



(The Empowered Educator,2017).

The Early year's foundation stage curriculum (2008) emphasizes how important outdoor play is for early childhood development and learning, outdoor play can enhance a child's sense of wellbeing and can promote healthy and active learning. Allowing children to explore the outdoors can make them keen to learn about the environment they live in and can allow them to become free and independent learners, outdoor play can promote problem-solving skills, support brain development and allow children to use their imagination when playing in nature (Council for Learning Outside the Classroom,2010).

Playing in an outdoor environment has huge benefits for young children's learning and development. It is great for young children's physical development and, while playing outside, children also learn how to get on with others and manage their feelings. Children also tend to develop a more positive attitude to learning when they are outdoors, they are usually more active, absorbed, and involved, and they see a purpose in what they are doing (Galway child, no date).

Allowing children to explore outdoors is a wonderful tool to help them develop many skills including mathematical and scientific development, as shown in the picture

above the landscape has a variety of different learning sources that will support this vital development for children.

Following the UNCRC (1990) which suggests that 'children have the right to play' especially when children part take in outdoor play it promotes their mental, emotional, social, and physical wellbeing and health and through play children will develop flexibility and resilience that will contribute to emotional and physical wellbeing that will help with any future development (Play Wales,2022).

In the above picture, three main features stand out the most and are supported by the curriculum for Wales (2022) and can be vital in supporting early development in both mathematics and science. These features include the weighing scales that are placed in the bottom right corner of the photograph by having weighing scales as part of a child's outdoor play experience this will introduce them to more fun and hands-on way of learning mathematical skills.

Having loose parts available for children to use can support children in learning basic mathematical skills. An activity that they can part take to support this development is by showing the children the loose parts and having them place these parts on the weighing scales to see how much they can weigh, this can introduce children to basic numeracy skills such as counting and, measuring and practitioners can teach children basic keywords, for example, more or less and add and subtract. Alongside mathematics, children can also learn about gravity through weighing scales and see how different loose parts can be placed on the weighing scales making the scales go up and down or by finding the right materials to make the weighing scales balance at an equal level (Skinner,2007).

Curriculum for Wales (2022) highlights that in early childhood development play forms an important part throughout these key stages of learning and has an impact on how children will develop key life skills which include numeracy, exploring different ideas of play, and building relationships with people. Another activity that links with the Curriculum of Wales (2022) is having an obstacle course featured in an outdoor setting this obstacle course can consist of tires, planks, and tree stumps.

Having an obstacle course in an outdoor setting can be a helpful tool and can help support practitioners in introducing children to problem-solving. This can happen by having the children work as a group and allowing them to think about how they are going to complete the obstacle course without falling, it also allows them to learn about balance and will encourage teamwork which will help them with future learning.

The final activity that will assist in supporting a child's development of mathematical and scientific skills is allowing children to explore with water. Using a water tray will introduce children to a variety of different sources. Water play is an amazing source to add into an early year's curriculum as this helps a child develop not only mathematical and scientific skills but can also help with a child's hand coordination, fine motor skills and introduce children to explore the different senses of the world (Busy Bee,2020).

Allowing children to play with water is an excellent way to introduce early mathematical skills to early years pupils, when children learn these new skills through play it allows them to familiarize themselves with mathematics before they start school.

An example of an activity that can be introduced to children and will support early mathematical and scientific development that is highlighted by curriculum of Wales (2022) is by having a water tray like the one that is shown in the photograph above and allowing children to fill up different sized containers. Allowing the children to fill these containers up with water will teach the children about capacity and volume and introduced them to important keywords such as more or less and full or empty.

Teaching children these keywords at an early age will help them in future development and having a fun hands-on activity for early years students to part take in will allow them to become more independent with their learning and will help them associate mathematics and science as fun subjects and will allow them to become keen to learn new skills shortly (Mcilroy,2022).

Water is a fun and simple way for children to become fascinated with learning simple scientific elements at a young age, from just having a water tray and some loose objects children can learn all aspects of science which include:

Physics- by adding the following activity to an early years curriculum it can introduce children to the world of physics and by allowing children to pick different objects to place into the water this will show children how different objects may sink or float depending on the weight of the object, for example, a rock or feather or even showing the children how a boat and float across the water, having these fun objects for children to experiment with can make them keen to learn more about the different types of scientific elements that exist learning (Petagon, no date).

