Part 1

(Kaur, 2023)

Part 2

This is an area of a garden within a nursery setting and the children that play within this outdoor environment are mainly aged between 3-4 years.

The water feature that is in this outdoor area is one of the resources provided to encourage water play. The mathematical and scientific concepts that children are learning during this water play includes time, measurements, gravity, force, and gradients.

To engage their water play using this water feature, children use a variety of materials that can be used for and hold water. These materials that the children can use during this activity includes jugs, bowls or bottles/ potion bottles and measuring cylinders or jugs. With the providence of a variety of materials to choose from for this activity, according to the Welsh Government (2022) in the Curriculum for funded non – maintained nursery setting framework children are learning to explore the use of those materials as well as learning to understand the practicality of those resources that are available to them, leading to children engaging their decision making and deciding what object is best used for this type of activity and play. With the decision being made, as stated by the Welsh Government (2022) children are learning to choose the resources that are applicable to them to develop their areas of learning pathways.

With the decision of what object to use is made, the children then fill up their chosen object with water from a water tray and then take it to the top of the water feature so that they can pour the water down and watch it travel down the three levelled pipes. To get to the top of the water feature, children are required to walk almost halfway up a slightly inclined slope. In doing so, Welsh Government (2022) asserts that the children are developing their physical development as they learn to adjust their movements so that the children are in control of their balance as they walk on gradients that are different. Once pouring the water from the top of the water feature, children become curious as they investigate and try to identify whether they can get to the bottom of the water feature before the water reaches the end, to see if they are in time to catch and collect the remaining water if there is any left in their resource that was previously used or replaced with a new material. When walking or running down the slope to try and catch the remaining water, children are learning about gravity and force as they begin to discover that the lower they get, the slower they are moving than they were when they were higher up the slope. In compliance with the Welsh Government (2019), the acknowledgement of force and strength can help children enhance

their knowledge and understanding of what is happening around them and how things work within the world they live in.

In opinion of the Welsh Government (2022) through the engagement of the children's exploration and inquisitiveness, children are also learning to explore and understand the mathematical concept of time. Children practice the mathematical concept of time as they begin to understand the contrasts between fast and slow, as they discover and express their thoughts on whether they were fast enough to collect the remaining water by identifying how much water had managed to be collected. In line with Welsh Government (2022) children are learning to enhance their communication skills as they express their thoughts and ideas with peers and practitioners around them on how well they did when catching the water. With the opportunities of exploring and being able to identify how much water had remained and was collected into their material that was being used for this activity after it had travelled down the wooden three levelled pipes, according with the curriculum for Wales the Welsh Government (2019) claims that children are learning about the mathematical concept of measurements that promotes and enhances children's numerical reasoning. By describing whether their resource is still full, half full, half empty, nearly empty or completely empty and expressing where the remaining water level is at children are developing an understanding of capacities and volume. In compliance with the Welsh Government (2022), the children are learning to understand quantities and recognise numerical symbols and the Welsh Government (2019) in the Curriculum for Wales framework assert that number recognition is one of the mathematical concepts that are experienced first to help children acknowledge, describe, and make comparisons between quantities. Furthermore, to help children further their understanding of quantities during their water play experience measuring cylinders and jugs can be added into this activity to promote the learning and recognition of numbers. The practice of recognising numbers and quantities and having the capabilities of using numbers are essentially required for children's future abilities and academic years suggests (Welsh Government, 2019).

When playing and climbing on the rock-climbing equipment that is on a gradient, the mathematical and scientific concepts that children are practising are understanding shape ideas, gravity, force, strength, and height.

