

(Montgomery, C, 2022)



(Five Adventures, 2016)



4,200

(Pinterest, 2021)



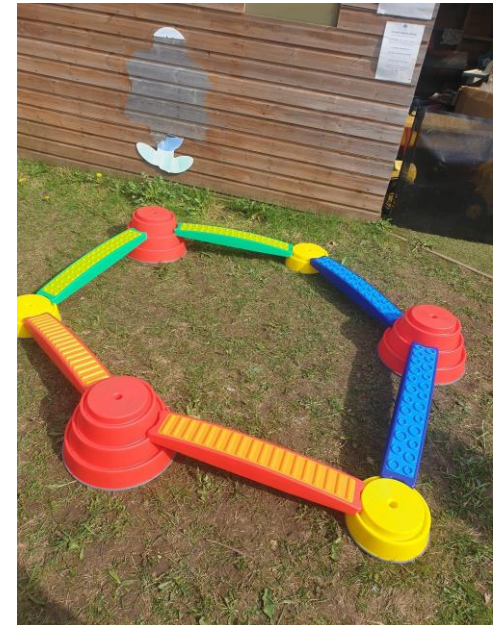
(Montgomery, C, 2022)



(Baker Ross, 2019)



(Montgomery, C, 2022)



(Gardening for kids, 2020)



Feature 1 – Mud kitchen

In approaching feature 1 this area is set up especially for mud kitchens purposes as it is highly important in outdoor spaces as seen in the image, further importance includes being a main focal point within the garden whilst enabling children the experience to see that daily tasks can be put into practise in relation to connecting with nature and the outdoor environment. Through using the initiative of imaginative and role play and setting of the scene by the practitioner, children will be empowered to 'pick', 'cook' and 'make' foods, potions, and recipes in the kitchen. In line with Welsh Government (2020) Children's development will be enhanced by this experience mathematically, as during this process they are exploring and forming quantities in different ways, continuing to test and mix combinations of objects, materials, and quantities of natural materials. Following that, during the role play children will understand the value and language of money in play which enables their understanding from observation from parents that money is unchanged for an item, for example a child discussing that 'this chocolate cake I've made in the kitchen is £5 please'. To illustrate feature 1 the mud kitchen has added objects such as metal kitchen utensils to intensify the experience of a real-life situation. Children using these added objects will be give them the ability to use a variety of different tools and objects to measure, transport and play with. This allows children to develop the need to re-use and identify the correct utensils for different natural materials including presenting knowledge around recognition of different marring units and their uses. In addition, that estimation and comparison will also be add to the play and presented by the practitioner, so that children can observe and then repeat using words such as 'shorter than' or 'heavier than' This is considered to improve children's developmental skills regarding mathematical concepts (Welsh Government, 2020)

Moreover, feature 1 includes science-based aspects as children are given the opportunity to get their hands dirty an experience different textures and consistencies and how to develop them to preferences using different natural materials. Continue, that the chance is offered to question and explore any experiment for example, to see how textures can change when water is added or mud. Additionally, according to Welsh Government (2020) feature 1 can support children to begin to understand curiosity for example,

picking a natural resource that nobody has used and making something different, this could mean also changing the appearances this can improve children's colours and repetition of re-presenting things they have observed from parents. Central to the analysis regarding feature 1, allowing children to experience an activity without restrictions or boundaries will allow science concepts to be developed as this type of area amplifies learning opportunity by stimulating inquiry, experimentation, explaining while doing, using messy areas with risk, and presenting trial or error (Welsh Government,2020)

