



Our adventure exploring curiosity, awe and wonder in the outdoors.



On September 16th, 2023, seven staff and 8 children aged between 2-3 from my early years setting visited a local area with an adventure in mind as highlighted by the curriculum for funded non-maintained nursery settings, staff within my setting understand that opportunities found in the natural outdoor environment supports self-esteem, well-being and holistic development of children (Welsh Government, 2021). Our adventure turned out to be a day filled with awe, wonder and nothing but unrushed play and learning where our wonderful children became teachers in their own right, below I will share with you, our day. Before we began our adventure a thorough risk assessment was completed, this is attached below. As our short walk began the children's imagination on what we may discover seemed to come alive with suggestions ranging from worms to rainbows. As we arrived at the outdoor destination me and other staff gathered the children around to discuss boundaries when exploring the environment, the boundaries discussed included the areas of the environment where the children were not permitted to explore past as well as staff and children discussing possible risks to uneven surfaces. The children helped

staff complete a risk assessment of the area with two children pointing out a screw they had found on the floor. I asked the children "what do you think could happen if we fell on this?" the children shouted, "cut yourself." Shortly after excitement erupted as the children began exploring, immediately a small group gathered next to the tubes and pipes and rushed to pick up the transport cars that were nearby. Two children immediately began pushing the cars down the ramps whilst one child looked on. As the cars raced downside by side one car sped down to the bottom of the wooden panel as the other car got trapped as it came out of the tunnel. I stood back and observed as the children done this three more times. One child became a little frustrated and said, "stuck again" the child that was looking on came over and said, "try this" and showed the children a larger rock he had picked up from the floor, he proceeded to roll it down the wooden panel. Two other children looked around and picked up a rock each of the floor, they held it out and began examining each one. Excitedly one child called me over as I stood back observing enthusiastically showing me their rocks. "Wow, these are fantastic, how many did you find?" "1,2,3, the children counted simultaneously.

I asked, "are all of your rocks the same?" One child shouted "no" I further asked what was different about them. One child explained their rock was massive whilst another said theirs was smaller. Promoting curiosity I asked, "who's do you think is going to travel at a faster speed?" two children said "mine" I asked, "why do you think that?" one replied "mine is bigger" another replied mine is round like a ball." I shared my enthusiasm and relayed saying "You have predicted the round one and the bigger one would roll faster" adding "shall we find out?"

The children rolled their rocks down, I asked them "which one went faster?" one child informed me that the rock with a more rounded shape went faster. The children were completely engrossed I then asked, "if we changed the trajectory of the pipes" whilst moving one

pipe at a higher angle so the children could make the visual connection to the concept of trajectory, “what do you think will happen now?” As I asked this question the three children worked together to move the second lot of tubing, changing the trajectory, and placing it at a higher angle. One of the children then said, “it’s going to be really fast now” I replied, “can you tell me why you think that?” he further replied, “this is higher now.” I stepped back and continued observing as the children rolled their rocks down, rejoicing together when they realised the rocks were now coming down at a faster speed. I watched further as the children independently continued to work together to change the trajectory of the pipes, placing them lower down and then using separate pipes to create a longer ramp whilst experimenting at what speed the rocks were going to travel. Possible resources could be used to extend the learning further, such as weighing scales to discuss prediction of weights using introducing concepts of light and heavy.

As I walked across the grass, I observed a staff member modelling to two children how she crossed the wooden stepping stones. She slowly stood up on the stones and held her arms out afar either side, I heard her explain “when I hold my hands out, it helps me balance would you like to have a turn?” One child immediately climber up on to the stones, I watched her as she crossed. Her body looked shaky, and she fell to one side. She instantly got back up and attempted it three more times, on the fourth attempt as she stood on the first stepping stone, she slowly lifted her hands from each side and raised them up shouting “look I’m balancing” the practitioner shouted back “you can do it” with a big smile and oozing with confidence we cheered as she independently crossed all the stepping stones completing the last one with a mighty jump off.

