

ECEY5005: Awe and Wonder, science. Mathematics and the outdoors.

Part 1



(source, Robinson, 2024)

(Palmers Rough, a local Nature Reserve with woodland, nature walks, fields and park.)

In this assignment I will be exploring how science and math's can link into the natural outdoor environment even during child-initiated play. Children will find themselves exploring maths and science through play unintentionally, enabling them to grow their own knowledge and understanding. These interests can then be brought back into the

classroom to be further explored and for ideas to be built on to further the children's learning, these interests contribute to Awe and Wonder, I will be looking at how maths can link, but I will be mainly focusing on science as the child-led activity.

Part 2

Being out in the natural environment places a strong emphasis on the value and importance of outdoor experiences for children's learning and development. Children actively engage with their environment giving them a sense of wonder and excitement, when in an outdoor environment young children learn through sensory and physical experiences which supports their brain development, children will discover how to be active and to develop their physical capabilities. If children are given the opportunity to play safely and freely, they will learn how to access risk and develop new skills, to also explore and experiment in the environment around them.

Learning Journey

Today is our usual planned forest school lesson, it has been planned in the timetable that we would have two sessions of forest school that would be planned off site and that was not at our own forest school setting, which is on the school grounds. This was decided, to give the children from the setting a chance to explore a natural woodland as the forest school on site is on a much smaller scale. From our setting of 30 Reception age children, we are taking two separate groups of 15 as forest school is alternated to take turns between the two groups every week. Today is the first outing, with the second to follow next Friday, having confirmation of permission from the parent/carers and a risk and benefit assessment carried out, we are travelling off site on the school minibus. There are two practitioners traveling on the minibus with the children, while a 3rd adult will drive a personal vehicle, following the minibus to ensure the correct adult to child ratio once arriving at the nature reserve.

On arriving at the woodland, the children were excited to exit the minibus, we walked in a line to an opening in the woodland that we called base camp, we made a circle and discussed the forest school rules. The children reminded us of what the rules were, we also mentioned a few new rules and pointed out the barriers flags around the area we were using,

the children were told to not wonder past them, to stay in view of the adults and not wonder off on their own. The children were given the freedom to explore, the idea for the adults as practitioners were to allow the children to explore freely, to enable the children to initiate their own play, to observe but also to challenge the children's ideas and thinking, by keeping questions opened once the children were allowing the adult into their play, as a practitioner observations should be made of the play the children are taking part in, photographs can be taken on the school iPad to record for the class learning journey, play should be supervised at all times. The practitioner should be aware of when to join in with play and wait for the right time to be introduced in the play, creating chances for sustained shared thinking, questions that are continually open ended until the child finds the answer and to initiate challenge to build on the child's learning.

Some children started to climb in between and onto the trees where they could, others were looking for what type of mini beast they could find. One child shouted out "there are woodlice here" after he rolled over a log and started to count how many were there. "There are 10 woodlice and 1 centipede, there are 11 mini beasts under this log, I'm going to make a mini beast hotel".

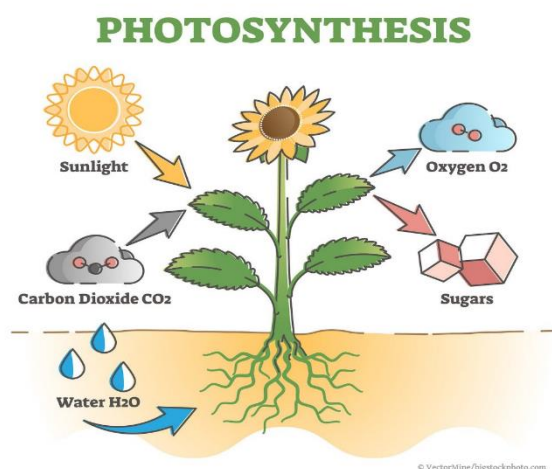
A group of children were playing hide and seek, hiding in between the bushes and behind the trees, the child that was to find them was counting to 20 and then gave up, eager to find their friends.