Feature 2- Bug hunting

Providing an outdoor space and encouraging a bug hunt as an activity and feature around the trees which can simply mean going for a walk and looking for insects or bugs for children of a younger age. This activity can be adapted easily to suit all ages for example, adding an identification sheer of bugs to look for or using magnifying classes to look closer and see who finds the most interesting objects. From using a bug hunting trail, children can develop identification skills which enhances children critical thinking to identify question which can be scientifically investigating. This, feature provides opportunities for further developed open ended questions, such as 'what type of house does this bug live in?' this type of questioning process allows children minds to become curious and explorative also it's a chance for their minds to recognise that them themselves are observing, investigating and can then communicate their findings. Welsh Government (2020) highlights that the benefits children experience is sciences development as this feature enables the opportunity for children to explore between living objects, their area if living and their life-cycle. As stated by Welsh Government (2020) to promote this the practitioner can encourage children to pick up different bugs and compare the different types of colourings, patterns, and ages. In view of Welsh Government (2020) this features, and activity can develop children's mathematical concepts such as s sorting and grouping when searching for the bugs. The practitioner could specific certain bugs in groups for example A and B, due to bugs that can fly and bugs that cab crawl so that children can collect directly however it allows the chance for child-led play also. Welsh Government (2020) explains that this presents a chance for children to discuss and speak

about their collected data and knowledge that they have gained whilst doing it. This development offers children the opportunity to be curious, sustained thinkers and individual explores who question everything (Welsh Government, 2020).

Feature 3- Tree climbing

In view of Welsh Government (2020) demonstrates that this feature and activity consist of using the trees to climb, this is an essential aspect of using outdoor space as it engages children with risk play, the ability to have been in close contact with nature and he opportunity to challenge themselves whilst having fun and exercising. According to Welsh Government (2020) one of the most important considerations of this feature is that tree climbing help children to understand mathematical concept such as depth, volume, heights, width, and the process of measurements. Welsh Government (2020) stats that an understanding of these concepts is critical for children to develop a full accurate way of developing in the world and resources around them. Additionally, tree climbing and using movement through sat re in different directions can enhance the chance it discovered using different physical strength and muscle. Welsh Government (2020) stats that this develops children's maths and science concepts as it can help use certain language and to describe positions and patterns. Furthermore, tree climbing according to Welsh Government (2020) can support scientific concepts such as coordination, balancing and gravity. Children having the opportunity to use the tree to balance on with both feet including using alternative hands to climb, adding that this allows children to take an active part in their learning through play. Following that, children will naturally build a sense f control of their bodies and movements. Equally this feature offers the chance to build confidence to develop in new ways and conquer new challenges (Welsh Government, 2020)

RISK BENEFIT ASSESSMENT

Location / Activity:	Outdoor activities	Date:	2022
Assessor:	CMontgomery	Review date:	2022

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

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

ACTIVITY	How will young people BENEFIT from this activity?	Hazards and risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
Collecting mud/ natural resources with buckets and using a wooden mud kitchen	To demonstrate knowledge around mathematical language to present quantities, and to 'more than', 'less than' and 'equal to'. Able to present counting during sequencing numbers and using correspondence to count sets in a formatted way. Experiencing objects that can touched, and ones that cannot. The skill to estimate and measure length, capacity, mass, temperature, and time, choosing appropriate units. The ability to point out questions are enabled to be investigated and suggest suitable methods of inquiry.	Possible splinters from the wood, potential tripping hazards when using utensils with kitchen. Wet ground, Slips, trips, falls. Accidental bump or knock with Resources Injury from a sharp rusty resource. Possible hazards substances on materials. faeces from wildlife on materials. Also litter and Ingesting soil	Child/ staff	When entering the area with the mud kitchen ensure the fences and gates are enclosed and shut. Ensure that the mud kitchen is safe to be used in line with health and safety regulations. Suitable clothing to be worn. Ensure that the area where the children are searching are free from hazards including, stingy nettles and possible poisonous objects. Staff to check children's records to ensure there is no known allergies. Make gloves and goggles available, educate about the right and wrong materials to use, educate about plants different plants that could be used. Ensure the reminder of nothing in the mouth or rubbed on skin. suitable gloves to be provided.	L

