

Section 1



(Rhys and Jones, 2021)

Section 2

Feature 1: Trees

With a variety of trees available in this pictured area, trees would afford children a vast array of opportunities to explore through fully immersed play, thus providing holistic learning opportunities including developing mathematical and scientific concepts such as the opportunity to follow a sequence of instructions in the form of a scavenger hunt as stated in the progression steps, Welsh Government (2020). With a plethora of natural materials available to collect such as leaves, twigs, bark, seeds and sticks from trees and the surrounding area, children could be encouraged to explore natural loose parts and could enjoy hunting for 'treasure'. Baskets could be added to assist the children with their collections and ignite curiosity, whilst stretching, reaching, bending, picking up and placing of materials will support gross and fine motor skills opportunities. Collecting nature's gifts, stimulate a sense of wonder and awaken Children's senses igniting their thirst for learning. Children could then use technology in the form of an iPad to capture pictures of their findings and research different tree types to explore and discuss the items they have found. Which would align with progression step one from the Welsh Government (2022) which implore that computation is the foundation for our digital world. This could be further extended throughout the year to demonstrate changes in seasons, such as the changes in leaves, and would afford children an insight into the scientific concept of life cycles. Photographic evidence could then be displayed, taking the outdoors indoors, or even collaborated into tables aligning with progression step one of recording and investigating data in the environment (Welsh Government, 2022). The leaves

collected during the scavenger hunt could be counted to determine who has collected more, exploring such mathematical language as more than, less than and comparing sizes, aligning with Welsh Government (2020) which discuss the importance of mathematical language being used to describe, estimate, and compare. To encourage further exploration of mathematical language and to afford children the opportunity to explore such mathematical concepts as grouping, sorting, colours, and shapes. the activity could include separating different coloured leaves and discussing differences between groups which would also contribute to progression step one of comparing relationships between numbers and quantities as well as affording children the opportunity to understand the concept of equals and not equals as stated by The Welsh Government (2020) which discussing children understanding the structure of mathematical relationships as part of their holistic development.



(Pinterest, no date)

To enhance the use of creativity and encourage the opportunity to explore the concept of patterns string could be added for the children to engage in leaf threading whilst utilizing their fine motor skills children could create patterns with the leaves, which they have grouped, to assist with progression step one of the mathematical concepts of understating of mathematical relations (Welsh Government, 2020).

Feature 2: Bridge

The sloping and flat features of the bridge would provide children the opportunity to learn about energy and the different energy levels needed to move up, down and along different gradients as well as discovering such concepts as forces and balance as recognised in progression step 2, which focuses on Childrens communication of the effects forces have on objects and selves. (Welsh Government, 2020). This could simply involve children running, walking, hoping, or jumping up, down or across the different slopes and comparing and sharing in mathematical language to discuss such concepts as faster or slower whilst utilising their gross motor skills through running and jumping which would boost endorphins and therefore Childrens wellbeing as well as supporting the development of scientific concepts within Childrens holistic development. Hoops or balls of varied sizes could be added to the activity to push up or down each side of the bridge to explore such concepts as speed, gravity, or forces. Wheelbarrows or trikes could also be afforded to children to use on the bridge to support those larger movements to promote further physical activity. Children could experience the effort needed to manoeuvre up or down the different slopes as well as whether the size of the object

would determine the outcome, aligning with children exploring the scientific concept of forces and energy within their holistic development and the differences between pushing up and down different gradients of slopes which provide children a foundation for understanding the universe according to the Welsh Government (2020). Children could also count the steps needed to cross the bridge and discover whether different people counted different steps or whether everyone would count the same number of steps, allowing such mathematical concepts as counting, predicting, comparing, length, measurement, estimating. The bridge also affords children opportunities to discover shadows in the water from the patterns on the bridge and could be compared in shape and size throughout the day with pictures being drawn or captured to offer children the ability to see the effects of the sun throughout the day and the scientific effects that offers the shadows.

