

Part 1Child G's Learning Journey: A day of exploration

A natural play area. (Parry, 2023)

We arrived on foot at our beautiful colourful outdoor area. We were very lucky to see clear blues skies with shadows being cast from the trees onto the green grass. Child G's eyes were immediately drawn to the very tall pine tree. "Wow! Look how big that Christmas tree is" he exclaimed. I responded with comparable enthusiasm "Wow, yes that Pine tree is very tall" I attempted metacognitive talk as a prompt for discussion. I said aloud "It is a very tall tree, I wonder if it is the tallest tree in the field?" The children responded excitedly, sharing their thoughts and ideas in regard to which tree was the tallest. I listened to the children estimating, comparing and discussing place value as they studied the trees in front of them.

We sang a familiar rhyme to reinstate boundaries and the do's and don'ts that keep us all safe when outdoors and the children were free to explore.

Child G ran straight towards the tall pine tree. I watched as he wrapped his arms around the trunk and looked up through the boughs of the tree. He was exploring his senses, looking at the tree from a different perspective, experiencing the feel of the rough tree bark against his skin and smelling the distinctive scent of the pine.

A woodlouse was spotted by another child looking under large stones and fallen branches. This caught the attention of some of the children including child G. I watched the children crouch low to the ground to get a closer look at the creature. I was invited to "come and see ". I took the opportunity to expand on the children's natural interest of the minibeast and enabled a closer look by offering magnifying glasses. We gently lifted rocks and logs searching the damp, dark habitats, we were now on a bug hunt. I suggested the children look at different habitats to find different minibeasts. We looked in the cracks in the bark for spiders and beetles, and on leaves for caterpillars and ladybirds. I could see that the children were enjoying the bug hunt immensely, I attempted to extend the learning further by providing a large white sheet. The children were to work together, communicating as they positioned themselves under the branch of a tree holding the sheet taught between them. I gently shook the branch and watched the children squeal with excitement to see the spiders fall and crawl across the sheet. These authentic, real, hands-on experiences gave the children an opportunity to explore, appreciate and care for the world around them.

We then sat on the ground looking at the leaves a group of children had collected. We talked about the different leaf types, shapes, colours and sizes. I observed some children using their senses to sort leaves into varying groups, some children working individually, some forming small groups. One small group were throwing leaves into the air and watching them fall, some excitedly trying to catch the leaves in their hands. These children were experiencing gravity. I commented excitedly "wow gravity, What goes up must come down" some children repeated this as they continued to play with the leaves. My aim here was to make this a word familiar to simply make the word gravity familiar to them. I watched one child threading leaves onto a stick, she was explaining to her friend exactly how she was making her 'leaf kebab' as she pushed the stick through each leaf she described pushing the leaf by size, colour and shape. Child G approached me with his collection of leaves. I

instigated a game of Leaf snap with him, other children gathered and joined in too. By comparing leaves children can start to develop reasoning skills. We took turns to place leaves in front of us trying to spot the shared features of the leaves. In order to win, the reasoning must be explained. This simple game is fun, it gives the opportunity to explore the leaves and their qualities, encourages communication, fine motor skills, use of mathematical language, mathematical reasoning and explanation of thought process.

Child G's attention was soon drawn to the hill behind us. He showed awareness that items needed to be rolled down and not up, the children knew that they needed to get to the top of the hill to be able to roll down. I questioned aloud "I wonder if we could roll up the hill?" The children all replied "Nooooo". I asked "How do you know?" They looked at me a little confused, then one by one began dropping to the ground attempting to roll themselves up the hill. This was fun but it was agreed that it was too hard. This enabled me to revisit the subject of gravity, the force that pulls objects down towards the Earth. Playing on a hill provides unique challenges and experiences. Children gain a different view and perspective of the world from the top of the hill. Moving up and down a hill is a different experience to moving on flat ground. It gives the opportunity to make children aware of their own bodies, how movement makes their body feel, what sensations they may notice from their body. Maybe they feel dizzy, breathless or hot when active on the hill. The children had fun rolling themselves down the hill unaware that they were stimulating their child's vestibular system, helping to control their balance and posture.

I prompted some of the children to roll other objects down the hill, making them aware of resources that might enhance learning and discovery.