Using metal kitchen utensils	The experience of offering conclusions as an answer of carrying out my inquiries including evaluating methods to suggest improvements. Understanding of how to use objects to measure and represent understanding the repetition in the same physical unit without any gaps when measuring. The skill to use a variety of measuring devices from different starting points. The experience with recognising differences and similarities in resource affects when using their	Conflict could arise between children with sharing or fighting using the utensils. Parts could possibly break or snap off the surrounding equipment.	Child/ staff	Children need to be observed by a member of staff. Staff member to explain the use for utensils, ensure that they are safe to use and set up in the correct manner. No loose or small bits. Provide hand washing provisions for during and after play with use of the utensils. Establish hand washing routines so children can stay hygienic	L
------------------------------	--	--	-----------------	---	---

	properties and uses under different conditions.				
Balancing beams around tree's	To develop the skill to recognise, copy, present patterns, and sequences by myself. The ability to present estimates and comparisons with measures, such as 'heavier than' and 'shorter than'. The ability to explore movements and directions, the ability to use mathematical language to describe position. The understanding of putting sets into categories and communicating the rules that have been used.	Children falling, sustaining injuries cuts, grazes, and bruises. Possible confrontation between sharing and taking turns.	Child/ staff	To be set up in a safe area where ground is firm and flat as a free led activity. Encouragement for a practitioner that children should only be using the section if they can do so independently. close supervision to minimise the prevention of risky or dangerous situations or positions. Supervising staff never lift children up. Children are taught to always have 3 limbs on a tree when using the beam for example, 2 hands+1 leg or 2 legs + 1 hand. Children are shown the possible slip hazard. Staff to monitor floor conditions and intervene when needed.	L

	The experience of estimating and measuring length, capacity, mass using appropriate standard units.				
Searching/ hunting for bugs, insects, and wildlife	The ability to extend experiences to explore, compare, and use general mathematic language of shapes through investigative play. The chance to investigate, collect, and record data found the outdoor environment with natural resources. The ability to present outcomes and chance. Unwedge of numerical	Possible hazards substances on materials. Faeces from wildlife on materials. Also litter on the ground could be harmful. Stings and anaphylactic shock. Rashes.	Child/ staff	Staff member to make sure that the area is safe and clean to search, including explain that anything found should not be put in the mouth, be aware of procedures and progress if a child has a reaction, sting, or bite.	L

	values to represent probability. The skill to demonstrate the impacts of science, past and present, in everyday life situation.				
Tree climbing	The skills to explore movements and directions. Including using mathematical and science language to describe position. Demonstrate the ability to present properties of two-dimensional shapes to including, number of sides of objects.	Children falling from a height, sustaining injuries cuts, grazes, and bruises. Possible falling branches from the tree or sharp edges.	Child/ adult	Place a member of staff to observe at a station to where the tree has been checked for safety and is suitable for children to climb. Climbing dens should be instructed it is not allowed as it is unstable and other children could be playing below. Check the weather conditions and the outdoor space prior to using it, as surfaces can be slippery, and the area may be unsafe or damaged. Children taught the rule that if the branch is thicker, then their wrist then they are not to put weight on it.	L

Making a bug hotel out of natural resources	This allows children to be curious about materials and their range of uses. This also enabled children to understand and learn about the properties of the materials. Promoting the ability to design while communicating. Presenting the understanding that living beings hunt for specific resources and depend on natural resources and shelters to life and survive. Also provides experience in grouping objects, counting in numeral or with hands, and sharing with objects and quantities.	Possible hazards substances on materials. Faeces from wildlife on materials. Also litter on the ground could be harmful Possible, harmful, berries, plants, or brushes. Stings, anaphylactic shock, and Rashes.	Child/ adult	Staff member to ensure that all resources that are collected are checked and safe to use for the bug hotel. Staff to enable rules on travelling with trees or branches (drag branch if longer than arm) Explain as an adult that it is safe to work in teams when transporting logs and branches. Also, staff to explain that all children should come to any member of staff if they need help.	L
---	---	---	-----------------	---	---

	The knowledge to recognise that the environment provides natural resources and can explain why they may have been processed to make them useful.				
--	--	--	--	--	--

