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(Source: Jnovakowski, 2019).

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Part One.



(Source: Pittard, 2021).

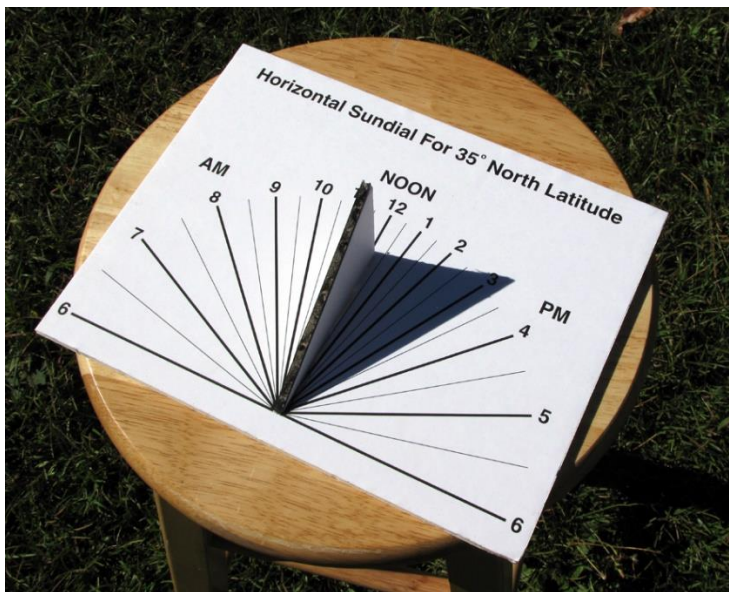
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Part Two.

Feature One.

The first feature I will look at from my picture is light and dark, in relation to shadows. There are numerous opportunities for children to be able to develop their scientific thinking through shadow work using a variety of different activities during outdoor play. Discussions can be shared with the children, with regards to where shadows come from and how shadows change and move at various times of the day as the sun moves around. Sundials could be shown to the children, explaining to them how they are used, resulting in opportunities for children to develop their scientific and mathematical thinking, by having a visual resource to see how shadows move hour by hour, which also offers the concept of time being introduced to the children.

An example of a horizontal sundial is shown below:



(Source: Wordpress.com, 2015).

Within my photograph there are a variety of different areas where shadows are present, for example, the trees and the bridge and one activity that could be introduced to the children, in order to help develop their scientific thinking, would be to ask them to take pictures of the differing shadows and areas, in order for them to collect data together. This can be supported by the learning outcomes from within the Foundation

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Phase Framework (2015) which suggests that children should be able to develop their data skills by recording findings using various means, including taking photographs.

After the data has been collected, discussions can be had between the adult and the children, with regards to the observations they have made, enabling the children to have the opportunity to discuss their findings and plan for the next step, again linking in with the learning outcomes from within the Foundation Phase Framework (2015). In order to further develop children's scientific and mathematical thinking, more visits could be planned to the area, at various different times of the day, so that the children could take more photographs of the shadows and collect more data. This data can then be compared with their previous photographs to enable them to make observations and discuss with their peers and practitioner the differences in the shadows and if they have moved from the original areas. This will give the children the opportunity to see the link between the time of the day and where the sun is having a direct impact on where they can see the shadows.

Feature Two.

The second feature on my photograph that I will be looking at is the pond that can be seen. This can be used for a pond dipping activity with the children which will help to develop their scientific and mathematical skills, by providing opportunities for the children to discover what creatures and plants are living in the pond. Resources such as nets, trays and magnifying glasses will be added to this activity, along with cameras, pencils, and paper, in order for the children to record their findings, using various methods. Pond dipping enables children to use their senses to help promote their holistic development, by them having the opportunity to look in the pond to find the creatures, by listening to any sounds that they may hear and by touching the plants and creatures after they have been caught in the nets.

An example of how pond dipping can be used to promote holistic development can be seen below:

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(Source: freerangers.org.uk, 2016).