I provided open ended resources including rope, pegs and fabric that may have been used for den building, sticky tape that could have made nature bracelets and also guttering, tubes, pipes and pieces of wood that would be great for rolling the smaller items on. The children gathered different items such as logs, conkers, acorns and a tyre. A small group of children were observed working together, communicating and problem solving their way to the top of the hill with the tyre. The children experimented with different resources and were heard using scientific language in relation to objects, shape, speed and changes in direction. The children discovered that the logs needed more of a push to move and were trying to figure out why some

items were not moving as well as they wanted them too. I talked a little about friction and how this force may be causing resistance. I explained that a smooth surface may be better than the grass for the smaller objects to roll on as there would be less friction. I watched as the children made predictions, experimented and evaluated without any adult involvement..

As an early years practitioner I understand the value and benefits outdoor play has for children's physical and mental health. Through hands-on activities in the outdoors children have the freedom to explore, investigate and experiment. They develop independence and confidence by being actively involved in their own learning, promoting great physical, social, emotional and cognitive gains.

This outdoor environment offers holistic learning opportunities and experiences naturally. Outdoor play stimulates the senses and offers enjoyable physical activity in a way that indoor activities cannot. I wanted to use the outdoor environment to specifically support the children's scientific and mathematical thinking.

I feel confident that today's activities engaged the children and linked perfectly to the curriculum for funded non-maintained nursery settings belief that children's natural curiosity motivates exploration. Children can be encouraged to use simple mathematical vocabulary when exploring quantities, numbers, shapes and patterns when partaking in practical experiences such as collecting, comparing, sorting living and non-living things. Inspiration was also sought from Piaget, who believed that children naturally act as little scientists, exploring their environments to gain understanding of the world around them. As the enabling adult I chose to enhance learning by providing resources specifically to enable scientific discovery, exploration and experimentation further. We had time and space, Children were able to repeat and consolidate their actions and learning.

Just as we prepared to depart from the area the children decided that they would like to collect some "ingredients" for our mud kitchen at our setting so that they could continue in their learning through play by making mud pies, Collecting, mixing, pouring, counting, weighing, transporting, sorting and transforming using their senses, imagination, curiosity, awe and wonder.

### Part 3

**RISK BENEFIT ASSESSMENT**

|                             |                   |                     |                  |
|-----------------------------|-------------------|---------------------|------------------|
| <b>Location / Activity:</b> | Outdoor play area | <b>Date:</b>        | 1st October 2023 |
| <b>Assessor:</b>            | Rachael Parry     | <b>Review date:</b> | 1st October 2024 |

| <b>Experience exploring outdoor space in photograph</b> | <b>How will young people BENEFIT from this activity?</b>                                                                                                                                                                                                                                           | <b>Hazards and associated risks</b>                                                 | <b>Who is at risk?</b> | <b>PRECAUTIONS in place to reduce the risk of injury</b>                                                                                                                                                                                                                                                                                                                  | <b>Overall risk after precautions</b><br><br><b>RATING: L/M/H</b> |
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| Walking on uneven ground                                | <p>Supporting children's mobility and balance whilst challenging the bodies equilibrium.</p> <p>Encouraging children's awareness of their own bodies and capabilities .</p> <p>Promoting children's awareness of gradients,slopes and forces.</p> <p>sensory exploration of differing terrain.</p> | Children could slip, trip or fall causing injuries such as cuts, bruises or sprains | Children and adults    | <p>Discussions with children in regard to the possible new experience ahead. Suggest that children walk slowly until familiarity and confidence grows with the uneven surfaces.</p> <p>Share a song, rhyme or dance exploring the vestibular sense.</p> <p>Appropriate footwear and clothing advised.</p> <p>Staff with first aid training and first aid kit present.</p> | L                                                                 |

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| Collecting and gathering materials                         | <p>Children can explore the properties of different materials.</p> <p>Opportunity for children to explore using all of their senses.</p> <p>Opportunity to use Mathematical language; including cardinal and ordinal numbers, shapes and sorting</p> <p>Supports some schemas</p> | <p>Children putting small items in their mouths, ears or nose may cause breathing difficulties, choking, allergies or poisoning.</p> <p>Contact with natural material and living things may result in an allergic reaction.</p> <p>Discarded rubbish can cause injury such as cuts and grazes.</p> <p>Children could wander and become lost.</p> | Children            | <p>Staff with first aid training present.</p> <p>First aid kit and any medical equipment i.e. Epi pens accessible.</p> <p>Appropriate staffing ratios ensuring adequate supervision.</p> <p>Children are made aware and reminded of the no picking or licking rule.</p> <p>Vigilant staff observing and monitoring children and the environment being explored.</p> <p>Children to be made aware of the boundaries. A clear simple set of rules made together with the children in a fun way to ensure everyone knows what is acceptable and also understand potential dangers.</p> | L |
| Exploration of findings such as trees, flowers, minibeasts | <p>Extending children's knowledge of living things and the world around them using all of their senses..</p> <p>Children's finer and gross motor skills will be developed and</p>                                                                                                 | <p>Allergies to plants, flowers or insect bites.</p> <p>Irritant or poisonous plants to include stinging nettles, berries, Japanese knotweed?</p> <p>Low level branches or sharp thorns</p>                                                                                                                                                      | Children and adults | <p>Explain rules of where the children can go and where they should not. This may be best explained through rhyme or song and by modelling to enhance children's understanding.</p>                                                                                                                                                                                                                                                                                                                                                                                                 | L |