According to White (2011) when considering the role of the adult, the first aspect to note is that practitioners are the main key of enabling children to engage with mathematical and scientific concepts in outdoor space. Furtado and Ouvry (2019) agree explaining that children should be provided a space outdoors where the environment is stimulating and full of enhanced provision for play. Bilton and Waters (2017) points out that in an outdoor area practitioners must highlight opportunities for learning with maths and science such as celebrating and presenting useful and unique qualities of the environment. For example, organisation, counting, grouping and collecting natural resources. Furthermore, continuing with measuring in different forms and with different activities where further concepts can be produced like comparing, estimating, evaluating, spacing and similarities. However, Salmi, Kaasinen and Suomela (2016) demonstrates that more science-based provision should be enabled as outdoors is an opportunity to be adventures, a predictor and experiment as much as possible. For example, using different aspects to measure such as tasking steps to measure a length of a tree or strides to measure the outdoor space from one side to the other. In compliance with Bruce (2012) research open ended play is described by practitioners as play that has no predetermined limitations and no answer, just an area where children discover and follow their imagination to allow the play to go in what direction they want to which boosts their play to see where their creativity takes them. O'Brien (2009) points out that promoting open ended play whilst developing mathematical and science concepts can provide

an open-ended aspect on resources, where the resources can be used for any purpose or be related to day-to-day outdoor role-play scenarios that children observe from adults or practitioners, continuing to benefits children as they will begin to utilise what nature provides by themselves.

Brodie (2014) study has shown us that providing sustained shared thinking opportunities within early years ad in the outdoors environment widens and furthers the educational learning that children receive including, the knowledge and skills. Children from using sustained shared thinking can allow children to become more able in being active participants in their own learning. Purdon (2016) illustrates that practitioners can enable sustained thinking opportunities by setting aside specific time for practitioners to plan shared thinking activities, supporting children's observations peer, providing group work, building the area in a certain way, and getting the children to think of different ways by asking questions.

In proportion to Broadhead (2003) research child-led play is an essential part of outdoor experiences however, it also stats that it can have an impact on their mathematical and science skills as It's about letting children having the ability to do what they need to do to learn and to grow how they choose. Moreover, this approach shows examples of children following their own chosen play patterns which has been used in repetitive ways with their body and developing brain. When using child-led play children can become deeply engrossed in their own world which is often when they discover things for themselves or when interacting and playing with other children. This is linked to Piaget theory as reported by Smidt (2010) the theory is viewed as presenting play as an integral way to enhance development of intelligence and resilience in children. His theory of play research that as a child becomes of age and matures, their play and environment should provide encouragement further with mathematical, scientific, cognitive and language development.

As confirmed by Robertson (2017) exploring mathematics outdoors in early years is the role of the practitioner that must be undertaken in all settings, as the benefits include encouraging a mathematical point of view and enabling children to make useful links and progression in their learning. Continuing that child will use critical mathematical thinking and learn mathematical skills as an area of the outdoor experiences and the child will begin to measure, count and explore shapes within other educational settings naturally.

Nevertheless, Aasen, Grindheim, Waters (2009) reports that exploring science outdoors is also the practitioner's role as the outdoor environment offers space that is not provided indoors and can be this can be particularly important to children who may not have these types of opportunities at home, and for children who learn best through active movement. Following, that early year's children begin their learning journey of discovery through physical, auditory and experiences which supports brain development and educational concepts.

As stated by Bilton (2010) the practitioner could demonstrate moving objects using something that is built outdoor or play game that includes imaginative play for example bug hunting or escaping from dinosaurs. Additionally, highlighting when observing as a practitioner it is essential to consider that their main role includes being hands on and involved by asking open ended questioned and engaging as a co-player to extend understanding and knowledge. White (2013) considers this statement and discusses that practitioners need to be a role model, plan the outcomes, introduce new ideas and to reinforce the use of mathematical and scientific language, additionally, providing this opportunity enables child-led play and for children to use their sustained shared thinking skills. Bjorgen (2015) discusses that central to White (2013) analysis the practitioner's role can be to extend children's experiences by enhancing their outdoor planning, this can be completed by identifying different learning objectives around maths and science to be put into practise outdoors.

