

Awe and Wonder- Science, Mathematics and the outdoors

Part 1



(Image: Jones, S. 2023)

Part 2

Today myself (Miss Jones), Miss James, Miss Hughes and my year 1 class visited Park Howard, which is around a 5 minute walk from the school. Our trip was to see how the world works in different ways, by allowing the children to explore and investigate the natural world around them. This involved Science and Mathematics by looking more deeply into living and non-living life cycles.

Promptly at 9am class 1 were leaving the school to head to Park Howard. Firstly we made sure that I spoke to the children about the morning ahead as well as ensuring all the children had their packed lunches and high visibility jackets on. A head count was also done to ensure we had everyone before leaving. Before heading off the children decided to hold hands, so that they could stay close together whilst walking to Park Howard. As we got closer to the park the children noticed a main road. One of the children shouted out 'We need to look both ways to make sure it's clear before we cross'.

As soon as we arrived at our destination all the children were full of excitement to get stuck into our adventure. Firstly we did another head count and then stood at the front gates taking in the amazing views of the large beautiful grass, trees and house in the distance. The outdoors is one of the best places to engage in play, so firstly we allowed the children to run onto the grass and have a little explore before we got onto our investigating.

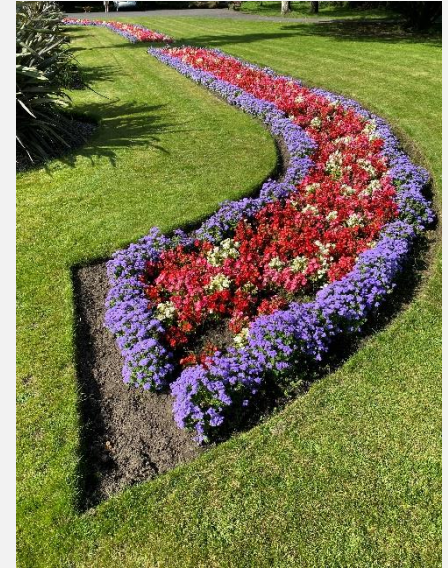
Park Howard is a large area where there can be so much choice for an enabling environment. Within the Welsh curriculum there are six areas of learning and I believe Park Howard can support all of these areas. Firstly health and well-being which with it being outdoors and in a large area it can contribute to physical well-being for the children as they will be able to run, roll, skip and jump along the grass and banks. With it also being in nature, this can have a positive effect on their health and bodies. Humanities as this area gives the learners the opportunities to discuss and explore with others what's around them and reflect upon their actions and those of others. Expressive arts is something children do every day without even thinking of it. It's within play when they use their imagination to be creative with various loose parts like taking along musical instruments and things for drawing or painting. Languages, literacy and communication is something this area can be used for with many things like storytelling sat on the grass or tree stump with a door, story trails through the trees. This will get the children's imagination running wild and they will want to ask questions about the door on the tree stump or a question about the story. Mathematics and numeracy within this area can be counting how many conkers we find on a walk around the park, or the number of trees or wildlife we spot. Then finally science and technology where it brings us to our task at hand which is Living and non- living life cycles.

We wanted the children to become aware and know the differences between living and non-living things. From the school, I brought tick charts with lists of living and non-living life cycles, magnifying glasses and some other materials like plastic containers, some spoons and paintbrushes in case they didn't want to us their hands for the little crawly things and a book with lots of different living and non- living life cycles in to see if they could spot any within it. The children would then be able to use what they choose on the walk within the grass, bushes and flower beds. Before this adventure out of school, I had come to the area to explore and think about ideas beforehand. Park Howard is filled with lots of

space, both grass and concrete as well as a park area, a walking area with beautiful flower beds, a closed in pond and an ancient house in the centre. It screams curiosity and adventure for all children.