Two of the girls were finding sticks and picking up leaves, they started to walk over to me, I said, "Hi girls what are you playing", girl A started to explain, "we are making leaf kababs", girl B said, "we can only use the leaves that have fallen on the ground" I said "why is that?" both girls replied at the same time "because they are dead", I asked them how do we know that they are dead?" Girl B said because they are not on the trees anymore, we can only pick them up from the ground, we can't pick the leaves when they are on the trees, they are alive". Girl A also agreed with this, "yeah, they are alive, and we can't pick living things, plants and trees are living things and we have to respect what is alive in forest school. The girls started to make their leaf kababs and then one of the boys came over and said, "what you doing? can I help"? He started to join in, and the girls said don't pick the leaves off the trees, the boy said, "I know" and then called his friend over. The boys then said to the girls "we will get the ones by that bush", Boy A then said to me "miss, how come there are bushes around by the trees and none here"? I said, "because plants grow towards the sunlight", boy A replied, "Oh yeah, you can see the sunlight coming through the trees look! there Miss" And on the ground there is sunlight in this spot but not over there. Boy B shouted, "yeah it's in patches, looks like a pattern". Then girl A said, "does sunlight help plants stay alive?" "I replied yes that's

right “boy B asked, “how miss?” I started to explain how that without the sun plants would not grow, and without plants there wouldn't be any oxygen, we need plants to breathe.

I explained to the children that plants grow by something called photosynthesis, boy A replied, “photosynthesis what's that!” girl A replied “I can't even say that! I told the children that plants use sunlight to make their own food, boy A “what, plants eat the sunlight, how?”. I told them that plants need sunlight and water to grow, photosynthesis is very important. Girl B said “miss, so if the plants couldn't grow, then animals and people can't be alive?” I replied with that's right! The children gasped! I asked the children if they would like to know more about photosynthesis, we could look for a video to watch to find out more. “Yes miss, we could watch it when we get back to school, boy A replied and shouted at another friend walking by “did you know plants eat the sunlight!”, the other child replied no, what does that mean? Boy A, “you know the sun is their food, and look the sunlight shining through the trees looks like rainbows”.

Source(Pinterest, no date)



Source(food of life,2023)



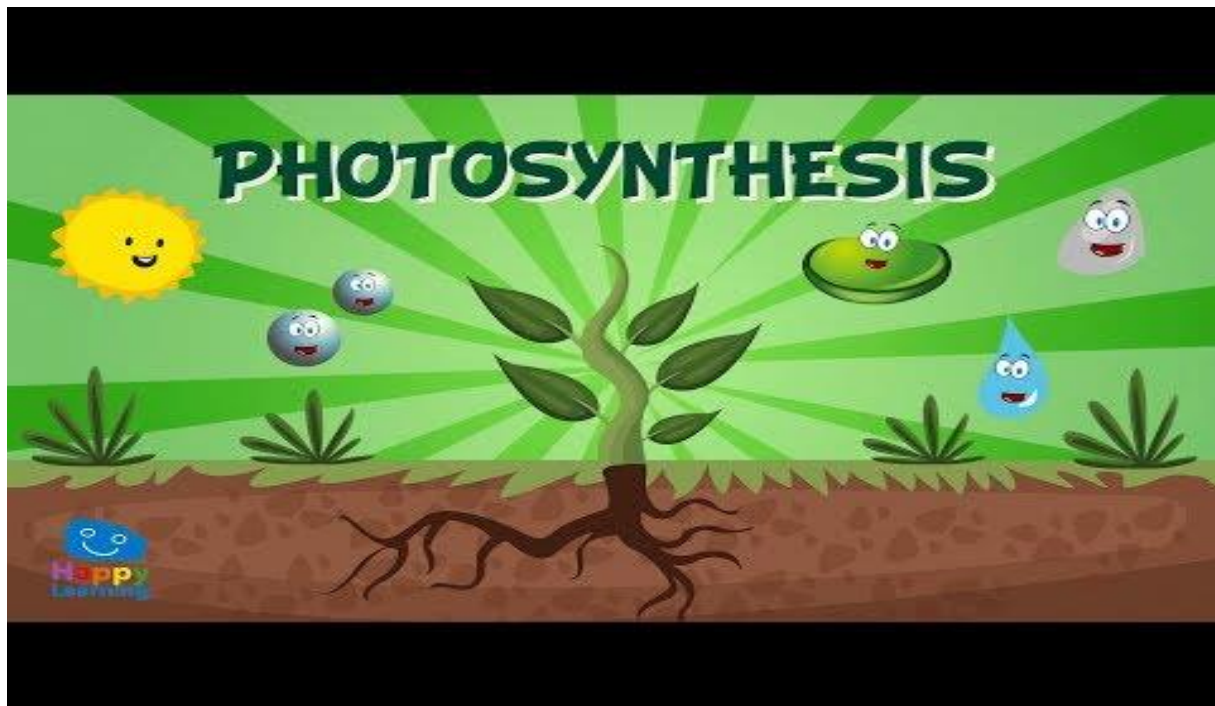
It was time to head back to school, as the children would soon need to be back for lunchtime.