To reach the top of the rock climbing that is on a gradient, children's uses their whole body as well as their gross and fine motor muscles, using their feet, legs, arms, and fingers. According to Welsh Government (2022), through this physical activity children are learning to make independent choices about their physical actions to help them understand what body parts are to be used first to engage this type of activity. Once recognising the physical movements, the children use their feet and steps onto one of the coloured rocks which lays at the bottom of the of the rock-climbing feature and uses their hands to hold onto a coloured rock that is higher up the slope so that they can pull themselves up the slope. As children pulls themselves up using their hands and fingers as they hold onto a coloured rock, in accordance with Welsh Government (2022) children are learning to control their balance and are learning to adjust their physical actions to match with the movements needed for the different type of ground surface that they are walking up on. When children are adjusting their physical movements and are pulling themselves up as they get higher up the gradient, children are learning about force and as well as understanding the children's own energy abilities as they recognise that as they get higher up the slope more strength is needed. Welsh Government (2019) asserts that by understanding forces and their own strength, children are learning to be in control of how things work and behaves within their surroundings.

Children engages their mathematical learning throughout this activity as they use the coloured rocks to hold and pull themselves up the gradient, children are learning to recognise different shapes as they adjust their hand movements to maintain their balance on the rock-climbing equipment. In opinion to Welsh Government (2022) children are learning to problem solve and are learning to use mathematical language as the children expresses their thoughts on the coloured rocks that are slightly shaped differently. Understanding shapes can help children develop knowledge of the physical world they live in as well as recognise the world through its mathematical shape. (Welsh Government, 2019).

Part 3

RISK BENEFIT ASSESSMENT

Location / Activity:	An area of a nursey setting Garden	**Date:**	22. 09. 2023
Assessor:	Lakshami Kaur	**Review date:**	

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
Water play	It provides opportunities for children's physical motor skills to develop, exercising their legs and arm muscles. Improves children's coordination, hand, and eye coordination skills to improve. It supports children's social, their intellectual and cognitive skills. This opportunity enables children to develop an understanding of how to use and play with the water sensibly. It helps children understand that water is a natural resource that is required for everyday use and used in different ways. It promotes sensory exploration, enhancing children's awareness of the difference between wet and dry. Promotes children's to use mathematical	Climbing on/ over the water feature, water spillages, and drinking the water. Causing falls, slips and choking. Leading to injuries, such as, injuries to the head, legs, and arms - bruises, cuts, and grazes and infections being picked up from dirty water to happen	Children and staff	Continuous supervision is in place. Adults supervise children as they play with this water feature constantly to ensure the children are safe and are playing sensibly. Children are being explained to that the water feature is not used for climbing on top of or over it and should be used sensibly. Children are being provided with an explanation of why climbing on top of and over the water feature is not permitted. Early years practitioners explain to children that climbing over or on top of the water feature could be dangerous as they could lose their balance and fall off, which could lead to the children getting slightly or seriously injured. Children are made aware that the water they use to play with this water feature is not for drinking and are explained to that it is because the water may	L

	language, enhancing their abilities of understanding the mathematical ideas of time and measurements. Children's scientific language can be developed as they learn about evaporation enhancing their understanding on why things happen and disappear. Develops children's physical motor skills, improving their leg muscles engaging their physical development. Children learns about balance. Helps children become aware of how to use their bodies to keep their balance under control to avoid slipping or tripping over. Promotes the understanding of gravity. Children becomes aware that as they get higher up the slope the steeper it becomes, and that more energy is required and when walking down the slope not much energy is needed. Children develop an understanding that when walking down the slope they walk faster than they did as they walked up the slope because they become aware that they are getting lower and are walking in the direction of the gradient.			collect dirt as it travels down the wooden water feature's three pipes and will not be good for them. The water tray that holds the water that can be used for this water feature has been moved closer to the water feature to prevent fewer spillages.	

