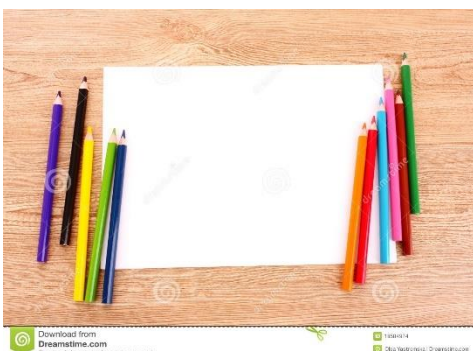


Part 1 - Image



(SuxxesPhoto, 2022).



(Dreamstime, 2022).



(Smith, 2021)



(Letterboxlab, 2022).

Part 2

Feature 1 - Bark marking

Paper and pencils will be provided for the children to sketch or make markings of the nature around them. For example, bark from the trees, leaves on the ground, stones and other interesting objects they may find.

According to Welsh Government (2020), children should be showing curiosity and questioning how things work. Bark marking is a great way for children to develop these skills as they could discuss amongst their peers or practitioners about the different materials they have found and how the different materials show up on the paper. It will also give children opportunities to develop their knowledge on life cycles as some of the leaves of the floor may be at different stages of life. Welsh government (2020) also suggest children should be able to recognise patterns from investigating and be able to discuss their findings. They should also be able to explore properties of materials and choose different materials for a particular use. The activity discussed above will aid children in developing their knowledge and ability to do this by looking at the different patterns of the natural objects they find and what patterns they make when sketched under paper. The activity will also give children opportunities to recognise that plants are living things that grow and change at different stages of their lives and during different seasons.

Welsh Government (2020) state that children should be able to recognise patterns and shapes, explore 2-dimensional and 3-dimensional shapes and their properties in a range of contexts and investigate, collect and record data of things found in their environment. This activity is a great way for children to develop these mathematical concepts. Pacey (2022) believes that mark making develops children's early writing skills and is a sensory and physical activity that can be enjoyed by children of all ages and capabilities. As well as this mark making can also better develop children's mathematical skills such as problem solving, investigating new concepts, the ability to differentiate patterns, shapes and sizes and develops their abilities to record what they see.

Feature 2 – Bug hunting

Magnifying glasses could be provided for the children to explore the area for small insects, bugs and wildlife. Shovels could also be provided for the children to dig in the mud to find more insects that live below the ground and to also learn other scientific and mathematics skills.

Lefkovitz (2022), suggests that digging in the outdoors allows children to understand what is under the ground for example what creatures they may find living further under the soil. They can also develop an understanding of different types of soil, how roots grow and what different animal burrows they may find. According to Dewar (2008), digging outdoors gives children opportunities to understand how soil changes its properties at different levels under the ground for example on top of the ground it may be harder to dig as there are more rocks and the ground is firm, but the further they dig it may become easier for them to dig as the properties of the soil are different. It also allows children to better develop their knowledge and understanding of depth and measurements. This links in with what Welsh Government (2020) state children should be doing in their learning.

This activity will give children the opportunity to learn and develop their knowledge and understanding on the life cycles and habitats of the creatures they may find. This is in line with what the Welsh Government (2020) suggest a child should be learning about as part of the new curriculum. They also state that children should be learning about how different things influence the environment and living things. Children's knowledge and understanding of this can be better developed with open-ended questioning and sustained shared thinking from the practitioners and discussions between the children. Georgina (2019), believes that bug hunting is an excellent opportunity for children to be outside and to learn about the world they live in. As well as this bug hunting is a great way for children to gain a fascination for science. Learning about the insects allows children to better develop their knowledge on what bugs and insects eat, their habitats, life cycles and what other animals may eat them. They do this through questioning and discussions amongst their peers and practitioners.