Further learning

After lunch we talked about what we did in forest school the children that were a part of the forest school group, told group of children that stayed in school about what they did at forest school. The children that were making the leaf kababs told the class that we were going to watch a video of, “what's it called again miss?”, “it's called photosynthesis”, boy A oh yeah, the plants eat sunlight, its true!”

We sat together to watch the video,

<https://www.youtube.com/watch?v=UPBMG5EYydo&pp=ygUXcGhvdG9zeW50aGVzaXMgZm9yIGtpZHM%3D>



The children enjoyed watching the video, and we discussed what we had learnt about photosynthesis, I asked the children as a class group to discuss with a partner, the person sitting next to them about what we could do to learn more about this topic.

The children started saying, things like “can we do some planting? I want to plant a sunflower! Another child added “if we plant more plants then we can make more oxygen,

and we will look after the animals and bugs”. One of the children had an idea to take some seeds to the forest school next week to plant, along with the tools that we would need to use. Which was a great idea! I asked the children what they would like to plant? one child said “we can plant some conkers , or some acorns, I'm going to bring them. I said, “maybe we could all bring something that we would like to plant and then we could see about going to the woodland regularly for our forest school, so that way we can record how our seeds are growing, we could make a diary. The children that are staying in school can plant some seeds in the school forest area and the school garden to see how well they will grow there, and we could record and keep a diary of the progress, then we could see which plants grow best in which area. I asked the children about how we could record what we were going to plant, one child said, “we could take pictures and draw what our plants will look like, girl A, who went to this week's forest school said” I know, I can do a map of where we went today so that next week the others know where to go and where they can plant.” “What a great idea and a kind thing to do”, I replied. Girl B shouted, “I will help you and we need to make a list of what we will plant”. I told the children that they had some really good ideas. The children got to work on making the maps of the nature reserve, the onsite forest school and the school garden, working together to get ideas how they would like to take on this challenge. Lists were made on the equipment that would be needed and the types of seeds they wanted to plant, the children were very pleased with their end results and were excited for next week.

A message will be sent out on marvellousme to parents/carers to inform them of the task the children were going to take part in.

Worksheets, continuous provision and targeted writing, and activities will be planned for the next week to cover over what we have learnt about the chosen topic, enabling the children to be able to recall on the information on which they have learnt, giving more chance to remember from repetition and keep their new knowledge.

With the children discussing and showing an interest in photosynthesis, they were making plans about the types of seeds that they were going to plant, showing their interest in the topic gives further opportunities to encourage their further learning, making links from photosynthesis gives opportunity to explore learning about the life cycle of plants, the carbon cycle, how we can look after the planet and where our food comes from. This also could link into mini beast and looking at the life cycle of a butterfly where we could grow and release our own butterfly's. This also gives an opportunity to discover how good bugs are for the plant and the importance of them. By the children planting flowers and seeds will teach them about caring for and growing plants and to understand how to grow food, encouraging them to grow plants in their own back garden's, hopefully nurturing their love

for the outdoors. With the children having this knowledge they could share their interest with their parents, encouraging an activity that could be spent doing together, with the child teaching their parent what they have learnt.

Source(Pinterest, no date)



With the children having a child-centered approach they were using, communication and language skills, teamwork, personal social and emotional development, literacy, understanding the world, they were using expressive arts. They were speaking, listening and sharing ideas, building relationships and using their fine motors, to plan their physical activity. All these skills that the children are developing are in the (EYFS) The Early Years Statutory Framework, the children are required to develop their skills to reach their ELG's (Early Learning Goals).