(Source: Entrican, 2020)



Through a sound knowledge of child development, the practitioner was able to recognise that by interfering there was a possibility of hijacking the learning taking place, instead she recognised to stand back allowing the little girls time to try out possibilities, practise new skills and revisit these in order to reach a higher level of thinking and learning (United Nations Childrens Fund, 2018).

As highlighted in the developmental pathway's children need to challenge their selves physically, whilst testing out their capabilities exploring what their bodies can do (Welsh Government, 2021). This needs to be further supported by enabling adults who encourage children in managing their own risks and challenge themselves. As the child waiting walked to the stones, she held her hand out to the practitioner and said, “I need help” before the practitioner could extend her hand the little girl who had previously crossed independently lifted her hand and said, “I’ll help you.” I watched as together the two little girls crossed the stepping stones with one of them telling the other “hold your arms out.” After helping her friend on two occasions, I watched her confidence grow and let out a big smile as I watched her cross it independently with both little girls cheering, sharing their joy and celebration.

I could see a small group of children sitting on the wet grass, I walked across and discovered the practitioner supporting the children using stones and pieces of grass to creating a one-sided picture of what seemed to be a butterfly. I observed as the children picked the grass from the ground and held them up next to each other's. The practitioner followed their lead and asked whose grass was the longest in length, the children gathered several pieces and lay them next to each other to determine who had the longest and who had the

shortest. The practitioner supported this whilst finishing the ones sided picture, she asked the children what they thought the picture maybe, immediately several children said butterfly and began adding stones and grass to the other side. The practitioner introduced the concept of symmetrical whilst the children created a beautiful butterfly using natural resources. The practitioner also added items and asked the children if they were symmetrical, I laughed as many said no and moved the items to match the other side. I continued to observe as I had not been invited into their play and I respected this.

One child then looked up at me with a wet leaf in their hand, he quietly asked “why is this wet?” this was a perfect opening for a learning opportunity, excitement run through me as I shared my joy and said “I have a fun experiment we could do that would answer that question, would you like to join me?”. A smile widened across his face, and he followed me, with other following behind. I lead the children to a pot of water on the floor.

Me: “what do you think would happen if you put the leaf into the water?”

Child: “it will be wet”

Me: Why do you think this?”

Child: “in the water”

Me:” I think you may be right, shall we put it in and find out”

Child (lowers leaf into water and then picks it back out)

Me: “how does it feel?”

Child: “wet”

Me: pointing at a puddle by us “what do you think would happen if we put our wellie into the water?”

Child: “they will be wet”

Me: “I cannot wait to see if you are rights, let's find out” (placing our wellies into the puddle)

Me: “are your feet wet?”

Child: “no”

Me: Let us feel the difference in texture” (holding out the leaf and feeling the welly and leaf) “how do they feel?”

Child: “slippery”

Me: “you are exactly right; the welly is slippery. The welly repels the water because it is waterproof, that is why our feet are dry, the leaf is not waterproof and absorbs the water that is why it got wet in the water.

The children jumped in the puddle carefully watching as the water run of the welly, they reinforced the language used by shouting wellies are waterproof. To extend this learning opportunity further, I may add larger pots where the children could fill these with water introducing concepts half, full and empty. I would then collect natural resources around the environment to discover which items sink and which one may float.

What a wonderful adventure!

RISK BENEFIT ASSESSMENT

Location / Activity:	Exploring mathematical and scientific concepts in the natural outdoors	Date:	16/09/23
Assessor:	Charlotte Thomas	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
Short walk to site	- Appreciate nature - Good physical exercise - Improves mood	- Coming into contact with traffic (moving vehicles) - Child running off - Animal Faeces - Sharp objects on floor - Bruises, cuts, broken bones, and death - medical incidents such as asthma attacks	Everyone	- Ensure planning of route is done in advance to minimise roads and highly built-up areas - Children walking with adult will be done in a 1-2 ratio - Safety talk with the children before walk commences with discussions on road safety and the importance of holding an adult's hand - Continuous risk assessment during the walk encourages the children to risk assess with the adults as we walk. - Emergency phone and emergency contacts taken by adult - First aid bag taken including any medication that may be required incase of emergency such as epi-pen, piriton for allergies and asthma pumps - Walking bus to be used	Low