We were a total of 9 children and 3 adults on our adventure. We split into 3 small groups of 3 children and 1 adult for each group. This was to be able to work closely with each pupil to grasp their full attention and potential within this activity. To start the activity off we got into our groups, picked up a magnifying glass, our tick charts and pencils and whatever else the children wanted to take. Then off each group went in different directions throughout the park. I then asked my group 'which direction are we going in compared to Miss James's group? To which one child exclaimed 'forward! and Miss James's group is going downwards'. Well spotted I replied. Then we continued on our walk making sure that every step we took our eyes were peeled to see if we could spot any living or non-living things. I took a step back from the children to observe and support their curiosity. As I watched and listened closely, I could hear the children engaging in discussions about the living mini beasts they had found on the ground and then someone had spotted the ancient house within the distance and shouted 'Look! I can see a house which is non-living'. I went towards them and said 'Show and tell me what you have found?' There were all excited to show me they had found centipede and a worm. They all took it in turns to look at them closely with the magnifying glass before ticking on our charts what we had found. We then made sure the mini beasts were put back where they got them and then continued with our walk. We walked on past the pond and one of the children came up to me all quiet and said 'Miss there is a squirrel sitting on the fence'. I called the children quietly and whispered 'Look everyone there is a squirrel, can anyone tell me if this is living or non-living?' one of the children said 'It's living as it's an animal.' We managed to take an amazing picture of the squirrel looking straight at us. I then asked the children 'what would have happened to the squirrel if we weren't quite? Do you think they would have stayed still?' Using sustained shared thinking can get the children to be respectful and listen to each other's thoughts and feelings. The children then started to have a group conversation about what they thought the squirrel would have done if we was not quiet on the approach towards it.

The walk is something that broadened their knowledge of living and non-living life cycles. The environment provided a rich experience of science about the characteristics of both living and non-living life cycles, from mini beasts, trees, tree stumps, the park and the house. This provided the children to be able to be respectful of living things, explore closely as well as freely without too much teacher interaction.



(Images: Jones, S. (2023).

Part 3 RISK BENEFIT ASSESSMENT

Location / Activity:	Park Howard/ Living and non- living life cycle	Date:	
Assessor:		Review date:	

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.

Experience exploring outdoor space in photograph	How will young people BENEFIT from this activity?	Hazards and associated risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk after precautions RATING: L/M/H
Uneven ground	This will benefit young people by balance being improved as well as speed, movement and direction.	Hazards and associated risks could be slips, trips and falls due to uneven ground which may cause cuts, grazes or brakes.	The staff and children.	Precautions to put in place prior to trip to reduce the risk of injury would be going to visit the sight beforehand. Doing some demonstrations before so we can ensure we have everything we need and it goes as smoothly as possible. Benefits of being outdoors will always outweigh the risks. Suitable footwear to be worn by all ensuring verbal warning of risk.	Medium

Experience exploring outdoor space in photograph	How will young people BENEFIT from this activity?	Hazards and associated risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk after precautions RATING: L/M/H
Stranger danger	This activity will benefit all young children by giving the children managed opportunities to take risks. Playing outdoors teaches young people how to deal with possible risks and without this they aren't equipped to deal with life going forward.	A stranger adult is asking the children questions or hovering around nearby. Physical/ verbal abuse or abduction of children.	The pupils.	It's important to prep talk the children before the trip and remind them of the rules. Explain that they should never talk to strangers and always tell an adult if they feel like someone's presence is making them feel uncomfortable in any way. Staff must also make sure to observe children closely. All staff and children should be able to be easily recognised by wearing the school logos on clothing. All staff must be vigilant and politely ask any members of the public to leave the area they are working in. Be prepared to remove group to alternative area if necessary.	Low
Traffic coming from and back to school	Young people will benefit from this activity by teaching them road safety about being safe on the roads. This embeds good practice and positive habits from an early age as well as guide their long term behaviour as road users.	The hazards and associated risks can be injury or even death.	The pupils and staff.	Precautions to put into place to reduce any risk of injury is to ensure that the children all have hi-visual jackets on. Keep all children on the inside, away from the traffic. Make sure hand-holding is also a vital rule as well as when walking, teach the children about the possible dangers about traffic and roads. Use pedestrian crossing wherever possible. One adult as the back of the line and one adult in front of the line when on route.	Low.