Pond dipping opens up opportunities for practitioners to develop children's scientific thinking by discussing with them what types of creatures and plants live in the pond, by explaining to the children that the plants and animals form a community within the pond and that some creatures rely on others as a source of food. Practitioners can also begin introducing terms such as herbivores and carnivores to the children, in order to develop their knowledge further.

Practitioners can also introduce mathematical concepts to the children by asking them if the creatures are moving fast or slow, are they all the same size? Longer? Shorter? Children can also be encouraged to count how many different creatures they find and transfer this information onto a tally chart, in order to discuss this with peers and practitioners, again linking with the learning outcomes underpinned within the Foundation Phase Framework (2015).

Feature Three.

The third feature from my photograph that I will be looking at are the variety of trees and leaves that are present and the opportunities that are available to discuss and develop scientific and mathematical thinking of children. Discussions could be had

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between the adults and children about the different seasons we have and how and why the colours of the leaves change during autumn and winter.



(Source: thehumblei.com, 2013).

The children could look at the various kinds of trees and leaves they can see and collect leaves of assorted sizes and colours, as well as looking at the patterns on the leaves, which will give them the opportunity to further their mathematical thinking. Children could be encouraged to find twigs or sticks which are the same length as their arm, or their hand or foot, for example, which can link in with the Foundation Phase Framework (2015) learning outcomes, as they will be learning how to make direct comparisons with the length of objects. Adults could provide children with resources such as pencils or crayons and paper to enable them to take prints off the tree trunks and leaves that they find, offering opportunities for the children to discuss their findings and compare the various patterns on the trees and leaves. Adults could develop this further by using books with the children to identify the types of trees that are present in the photograph, supporting children's learning about the world in which they live in, as well as encouraging them to explore and ask questions (Foundation Phase Framework, 2015).

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Part Three.

Location / Activity:	Bryngarw Park – forest area	Date:	13 th September 2021
Assessor:	Rhian Pittard	Review date:	13 th February 2022

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

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

ACTIVITY	How will young people BENEFIT from this activity?	Possible hazards	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
Walking on uneven ground.	Children will develop their balancing skills and become more confident when doing so. Will also help to develop their gross motor skills.	Losing balance and falling over, which may lead to cuts or bruises. Tripping over obstacles that may be difficult to see.	Children and adults.	Children and adults to take their time when walking. Encouraging children to walk and not run and to look where they are going. Adult to walk in front of the children so they can see where to go. Appropriate footwear to be worn.	L
Outdoor/open space – children exploring the area.	Children will have opportunities to improve their holistic development, as well as their well-being. Children will have the chance to learn about the world in which they live in. Children will become aware of	Trips and falls over tree roots and stumps. Walking into low level branches, which could cause eye injuries. Outdoor space, lots of room for children to wander off and explore. Weather conditions. Insect bites or stings.	Children and adults.	Appropriate clothing and footwear to be worn by adults and children, for example, sun cream/sunhats or raincoats and wellies. Care taken when walking, looking forward and being aware of the surroundings. Boundaries given to	L

	nature and the environment.			children of where they are allowed to explore within. Regular head counts of children to ensure no one has wandered off. Discuss with children to be careful around bugs/insects in case they can bite or sting. Being aware of other people that may be in the area. Prior knowledge of any allergies. First aid available.	
Photography.	Children will develop their technology skills. Children will learn how to make observations and compare their findings. Language development. Developing mathematical thinking through collecting data, supporting the Foundation Phase Framework (2015). Children will develop their independence, enabling them to become confident, capable learners (Welsh Government, 2015).	Equipment being used inappropriately. Confidentiality issues. Internet safety.	Children and adults.	Adults to discuss and demonstrate to children how equipment should be used appropriately beforehand. Children to be made aware of using the equipment safely and in the correct manner. Respecting anyone who does not want to or cannot have their photograph taken.	L