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
Uneven surfaces	- opportunities to explore balance - use of core strength, agility, body control, endurance - risk taking - speed - trajectory	- Stones or items sticking out of the ground - Trips - Falls - Broken bones - Cuts	Everyone	- Staff to include children in risk assessing upon entering - staff modelling walking	Medium

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
Heavy objects such as stones and sticks	- Learning opportunities around weight, size, and textures	- Raining making sticks slippery - Throwing of the items - Dropping the items suddenly - Inappropriate footwear - bruises - bumps - Cuts - Broken bones - Concussion	Everyone	- Modelling by adults on appropriate handling of heavy and sizeable items, group discussion on possible injuries if used inappropriately	Low

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
Plants	- opportunities to discuss what plants need to grow - Discussions on wildlife and insects - Talks regarding our planet, sustainability, and the environment around us	- Staff being unaware of the identification of plants - Children mouthing plants causing toxic reaction or choking - Overgrowth of plants that can cause trips and falls - Allergic reaction - Poison	Everyone	- Use of common plant cards supporting the children to identify any plants that maybe harmful (staff to support this) - First aid bag - Identify any allergies to plants beforehand where possible	Low

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
Stingy Nettles	- Being able to identify hazards visually in a natural environment - enhance vocabulary - communication opportunities - problem solving - discussion on effective treatments	- strangulation (longer stingy nettles) - Children and staff being stung	Everyone	- finding alternative routes to use - Discussion on the risks of playing near the stingy nettles	Medium

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
Tubing and pipes	- Discussions and learning opportunities around speed, trajectory, size, and problem solving	- Being heavy - Being left across the floor causing a trip hazard - Being used to swing causing bumps and bruises - sharp edges or corners can cause cuts	Everyone	- Visual risk assessment of pipes and tubes before use	Low

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
Stepping logs	- Supports balance and co-ordination - Builds confidence and self esteem - Develops gross motor skills - Supports numeracy through counting and comparing	- Rain causing the stepping stones to be wet - Ice causing the stepping stones to be slippery - Bumps - Bruises - Cuts - Concussion - Lacerations	Children	- Stepping stones not to be used in icy weather - Stepping stones to be risk assessed before use - Ensuring stepping stones are not too far apart - Adult situated in area ensuring children who may need support have it	Low

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
Apple Tree	- Discussions around the environment and sustainability - Learning opportunities with health eating - Supports independence and responsibility becoming ethically informed	- Windy weather causing apples to fall - Apples can fall from tree causing bumps to head - Choking hazard - Child throwing apples causing bumps and bruises to others	Children	- Modelling to the children that the apples can fall from the tree when shaken discussion of possible risks of this - Discourage anybody from standing under the tree during windy weather	Low

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
Wooden bench	- Exploration of balancing, use of gross motor skills, climbing - Opportunities for the children to explore height - Discovering self-limits - Use of hand eye coordination, agility, core muscles - supports spatial and directional awareness	- Rain causing the bench to be slippery - Icy weather causing the bench to be slippery - falls - bumps - bruises - cuts	Children	- Informing the children if the bench may be more slippery, supporting them to risk assess with you	Low

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
Small pebbles and stones	- Items usable for multiple learning opportunities such as symmetry, comparison, counting, weighing - Use for creativity, loose parts, and imagination	- Choking hazard	Children	- Close adult supervision at all times, 1-1 supervision of children known to mouth items and explore objects and resources orally	Medium
Water	- Promotes curiosity, investigation, and scientific concepts such as absorbance, senses, temperature, quantities such as full, half full, empty	- Drowning - Stagnant water	Children	- Ensure all standing water has been emptied - Ensure no exceptionally elevated levels of water are accessible	Low

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
Unsecured Perimeter	- Moving freely between areas - Enabling children to take risks safely in a natural environment with minimum barriers to exploration	- Unknow adults to enter the area - Child going missing and leaving the environment without adult	Children	- Discussion on boundaries of the area, with staff clearly showing areas we must not pass - All staff to do continuous headcounts - Register to be taken frequently - Placing staff in areas to ensure all areas have adult supervision and maximum supervision of the children is carried out	Medium