Feature 3: Pond

Although a focal point of the photo, the pond itself is almost hidden amongst the greenery and would therefore encourage curiosity, discovery, and experimentation for children. Magnifying glasses, clipboards, paper, and pencils could be added to support further exploration of the pond life, pond water, plant life and would provide holistic learning opportunities for the children including scientific development in the form of being curious and exploring the environment around them as aligned with progression step one Welsh Government (2020). Pots and pans could be further added to the activity to collect water and to further explore what is in the pond, again children could compare and contrast what they have found and could begin conversations about mathematic concepts such as volumes of water and pouring liquid.

Using the sticks that the children found in the earlier scavenger hunt the children could engage in a 'pooh sticks' activity. Using different size sticks to throw from one side of the bridge and witnessing which stick 'wins' which would encourage discussion regarding gravity, trajectory, floating, estimating and comparing, aligning with progression step one of mathematical descriptions of learning as stated in the Welsh Government (2020).

Children could also measure their sticks which could afford children further opportunity to explore mathematical language, such as longer than, shorter than, faster and so on, as part of their holistic development as well as developing social skills through working collaboratively and boosting well-being and confidence.

Section

3

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
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Scavenger hunt. Using baskets to collect materials from trees and surrounding ground.	Agency afforded to children in regard to choosing objects. Opportunities to explore the environment afforded to children as well as children able to make observations. First-hand real life experiences of items such as leaves, twigs, stones, grass. Developing an understanding of the environment and exploring other living things, their habitats and their life cycles. Promotes decision making, deciding what to choose for their basket and where to explore whilst looking for treasure. Encourages stretching/bending/picking up/placing which offers gross and fine motor skills opportunities. Exploring properties of different materials which children can sort into self-selected groups. Allows for noisy, messy, adventurous outdoor play.	Allergies, bites, reactions. Children breaching boundaries. Children collecting unwanted items such as rubbish/glass. Low level branches. Children climbing trees with potential falls. Uneven ground, logs, sticks to trip or fall onto causing grazes, cuts, sprains.	Adults and children	First aid kit available including epipen if needed. Updated list of children with allergies. Discussion of where children can hunt for items and where the boundaries are. A game which demonstrates the uneven ground for example a spinning game. Gloves to be worn where available and or necessary, handwashing. Conversation regarding appropriate items for children to collect and when to make an adult aware of inappropriate items to be removed, such as rubbish. Children made aware of any plants which cannot be picked due to poisons, demonstrated if available. Children reminded of golden rules. Adult support and ratios adhered to.	M
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Leaf threading. Using collected leaves to thread to make patterns and or displays.	Children utilising their fine motor skills as well as refining their hand-eye co-ordination. Understanding mathematical concepts such as counting leaves, pattern designs and grouping. Children following simple set of instructions, how to thread and so on during sustained shared thinking with a more knowledgeable other. Nurtures creativity among children. Developing language through metacognitive talk and sustained shared thinking. Developing fine motor skills through threading. Children socially observing others, comparing creations and conversing about the differences. Opportunity to design and communicate ideas.	Allergies. Bites. Sharp sticks causing cuts or scrapes.	Adults and Children	First aid kit available. Updated list of allergies. Demonstration on using sticks to thread Adult support and ratios adhered to. Children reminded of golden rules.	L
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Running/ rolling items up/down/across bridge including whole selves, hoops, balls, wheelbarrows.	Supports Childrens understanding of forces, energy. Language opportunities especially regarding scientific concepts. Opportunities for vestibular balance, coordination and spacial awareness. Developing proprioception. Physical activity demonstrating gross motor skills. Boosts endorphins and in turn promotes well-being. Affords negotiating and problem-solving opportunities. Promotes turn taking. Understanding cause and effect. Developing language through sustained shared thinking. Promotes social aspects of development. Affording opportunities for predictions to be made. As well as Trial and error affordances to children. Children trial and error different weights and materials to note differences in moving up or down or across gradients.	Children may trip or fall as uneven surface causing cuts, bruises, sprains or other injury.	Adults and children	Discuss area with children, ensuring they are aware of the different gradients and suggesting walking over bridge to fully understand incline/decline. Adult support. A wobble wobble game or similar to demonstrate balance. Walk over bridge with children as support, suggest walking slowly and build up speed once used to gradients. First aid kit available. First aid trained adults. Suitable clothing and footwear, including long sleeves, waterproofs and wellingtons. Adult child ratio adhered to. Golden rules reminded to children. Children to test any resources on green area before taking onto bridge to check weight.	L
Exploring pond and collecting water and other pond life items to observe.	Exploring life cycles. Exploring other living things and their habitats. Developing language and social skills whilst working collaboratively therefore boosting confidence. Demonstrating curiosity and exploring environments. Multisensory experiences.	Cold water. Possibility of falling in, drowning. Allergies.	Adults and children	Adult support. Suitable clothing and footwear. Discussion of risks with children regarding pond, boundaries water depth. A walk around the pond discussing edges and safe spots to collect water together. Reminder of golden rules. First aid kit including appropriate trained adults. Updated allergy lists. Knowledge of pond, depth and so on. Adult ratio adhered to.	M