Pond dipping.	Children will learn about pondlife, creatures and plants that live in them. Children will develop their fine and gross motor skills. Children will gain an awareness of the world in which they live. Opportunities to discuss science and mathematical concepts, such as life cycles and speed/size of creatures. Language development. Supporting mathematical development by counting creatures they find, making tally charts, recognising similarities (Foundation Phase Framework, 2015). Children will develop their self-awareness, learning how to take risks in a safe manner, helping them to develop their confidence further (Welsh Government, 2015).	Children falling into the pond. Children getting bit by any insects. Children putting hands in mouth after touching pondlife. Children being hit by nets being used by others. Slipping on wet surfaces.	Children and adults.	Water safety discussed with children before activity takes place and direct adult supervision at all times throughout the activity. Adults to ensure that children are safe when carrying out the activity, for example, a safe distance from the pond. Appropriate clothing and equipment to be used. Good hygiene to be demonstrated by adults, with regards to hand washing. Health and safety to be explained to the children. No putting anything in their mouths, no touching faces after activity until hands have been washed.	M
Shadows/sundial	Children will learn about light and dark, where light comes from	Being out in the sun for too long, increasing the risk of sunburn	Children and adults.	Adults and children to reapply sun cream regularly. Sun	L

	and how shadows are made (Foundation Phase Framework, 2015). Children will begin to gain an understanding of the concept of time. Developing language skills through making observations and having discussions with adults and peers.	or dehydration. Incorrect use of sundial – sharp point could cause cuts or grazes.		hats to be worn. Drinks available to everyone throughout the activity. Children encouraged to move around and not stay in one place for too long. Make use of the shaded areas. Adults to explain to the children how to use the sundial correctly and explain that it could be dangerous if not used in this way.	
Study of trees and leaves.	Children will learn about the world in which they live, helping them to become ethical informed citizens (Welsh Government, 2015). They will gain an understanding of various kinds of trees and leaves within the area. Children will develop their scientific thinking by learning about the different seasons and how they affect the surroundings (Foundation Phase Framework, 2015). Children will develop their	Splinters from the trees. Low level branches could cause an eye injury or scratches to the face. Stingy nettles or brambles could cause injuries. Animal waste on leaves when picked up. Trips over tree roots. Insect stings or bites.	Children and adults.	Adults to make children aware of any areas with nettles or brambles. Children being encouraged to take their time as they are in new surroundings. Adults and children to be observant when picking up leaves off the floor. No touching faces or hands in mouth until hands have been appropriately washed. Explaining to the children that they may find some woodland creatures hiding on the trees or under leaves and to be mindful	L

	mathematical skills by discussing colours, sizes and patterns of leaves and trees.			and treat them with kindness. Adults to make children aware of how to reduce the risk of getting a splinter from any trees.	
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Part Four.

According to White (2020), all children have the right to experience play and learning in the outdoor environment, which will enable them to thrive and develop their bodies and mind through stimulating and real-life experiences. Article 31 from the United Nations Convention on the Rights of the Child (UNCRC, no date) can support this as it states that every child has the right to play and experience and take part in a wide range of activities. Furthermore, White (2020) believes that children need experiences which involve them handling and exploring real objects and materials, in order for them to begin to make sense of the world around them. Montessori further supports this as she believed that children gain a deeper sense of learning through hands on experiences which help to promote enthusiasm and curiosity in children (Aubrey and Riley, 2019).

Maynard and Waters (2014), discuss how Froebel believed that there were connections between all living things and how it was important for children to be close to nature through outdoor environments. Froebel's introduction of kindergarten gardens allowed children to have opportunities to develop their science and mathematics skills by learning about life cycles and seasons, as well as finding and recognising various bugs and insects (Aubrey and Riley, 2019). The McMillan sisters were also keen advocates of the importance of outdoor learning and developed outdoor areas which consisted of multi layers, of various heights and levels, which encouraged children to develop scientific concepts, such as balance, force, and weight, through exploration (Maynard and Waters, 2014).