Experience exploring outdoor space in photograph	How will young people BENEFIT from this activity?	Hazards and associated risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk after precautions RATING: L/M/H
Loose parts	Young people will benefit from this activity by using their imagination, exploring and having different challenges.	Hazards and associated risks can be when there are loose parts involved can be choking, splinters, hitting each other or sharp edges.	The pupils.	Precautions to put in place to reduce the risk of injury whilst there are loose parts around is to check over all the loose parts beforehand for any pointy or sharp edges. I think It's also important for children to be somewhat involved with risk assessing. It should be appropriate to the level of understanding of the children involved. This can then encourage the children to think or question before they play as well as problem solve. Adults should also have a discussion beforehand to the children and ask questions like 'what do we need to remember when playing with....'	Medium
Extreme weather conditions	Children will benefit from being outside as it allows children to develop self-confidence, independence and self-esteem. They are able to try new challenges during play and they are more likely to try new activities. Outdoors promotes health, social and emotional wellbeing.	Hazards and associated risks when it comes to extreme weather conditions can be sunstroke, sunburn or dehydration.	The staff and pupils.	Precautions to put in place for extreme weather conditions are: Ensuring all have access to plenty of fluids and drink brakes. Avoid long exposure to sun. Ensuring that all letters sent out to parents/ guardians before visit sates the importance of wearing hats, sunscreen, wear appropriate clothing and footwear. Keep an eye on the timings of activities in case they may have to be shortened or cancelled.	Low

Part 4

According to (Williams, 2016) adult practitioners influence the type of experience in supporting children's play. The adults ultimate goal in supporting this is to ensure that a subtle and sophisticated approach to enhance child- initiated play. As stated by (Bento and Dias, 2017) adults must ensure they are not dominating but rather taking on a supportive role and approach. Sustained shared thinking drives from scaffolding and the role of the adult is to capture in the child's play and to be able to work with the child to evolve and expand their reasoning and education. Furthermore according to (Malik, 2017) we can determine that Vygotsky stated that scaffolding is brief assisted learning, in which is aimed for the children to become independent learners.

We can determine that according to (Media (2000), n.d.) the key aspects in an adult role is be able to develop a stimulating environment, for children with access to natural loose parts. Additionally according to the research (USLU KOCABAŞ and BAVLI, 2022) Montessori educational method indicates that practitioners show children how to use new materials then withdraws, just to observe. This places the child into free environment and trains the adult into the child's way of thinking.

Within the outdoors adults need to be able to identify the unique qualities around them to introduce Mathematics. This could be from collecting natural objects such as twigs, stones or leaves. They could also investigate by measuring the area around them using movement such as strides or hunting for mini-beasts. Children can learn Mathematics through all of their senses including touch, smell, sound and taste. According to Dilki Sonali (2016) Doctor Maria Montessori considered that young people happen to captivate mathematics ideas naturally. In the Montessori learning surroundings the young people similarly sees and learns some symbols as numbers and they hold the amount in their hands. A system where a young person is moving objects around with their hands and making use of their senses, this also take into account the young person's capabilities for mathematics.

This could be exploring empty or full containers with wet sand or branches. Children could investigate by looking at seeds or measuring the heights of tall sunflowers as well as collecting natural objects like stones or flowers. According to the research (White, 2019) we can determine that children can explore and experiment with all the above materials, determine how to put them together, how to take them apart and how to put them together again in many different ways. During these moments that the children are assembling their plans, they are thinking 'what happens if' or 'what will happen if I do this'. They can then think like true little scientists and be able to ask each other questions and have many ideas of their own, about how things work and then experiment with them. Furthermore, during these times of assembling, children can get first hand concepts of weight, distance or balance. They will enable skills on how to be able to join things together, as well as solve problems which may occur. The adults needs to be fully engaged and It's important to use specific vocabulary with open ended questions about Mathematical learning within the outdoors.

The Foundation Phase Framework Curriculum for Wales (n.d.) focuses on children being able to enquire and investigate the outdoors in a safe and systematic way. They need to be given the experience to help expand their curiosity about the world they live in and the world around them. This will then ensure they are equipped about living things, people and places. All children should be motivated to be able to enjoy by exploring and experimenting as well as asking questions to find out the answers. In turn this will stimulate them to care, have responsibility, deal with things and show consideration for all the living things and the environment. Children can explore Science within the outdoors by drawing living things, exploring the natural world around them, collecting rocks or shells and try and sort by difference and naming animals and plants. Furthermore (Pelz and Kidd, 2020) states that exploratory play is the type of play that inspires children to investigate their environment and understand about the world around them. This boosts them to explore and interact with their surroundings in an unrestricted manner.