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
Wooden rectangles	- Opportunities for problem solving use of imagination - constructing shapes, architecture, measuring length - Discussions on textures - Discussions on recycling and our environment	- Rectangles with edges causing splinters - Splinters	Everyone	- Demonstrate to the children the possibility of loose and ragged edges of natural materials such as wooden rectangles and sticks	Medium

Section 4

Parsons (2011) believes that when children are given access to play and learn in a natural environment in the outdoors, opportunities are greater to foster their imagination, curiosity, social connections, understanding of the world around them and their holistic development. Humphreys (2000) agrees and further states that a deeper level of learning is achievable in children between the ages of 0-6 when they are learning through hands on opportunities in a natural environment, where they can be present, involved and gain understanding through direct contact using their senses. As stated by the Welsh Government (2021) adults play a crucial role in supporting the holistic development of children, by offering engaging experiences that support children's holistic development, adults are central to supporting children's imaginations and curiosity being in tune with their likes, interest, strengths and current developmental stage using this as a basis to make teachable moments rich and engaging.

Fleer (2011) believes that through conceptual play, concepts are introduced in play-based learning between the supporting adults and children. Using imagination as the bridge to foster natural curious minds in a fun and engaging way, whilst introducing scientific and mathematical concepts. Thomas *et al* (2011) states that intentional activities do not need to be used when supporting mathematical and scientific concepts in the early years. Further stating that concepts can be introduced in a child led environment where the practitioner follows the lead of the children's play and supports such concepts based on the child's likes and interests through hands on learning. Fleer (2023) agrees and further states that studies carried out by Fridberg in Sweden in 2019, who deemed question asking crucial for the use of concepts with children and stated that imagination, curiosity, and question asking are plainly apparent in order for children to engage conceptually. Brodie (2014) suggests that through sustained shared thinking a child is given the opportunity to clarify a concept, solve a problem and extend a narrative, but emphasises this teaching is not one sided and should be a two-way exchange with the child being an active teacher in the process. Anghileri (2006) believes that there are two levels to an adult scaffolding a child's learning and further explains that level one should include a rich environment that enables learning to take place with the practitioner interactions, level two includes direct interactions supported by both the practitioner and environment providing strong scaffolding on conceptual play.

Jadallah *et al* (2011) highlights Vygotsky's theory of learning during scaffolding and states the importance of practitioners, further stating the assistance one offers during scaffolding determines the child's potential level of ability as opposed to their ability of solving problems independently referred to as their actual level. Yew *et al* (2022) states that play within the outdoors environment is vastly becoming recognised as crucial to a child's development. Experiencing a natural world where children can practise, repeat, and embed new skills whilst learning about the world around them through their senses, allowing them space to investigate, think and conduct learning opportunities. Knight (2013) shares similar views and states that whilst exploring play in the outdoors children can move freely, learn to balance, swing, climb, run, and manage their own risks all being linked to mathematical and scientific concepts. Theorists Margaret and Rachel Mcmillan also agree that outdoor play is a key factor in children's development and suggested that all children need a natural environment outdoors with space to explore and learn through movement, the Mcmillan sisters also described the lack of outdoor play as

detrimental to a child's development (Pat, Elizabeth, and Howard, 2010). As cited by Tovey (2016) Froebel's Theory also placed and emphasis on the importance of children learning in the outdoors. Froebel believed that children learn through first hand experiences that are rich and should experience not just plants and flowers but experiencing all the nature and natural components to the rich outdoors.

Schwarzmueller and Rinaldo (2013) believe that self-directed play fosters a child's holistic development as well as stimulating their creativity and imagination, allowing them to learn valuable skills that will support their transition into adolescents. Self-directed play, which is also widely recognized within the Reggio Emilia approach, an emergent curriculum that is solely focused on teaching children following their own interests and likes, through curiosity as well as learning through the environment around them. In concur Louis Malaguzzi's theory of the environment was one that pioneered early years sector. The environment in which children accessed was deemed crucial to their learning and making their learning important, so much that Malaguzzi believed the environment acted as a third teacher.