Knight (2013) presents that it is generally considered that movement is the underpinning of forming mathematical and scientific concepts in early years as children use movement to step forward, backwards, pace out lengths, measure width and to run short and longer distances, including climbing heights and estimating. Garrick, (2009) evaluates that movement develops the brain body and plays a factor to physical play. contributing that movement promotes personal and health development. Wood, Howard and Broadhead (2010) disagree with Garrick, (2009) statement as it is believed that children using movement of the most beneficial factor as children learn to play alongside others, forming relationships whilst connecting to learn by doing things with the body to move which puts understanding on cause and effect.

Houser, et al (2019) demonstrates in approaching outdoors learning adding loose resources to the activities to the natural environment which can have a very positive impact in relation to maths and science skills by validating loose resources for example, kitchen utensils for the mud kitchen. Collaborating that, this can provide further language development through the use of familiar and unfamiliar resources, new experience, challenging play and recognition. In correspondence with Sandsete (2017) study the practitioner in relation to loose resources can enhance this experience by applying affordance to the added resources, highlighting the quality and environment of the objects allowing and inviting the child to interact with the resource in a certain way. For example, when completing a bug hunt the practitioner could add magnifying glasses to promote curiosity and discovery. However, this can be presented in a child led from using open ended play only giving direction and simplified instructions.

Davies and Hamilton (2018) examine that there are many advantages of maths and science in outdoor spaces when working with early years as it offers the opportunity to be more memorable as the educational objectives are offered in the context of play, continuing that it encourages exploration and risk taking. Kemple, et al (2016) analysis the benefits more on the area that supports emotional -wellbeing, mental health, providing that it discusses children's self-image and self -esteem of themselves as mathematicians and scientists. Maliyok (2015) claims that there are many disadvantages to be considered when facilitating outdoor experiences as there can be many health and safety regulations to follow and ensure that the environment is safe to use. continuing

that there will be additional paperwork to be undertaken or example, consent forms from parents, medical records, risk assessments and evaluations forms which can add more pressure to all individuals involved. Little and Eager (2010) argues that there are further disadvantages include the ability to follow the curriculum requirements as it can be difficult to maintain requirements for all ages when planning and facilitating the outdoor space. Additionally, there be the risk of natural hazards such as bees or uneven grounds which can cause life threatening conditions.

In agreement with Wainwright (2021) research outdoor learning is a significant part of the Early year's foundation phase Framework. Explaining that Being outdoors has a practical impact on children's education and further development, as it offers opportunities and moments for doing things in different ways and on different scales than when indoors.

According to Waller (2007) study the Early years found phase links into outdoor play as this often gives children more freedom and autonomy than indoor play as they can evaluate and be independent. As part of the early year's foundation phase it's recommended that practitioners should provide outdoor resources to develop children's education concepts and self-confidence.

McNally and Slutsky (2017) maintains from the understanding of the Reggio Emilia approach the environment is standardised as the 'third teacher', this is because it is so beneficial at enabling children to explore their interest, collaborate with others and learn from experiences outside of the classroom. Reggio Emilia successful approach to outdoor education consists of many three main factors which are that children should have the ability to construct their own learning in a safe space, Children should be allowed to collaborate and learn through interaction within their community and lastly children are natural communicators and should be encouraged and driven to express themselves however they feel that they can as individuals. Furthermore, the approach takes on the high advanced role of collaboratively and exploration when learning in a Reggio Emilia invented environment, adapting to children's inquiry and discovery. By being involved in day-to-day experiences in outdoor environments, children co-construct knowledge through many different forms with peers and teachers and the learning environment. Linder, Powers-Costello and Stegeline (2011) explains that this

provides links to maths and science concepts in early years as Reggio Emilia approach agrees that it is inspired to have a non-traditional learning environment where children have easy access to resources and learning materials. Counting that, The Reggio Emilia Approach demonstrated as an innovative, inventive and inspiring approach to early years outdoor education, valuing the child as strong, capable, and resilient explorer with the ability wonder and develop knowledge as much as possible.