Feature 3 – Over and Under

In the picture there is a large branch that has fallen from a tree and is on the ground. There are openings along the branch that children could crawl under, there are also sections along the branch that children could climb over. This will give children the opportunity to learn and better develop their knowledge on a range of mathematical and scientific skills such as space by deciding where along the branch they need to be to have enough room to climb over or crawl under. It will also aid their understanding on height when they are climbing and crawling, they may also jump off the branch when they have climbed up onto it. Forces and energy such as gravity when they are climbing. It can also better develop children's balance skills as they could balance along the branch with observation from practitioners. This activity is a great opportunity for children to lead their own play and for practitioners to engage in sustained shared thinking with the children. The activity will also allow children to develop their numeracy skills as they could count how many steps it takes them to climb over or how long the branch is. This is in line with what Welsh Government (2020) state that children should be able to as they believe children should be able to order and sequence numbers and count on and back in step sizes, explore measurements using counting and should be able to explore 3 dimensional shapes and their properties. The scientific skills Welsh Government (2020) suggest a child should be able to do in their learning that link to this activity is investigate different forms of energy and communicate the effect forces have on themselves and on objects. And to also be able to use their own knowledge to predict effects as part of their scientific exploration.

RISK BENEFIT ASSESSMENT

Location / Activity:	Woodlands	Date:	11/03/2022
Assessor:	Danielle Davies	Review date:	27/03/2022

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
Uneven Ground	This will benefit young children's balance. It will also aid children in becoming more aware of their surrounding areas. Aid children in walking up and down slopes and their understanding of forces. It will ensure children have opportunities to become more aware of their bodies and what they can do.	Children may trip or fall. This could cause cuts, bruises or sprains etc.	Children and adults	Discuss with the children that the grounds are uneven and a new experience to them. Play a fun game with the children before they go on the outdoor trip, that resembles what it would be like to walk on uneven grounds such as a 'wibbly wobbly' game. Take first aid kit on the outdoor trip just in case there is an accident. Ensure children and adults are wearing appropriate shoes.	L

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
Exploring the area, exploring things such as trees, flowers, fallen leaves, insects and bugs.	Children can learn about living things, their habitats and life cycles. Children can freely explore the surroundings and learn about the outdoors and other living things It will also benefit children's physical development through movements such as stretching, bending and crouching. It will also give children opportunities to learn about the world around them.	Low level branches that could cause cuts and scrapes or eye injuries. Bites and stings from bugs and insects. Some children may have allergies to stings. There could be harmful plants and berries on plants, trees or bushes. Children may wander off and get lost. Children may pick up sharp objects or rubbish. There may be strangers or dogs in the area. Children may get wet or muddy.	Children and adults	Children will be told these surroundings may be new experiences for them and what things to watch out for. Adults could be at the areas where the low-level branches are to guide children to lift them or crouch under. Children should be told what areas they are allowed in and what areas they should not pass. There should also be an adult at the areas where the children are not allowed to go. Children's medical history should be documented and brought on the trip in case there is any children with allergies and their medical supplies should also be brought on the trip. A first aid kit should be brought with the adults to ensure that if a child is stung or bitten by insects that there are creams to apply to soothe the area. Children will be told the 'Golden Rules' that they do not put anything in their mouths. Before the trip a member of staff should check the area to ensure there are no sharp objects and rubbish on the ground. And that there is no dog excrement anywhere and if there is it should be removed properly before the children attend the area. Appropriate wet weather gear should be worn by the children and adults. Such as wellies, trainers, warm and waterproof clothing.	L

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
Tree climbing	It will give children opportunities to become aware of what they are capable of doing. It will benefit children's understanding of height. It will benefit children's learning on tree's life cycles and seasonal changes.	Children could fall, causing cuts, bruises, sprains or breaks. There may be sharp pieces of bark on the trees.	Children	Children will be told to be careful when choosing which trees to climb as there may be sharp pieces of bark or branches that are not safe. There will also be an adult present to observe children climbing the trees and to guide them if they believe it is not a safe tree to climb. Appropriate footwear should be worn to allow the children to climb.	L