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|                                         | <p>strengthened as they move, bend, stretch and dig.</p> <p>Encouraging children to be kind and considerate to other living things and becoming ethical citizens.</p> <p>An introduction to biology, life cycles and habitats.</p>                                                                                           | <p>could cause injury, cuts, scratches or infection to heads, eyes or other body parts.</p> <p>Children could come into contact with potentially hazardous materials such as discarded rubbish.</p>                                                                                                                                            |                     | <p>Appropriate staffing ratios ensuring adequate supervision.</p> <p>Discuss potential hazards with children explaining what should be avoided and why.</p> <p>hand washing at the end of the experience.</p> <p>Staff with first aid training present.</p> <p>First aid kit and any medical equipment i.e. Epipens accessible.</p>                                                                                                                       |   |
| Experience differing weather conditions | <p>Opportunities to use English and Welsh language and vocabulary linked to the weather and temperature.</p> <p>Encourage children's awareness of Self-care and monitoring their own risk -</p> <p>Opportunity to discuss safety precautions such as suncare, and dressing appropriately in accordance with the weather.</p> | <p>High winds could cause trees or branches to fall causing serious injury or death.</p> <p>Extreme cold temperatures could result in hyperthermia.</p> <p>Extreme hot temperatures could result in hypothermia.</p> <p>Wet conditions could cause feelings of discomfort or slips.</p> <p>Sun exposure can cause sunburn and heat stroke.</p> | Children and adults | <p>Monitor weather conditions and act appropriately. Avoid taking the children outdoors in extreme weather conditions.</p> <p>Staff with first aid training and an accessible first aid kit present.</p> <p>Ensure appropriate clothing to suit the weather;</p> <p>Cold and wet weather - warm layers, waterproofs, coats, wellington boots.</p> <p>Hot sunny weather - sun hats and cool clothing.</p> <p>Ensure water and shelter is available and</p> | L |

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|                              | Awareness of the dangers when experiencing extreme temperatures or weather conditions.                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                        |          | sun cream has been applied.                                                                                                                                                                                                                                                             |   |
| Play with mud, soil or water | <p>Opportunity for multi-Sensory experiences.</p> <p>Exploration of material properties.</p> <p>Experimentation of changes that may happen when properties are mixed.</p> <p>Encourage language linked to properties of materials and the changes that occur.</p> <p>Children make predictions and reflect on their findings.</p> <p>Actions including mixing, squeezing and pounding can strengthen children's muscles and encourage movement promoting their physical development.</p> | <p>Children could slip causing injuries such as cuts and bruises.</p> <p>Clothing may become wet, dirty and uncomfortable.</p> <p>Children may drink dirty water and put mud and soil in their mouths.</p> <p>Allergic reaction to natural materials and resources</p> | Children | <p>Appropriate staffing ratios ensuring adequate supervision.</p> <p>Staff with first aid training and first aid kit present.</p> <p>Appropriate clothing advised.</p> <p>Potential dangers explained and modelled to children in a fun way that will be understood and remembered.</p> | L |

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| Independent exploration of the environment | <p>Children can explore, experiment and make observations driven by their own curiosity.</p> <p>Encouraging children to communicate their observations, ideas and findings.</p> <p>Encouraging Children's divergent thinking.</p> <p>Opportunity for children to recognise and evaluate risk and identify anything that may be harmful to themselves and others, responding accordingly.</p> <p>Promoting independence and building resilience.</p> <p>Wide open space to move and socialise.</p> | <p>Children may wander too far and get lost causing upset and worry.</p> <p>Children could slip, trip or fall causing injuries such as cuts, bruises or sprains</p> <p>Children could put items into their mouth causing breathing difficulties, choking, allergies or poisoning.</p> | Children           | <p>Parental consent gained.</p> <p>Talk about boundaries and the positives and negatives about going on an adventure.</p> <p>Secure fenced, gated and locked surroundings.</p> <p>Area assessed to ensure minimal potential hazards are present.</p> <p>Appropriate staffing ratios ensuring adequate supervision.</p> <p>vigilant, observant staff present.</p> <p>Children and staff may wear hi-vis jackets.</p> <p>Staff with first aid training present.</p> <p>First aid kit and any medical equipment i.e. Epipens accessible.</p> | L |
| Walk to the outdoor area                   | Promoting Children's independence                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | To get to our chosen outdoor environment children must Cross a driveway.                                                                                                                                                                                                              | Children and staff | The outdoor environment is within the school grounds. The school is surrounded by high fencing. No                                                                                                                                                                                                                                                                                                                                                                                                                                        | L |