General outdoor play	Larger space for large physical movement. Enhances gross and fine motor skills. outdoors lends itself to appropriate risk taking. spacial awareness. Improves health and wellbeing. Learning how to play with others, forming relationships. Moving underpins mental health, ensuring a healthy, confident individual. Social development. Offering risk and challenge. Affording children first-hand experiences. Allowing creativity and problem solving. Lower level of anxiety.	Hot weather Cold weather Sunburn/stroke High winds Ice	Adults and children.	Appropriate clothing and footwear including waterproofs, warm cloths, wellingtons, long sleeved clothing. Suitable clothing and footwear, including sunhat and cream. Drinks available. Aware of weather forecast and prepared with different resources needed. Appropriate adult child ratio adhered to. Trained first aiders adhered to as well as fully stocked first aid kits. Parental acknowledgement if children taken off site.	L
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Section 4

Adults are an Imperative part in affording Children opportunities to engage with mathematical and scientific concepts in outdoor areas, as children can learn through first-hand experiences which challenging concepts begin with. Froebel, as discussed by Tovey (2016) implores how these first-hand experiences in the natural outdoors can support a Childs holistic development including the development of scientific and mathematical concepts such as shapes, patterns, volume before children can even vocabularise them. Whilst Duncan (2013) compares outdoor experiences, to a gift to children benefitting their physical, social, and cognitive development. Furthermore, Moyles (2013) states that first-hand experiences afforded to children deepen learning and understanding. Donaldson (2015) further agrees that through a child learning through hands on experiential trial and error experiences will result in the long-term success of every child in Wales. This aligns with Piaget (1957) who thought of children as little scientists experimenting and discovering about the world around them whilst engaging in trial-and-error play.

Ernst and Tornabene (2012) concur that unstructured play experiences in nature are pivotal for a Childs holistic development during early years. Further stating that children who have more access to outdoor experiences are more creative, empathetic to others, with a lower level of anxiety and higher levels of decision making and problem-solving skills which are key features of scientific and mathematic concepts as described by Welsh Government (2020). Williams (2008) further suggests that early year's affordance to children of outdoor natural experiences can support the development of mathematical and scientific thinking during everyday activities such as understanding about sound, speed, and gravity by running and jumping through leaves. Furthermore, Play Wales (2018) state play must be freely chosen, personally directed, and intrinsically motivated which will support holistic development as well as contributing to the welfare and resilience of a child.

Wilson (2013) agrees that the outdoor natural environment is filled with endless opportunities to discover and explore, bringing a sense of delight to children as they become fully immersed in exploring the world in an engaged manner. Wilson (2013) further states that the outdoors allow children to engage in large movements such as running through crunchy autumn leaves, jumping in puddles, and spinning without the restrictions of being indoors, which all contribute to a child developing holistically which includes their physical development as well as developing mathematical and scientific concepts such as water displacement whilst jumping in muddy puddles.