As stated within the Curriculum for funded non-maintained nursery settings (n.d.) adults need to be able to create a safe environment that supports all children to be able to express their feelings and behaviors in constructive way. It's important that all adults are able to promote a happy advance towards learning. They state that all the involvement that's offered within the Early years should always aim to be a hands on approach, offering challenges, risk and every opportunity to have a fulfilled learning journey. The experiences need to be holistic and rooted in real-life surroundings to be able to allow all children to have deep levels of participation throughout their learning.

Furthermore (Williams, 2016) found that the findings and discussions that took place in 9 early years settings within North Wales with a total of 37 practitioners was that there was not much literature to indicate that practitioners had the experience of evaluating learning in the outdoors. It is determined that assessing children in the outdoors is not used to its full potential, there are lack of resources as well as amount of staff and child staff ratio. It is said that these practitioners need training for planning for learning and assessment on outdoor learning. It was also said that in Scandinavian countries such as Finland and Denmark that the children there had a higher level of cognitive and physical development along with shared thinking as a result of using the outdoors for learning more often.

Similarly (Estyn, 2011) has said that practitioners are more confident planning outdoor learning and overcoming obstacles such as having limited amount of space or an area that is difficult to adapt. The practitioners said that children benefit with high levels of engagement and enjoyment as well as a positive outlook on behavior and physical fitness.

According to Bradbury and Swailes (2022) we can determine that Froebel created 'gifts' for children. These were to get children to understand sizes, shapes and dimensions. These encourage open ended play. Froebel also created 'occupations', these are materials in which children can express themselves with such as- play dough, paint and colors. Froebel pedagogy focused on child- centered learning and ensuring the child was the first consideration for all planning environments and learning.

Similarly Early Education (2021) states that Froebel's principles focus on the child's holistic needs from health, physical, mentally as well as feelings and thinking. Froebel also states that practitioners need to recognize when space is needed for children and that it is vital for children to learn without external pressures from them. Furthermore as stated by Spielgaben (2015) Froebel emphasized that there should be close links between home and school. Children should be permitted to learn through their own developmental pace. Froebel believed that practitioners are

a guide to children and all their environments should be stimulating as they will learn best in this way. The environment should carefully be prepared providing the materials that are suitable for their development. Children who are taught within a Froebel environment are able to learn to see problems from many angles and to solve them by themselves.

Moreover (MRedford, 2013) suggest that Vygotsky like Piaget learn actively and develop knowledge and thinking skills through hands on pretend play. Furthermore Vygotsky drives importance and leadership on the more understanding other to push the learning on, keeping the child within the space between what the child can do without help and what the child can do with help. Similarly Piaget is very much about what's going on within the child's mind. As well as how the child grasps it and moves on. Piaget believed that the practitioner needed to provide opportunities for the child to be challenged and to repeat this until they grasp's it.

According to www.unicef.org (n.d.) we can determine that all children are born with curiosity but this needs to be stimulated. Early years children need stimulation within their activities and environment to trigger awe, curiosity and interaction with others. Active based learning can transform children's experiences within their place of learning as well as strengthen all areas of learning and the outcomes. Experimenting can stimulate curiosity and build lifelong learners. Experimental learning is the best way of learning as this helps children retain in the knowledge.

To conclude adult practitioners should influence a precise practical approach to enhance child initiated play. Practitioners must ensure they do not dominate but rather taking on a supportive role. The environment should be stimulating for all areas of play with loose parts. It's vital that practitioners promote a happy advance towards learning and all involvement that's offered with early years should aim to be a hands on approach offering a fulfilled learning journey. These experiences should be holistic. Outdoor play within the early years should be an essential part of their education. It has many benefits from children's physical, cognitive and social development. It offers children the opportunity to explore the natural world around them to be able to develop skills like balance, problem- solving, teamwork, motor skills, understanding and coordination. Curiosity is key and anyone can learn anything as long as it's at the right level for everyone. As practitioners taking children outside could be the best thing you do for their development. Awe can be a powerful feeling that can leave a positive mark on a child, it can inspire and motivate them. Wonder is the inner desire that is ready for their learning journey to be awakened.

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