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|  | <p>and building confidence.</p> <p>Planning and organising their own journey.</p> <p>Walking is a physical exercise good for body and mind.</p> <p>Opportunity to experience and discuss road safety.</p> <p>Opportunity to discuss the dangers of strangers.</p> <p>Working together as a team, children help and support each other.</p> | <p>Potentially dangerous should children run in front of oncoming traffic.</p> <p>Children could wander and become lost.</p> <p>Kerb and uneven surface and differing terrain may cause unbalance, trips and falls.</p> |  | <p>unauthorised persons should be on school grounds, entry is gained through one main gate secured with a keycode, with permission only.</p> <p>Appropriate footwear advised.</p> <p>Explain potential hazards of the road and how to cross safely, with the help of a 'we must stop, look and listen' song.</p> <p>High- vis jackets may be worn.</p> <p>Appropriate staffing ratios ensuring adequate supervision.</p> |  |
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#### Part 4

Children have a natural interest in maths, numbers, shapes and measuring and also science, experiments, exploring, investigating. The outside space offers mathematical opportunities that are bigger, messier and noisier than indoors. Using the natural environment children can explore empty and full, measure, collect, sort, count, repeat patterns with twigs and rocks or hop jump hop jump. They can enjoy learning mathematics and science in the natural environment through all of their senses. The practitioner's role is to support the children's curiosity further with enthusiasm to meet the child's awe and wonder.

Pound (2007) claims that Vygotsky's zone of proximal development is the gap between what a learner has mastered and what they can potentially master with support and assistance. The adult is observing the child, allowing the child to learn through their own learning patterns, engaging in their own interest and the level that is right for them. The skillful practitioner will observe the child allowing the play cycle to develop. If the child invites the adult into the play or the adult sees the opportunity for a teachable moment they can assist or scaffold the learning. The skill is to enhance and support the child's individual learning experience in a way that is suited to that individual child.

Play is fundamental to children's development. It is deemed so important that it has been recognised by the United Nations conference for the rights of the child that every child has the right to play (UNICEF 1992).

Children deserve to have their sense of wonder sparked and nature provides the possibilities for children to learn and discover using all of their senses. (Wisdom of nature, no date)

Coates and Pimlott-Wilson (2019) confirms the strong belief that for children to learn, they must experience something meaningful and relevant (Piaget, 1962; Bruner, 1983; Dewey, 1997).

Another example of how adults can support children learning mathematics and science in the outdoors is to make available equipment and resources to enable the children to build dens. When building - children use mathematics and science concepts as they consider how to build the den. They can estimate and measure, consider angles and shapes and also forces. - cognitive.

Jensen and Bullard (2012) believe that mud is an open ended material that is full of affordance. The diversity of mud allows for repeated experimentation. Mud allows an appreciation for the environment to be developed, other natural resources such as water, leaves, seeds, twigs, stones and grass may be added and explored too.

Children are not simply learning about nature but learning through engagement with nature. Emerging maths and science skills can be practised, investigating physical changes in the mud when it freezes or has different quantities of water added to it, comparisons can be made and differences observed as children estimate, test hypothesis and problem solve. Children can count, sort and measure different weights and volume. The child will have used mathematical skills whilst developing early science concepts. The knowledgeable, observant practitioner should

encourage the use of mathematical and scientific language, provoking further curiosity, thoughts, questions, challenges and ideas with metacognitive talk. The children are engaging in many subjects or areas of learning as they play, they are developing and learning holistically in a cross curricular fashion.