Conforming to Shawket (2016) study Montessori's theory is a method of education that links to maths and science concepts as it is based on self-directed activity throughout play, hands-on learning in an active manner and exciting collaborative play. If the practitioner was to use a Montessori approach children would be able to make creative and articulative choices in their learning, while the outdoor environment is set up and age-appropriate activities were proved to guide the process. Mohr (2021) agrees that when considering theory into provision and practise Montessori theory believes that children need a natural environment for all development. The theory advocates for children to use movement more freely and play in the climb trees and hills to support their all-developmental concepts not just maths and science.

An equally important aspects stated by Roth and Mansson (2011) is that Montessori and Reggio Emilia's approach are often compared when considering outdoors and developmental concepts, this is due to having similarities in their approaches. Additionally, Reggio Emilia focuses on collective learning whereas Montessori theory enables focus on independent learning as an unique learner. Aljabreen (2020) argues further that both researchers promote self-guided learning however, one of the key differences is that the Reggio Emilia theoretical approach has an element of references to the curriculum, whereas Montessori is more a more refined and structured theoretical approach, continuing, that Reggio Emilia based teachers are seen more as play-partners and guides however Montessori staff are seen as directors or influences.

One of the most important considerations and links of this study as stated by Smedley and Hoskins (2020) is Froebel's theory, where it is believed that play underpins the means of learning in early years whether this be outdoors or indoors. Furthermore, Froebel's theory points out that play enables children to see how they connect with nature and the world around them. Tovey (2016) points out that Froebel claims that Outdoor play is about potential, this can be angled at anything within the outdoor space for example, the potential to be in open spaces, promote children's curiosity imagination and creativity including benefiting their own health and well-being. As Froebel illustrates, the focus of attention on the quality of the environment and resources and the interactions within it are crucial.

Smidt (2011). suggests that Bruner's theory supports Froebel's statement as the theory explains that when new resources are provided, a child goes through three elements of representation which consist of an enactive representation experience which is based on action and doing, An Iconic representation experience which is based on images and using the sense of seeing, and lastly a symbolic representation experience which is based on language use and verbal expression. Central to this analysis considering learning theorist Leggett and Newman (2017) study illustrates that Vygotsky's theory is highly relatable to developing maths and science concepts as his theory demonstrates the usages of signs which are accessible part of concept information. Additionally, Vygotsky theory it is believed that children have the ability to engage in pretend play as they start to separate visual fields between what can be seen from using their senses and what can be implied or imagined.

Reference list

- Aasen, W., L. T. Grindheim, and J. Waters (2009) 'The Outdoor Environment as a Site for Children's Participation, Meaning-Making and Democratic Learning' *International Journal of Primary*, 37(1), pp. 5–13. DOI: 10.1080/0300427080229174
- Aljabreen, H. (2020) 'Montessori, Waldorf, and Reggio Emilia: A Comparative Analysis of Alternative Models of Early Childhood Education', *International journal of early childhood*, 52(3), pp. 337–353. DOI:10.1007/s13158-020-00277-1.
- Baker Ross (2019) Wooden Magnifying Glasses. Available at: <https://www.bakerross.co.uk/design-your-own-wooden-magnifying-glasses> (Accessed: 14 March 2022).
- Bilton, H. (2010) *Outdoor Learning in the Early Years: Management and Innovation*. 3rd edn. Routledge.
- Bilton, H. and Waters, J. (2017) 'Why Take Young Children Outside? A Critical Consideration of the Professed Aims for Outdoor Learning in the Early Years by Teachers from England and Wales', *Journal of Social Sciences*, 6(1). Available at: <https://doi.org/10.3390/socsci6010001>
- Broadhead, P. (2003) *Early Years Play and Learning: Developing Social Skills and Cooperation*, 1st edn. Routledge.
- Brodie, K. (2014) *Sustained Shared Thinking in the Early Years: Linking theory to practice*, 1st edn. Routledge.
- Bruce, T. (2012) *Early Childhood Practice: Froebel Today*. United Kingdom: SAGE Publications.
- Davies, R. and Hamilton, P. (2018) 'Assessing learning in the early years' outdoor classroom: examining challenges in practice, Education', *International Journal of Primary, Elementary and Early Years Education*, 46(1), pp.117-129. DOI: 10.1080/03004279.2016.1194448