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
Exploring the large branch on the floor	It will give children opportunities to learn about how branches fall from the trees and what happens to the branches when they have been on the ground for some time. It will give children opportunities to learn about over and under. Children will be able to see what types of bugs and insects live under and around the fallen branch.	There may be rough or sharp areas of the fallen branch, causing splinters or scrapes. The branch may be slippery, causing the children to fall, causing cuts and scrapes. Children may get stung or bitten by the insects and bugs.	Children and adults	An adult will be with the children always observing when they are playing on or around this fallen branch. Appropriate footwear should be worn by adults and children to ensure they don't slip if the branch is slippery. A first aid kit will be brought on the trip in case there are any injuries.	L

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
Bark marking/ leaf marking	This will benefit children's understanding of the different textures and properties that trees, and leaves have. It will also benefit children's understanding of life cycles and seasonal changes.	Children may get splinters or scrapes from the trees. Children may pick up sharp objects when searching for leaves on the ground.	Children and adults	A check of the area should be carried out ahead of the trip to ensure there are no sharp objects or rubbish on the ground. Children will be warned that the area may be a new experience to them. A first aid kit will be brought on the trip to ensure splinters and scrapes can be dealt with. Adults will also be observing the children while they are carrying out this activity.	L

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
Bug hunting	This activity will benefit children's knowledge and understanding on life cycles and habitats of bugs and insects. It will also benefit children's knowledge of depth when they are digging. Hand-eye coordination will be enhanced. Fine and gross motor skills will also be enhanced as they children will be digging, bending and stretching.	Injuries may occur from the gardening tools. For example, the children may play inappropriately with the tools. The tools may have sharp, pointy edges. Stings and bites may occur from the insects and bugs. Some children may have allergies.	Children and adults	Children will be told that this may be a new experience to them and that if they are unsure there will be adults there to help them if needed. Children will be guided to be sensible and safe when using the gardening tools and to not throw them around. Adults will be supervising the activity to ensure the children are using the tools safely. Frist aid kit will be brought on the trip in case of any bites and stings. Adults should know of any allergies and medications should be brought on the trip.	L

Part 4

Gallenstein (2015) suggest that active, creative and intellectual engagement and exploration in the environment is essential for children to develop their knowledge and understanding in Science and Mathematics Tovey (2020) and Tovey (No date) suggests that Froebel (1782-1852) believed that children learn best through free play as in play children can construct their own understanding of the world or topic with direct hands-on experiences. However, he also stated that the adult plays a major role in this by sensitively guiding children to achieve and utilise this freedom in a respectful way. Green (2013) states that although Froebel believed self-directed play is important on its own it is not enough. Children need to be aware of their own learning, so they learn in a deeper more self-reflective way. Today this is known as metacognition and refers to thinking about your own thinking. Practitioners can support this by using words such as think, remember, guess, consider, wonder and imagine in everyday language children will then learn to talk and think in this way.

According to Oldridge (2019) and Rymanowicz (2015) for children to learn in a child-led and free play environment practitioners must react to the children's ideas to help them better develop and evaluate their ideas. Having these types of discussions with children is known as sustained shared thinking and is a great way for practitioners to ensure that the children are learning in a child-led way.

Sustained shared thinking is an excellent way of engaging in discussions with children and a way to keep conversations flowing through appropriate open-ended questions at the right time (Gray and Macblain, 2015, p.184. and Early Education, 2022). Siraj-Blatchford, *et al.* (2003), state that sustained shared thinking is when an adult and a child work together in discussion to solve problems, evaluate activities, expand a narrative and to clarify concepts. However, Siraj-Blatchford, *et al.* (2003), also states that sustained shared thinking is not seen in all settings and was seen more in excellent practice settings than it was in good practice settings. Brodie (2022), states that sustained shared thinking occurs when two or more individuals work together intellectually. Often this happens between an adult and a child but can occur between children if one child is a 'more knowledgeable other' (Vygotsky, 1978, quoted in Brodie, 2022).