Macmillan, as discussed by Machan (2016) implores that the outdoors provides children with enriched first-hand real life learning experiences as children learn new skills and make fresh discoveries about the world around them aligning with the four purposes as outlined by Welsh Government (2015). Furthermore, The Welsh Government (2015) state that a greater emphasis should be placed on learning in the outdoor environment as it promotes further discovery, creativity, and independence. Macmillan, as discussed by Machan (2016) agree that there are health and wellbeing benefits to being outdoors.

White (no date) suggest that children thrive holistically when they are afforded free child led access to stimulating outdoor play through real experiences. However, implore that knowledgeable, enthusiastic adults are key to ensuring children experience these experiences by allowing time, space, resources, and meaningful interactions. Practitioners must ensure they are not just getting children outside. The National Strategies (2009) further agree that practitioners must be knowledgeable positive and confident about maths and science concepts to ensure children have the best possible opportunities to learn. Macgrath (2010) suggests that practitioners cannot just facilitate children, they must be curious and explore alongside them, asking to extend their learning with questions such as Why and How? Offering children, the opportunity for sustained shared thinking as discussed by Purdon (2014) who state that sustained shared thinking contributes to a Childs outcome as during these immersive conversations with children a Childs thought can be developed and extended, however must involve an interested, knowledgeable other.

White (no date) further states that the outdoors should not be seen as an option or an extra, as it allows children to be active, noisy and messy whilst using all their senses and their whole body. Attitude, understanding, commitment, knowledge, and positive thinking are pivotal for practitioners to afford children stimulating, play based, child led experiences which are vital to their health, well-being, and holistic development including the development of mathematical and scientific outcomes. White (no date) further states that the outdoors should bear the same relevance as the indoors and the planning and resources available should demonstrate this to offer children high quality outdoor experiences.

Williams (2008) however states that although practitioners encourage interaction with nature there are challenges such as practitioners thinking the weathers too wet or too cold or parents worried about Childrens dirty clothes or the planning of taking children off site, however with planning and suitable clothing and footwear these challenges can easily be overcome and should not be an excuse for children to miss such pivotal learning experiences.

Ernst and Tornabene (2012) consider how it is important for early years practitioners to effectively offer the outdoor provision to children as children are spending less time experiencing the outdoors at home due to parents' busy lives or worries, technological advances and urban settings. Further stating that experiences for children outdoors are directly interlinked with adults' attitudes and behaviours to the outdoors, which can also be said for

learning mathematical and scientific concepts. Macgrath (2010) states that it has become socially acceptable to dislike maths and states that this must change as it hinders employability and attributes to poor mental health and low self-esteem in later life. Practitioners must feel confident about maths concepts and present them in a stimulating manner and encourage children to feel confident about maths.

Carbon (2013) suggests that practitioners should rediscover the awe and wonder of outdoors to remind themselves of the possibilities afforded to themselves and the children. Carbon (2013) further states that children learn through their senses as nature provide children the opportunity to lay in the grass and feel its texture, to look at the sky and see its colours, to smell the flowers and feel the difference between stones and leaves. Giving children an opportunity to build on their previous knowledge aligning with Bruner (1960) scaffolding theory, which states that children learn knowledge such as flowers feeding from rain water and sunlight at an early age which is then built upon to learn about life cycles and photosynthesis. As further stated by Welsh Government (2008) who state that children learn from birth through first hand experiences and build on that prior knowledge to strengthen development. Linking to the activity of pooh sticks children can engage in discussions regarding such scientific concepts as gravity or mathematical concepts such as velocity which will be a base to expand on over future learning. Welsh Government (2008) further state that children must be afforded the time to revisit, review and amend their creations or work. Aligning with Nicholson (1971) who agree that children need space and time to revisit activities to allow consolidation of learning.