Chemistry -Children love bubbles and are fascinated by these little balls of wonders that pop allow children to watch the bubbles for from washing up liquid and water will lead to children asking those important questions for example why do bubbles form and why are we not allowed to catch them without them popping early years students might not grasp the concept of the science behind making bubbles but learning through outdoor play is a good way to introduce science and can improve their learning in future studies of science (Nicholson,2019)

Biology – Water can bring an endless amount of fun to an early years curriculum and by having early years students fill up different containers with water and allowing them to look after different plants that are in an outdoor setting can not only teach children about volume but will allow children to learn about photosynthesis and how a flower can grow from a little seed as long as it is nurtured in the right way. This simple exercise can allow practitioners to teach children about nature and allow children to become independent when being allowed to look after and care for different flowers around the garden (Gross,2012).

Curriculum of Wales (2019) highlights that scientific development should not be overseen when planning early years curriculum and that children will become ambitious and ready to learn throughout their education if science is introduced at a young age. By introducing children to fun activities just like the ones discussed previously that are shown in the above photograph which relate to the curriculum of Wales and that will cover both maths and all three components that make up science which are biology, chemistry and physics and by allowing children to explore in an

outdoor setting this will allow children to become keen to learn these skills that will support them in future education.

RISK-BENEFIT ASSESSMENT

Location / Activity:	Outdoor Garden	Date:	10/03/2022
Assessor:	Laura Frayne	Review date:	10/09/2022

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

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

ACTIVITY	How will young people BENEFIT from this activity?	Hazards and risks	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING : L/M/H
Water tray sinking and floating	Children will benefit from this activity by learning key science terms and being introduced to different objects and showing children how some objects can float, and some objects may sink depending on the different weights of the objects.	Water is always a risk, having loose objects	Children	Practitioners should make sure there are non-slip mats underneath water tray so if any water does fall onto the floor no children are at risk of slipping and hurting themselves.	L
Weighing different loose parts	This activity will introduce children to the different variety of loose parts and will introduce children to not only gravity but also the different types of weights that exist.	Children may swallow some of the small objects and this may lead to them choking	Children	This exercise will be supervised at all times by a practitioner making sure that no loose objects will be used without the supervisor of a practitioner.	M

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
Making an obstacle course- Allowing children to use different objects and work as a team to build a fun adventure course	Children will learn how to work as a team and learn how to build relationships with other children and have the support of their practitioner to assist with building the obstacle course, the children will learn about gravity from stacking different planks of woods and being able to climb on top of them and the children will also learn how to follow different instructions.	Children could lift something heavy, or something could fall if it is not properly secured	Children and practitioner	Practitioners need to support the children with any lifting and when doing this practitioners must follow proper manual handling protocol.	L
Will it dissolve- this activity will introduce children to different types of ingredients and textures the ingredients will include water, salt, vitamin tablets, and flour.	Children will learn about solubility and will use different substances and see which ones will dissolve in the water this is the perfect opportunity for practitioners to ask children which substance they think will dissolve	Children swallowing the ingredients or children might be allergic to the solutions being used throughout the activity.	The children.	When planning this activity, a full health and safety check will be complete, practitioners will check for any allergies before allowing the children to take part in this activity and if children have allergies an alternative ingredient will be used, and this activity will have adult supervision throughout.	M

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
Block Play	Block play will help develop both mathematical and scientific skills, it offers open-ended creative play it will allow children to learn about different shapes and sizes, and teach them how to build a tower by stacking each block.	Children might put the blocks in their mouths.	The children	Practitioners will be observing the whole activity and making sure that the children are correctly using the blocks.	L
What is the time Mr. Wolf- This classic game is the perfect opportunity for children to learn how to count in a fun interactive way.	Children will learn different numeracy skills by asking the wolf what the time is and then taking as many steps as the wolf says this is a good opportunity for the practitioners to interact with the children and a good way for children to work as a team to win the game.	Children might get over-excited when running and may hurt themselves or run into each other.	The children	When planning this activity practitioners should think of a sensible number of children to participate in the game reducing the risk of any injuries.	L

Foundation phase framework (2008) highlights that child-led play is important when children are in these key stages of development however children must see that their practitioners show enthusiasm when it comes to learning about science and mathematical skills outdoors, it is important for adults to put as much effort into outdoor play when planning resources as they do with indoor play.