	Children's scientific, mathematical language, literacy and understanding improves as they talk about gradients.				
Walking up and down inclined slopes and steps	Develops children's physical motor skills, improving their leg muscles engaging their physical development. Children learns about balance. Helps children become aware of how to use their bodies to keep their balance under control to avoid slipping or tripping over. Promotes the understanding of gravity. Children becomes aware that as they get higher up the slope the steeper it becomes, and that more energy is required and when walking down the slope not much energy is needed. Children develop an understanding that when walking down the slope they walk faster than they did as they walked up the slope because they become aware that they are getting lower and are walking in the direction of the gradient. Children's scientific, mathematical language, literacy and understanding improves as they talk about gradients.	Chance of losing balance or grip, missing steps, slipping, falling, or tripping over a step. Causing injuries - grazes, bumps or bruising to the head, leg, arm, or other parts of their bodies or something getting into the eyes.	Children and staff	Ensure children are wearing appropriate shoes within this outdoor environment. Making sure that this outdoor space is always supervised by an early year adult. Provide the children support and extra help when they are required it.	L

Ground surfaces that have different textures - Grass, tarmac, bark chips, concrete and pebbled stones	Promotes sensory exploration. Develops children's understanding of the world. Enhances children's balance.	Uneven ground surfaces and becoming wet because of wet weather conditions. Causes trips, falls, slips and injuries such as scratches, grazes, bumps, and bruises to the head and other parts of the body.	Children and staff	Appropriate shoes are worn. Explain to children that these ground surfaces may be wet in wet weather conditions, so they are to take extra care when running.	L
Playing with loose and natural materials (stones, bark chips, bread crates, leaves and wooden planks)	Playing with loose materials enhances creativity, imagination and problem solving and promotes investigations and discovery. Improves children's pincer grip. Enables open ended, free exploration and meaningful play. It provides opportunities that enable children to socialise and collaborate with peers which enhances children's social and communication skills. It can encourage children to practice their numerical language and develop their literacy skills.	Loose materials that are small. Small loose parts can be put into mouths and easily be swallowed This can cause infections to be caught from dirt and choking. Loose materials like bread crates and wooden planks that are	Children and staff	Extra staff to help with supervising this outdoor environment. Explain to children that they should not put anything in their mouths and should not be thrown around as it is dangerous. Loose materials that are damaged are removed and replaced with new ones.	L

	Promotes all areas of schemas, can help children develop an understanding of repetition, patterns, and sorting.	damaged or causes trips can cause injuries such as minor or deep cuts, grazing or bruising. Throwing loose parts/ materials can cause eye or head injuries, cuts or bruising to other parts of the bodies.			
Rock climbing on a gradient	Improves children's physical motor skills, their strength, and balancing skills. Supports children's visual and dexterity skills. Enhances children's intellectual and cognitive development. Encourages colour recognition and enhances children's understanding on the mathematical concepts of height and shapes. Promotes resilience, builds their confidence and their independence, supporting children's emotional growth. Children becomes aware of their own physical strength,	Rock climbing feature becoming wet or icy because of wet weather conditions. This can lead to children slipping, having uneven balance, or losing their balance completely, which could cause injuries such as cuts, bruises, bumps grazes or serious injuries like broken	Children	Children to be extra careful and take their time as they go up and down this activity. Ensure children are wearing appropriate shoes. Provide children with extra support when they need it.	L

	capabilities, and abilities.	bones or sprains.			
Exploring trees and branches	Develop knowledge and understanding of the world and being outdoors. Helps children understand the different seasons as leaves on the trees changes colour. Promotes children's cognitive development. Supports children's discovery abilities. Develop mathematical language and literacy skills. Understand life cycles of natural features.	Sticks and branches falling on top of children. Causing sticks or leaves getting into eyes and injuries such as bumps, bruises or scratches to the head or any part of the body.	Children and staff	Check area around the trees before children go into this environment and remove any branches/ sticks that look or are loose.	L