Five Adventures (2016) Outdoor activities to do with Children in Fall: Nature Art. Available at: <https://fiveadventurers.com/Home/free-activities-to-do-with-kids-in-autumn-outdoor-activities-to-do-with-children-in-fall/> (Accessed 14 March 2022).

Furtado, A. and Ouvry, M. (2019) *Outdoor Play and the Early Years Curriculum: Exercising Muscles and Minds*, 2nd edn, United Kingdom: Jessica Kingsley Publishers.

Gardening for kids (2020) Children's Character Buckets Available at: <https://gardeningforkids.co.uk/products/briers-character-buckets> (Accessed: 14 March 2022).

Garrick, R. (2009) *Playing Outdoors in the Early Years*. United Kingdom: Bloomsbury Academic.

Houser, N., et al (2019) 'A Loose Parts Randomized Controlled Trial to Promote Active Outdoor Play in Preschool-aged Children: Physical Literacy in the Early Years (PLEY) Project', *Journal of Methods and Protocols*, 2(27). Available at: <https://doi.org/10.3390/mps2020027>

<https://hwb.gov.wales/curriculum-for-wales/mathematics-and-numeracy/descriptions-of-learning/>(Accessed: 14 March 2022)

Kemple, k., et al (2016) 'The Power of Outdoor Play and Play in Natural Environments', *Journal of Childhood Education*, 92(6), pp. 446-454. DOI: 10.1080/00094056.2016.1251793

Knight, S. (2013) *Forest School and Outdoor Learning in the Early Years*. United Kingdom: SAGE Publications.

Leggett, N. and Newman, L. (2017) 'Play: Challenging Educators' Beliefs about Play in the Indoor and Outdoor Environment', *Australasian Journal of Early Childhood*, 42(1), pp. 24–32. DOI: 10.23965/AJEC.42.1.03.

Linder, S.M., Powers-Costello, B. & Stegelin, D.A. (2011) 'Mathematics in Early Childhood: Research-Based Rationale and Practical Strategies'. *Early Childhood Education Journal*, (39), pp. 29–37. Available at: <https://doi.org/10.1007/s10643-010-0437-6>

Little, H. and Eager, D. (2010) 'Risk, challenge and safety: implications for play quality and playground design', *European Early Childhood Education Research Journal*, 18(4), pp.497-513. DOI: 10.1080/1350293X.2010.525949

Maliyok, H. (2015) 'Safety and Risk: Benefits of Outdoor Play For Child Education', *The International Journal of Educational Researchers*, 6(3), pp. 50-62. Available at: <https://dergipark.org.tr/en/download/article-file/89928> (Accessed: 25 March 2022).