However Gomperts, Hinks and Knight (2011) argues that practitioners' lack of confidence and understanding in regard to Maths and science being learnt through play in a child-led, hands-on manner in the outdoors could be problematic. Similarly Rekers and Waters-Davies (2021) points out that where nature offers conditions for exploration and experimentation activities such as puddle jumping and mud painting These activities may be met with a lack of discontentment from the practitioner whose personal feelings views or beliefs form a barrier when children are playing in an explorative way. The adult may feel that these activities are too messy rather than see the mathematical and scientific learning opportunities and teachable moments. Another example of this: Maybe the adult stops children from moving certain items away from specific areas. Missing the opportunity to recognise and observe the transporting schema the child may be demonstrating. It is vital that practitioners in settings develop a shared vision and gain knowledge to understand and appreciate the benefits of the child-led, hands-on approach as well as the holistic learning opportunities in the outdoors. These barriers should be overcome and the outdoor area be utilised through observation practitioners will gain an insight into the children's learning behaviours and their understanding of the scientific and mathematical concepts and the children will grow to become confident, independent learners. (Gomperts, Hinks and Knight 2011)

Practitioners can facilitate mathematical play outdoors by providing an environment that encourages exploration, investigation and mathematical dialogue. The environment should provoke thinking and problem solving. Another key role of the practitioner is to be a positive role model, showing interest, excitement and enthusiasm in mathematics, enjoying the fun of first hand experiences and being curious adults. (Welsh government) unstructured play with the right type of play materials will enrich the play environment.

White (2023) believes the adult plays a crucial role in organising an environment that stimulates the children, enabling them to follow their own interests through play.

Welsh Government (2021) recognises In the curriculum for funded non-maintained nursery settings that the role of the adult is pivotal to children's progress.

Practitioners should ensure children's natural curiosity is encouraged. with hand-on, authentic and meaningful experiences in which children can engage deeply in

Young children need practitioners who enjoy and understand the value the outdoors has for young children's learning, development and wellbeing.

contact with the natural world, the changing weather, seasons and environment offer multi-dimensional and multi-sensory experiences. Positive, enthusiastic, joyful approach to learning should be modelled.

Tovey (no date) Froebel recognised the powerful impact adults can have on children's curiosity and engagement. Practitioners should be informed and in-tune enough through observation and knowledge of the individual child to know how to extend play without taking over. Appropriate links can be made to the curriculum by building on children's interests and extending learning in meaningful ways. With the support of knowledgeable mindful practitioners children can engage with resources, investigate questions and discover and solve scientific problems. Opportunities are enabled for children to be little scientists.

According to Miller (2011) Children actively gain knowledge about the world around them by experimenting like little scientists. In children's innate behaviours, Piaget observed cognitive development. Piaget believed that moment-to-moment encounters with objects or people enabled the children to understand their surroundings..

Pound (2007) suggests that Piaget believed that Children should have control over their own learning through doing, touching, manipulating. Furthermore, Welsh Government (2022) has taken insight from theorists to include Piaget stating that through open-ended resources and activity children can gain knowledge themselves through engaging in meaningful play and exploration for long periods of time without interruption time.

According to Flannigan and Dietse (2018) curiosity engages children in play, exploration and discovery. Children's curiosity is inspired when exposed to interesting loose parts. Loose parts can provide stimulating problem solving and

creative thinking situations as Children are challenged to make their own decisions on what resources will work most effectively for the task.

Furthermore Ånggård (2011) believes that loose parts encourage Children the freedom to create play experiences based on their own individual interests, experiences, curiosity, creativity and ideas. The use of loose parts generates freedom and problem solving. Loose parts assist mathematical learning. Nicholson (1971) believes that all children love to play, experiment, discover and investigate with loose parts.

Moreover Gibson (1977) explains that loose parts are of high affordance, the possibilities offered by an item are not restricted. loose parts do not have a predetermined use or outcome. A child may see multiple uses for the item based on their perception, their play is influenced by what they imagine, wish or perceive the item to be or be used for. Affordance allows the play area to be multi sensory. The theory of loose parts and affordances provide early years practitioners with knowledge and insight to create rich diverse outdoor environments.

Houser *et al* (2016) defines loose parts as materials that are variable. Materials that can be used in more than one way, children can experiment, investigate and invent with these natural or manmade resources. Nicholson's theory of loose parts states that in any environment the level of inventiveness and creativity are relative to the number and range of variables in it.

Outdoors can be most effective in providing unstructured, open-ended play using open ended materials. Access to active play in nature and the outdoors is essential for healthy child development. By increasing children's opportunities for self-directed play outdoors children demonstrate an understanding of cognitive, social, and emotional skills including sustained shared thinking, communication, self awareness and empathy whilst benefiting physically, creatively and being able to manage their own risks. (Tremblay, 2015).

Practitioners should create an environment where children want to play and engage with the natural world. Adding materials and equipment to support learning and creativity. (Tinney 2020)

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