Part 4

As stated by Robertson (2017), Friedrich Froebel was a pioneer that developed the theory of outdoor play and believed that children learn best through continuous exploration and experiencing with direct interactions. In compliance with Prince and MacGregor (2022) outdoor learning is defined as being an environment that is facilitated with the experiences of different activities to promote children to learn outside the classroom. In accordance with Richardson (2014), the provision of a well-designed and organised outdoor environment is essential for children's everyday lives. Olsen and Smith (2017) assert that being out and exploring through different real-life experiences within an outdoor environment can help with strengthening children's understanding of the world and enhance their knowledge of how things really work in the world altogether. The Welsh Government (2022) suggests that a safe outdoor environment is crucial for children's development in all areas of learning as well as their wellbeing. Richardson (2014) believes that an outdoor space can provide children with more opportunities and can offer different experiences than an indoor environment. An outdoor space provides more of a chance and lots of opportunities for meaningful play, as children have more freedom to learn and can play in a less restricted area as outdoor environments have bigger and wider spaces. (Richardson, 2014). On the other hand, Gompertz, Hincks and Knight (2011) suggest that to encourage learning, the space of an outdoor environment is not a concern, it is about what is already within the outdoor space and how those resources are being used. Outdoor play opportunities can enable children to be exposed to and learn about the natural environment, claims Tovey (2013). With outdoor experiences, children can learn about and develop an understanding of the changes that occur in real life, such as different seasons, weather conditions, and the life cycles of living things. (Grigg and Lewis, 2016). Just like the pioneer Friedrich Froebel, according to Sargent (2015), Jerome Bruner's (1966) and Jean Piaget's (1952) theories believe that children can learn about and understand the world more quicky within an outdoor environment when they are experiencing and exploring with direct interactions. Spencer et al (2021) claims that outdoor environments can stimulate children to explore, experience and play with natural materials.

The Welsh Government (2019) has pointed out that enabling opportunities for children to play is an integral part of the growth of children's mathematic learning. The Welsh Government (2019) and Clements and Sarama (2020) believe that a greater understanding of mathematical

learning is important for and enhances the development of other areas of children's learning, as well as preparing them for their future years. According to Pratt (2011), math is a process where a concept is thought of and then applied to create answers. In accordance with Keith (2018) outdoor spaces can provide children with lots of opportunities that engage and stimulate children's mathematical learning. According with Gompertz, Hincks and Knight (2011), science is all about learning and developing an understanding of the world. In the opinion of Worth (2020), the role of an adult plays an important role in children's learning of science and in the opinion of Bose and Seetso (2016) the role of an adult is integral to children's learning of science as well as to children's learning of maths. Bose and Seetso (2016) suggests that both areas of learning maths and science have their resemblance's and helps one another. With the use of and engaging in activities that requires mathematical concepts such as measurements, shapes, and numbers, etc with direct interactions, children's scientific knowledge becomes innate and strengthens. (Bose, k. and Seetso, G. 2016). To promote and engage children's learning of maths and science in the outdoors, Welsh Government (2022) suggests adults working with young children have the role of ensuring they are utilising observations for effective planning to meet the needs and interests of the children and to be enabler that encourages meaningful play. According with Grigg and Lewis (2016) children's mathematical and numeracy learning, and recognition should be encouraged through the engagement of real-life experiences and direct interactions.

Loose parts and Natural materials

The Welsh Government (2022) recommends that the experiences early adults provide for children should encourage children's independence and resilience, as well as be stimulating. Critical thinking about the outdoor space and effective planning are needed to ensure children's learning and play experiences in the outdoors. (Olsen and Smith, 2017). In the opinion of Olsen and Smith (2017), to encourage and engage children's play experiences within outdoor spaces, the provision of various materials and outdoor apparatus is essentially important. Similarly, to Olsen and Smith (2017) Spencer et al (2019) also suggests that with the providence of loose parts in outdoor environment, it can encourage children's learning and play experiences. As stated by Gull et al (2019) in his theory of loose parts, Nicholson (1971) explains that loose part play encourages exploratory play and suggest that loose parts are material that can be used in a variety of ways. Casey and Robertson (2016) claims that