Practitioners must afford children enough resources to understand mathematical concepts such as water and containers to learn about volume. These resources must include the opportunity to use natural, open ended, transportable loose parts such as pipes or guttering, tyres, sticks and so on which can be tied together or stacked as discussed by Nicholson (1971) afford children the ability for creative thinking and problem solving, offering stimulating opportunities for true engagement and problem solving of such scientific and mathematical concepts as gravity, weight and volume. Beloglovsky and Daly (2014) suggest that when children are afforded loose parts their curiosity and imagination are ignited and mathematical skills such as problem solving are afforded to children. Smith-Gilman (2018) further considers how loose parts provoke thought filled conversations which if shared through sustained shared thinking with a more knowledgeable other can improve mathematical and scientific language development which should be encouraged to empower children. In the example of rolling items up and down the bridge, conversations could be had regarding what items will roll down quicker and which are harder to push. Allowing thought regarding forces and energy needed but in a shared experience between a child and a practitioner. Aligning with Vygotsky (1978) thoughts on the importance of children learning from a more knowledgeable other whilst in the zone of proximal development to extend a Childs learning. Practitioners through knowledge of the child and child development and observations can extend a Childs learning to enhance them.

Pacey (2017) state that observations are a pivotal duty of a practitioner's role to give an insight into where a child is in their developmental journey and to understand how best to support that Childs development. Further stating that practitioners must observe, evaluate, and plan suitable play opportunities for children to develop holistically. However, Botrill (2018) implores a Childs imagination to be at its best when children are looking for inspiration therefore over planning should be avoided, especially in the outdoor area where there are so many open-ended opportunities for discovery such as the chosen features of the trees, pond, and bridge. However, interactions must be meaningful with available resources to extend, enrich and support play.

As suggested by Piaget (1957) who states that when working alongside children, practitioners must be enthusiastic, engaged, invested and curious offering facilitating opportunities for children to explore and experiment environments. Rymanowicz (2015) agrees that an adult's role is facilitating self-directed play in a child centred, nurtured, rich stimulating environment offering active discovery and learning.

White (no date) states that the outdoors lends itself to affording children challenges, helping them to understand risk and if this opportunity is not afforded to children, it could affect a Childs confidence and they will be unable to accept change in later life. Outdoors is an opportunity for children to engage in risky play with Donaldson (2015) imploring that the New Curriculum will develop confident, creative, risk-taking problem solvers which can only be realised if practitioners afford children the trust and responsibility to take risks and make mistakes allowing reflection whilst building that emotional and physical resilience for life.

As discussed by Roberts and Jong (2016) The Scandinavian Approach afford children the trust and responsibility to use real tools for whittling and climb trees without boundaries as children learn through trial and error to protect themselves, affording children with a greater confidence and thirst for knowledge throughout their lives. Brown (2013) considers how western societies especially have become risk adverse within an everchanging world and parental concerns however states that with training and understanding of child development considers how this can be avoided. Furthermore, Lavrysen (2015) considers how this overprotection can have a negative effect on a Childs development declaring a lack of outdoor play a major factor in Childrens anxieties in later life.

Moyles (2013) suggests educational settings are become risk adverse which is limiting a Childs ability to express themselves freely without constraint whilst Storli and Sanseter (2017) consider practitioners often intervene to stop or limit risky play, however Play Wales (2018) implore practitioners need to offer children risk and challenge in a safe environment to allow for their holistic development including the development of mathematical and scientific concepts, as risk taking promotes decision making and problem solving in children which are key components in mathematical thinking as defined in the descriptions of learning as outlined by Welsh Government (2020).

Curtis (2013) implores that risk to a child can offer accomplishment, confidence, a sense of power as well as offering physical skills development. Agrees however that practitioners are limiting this risky play without considering a Childs competence or the knowledge and ability of the practitioner.

Donaldson (2015) implored that children need strong foundations to promote for successful futures for all children to develop holistically. Which can only be realised if practitioners offer children meaningful first-hand real-life experiences whilst sharing in the excitement of a Childs curious imagination of awe and wonder in a high affordance environment.

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