White (2020), suggests that natural materials which can be found in the outdoor environment, are a valuable resource for helping children to develop their scientific skills and concepts, as they can help to promote discussions between children and

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adults, with regards to life cycles of plants and animals, the different seasons and how they affect the trees and leaves. Alongside this, children have the opportunity to develop their mathematical skills and concepts by pattern recognition, colours, shapes of leaves, trees, and shadows and through beginning to make their own observations. Tucker (2014) supports this as she believes that play and mathematics are natural partners and that it needs to be fun and enjoyable in order for children to develop a deeper level of learning and through using natural materials such as, conkers, acorns, leaves and pinecones, children will be encouraged to discover and discuss where they came from and why. Furthermore, natural, outdoor materials are open ended and versatile, allowing children to use them in any way which best suits their play and interests, for example, a stick could become a wand, or a sword or even a pen, depending on each child's individual thinking and needs. Children will seek out objects that they can use for everyday activity and there are endless opportunities found in the outdoor environment (Gibson, no date).

In order to help support children's development, practitioners need to ensure that they are providing an outdoor environment for children which is motivational, empowering and richly developed, which will encourage children to become resilient, confident, and capable learners (Donaldson, 2014). This can be achieved through observations being carried out by practitioners, and for them to listen to and support children to find answers from their own questions and to help them make connections about the world in which they live (Tovey, 2012). The Foundation Phase Framework (2015) offers that practitioners should help support children's holistic development through support and guidance, as well as extending children's thinking and learning through providing opportunities which will help promote and enable children to explore, take risks and problem solve, allowing them to develop an understanding of themselves and their capabilities. Froebel also believed that by giving children opportunities to play with risk and challenge, they would develop their self-awareness and develop their ability to assess any risks for themselves in their future play (Maynard and Waters, 2014). Through practitioners providing stimulating and natural outdoor environments for children, similar to the one shown in section one, they will have opportunities to develop their scientific and mathematical concepts through discussions regarding the weather and the differing seasons, plants, and wildlife, sorting and ordering, alongside

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measurement and similarities. Practitioners can enhance and extend children's learning further by asking open ended questions in order to encourage children to develop their independence and to voice their own ideas and interests (White, 2020).

According to Holt (1990), the independent scientist that children have inside of them will disappear if practitioners attempt to control or manipulate their learning as children are eager to make sense of the world in which they live. This can be supported by Cremin (2014) as she believes that children are fuelled by curiosity and wonder, with a keen early interest in science and that they should be seen as active, capable participants. Cremin offers those playful first-hand experiences encourage children to make connections between science and their environment, through the children experiencing high levels of engagement and their interest sparking their curiosity, leading them to begin using scientific inquiry to enable them to find the answers to their questions (Cremin, 2014). Furthermore, Waite (2017) offers that children are naturally inquisitive from an early age and through engaging them in science-based learning in the outdoor environment, their curiosity can be tuned into, and concepts can be developed in order for them to develop a sense of understanding of the world around them.

Practitioners can help to extend children's learning and development by giving them opportunities to repeat and re-visit opportunities and environments (White, 2020). This can be supported by Bruner's Spiral Curriculum theory, as he suggests that children will deepen their knowledge further overtime, through revisiting experiences they have had. Bruner offers those children will experience continuous learning in this way and will be inspired to learn more and ask questions in order to begin to think for themselves and to further develop their understanding (Gibbs, 2014). Bruner also suggests that during these experiences it is likely that children will make mistakes, which he believed was beneficial in children's learning, which is supported by the learning outcomes underpinned within The Foundation Phase Framework (2015) as they state that children are likely to experience setbacks when challenging themselves and they are key learning tools which are needed in order to help develop children's resilience. Each time the experience is revisited, the level of learning will increase and will extend on the child's previous knowledge, for example, within the outdoor

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environment shown in section one, the children could look at the colours and shapes of the leaves on their first visit, which could be extended and stretched further through revisiting, with the children researching which leaves came from which tree, leading on to discussions about seasonal changes (Bilton, 2010).