Part 3

Risk Benefit Assessment

Location / Activity/ Group specific Risk Benefit Assessment:	Palmers Rough, Natures Reserve	Date:	13/09/24 & 20/09/24
Assessor:	Aimee Robinson	Review date:	02/09/24

Experience exploring outdoor space in photograph	Benefits from this activity?	Significant Hazards & identification of Risks	Who is at risk?	Control Measures/Precautions in place to reduce the risk of injury	Overall risk after precautions RATING: L/M/H
		Traveling on minibus, there and back two groups of 15 children	Children and staff	The driver of the minibus must be insured to drive it. All seatbelts must be worn, and children's belts checked by adult's	Low
		Identification of staff and children	Children and staff	All staff and children to wear high visibility vests, Staff also must wear ID Badges	Low
		Clothing and footwear, to protect from branches and slipping over	children	All children must wear long sleeves and trousers, waterproof and warm clothes, to also wear welly boots	Low
		Children wondering off or becoming hurt	children	Children told about the rules and expectations, area boundaries put in place.	Low
Exploring the woodland child-initiated play and physical activity.	Development of fine and gross motor skills, developing the foundation for healthy body and social and emotional wellbeing, supporting children to develop physically and emotionally through hands				

	on learning experiences in a woodland or natural environment				
Use of tools Hand spade, shovel, rakes. Watering cans.	Learning new skills, using both fine and gross motor skills	Could cause harm by accidentally hurting someone, hurting themselves if not using tools in the right way	Children	Children taught how to use tools in the correct way, rules put in place. Gardening gloves to be worn	low

- Parent permission attained through sending permission slips home to parents/guardians, giving permission for children to be taken off school site. As the Reception class has 30 children in the setting it has been decided that 15 children go on the visit first date and the other 15 go on the second date.

Part 4

Children develop rapidly in the early years; their scientific development is a result of learning through physical and social experiences, learning through their encounters and their personal experiences. Throughout the stages of the early years of a child's life the scientific concepts of that child's world will affect the quality of a child's ability to explore through their physical, emotional, cognitive, social and language development. Children learn about the world and environment around them. Children should be allowed and encouraged to interact with their environment, Rousseau (1911), identified the importance

of experimental learning. Rousseau, advocated a form child-centered learning where the learning environment should accommodate the child, rather than the child must accommodate to the environment. He believed that the more child-centered play, the more exploratory experiences the child has, the greater the scientific development, this idea allows for the enabling adult and enabling environment.

Rousseau was not the only theorist that believed in a child-centered approach, Plowden (1910-2000) was an advocate for a child-centered approach. (DES, 1967), Plowden's report stated that, initial curiosity is stimulated by the environment that is provided by the teacher, leading to open-ended questions to find answers from children. Dewey (1859-1952) shifted his views from a school-centered approach more towards the benefits of a child-centered education, Froebel (1782-1852) also stressed about the natural growth of children through action of play.

Rousseau, (1911), also believed that children should be given the opportunity to explore a variety of diverse recourses. This should only be restricted by a concern for the safety and consideration of other living things. In forest school children are taught to have respect for living things, with the intention to help them develop a deeper connection and understanding of the natural world and the importance of caring for the environment. By encouraging children to learn and play in the outdoor natural environment, allows children to become in tune with nature, encouraging the interest for environmental sustainability and conservation. Steiner (1861-1925) was an advocate of the importance of spiritual growth and holistic education. He identified the importance of children that can engage with the natural world, believing that children should not be forced into formal learning in early age but to have an education that encourages a child to have developing purpose and direction. This idea of learning is encouraged in forest schools to offer the opportunity for children to experience holistic growth through regular sessions, leading to the support of play through exploration and supported risk taking, (The Forest school Association, 1993) not only does forest school develop learners socially, emotionally, spiritually, physically and intellectually , through creativity it will inspire Awe and Wonder offering holistic growth through the child's interest. Inspiring and captivating the child to engage with new experiences enhancing an interest for further learning and knowledge that fascinates and inspires children, by having a holistic approach meets the needs of a child encouraging and nurturing the unique child. Maslow (1968), a child's needs must be met in every level in order for a child to develop to the next level.

The Scandinavian approach uses the outdoors as part of the pedagogy of an early year setting, this approach is inspired by Froebel (1826) as he believed children should have the opportunity to learn and develop outdoors in a natural environment, this approach is child-

centered to learning and development. The Danish pedagogy sees that a child's upbringing and the relationships between a young person, family and society. Erikson (1950) identified the importance of a loving and emotionally stable home life, how this has a positive effect on the emotional development of a child, encouraging the motivation to learn, also believing that society and culture also influences the development of a child. Maslow (1908-1970) would also agree with this theory, Maslow's hierarchy of needs identified the level of a child's needs that must be met in order for child development allowing them to achieve self-actualization.