In the Froebelian approach to learning the outdoors and garden areas are a place where children can learn and grow at their own speed surrounded by enabling adults that ensure their learning is child-led (Tovey, 2017). According to Arlemalm-hagser and Elliott (2021), Froebel emphasized the importance of outdoor play and children's learning, he believed it gave children endless opportunities to learn through gardening, exploration, play, nature studies and many more forms. It is also crucial for practitioners to interact with the children to scaffold their learning. Alongside this the practitioner must have a clear knowledge and understanding of the affordances and provocations required to structure the outdoor areas to enable children to learn a child centred way.

Cremin, *et al.* (2015) suggest that playful hands-on experiences give children the opportunity to make connections between science and their environments. Weinstein (2015) believes that with forest schools becoming more popular recently across schools and early years settings in the United Kingdom there are many more opportunities for children to experience the awe and wonder that nature provides. Tinney (2013), states that until recently discussion surrounding early childhood mainly focused on the benefits the outdoor provides to the child, however it is vital to understand that outdoor experiences also benefit the natural environment and promotes caring instincts in young children towards nature and other individuals. According to Tovey (2017), Froebel also believed this to be true and said something very similar, 'The child who has cared for another living thing is more easily led to care for his own life.'

Edington (2014) discusses the importance that practitioners have in supporting children's outdoor learning and believes practitioners are powerful role models to the children. Therefore, Boys and Girls should see men and women engaging in all outdoor activities for example women should be seen playing football, running and playing in the mud and men should be seen carefully handling bugs and creatures or smelling and admiring beautiful flowers.

In the Reggio Emilia approach to teaching in early year's children are seen as strong, independent and intelligent individuals who should be in charge of their own learning and given every opportunity to reach their full potential. A key role for practitioners in a Reggio Emilia approach setting is to document the children's

learning, this is done in written form and with photographs. This gives structure to the theory and practice used and allows practitioners, parents and children to visibly see their progress and to see how and what they have been learning. By simply observing the children and not directing them allows the children to explore and experiment in their own way. It also strengthens children's problem-solving skills as they can make mistakes and find solutions (Day Nurseries, 2022 and Thescotcollege, 2017). A key principle in the Reggio Emilia approach is 'the one hundred languages' this refers to the many different ways children can express themselves, their thoughts and ideas. This concept was discovered through observing children and seeing their excitement communicating with others about their own personal developments surrounding the skills and knowledge they had learned. Practitioners explored the possibility of children being able to express themselves and communicate through many different forms such as dancing, playing, questioning, singing, imagining, listening, laughing, crying and many more forms. From this Malaguzzi a co-founder of the Reggio Emilia approach formed the concept of the one hundred languages (MAeducation, 2007 and myteachingcupboard, no date).

Worth (2020) discusses a concern for the quality of science education. However, although there have been many changes to science education in recent years there are still concerns surrounding its quality. Alongside this Worth (2020) suggests that the practitioner's role is crucial to children's science education, and they should have an in-depth knowledge of children, teaching and learning and of scientific pedagogies. A study carried out by Cremin, et al. (2015) to determine the best approaches to teaching and learning science in early years education discovered that in playful, motivating environments that can be freely explored children were more engaged with the resources, more curious and could collaborate to solve problems. Their research showed that with adults that were enabling, and engaging children had the opportunities to become little scientists.

According to Ula and Kiraz (2014), Piaget also referred to children as little scientists. Piaget's theoretical framework suggests that cognitive development has four stages, sensorimotor (0-2 years of age), pre-operational (2-7 years of age), concrete operations (7-11 years of age) and abstract operations (11 years and over). Mcleod (2020) states that a child cannot skip a stage as their intelligence grows as they grow

older. However, how and when they reach these stages can depend on their home lives, environmental factors and their readiness and ability. They can only progress through these stages as they develop and evaluate their own idea of the world.