According to Waite (2017), children use experiences they have had in order to develop their knowledge further and by combining science and outdoor experiences, children can explore their world in a way that makes sense to them. Children benefit from multi-sensory environments which enable them to touch, smell, see and hear many things in an outdoor environment that they would not be able to indoors, encouraging children to ask questions and ignite their curiosity (Waite, 2017). The Foundation Phase Framework (2015) suggests that children are more likely to set their own challenges in an outdoor environment and they will attempt things that they have not done before, encouraging them to address their fears and develop their self-awareness of what they can and cannot do. This can be supported by Vygotsky's zone of proximal development theory as he believed that children's learning could be developed further through working with a more knowledgeable other, which may be an adult or a child's peers. Vygotsky offers that individuals learn best when working together, within a social environment and interaction with others, encouraging a more dynamic learning outcome through scaffolding (Topciu, 2015). Vygotsky also placed great emphasis on the importance of dialogue and how children can extend on their learning through using their meta-cognitive skills and discussing their ideas out loud with peers and practitioners. This can be developed further by practitioners giving children the necessary space and time they need in order to develop their problem solving and scientific learning skills, as well as listening to and respecting children's questions, ideas and interests and providing them with open ended opportunities, which are needed in order to develop their independence (Cremin, 2014). Montessori believed that children were competent individuals, who need time and space to learn and develop effectively, and for practitioners to ensure that they allow children this time and space, without intervening and interrupting their play but instead waiting to be invited (Maynard and Water, 2014). It is during these opportunities that sustained shared thinking can be achieved through effective partnerships between practitioners and children, enabling the children to demonstrate high levels of engagement, as a

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result of following their own interests, alongside practitioners supporting their learning by showing an interest in children's achievements and asking open ended questions in order to help support and develop children's learning further (The Early Years Training Hub, no date).

According to Sisson and Lash (2017), loose parts are a crucial part of a child's development and may consist of any objects or materials that can be moved, carried, and combined together in many different ways. Larger, heavier resources can support body awareness in children as they will learn how much they are able to lift and carry, which will contribute towards the development of their mathematical and scientific concepts, such as weight, distance, quantity, force, balance, and gravity. Maynard and Waters (2014) suggest that the McMillan sisters were the first people to introduce the idea of loose parts, through providing children with open ended materials such as boxes, ropes, wheels, and planks of wood to develop creativity and interest. This can be supported by Nicholson's theory (1979, cited by Smith-Gilman, no date) as he also believed that loose parts offered open ended play opportunities for children and that their creative thinking could be sparked and developed through the use of loose parts. Nicholson also suggests that loose parts are interdisciplinary and inclusive to everyone, and practitioners need to ensure that they are providing children with a wide range of loose parts, which are always accessible to the children, in order to create a stimulating environment for children to explore and develop. According to Smith - Gilman (no date) the most interesting and valuable loose parts are the ones that we have access to on a daily basis and are a way in which conversations and discussions can be developed among children and practitioners. Loose parts could be added to the outdoor environment similar to the one shown in section one in order to help develop children's mathematical and scientific concepts further, for example, tyres could be added so children can roll them down the hills and then push them up, discovering the concept of force and weight.

According to White (2016), movement and physical development aid a child's learning, through developing their control and co-ordination, as well as helping them to gain an understanding of spatial awareness and allowing them to become more aware of their own bodies and develop an awareness of their capabilities. When movement occurs

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in children, the brain and body work together, which enables children to develop their confidence in their surrounding environment, offering opportunities for them to explore, interact and enquire with peers and practitioners around them. Through movement and doing, in environments similar to the photograph in section one, the children are able to further develop their balance and positioning skills through activities such as climbing trees, running up and down hills, as well as running through the leaves on the ground. In order to help promote and develop these skills further, practitioners need to ensure that children have opportunities every day to explore, engage and experiment with the world in which they live (White, 2016).

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