loose materials can offer and provide children with endless opportunities of continuous and meaningful play that is encouraged by their curiosity and imaginations. Furthermore, natural materials consist of sand, water, and items that are loose, such as pebbles, stones, sticks, branches etc. (White, J. 2014). Casey and Robertson (2016) suggest that loose resources entail the use of materials that can be used for building such as wooden planks and nails and consists of materials that relates to the natural world like mud and pinecones. White (2020) suggests that natural materials are the best sources of objects that are used to encourage development in all areas of children's learning and are resources that are easily accessible and can be used in a variety of ways. Skinner and Stevens (2012) suggest that it is the adult role to be that enabler and provide those natural materials to engage children's interests in schema, such as positioning, transforming, connecting, and orienteering, by encouraging sorting, counting, making comparisons, and rearranging. Huggins and Wickett (2011) describes schemas as actions or behaviours that are repeated to help children engage and deepen their knowledge of the world around them. Skinner and Stevens (2012) believe that natural materials can support children's mathematical learning as they promote the use of calculations, consisting of making additions or subtracting. Encouraging children to make patterns with the use of natural materials can support children's mathematical learning, as this activity promotes children to recognise and engage the mathematical concepts of shapes, sizes, numerical reasoning, and measurements. (White, J. 2020). According to Sisson and Lash (2017), loose materials and parts promote a continuous play that stimulates curiosity and imagination and engages children's mathematical skills in problem solving, which happens in opinion with Skinner and Stevens (2012) when play is being child- led. In compliance with Sargent (2015), and McLennan (2017) the providence, use and the collection of natural materials can engage children to learn about and encourage the development of understanding numbers and counting. The acknowledgement of number recognition and numerical reasoning are crucial for children's learning as it sets out the foundation of other mathematical concepts to be understood and engaged. (Sargent, M. 2015). Vanover (2018) suggests that the natural materials sand and water are most used to engage children's play experiences and should always be available and be always at an accessible reach for children. With the providence of sand and water, children are encouraged to practice their mathematical and scientific learning, they are learning about the use of volume and recognising shapes through the

creations of sand sculptures and making sense of the world as they play with the water. (Vanover, T.S. 2018).

Providing the experience of Den making and construction

In accordance with Grigg and Lewis (2016) providing children with resources and loose materials such as boxes, bread crates, blankets and many more loose resources can encourage the motivation of constructing structures and den building. Constructing dens with the different shaped and sized materials provided by an early year adult promotes children's mathematical learning, as this activity engages children to learn and understand the mathematical idea of shapes and lengths. (Grigg, R. and Lewis, H. 2016). According with Skinner and Stevens (2012) lengths is a mathematical concept of measurements and is one of the concepts of math that is understood before the mathematical idea of heights are understood. However, Robertson (2017) suggest that understanding and comparing height is more achievable for children than making comparisons with different lengths. In the opinion of Robertson (2017) when activities engage children to learn about and make measurements, the role of an adult consists of facilitating and supporting children when they are making estimates, responding to children when they require it and being that enabling adult by providing children with the correct resources that engages children to understand the mathematical concept of measuring. Skinner and Stevens (2012) and Watts (2020) claims that throughout the exploration and experience of constructing dens, the children are learning how to problem solve as they collaborate and work with peers. In compliance with White (2020) construction play can enhance children's scientific learning as they experiment how to make sense of and become aware about the world and how things work within the world. With direct interaction and the providence and the of loose and a variety of materials that engages construction play encourages children to practice and learn the mathematical and scientific ideas of weighing, gravitational force, friction, and balance. (White, J. 2020). As stated by Keith (2018) with the motivation of constructing dens, children are practicing and learning about the mathematical and scientific concepts of space, recognising shapes, size and making choices through the practice of problem solving.

Providing the experience of Mark Making

Skinner and Stevens (2012) assert that with the opportunities of mark making and the providence of mark making material outdoors such as chalks, it can engage and stimulate children's mathematical learning. Mark Making using chalks enables children to practice and learn about shape awareness and enhances children's numerical recognition. (Skinner, C. and Stevens, J. 2012). Robertson (2017) suggests that with the providence of mark making objects like chalk, children can engage their mathematical learning by creating a hopscotch on the ground surface. Robertson (2017) claims that with the opportunity of playing and engaging in the hopscotch activity, children are practicing the mathematical concepts of numbers. the Hopscotch activity enables children to gain their confidence of using numbers when collaborating with peers throughout this game.

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