



(Fledglings Nursery, 2022)

Part 2

My photograph has been taken in Fledglings Nursery where I work full time. The picture is showing a part of our nursery garden which has our growing beds made from old pallets and a bug house made with all natural resources by and with the children. This area allows children to engage with the outside world with scientific and mathematical concepts. The growing beds have pumpkin plants in that the children planted from seed and have watched them grow and develop. The children have taken ownership of these plants watering them and excitedly checking on them every day. Growing the pumpkins from seed the children have explored many concepts. They firstly have explored how things grow and what is needed for them to grow (Scientific) Plants need certain things like we do to grow healthy and develop. The root grows out of the seed and down into the soil. The shoot grows up out of the soil towards the light and water is needed to help it grow. The shoot changes size and shape growing bigger every day (mathematical) Both the environment and weather effect the plant. The plant puts out leaves at the right place and time to catch the sun the plant needs sun and water to make food, and some will open and close flowers with the sunset. Leaves are varied sizes, shapes, and patterns. (mathematical) Many plants stop growing in the autumn and winter, leaves change colour, the plants rest through winter and grows again in spring summer. (Children learn about cause and effect and seasons of the world we live in the science) Pumpkins begins growing as a green colour and change colour from the sun to orange. Plants make seeds inside their flowers when ready they fall to make new plants. Pumpkins grow in various shapes, weight, and sizes they are fascinating for children as no two are the same. (mathematical) They create lots of curiosity within children, to touch feel and explore children see and feel first-hand how they grow. They learn mathematical concepts by holding them talking about which one is heaviest, which one is the biggest "Look this one is smaller it needs more sun and time to grow" "That pumpkin is some green, some orange" "This feels hard and bumpy"

Children water the plants freely. Watering cans are accessible for the children to fill up from the water butt. The water butt collects rainwater through using this the children learn science where the rain comes from and independently fill up the watering cans learning mathematical concepts of water such as water being heavy and filling to the top. Children have said here "mines full to the top" "This is heavy", "I need more water I need a bigger watering can".

Exploring the area with the children can enhance and evoke curiosity. The children can explore the area freely using all their senses. They can smell, hear, and see the plants and minibeasts. Awe leads to wonder and curiosity which brings thinking and questions from the children. Outside they develop a connection with nature and learn first-hand about the mini beasts who live within it. Children love exploring the bug house by lifting the damp logs or stones to see what they can find. As an adult I stand back to let them explore but observe to answer questions they may have or sometimes children are fearful of what they find. In some situations, I explain to them that its ok the minibeast will not hurt you and to be gentle with them and put them back in their home with their family afterwards as some children's reactions are to squash or hurt them. Children explore the soil looking for minibeasts. They learn how the soil is home to many and learn that nature has a place in the environment. Through exploration and discovery children will begin to extend their knowledge and appreciate the world around them. At the bug house we place magnifying glasses and reference bugs to enhance learning with the children who choose to look there. Children have counted them, talked about how many legs they have and discovered some fly some are fast and others are slow and slimy. Visual is central to children's learning (Bilton, 2010) and seeing the insects up close a child can discover and investigate them first hand. The children work together cooperatively when they are heavy and often say what they think they will find. (Mathematical concepts problem solving and Scientific prediction) When we have held the mini beasts, we find they have compared one to another.

One of the many benefits of growing plants is that it attracts minibeasts to the area. Children can see first-hand and up close the natural world around us. The soil has many living organisms the children can observe and explore from worms and woodlice living in the soil to other minibeast who lay eggs within the soil. Through these children learn about life cycles, the environment and how everything around us has a purpose. (science) The pumpkin plant brings lots of insects to the garden. The children have found bees, butterflies, spiders, worms, and woodlice Children really come alive when getting close to nature and the language they use shows this. "Wow look at that big spider ", "Look the butterfly was flying fast and then stopped on the flower" As an adult supporting the learning, I explain to the children that the mini beasts use the flowers for food.

The National Curriculum for Wales (non-maintained settings) states that high quality provision in the early years is vital for children's development. The activities we plan as practitioners must provide children with the opportunities and experiences that develop knowledge and understanding skills that they will be able to use later in life. The curriculum is embedded with a pedagogical framework for practitioners to follow providing children with experiences that promotes, belonging, communication, exploration, physical development, and wellbeing. My photo allows development in all these pathways mentioned.

Belonging – The children have ownership of the outside area. They have planted seeds themselves, observed them growing, watered them and seen first-hand what part they can play in caring and looking after nature and environment. They help with the tidying up of the area and weeding which gives them a sense of achievement and pride.