As cited by Aziz and Said (2015) Gibson's theory introduced in 1966 also highlighted the importance of play in a natural environment and suggested play should be self-initiated by the child and stated the activity at hand was superior to the outcome. Gibson's theory also highlighted the importance of affordances within the environment and described these as properties that were available within the play space that encourage risk taking, investigation and exploration and further believed in the concept of affordances, both the environment and individuals complement each other. Fler, Gomes, and March (2015) share similar views and further explain affordances within the play space available are crucial in supporting scientific concepts in play as an example a space for natural light creating shadows, ramps to roll and push resources and natural items that promote endless play opportunities. In addition to the affordance of the properties available, it is also suggested that practitioners who have a scientific attitude are more likely to link resources freely available to scientific concepts when interacting with the children. Anthony, Pellegrini and Hoch (2012) state that in order to tune into a child's likes and interest, observations are key. Through observations practitioners can determine a child's strengths and where support required, their likes and interests and what engages, stimulates, and motivates the children in their care alongside any possible schemas that may be able to be identified. Atherton and Nutbrown (2011) suggest although there is no one definitive definition of what schemas are, many theorists such as Piaget describe them as organised actions or specific behaviours that take place repeatedly during a child's exploration. Elaborating further Nutbrown (2011) states when an adult recognises and expands their learning through the schema seen, children can acquire a wealth of knowledge and understanding that allows them to build command over a variety of mathematical and scientific topics. As stated within the Curriculum for non-maintained nursery settings, repetitive behaviours known as schemas support the vital brain development of a child. Although practitioners may question why such behaviour is occurring it is crucial that practitioners understand schemas can help establish the groundwork for future mathematics and scientific comprehension by providing tangible opportunities to fully understand verbal concepts and encouraging problem-solving and creative thinking.

Hong and Diamond (2011) argue that the use of incidental scientific and mathematical vocabulary, with these being short and focused shows no lasting long-term effects on the children's overall learning and question if it is merely enough to use such vocabulary and

concepts at appropriate intervals through the day. Smidt (2011) disagrees and concurs with Bruner's theory that with the right instructional help, even young children in the early years can acquire challenging topics and difficult concepts. Further stating vocabulary, concepts and to pics revisited can be used to extend and build upon previous learnt knowledge.

Although the importance of accessing the outdoors in the early years is vastly recognised across the world, some practitioners and teachers still face possible barriers. Kellet (2011) suggests that barriers may include some share beliefs that children lack competence additionally stating lack of funding for resources as another barrier to provide a rich environment. Waite (2020) adds during recent studies conducted through an online survey to gather information on what barriers to outdoor learning are experienced in different countries and areas, results showed common answers given to barriers learning in the outdoors. Amongst the most common answers were practitioners lack of confidence in supporting children in the outdoor environment, with increasing uncertainty how to scaffold the children's learning in line with the curriculum. Sandseter *et al* (2019) further states fear of children getting injured, lack of play spaces, poor availability of resources and adults own concerns and anxiety were noted as barriers during a study carried put through questionnaires on perception of barriers to outdoor play. Solly (2022) states that although practitioners can be apprehensive about accessing a natural environment or play space outdoors, the benefits are crucial to a child's development. Supporting a child's mental health and well-being, promoting curiosity and imagination, deepens understanding of the world around them and encourages hand on self – directed learning are just some of the benefits.

Waite (2009) and learning through landscapes (2023) share some positive outcomes in overcoming possible barriers practitioners may face. Some suggestions were:

- Reviewing the outdoor space, no matter how small try and utilise
- Visit a local forest school, this will help with being anxious
- If parents are anxious invite them in allowing them to see your practise in the outdoors
- Set boundaries with the children to minimise the risk of injury, allow them to risk assess with you
- Speak to your manager about professional development and accessing up to date training that would support you in the outdoors.

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