During the sensorimotor stage Piaget believed children learn through exploring and they live in the present and do not have a true image of the world. During the pre-operational stage children begin to learn about the world through language and intellectual imagery. Exploration and discussions during this stage will allow children to become more curious about the world. In the concrete stage children can think more logically and will begin to discover things like materials may change in appearance, but their original properties remain the same. This stage has strong links to scientific learning (Mcleod 2020).

According to Aubrey and Riley (2019) Bruner believed that teaching should be more than just the presentation of information and explanations it should give children the opportunity to experience excitement about discovery. For this to happen he believed that practitioners should be the facilitator and motivator for learning allowing children to explore and discover. Bruner (1960) developed the Spiral curriculum where he believed children should be introduced to a topic or subject and then it should be revisited later to reinforce the children's knowledge and understanding of the topic. By doing this he believed that the depth of understanding and confidence in the topic is strengthened.

According to Gallenstein (2005) Science and Mathematics should work together in a cross-curricular approach as Mathematics is a key element in communication for scientists and provides a constructive way for children to process and share their findings. Welsh Government (2020), suggest that curiosity and self-discovery is essential to understanding and predicting scientific concepts. Children should be knowledgeable about the world and all its living things. And should know all about forces and energy and why they behave the way they do. Forces and energy are best described as the behaviours of the smallest objects to the way the planet and stars behave and why. However, knowledge in mathematics is key to children understanding these scientific concepts. Welsh Government (2020) believe that children require knowledge and understanding in geometry for example sizes and properties, shapes and spatial awareness and with this knowledge children have a

better opportunity of gaining a more in-depth knowledge of scientific concepts such as forces and energy. Alongside this knowledge Welsh Government (2020) also suggest that in mathematics, children should have knowledge surrounding number and quantities, understand algebra and all it relates to and be capable of solving problems.

According to Gov.UK (2012) Ofsted report suggested that Science is not taught in primary school classrooms daily and is more often that not only set up as a daily activity when the headteacher knows Ofsted is making a visit. Gov.UK (2021) Ofsted report stated that 2 hours of learning per week is required in science to cover the recommended National curriculum content. However, the report noted that the average in most schools was just 1 hour and 24 minutes a week. So, for the children to be gaining enough depth of understanding and knowledge in the subject teachers and are required to make every minute of the lesson count. Taking the Ofsted report into consideration it is quite clear that teachers may not have the sufficient timings for their lessons to be full of discovery and curiosity as the Welsh Government (2020) new curriculum suggests they should be.

Montessori believed that children are born with a mathematical mind (Issacs, 2022). Lipp (2022) agrees with this but also states that mathematics is a part of a child's everyday life and is used for several simple things they say and do, for example telling the time, saying how old they are or how big they are and so on. However, Clements and Sarama (2020) suggest there are many fears when it comes to mathematics from children and sometimes even practitioners. However, practitioners who use the best research and excellent practice to teach, design their environments and plan activities children will become less fearful and more eager to learn mathematics.

Loose parts are natural or artificial objects that can be added to play to encourage creativity, exploration, problem solving and many more skills (Louv, 2022). According to Nicholson (No date), loose parts are open-ended materials that can range from natural objects such as rocks, sticks, pinecones, shells and pebbles, artificial objects such as pipes, rope, boxes, crates and buckets. However, Tucker (2005) believes the possibilities are endless with natural resources whereas with artificial resources the possibilities are limited. Lipp (2022) suggests when loose parts are added to play

the opportunities for imaginary play are endless and children are encouraged to problem solve and make decisions. It can also bring adventure and excitement to their learning as they discover the different possibilities these materials can bring to their play. Tucker (2005) believes that well chosen resources are full of potential for creativity and cross-curricular opportunities providing meaningful links between mathematics, science, language and many more subjects.

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