, the pre-operational period, the concrete operational period and lastly the formal operational period. Piaget believed that the human thought is a gradual process

Helen Bilton (no date) vocalises that due to the richness of learning opportunities presented by the natural environment, the supportive role of adults must be varied to take full advantage of this potential. Furthermore, according to Vygotsky's social learning model, interactions between children and adult facilitators are crucial for the development of higher order functioning, particularly when education and growth take place outside. Vygotsky explored that adults are more significant, being the little step, giving children confidence. Tunnicliffe (2008) states that it has been proposed that increasingly primary school pupils' exposure to the outdoors across the curriculum, not only for play or organised sports, can have positive effects on children's sense of connectedness to the natural world. For example, Tunnicliffe (2008) implied that children can examine the pond as an activity for biology and science educators.

Julia Robertson (2019) indicates that children need to have exposure to educated adults who can help them with their outdoor play and activities and provide them with role models for literacy activities and abilities. Competent, able, and attentive professionals utilise their surrounding environments as an inspiration and facilitator for internal and external literacy engagements. In addition to this, Julia Roberston (2019) conveys that adults should supply materials that are specifically aimed to fulfil children's interests and developmental requirements, regardless of where they are in their transition from childhood to emerging literacy. Adults should make use of ongoing elements to create exciting and demanding outdoor environments and activities. Adults should be providing access to environment and allow children to explore surrounding areas as they can explore with their imagination.

There are several outdoor activities that enhance children's mathematics and scientific skills. For example, adults can set up hopscotch, balance beams, den building, nature hunts and so on. Macintyre (2004) implies that children experience science and mathematical areas in a concrete way through movement. Children's activities and games can consist of counting, adding, subtracting, and walking forward. Children can determine width and length while running both short and long distances. When children swing, spin, and jump, they can sense the forces, gravity, and the energy. Children learn to recognise their own bodies in motion and how they impact the environment. Children can measure each other's heights whilst climbing and digging to estimate the volume and depth. Douglas (2005) supports this as he states that spending time outside has been shown to have

restorative effects on overall wellbeing of children, as well as being beneficial for reducing stress and preventing depression.

Adults should provide loose parts for the children to use and elaborate their ideas with within play. Adults should provide resources and consider them such as varied materials, weight, size, and colour. Diverse types of loose parts include sand, crates, tyres, water, ribbon, rope, buttons, string, soil, and several others. Nicholson (1971) studied that the theory of loose parts incorporates a method to environmental development that emphasises how important it is to provide children with open-ended materials to foster their imagination, creativity, and capacity for independent learning throughout play. Several Early Childhood Educators' practices have been significantly impacted by the principle of loose parts. Jacobson (2021) states that whilst children are using loose parts within their child led play, adults ought to allow children time to reflect and ask open-ended questions. An adult can inquire, "Why do you think this has happened?" When adults raise questions like "How could we handle this differently next time?" They can ensure that the problem is solved. Adults should constantly promote a child's decision-making. For example, they could say, "Yes, let's try it this way this time, good idea!" Therefore, according to Bruner, the purpose of education is to produce self-sufficient pupils who understand how to learn. Bruner combined the spiral curriculum and exploration learning in his theory, children learn by pursuing their own interests and curiosities such as problem solving and being motivated. Bruner implied that it is the role of the adult to assist and promote learning by promoting the process of discovery. Little (2011) implied that many children instinctively gravitate towards physically demanding, risky play that could result in injuries. While risk-taking is acceptable, adults should always evaluate the locations their children will explore to ensure their safety. In addition, since it creates a predictable and secure relationship, adults should set boundaries for children. The Early Years Network Team (2023) state that there is potential for outdoor learning to have a long-lasting effect on children's mental, emotional, and physical development. Through outdoor learning, adults can help children embrace the transforming power of nature and raise a generation of resilient, empathetic, and ecologically conscientious people.

Elliott (2021) implies that according to Froebel (1995), children's outdoor play is important for their physical, intellectual, and moral development, who highlighted the importance of this activity. Froebel portrayed that adults should support children and extend their learning and discovery. Based on the earlier work by Rousseau and Pestalozzi, his pedagogical views indicated that the outdoor learning through exploration and play, nature studies and gardening would teach a sense of responsibility towards living things. Froebel thought that children should be exposed to more besides just animals and plants when it came to nature. He made the case that playing outside in the garden and in the surrounding area is one of the best ways children can get an understanding of nature. Froebel portrayed "To learn a thing in life and through doing is much more developing." Tovey (2007) stated that adults should supply scientific and mathematical activities. For instance, adults might gather plastic bottles and let children gather as many sticks as they can to put into the bottles. Children can also use the bottles and let children gather as many sticks as they can to put in the bottles. They can also use the bottles for wet play, where children can experience the various pressures and energy in the water.

To conclude, the role of the adult is vital within children's learning as they guide children through the initial stages of knowledge and exploration. Children can benefit from adult assistance in connecting mathematics and scientific concepts to what they experience and learn about within their natural surroundings. Adults are essential in enhancing children's outdoor experiences as they can offer a deeper awareness of the environment and impact valuable life skills including problem-solving, exploration, critical thinking, and observation.

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