Communication – When playing and exploring the outdoors children feel confident to use language freely. They communicate with others and learn new vocabulary through the experience. Even a reluctant child has more confidence to communicate outside

Exploration – The children enjoy exploring the garden area searching for bugs, looking how things have grown. Investigating how why and being curious.

Physical development - Outside the children are using and developing many physical skills. From fine and gross motor skills. spatial awareness, balance, hand, and eye coordination. Exploring the areas, digging the soil, planting the seeds, watering the plants, looking under logs and stones they use whole body movements, bending, lifting, balance and control

Wellbeing – Playing outdoors improves a child's wellbeing. Being up close with nature in the fresh air and natural light improves concentration, mood and can reduce stress. The outdoors improves self-esteem and builds confidence and resilience in children.

Enabling adults – The activity benefits children and it offers opportunities to repeat, practice actions which in turn develops their thinking. It supports children developing resilience, independence, and confidence to calculate risk and challenges them. Children are building on independence exploring the garden, watering plants, and building on resilience with the natural world, mini beasts and learning to take care of themselves.

Engaging experiences – This is a hands-on experience which is purposeful to a child encouraging independence and offers risk and challenge. Through watching how plants develop and what they have planted allows for opportunities of success, deep involvement as well as a period of uninterrupted active learning.

The experience offers opportunities of sustained shared thinking between children and adults. It promotes physical activity (exploring, digging, carrying) and encourages children to use simple mathematical language. (Size, shape, weight)

Effective environment – The outside garden creates opportunities of awe and wonder. It evokes curiosity through exploring the environment and allows them to appreciate the natural world surrounding them. The activity allows for opportunities to learn and build on communication and language vocabulary.

Part 4

The importance of outdoor learning for children in the early years has been recognised for many years. It not only allows for physical development and exploration furthermore Bilton et al, (2016) tell us that most children thrive outside in all areas of development and there are many opportunities for mathematical and scientific learning in the outside environment. During outside play there are many opportunities for children that are restricted in the indoor environment. Outdoors children learn first-hand concepts such as the colour of the grass, if something feels heavy, what the rain feels like and what happens to it when it hits the ground. Here children develop knowledge and understanding of the world. The outside is full of Science and Mathematics and helps children make sense of the world around them. Visual is central to children learning and they have lots of access to visual learning outdoors. The importance of this has been shown by Whitebread et al, (2008) who found that children learn better through experience, rather than being taught. They learn from first hand seeing the concepts rather than just being told. This was prominent in the practice of Reggio Emilia. (Thornton and Brunton, 2010). Learning through real life, each child learns through discovery. This was also strongly believed by the theorist Bruner's discovery learning theory in which children construct their own ideas themselves and is a more effective way of learning. The outside has many areas for children to explore and discover for children for this theory.

The outdoors provides lots of opportunities for children to explore the environment which allows them to enter the zone of proximal development (Vygotsky, 1978). It is in this zone of development that children can explore and do things independently unaided. However, Smith and Price, (2012) tell us that with the help of an adult a child can achieve more and through research it has been recognised that having a good start in mathematical understanding allows them to have better progress later in education. He also believed children learn actively and the outside environment provides many opportunities for this active learning.

The adult has a responsibility to provide safe environment for the child to explore which offers opportunities for learning. Maslow's theory of Hierarchy, (date unknown) states that children need these needs met before learning and current brain research has proved this. By allowing children to feel safe and have a sense of belonging allows children to build self-esteem, so they are relaxed and happy to explore freely.

The role of the adult is also to provide this safe, stimulating environment to evoke curiosity and discovery. Loose parts have been recognised in providing numerous opportunities for maths and science learning. From Nicholson's loose parts theory materials collected and provided by adults for the children evoke curiosity, imagination, and discovery which in turn develops mathematical and scientific concepts. These loose parts come with no instructions just allow children to make their own choice of play and are open ended with options. They provide freedom for a child-initiated play and according to Gull et al, (2019) there is evidence that children love to play with loose part variables. This is also agreed by Rahardjo whose research found that they provide children with mathematical scientific thinking, problem solving, critical thinking, through this type of play children make new discoveries. Open ended resources allow children to experiment, take risks and see for themselves. It can nurture children's symbolic thinking and all forms of play can contribute to mathematical learning.