- McNally, S. and Ruslan Slutsky, R. (2017) 'Key elements of the Reggio Emilia approach and how they are interconnected to create the highly regarded system of early childhood education', *Early Child Development and Care*, 187(12), pp.1925-1937. DOI: 10.1080/03004430.2016.1197920
- Mohr, H. (2021) 'Impacts of Early Childhood Professional Development on Educator Practice and Subsequent Student Experience in the Outdoor Environment: education, Montessori', *School of humanities, arts and science*, (428). Available: <https://sophia.stkate.edu/maed/428>
- Montgomery, C. (2022) *kitchen utensils*. Carmarthen: University of Wales Trinity Saint David.
- Montgomery, C. (2022) *Outdoor Balancing beams*. Carmarthen: University of Wales Trinity Saint David.
- Montgomery, C. (2022) *woodlands*. Carmarthen: University of Wales Trinity Saint David.
- O'Brien, L. (2009) 'Learning outdoors: the Forest School approach', *Journal of Education*, 37(1), pp. 45-60. DOI: 10.1080/03004270802291798
- Pinterest (2021) Mud pictures. Available at: <https://www.pinterest.com.au/pin/71213237828372039/> (Accessed: 14 March 2022).
- Procedia Environmental Sciences journal*, (34), pp. 222-232. Available: <https://doi.org/10.1016/j.proenv.2016.04.021>
- Purdon, A. (2016) 'Sustained shared thinking in an early childhood setting: an exploration of practitioners' perspectives', *Journal of Education*, 44(3), pp. 269-282. DOI: 10.1080/03004279.2014.907819
- Robertson, J. (2017) *Messy Maths: A Playful, Outdoor Approach for Early Years*. United Kingdom: Crown House Publishing.
- Roth, V. and Mansson, A. (2011) 'Individual development plans from a critical didactic perspective: Focusing on Montessori- and Reggio Emilia-profiled preschools in Sweden', *Journal of Early Childhood Research*, 9(3), pp. 247–261. DOI: 10.1177/1476718X10389148
- Salmi, H., Kaasinen, A. and Suomela, L. (2016) 'Teacher Professional Development in Outdoor and Open Learning Environments: A Research Based Model', *Journal of Creative Education*, 7(10), pp. 1392-1403. Available at: <https://doi.org/10.4236/ce.2016.710144>
- Bjorgen, K. (2015) 'Children's Well-being and Involvement in Physically Active Outdoors Play

in a Norwegian Kindergarten: Playful Sharing of Physical Experiences', *Journal of Child Care in Practice*, 21(4), pp.305-323. DOI: 10.1080/13575279.2015.1051512

Sandsete, E. (2017) *The SAGE Handbook of Outdoor Play and Learning*. United Kingdom: SAGE Publications.

Shawket, I., (2016) 'Educational Methods Instruct Outdoor Design Principles: Contributing to a Better Environment',

Smedley, S. and Hoskins, K. (2020) 'Finding a place for Froebel's theories: early years practitioners' understanding and enactment of learning through play', *Early Child Development and Care*, 190(8), pp. 1202-1214, DOI: 10.1080/03004430.2018.1525706

Smidt, S. (2010) *Playing to Learn: The role of play in the early years*, 1st edn. Routledge.

Smidt, S. (2011) *Introducing Bruner: A Guide for Practitioners and Students in Early Years Education*, 1st edn. Routledge.

Tovey, H. (2016) *Bringing the Froebel Approach to your Early Years Practice*. 2nd edn. Routledge.

Wainwright, N. (2021) 'The foundation phase in Wales, outdoor learning and motor development', *Journal of Physical Education and Sport*, 21(1), pp. 567 – 573. DOI:10.7752/jpes.2021.s1064

Waller, T. (2007) 'The Trampoline Tree and the Swamp Monster with 18 heads': outdoor play in the Foundation Stage and Foundation Phase, *Journal of Education*, 35(4), pp. 393-407. DOI: 10.1080/03004270701602657

Welsh Government (2020) Curriculum for Wales: Maths and Numeracy. Available at:

Welsh Government (2020) Curriculum for Wales: Science and Technology. Available at: <https://hwb.gov.wales/curriculum-for-wales/science-and-technology/descriptions-of-learning/> (Accessed: 14 March 2022)

White, J. (2011) *Outdoor Provision in the Early Years*. United Kingdom: SAGE Publications.

White, J. (2013) *Playing and Learning Outdoors: Making provision for high quality experiences in the outdoor environment with children 3–7*, 2nd edn. Routledge.

Wood, E., Howard, J. and Broadhead, P. (2010) *Play and Learning in the Early Years: From Research to Practice*. United Kingdom: SAGE Publications.