The exploration of the outdoors builds and develops a child's, confidence, social and emotional development and skills, communication and language development, motivation and concentration, physical skills – such as balance, agility and strength, health and immunity of the child, developing the whole individual, the holistic child. The Scandinavian approach allows for discovery and investigated learning in the outdoors, also allowing further discovery indoors for further exploration, discussion and further learning.

(Vision and values partnership 2004) states that young children thrive, and their mind and bodies develop best when they have free access to stimulating outdoor environments for learning through play and real experiences. Adults who have the knowledge and enthusiasm are crucial to unlocking the potential of outdoor learning.

With greater awareness of the importance of young children's health and well-being, there has been a recent increased focus on the potential of outdoor learning for the overall development of child development, (Bilton, 2010). The Characteristics of Effective Learning in the Early Years Foundation Stage (EYFS) Statutory Framework in England (2012), Building the Ambition: National practice Guidance on Early Learning and Child-care, Children and Young People (Scotland) Act 2014, (Scottish Government, 2014), the revised Foundation Stages in Wales (2008) and Northern Island Curriculum (CCEA, 2006) identify the importance of young children's learning on the need for play based learning, exploration, building resilience, being active and engaged in learning, making decisions and connections, thinking skills and creativity, are all skills at the Centre to young children developing as mathematical thinkers and learners. When outdoors children can use the scenarios of playing shops and using imaginary money, measuring by finding the longest and shortest sticks, counting stones, how many different types of mini beast they can find, leaning about weight and volume through using water or natural object. There are plenty of opportunities through child centered play for children to explore mathematics in the outdoor environment, children will discover and build their knowledge on mathematics through play quite naturally by being curious. (Montessori, 1946) state that children develop a curiosity about and a love through nature when given the opportunity to

experience the outdoors. (Montessori, 1988) has describe that the mind has the spontaneous ability to organise, classify and quantify patterns and relationships within the context of daily experiences, Montessori recognised that the experiences that we provide for children to support the mathematical mind enabling children to spontaneously materialise building the foundation for creative mathematical learning. (EYFS Statutory framework, 2024) states that it is essential for all children to develop the necessary building blocks to excel in mathematics

When children are being curious, they start to further explore and will ask questions such as, why, how, when and what this type of question will start to fuel scientific inquiry (EYFS Statutory framework, 2024) understanding the world, personal experiences, knowledge and sense of the world around them. From the Early years Foundation Stage (EYFS) (DfE),2012) there has been a growing awareness of ‘sustained shared thinking’, science requires exploration, interaction, discussion and hand on learning through the capacity for play to become a good scientist. Children are naturally inquisitive; they are full of questions about the world around them and will investigate how things work. Through play children are introduced to science through water play, sounds, playing in the mud kitchen where they are making potions or mud pies even jumping in puddles and climbing onto tree stumps gives children an introduction to science. Through learning about science children learn communication skills, collaborative skills, teamwork and perseverance, analytical reasoning and problem-solving skills. Rousseau (1712-1778) children have a different way of thing to adults, his pedagogy of practical development in the early years, children should learn through experiential learning, by being hands on and learning through reflection. Children should be encouraged to investigate, experiment, and have the opportunity for spontaneous scientific discovery as well as specific activities. Children learn through physical exploration from hands on learning, the messier the better. Weikart (1931-2003) believed that children are active learners who learn best from activities planned and executed by themselves. This type of learning is also echoed by the Montessori approach (1907), children work independently and are self-motivated in their learning, children learn to think critically.

Setting the scene from the chosen photograph and the scenario which unfolded, there is an element to maths in their play but the chosen topic to bring out into the outdoors was science, through child-centered and child-initiated play, the children spontaneously discovered the topic of photosynthesis. By asking opened-ended questions and shared sustained thinking, the children showed eagerness to further their own learning and knowledge, keen to share ideas on what they would like to do, to learn more about the

subject. This in turn then led to other links that can lead into further learning and discussion of not only the life cycle of a plant but also into other topics that branch off into the children learning about the world around them.

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