The outdoor provides natural resources which allows children to explore their schematic behaviours. Schemas are important for science and maths learning. White et al, (2021) states that schemas are a scientific process and allow children to transport, line things up, allow for containment and for children to have the opportunity to repeat the process as many times as they would like to

This is a testing theory, repetition helps memory and according to Gano, (2009) Schemas link directly to the development and strengthening cognitive structures of the brain. Repeating play enables children to explore and investigate ideas making new discoveries of mathematical and Scientific concepts. It is therefore important as an adult to allow children the opportunity and time for Schematic play and loose parts can help achieve this.

(Garrick, 2009) tells us that children create their knowledge and understand by exploring the world as with Piaget's constructivist theory the outdoors and schemas support this theory for children and provide those opportunities through experience and reflection. Body movement to allow challenge and movement outdoors allows for big movements that are restricted in the indoors. Time spent outside allow children to make whole body movement and develop gross motor skills. It during this time children learn about vestibular balance and pre preception. Studies have shown that children can be as active in the outside environment in exploring as they would in a structured sports activity. Ball, *Et al* (2008). White et al, (2021) informs us that children gather data from being outside they learn about cause-and-effect, children need to be outside to investigate and discover through science.

Allowing children to explore the natural world and the chance to interact with nature is important to allow them to appreciate the natural world and the surrounding environment. It is important adults recognise the value of these experiences with nature for children. It provides a multi-sensory environment. White (2008) suggests that plants are beneficial for children they include all the senses, improve the environment therefore benefiting their wellbeing. Nature allows for lots of Mathematics and Scientific opportunities. Plants attract wildlife which children are fascinated with they bring awe and wonder. Children enjoy growing plants and watching them grow it brings a deep sense of belonging and responsibility for living things. These interests in the environment and healthy things help set foundations for healthy attitudes for life. Tovey (2012) highlights that enabling environments and outdoor concepts for children have been part of practice since the beginning of Froebel approach many years ago. Froebel believed in engagement with the natural world and experiences that allow children to develop knowledge of the world, to see its beauty and wonder. Through gardening and play outdoors they learn about sustainability and the effect we have on nature and living things. Children need opportunities to learn this sustainability mindset caring for things, Science and maths allows this to happen Bilton, (2020). It is vital as adults we are good role models when in the outside environment, so the children learn from behaviours and respect the world around them.

Wilson, (2018) tells us that before teaching children about climate change, deforestation and how we are damaging the world as adults must help children build early attachments with nature and give them opportunities to discover, explore and begin to understand it. This will in turn lead them to science concepts that everything has a purpose and a life cycle, and that nature has a vital place in our world.

The outdoor environment allows for children to learn to take risks and learn from their mistakes, Gill (2019) and Bilton, (2010) reminds us as adults to manage the risk through a balanced approach and that allowing children to play, explore and experiment they are testing themselves building resilience. Children learn from physical contact with the world through experience, knowledge, and discovery. Through the adult allowing children to learn by themselves they become self-regulatory and learn about risk and capabilities. It is therefore vital practitioners allow for this learning and understand that hazards can be an appropriate part of discovery.

This is vital for child development and agreed by Tovey, (2007) and Waller, et al. (2017) The aim of planning activities is not eliminate risk, but to weigh up the risks and benefits. There can be some risks outside children will hurt themselves, but they will also gain a lot of experience and explore maths and science. Lindon, (2011) tell us there is a difference between hazard and risk. A hazard is something a child cannot usually see whereas a risk is a challenge that children have to work through to develop. Bilton, (2020) highlights that the attitudes and values of the adults can impact on a child's learning outdoors. An adult can think the weather is a hazard when children learn from it. Ouvry, (2001) also confirms that the weather can be a benefit to children and increases knowledge and understanding of the world furthermore balancing safety and challenge. The role of the adult is to ensure appropriate weather clothing is worn and to role model this themselves having a positive outlook on the weather and being out in it. It is also important that adults become co explorers to allow for opportunities for children to self-assess their own risk and learn experience lifelong learning skills. (Bilton and Crook, 2016).

The outdoor environment provides opportunities for children to have sustained shared thinking with peers and adults. It is an intellectual way in which more than one individual work together cooperatively and intellectually to solve a problem (Tovey, 2007). The outside environment provides rich experiences to encourage sustained shared thinking from children observing plants and nature, asking questions, and exploring their own thoughts, concepts, and ideas. It is important to allow children to explore their own ideas and to observe and wait, to see if a child wishes to share something with you. As an adult we tune in to children's interests, respect their choices and invite a child to elaborate if they wish too not hurry them because we think they should. Garrick, (2009) highlights it is important for adults to role model language to extend children's vocabulary therefore scaffolding a child's learning and offering great opportunities for sustained shared thinking. This allows quality interactions with a child that they will remember.

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