Adults supporting a child when they are part-taking in outdoor play is crucial for enhancing a child's learning but also through an adult observing a child, they can get to know a child's likes and dislikes and an adult needs to realize that they are not there to take over a child's activity but are there as a support system. If an adult role-plays with the child when they are playing this will show the child that the adult is keen to invest their time into the child and also respect the particular activity the child is playing with (Aurora Early Education,2020).

Foundation phase framework (2018) highlights the importance of play-based learning for children aged three to seven years of age, this framework also suggests that there should be a balance of child-led and practitioner-led activities within an indoor and an outdoor environment this means that early years practitioners should allow time to support children when taking part in these activities.

Adult's support towards children starts from proper planning although as mentioned above child-led play is important it still needs support from their practitioners, this is why planning activities in advance will help with child development for example if an outdoor area has mud kitchen a practitioner can support this by setting up different loose parts in the mud kitchen these could include water, mud, spoons, bowls, and sand by having these loose parts set up this can allow the children to experiment with new tools that they may not have seen before and when this activity is taking place this will be the perfect opportunity for practitioners to simply observe the children and wait for them to ask practitioners different questions about this new way of learning (Maynard,2013).

Montessori (1964) suggests that practitioners admire the environments they create and that they can think of and remember it, but children absorb the environment they play in and the objects they see are not just things they remember but they form part of a child's soul that is why practitioners should plan with activities and create an

environment for children to play in that they will never forget (Carmel Montessori, no date).

When practitioners are planning an environment to support the development of scientific and mathematic skills it is important for the practitioners to view and observe the outdoor setting from a child's point of view and how it will captivate them and make them eager to play and learn an outdoor area needs to be inviting and just like the picture above it is full of colorful eye-catching that will provide endless hours of fulfilled learning as suggested by (my space, no date).

Rekers and Waters (2019) highlight that if practitioners allow children to explore the outdoor world and allow them to engage in different activities this can lead to strong bonds between practitioners and their students. The reason for this is because by allowing children to explore independently and adults just standing and observing will show the children that the practitioner respects the child's interests and supports any playful activities they wish to part take in without stepping in, causing interruption to their game. Allowing this freedom will enhance a child's self-awareness, connection to the outdoor world and help them tackle any physical challenges they might bump into.

One key part of practitioners supporting a child's development is to provide a stimulating outdoor environment which consists of exciting areas of provisions, this means identifying the endless opportunities for maths to be learned and enhancing the unique qualities of an outdoor setting such as sorting natural objects, moving different types of objects together or measuring large objects using different measuring techniques (Waller,2011).

Practitioners need to keep in mind that their role outdoors should include engaging with children as a co-player and whatever the weather practitioners need to introduce children to the world that awaits them outside. Practitioners can support mathematical development by asking an open-ended question and using specific mathematical terms for example how many, how heavy, and adding and taking away if practitioner introduces these terms to children at a young age these will get embedded into their brains and help them in future mathematical studies and by allowing children to learn maths in a bigger, messier and noisier natural environment will allow children to associate maths as a fun and exciting subject (Dancer,2022).

Montessori (1964) suggested that play is children's work, but where in this play should an adult be placed well the answer is that a child's play is not at full quality without the nurturing of an adult (Rymanowicz,2015).

There are a variety of different ways an adult can support children when they are playing. Practitioners need to keep in mind that their presence is the most important support they can offer a child as long as a child can see the adult that is looking after them and as long as a child knows that they can quickly find their practitioners when needing support, they will feel that they are safe enough to explore and play independently without interruption (Eyc,2016).

As a practitioner they need to observe and wait to see what imaginative and creative things a child will part take in when playing, observation is a key tool for a practitioner to use this creates a strong connection between the child and adult and can show the child support without any physical interaction from a practitioner and from just simply stepping back and observe this will show a child that an adult can allow a child to freely play building a trusting relationship between a practitioner and child (Caro,2012).

Learning in a natural environment can supply different types of materials, both fixed and loose which can introduce children to learn science through play, practitioners introducing children to the outdoor world is a fantastic way to show children how they can learn science through a fun hands-on learning experience, having children learn outdoors can allow children to become more confident with the different materials from an outdoor environment having the initial support from their practitioner can make all the difference with a child's confidence in future outdoor learning for example if a child seems skeptical about playing outdoors this is where the practitioner can step in and give help to show the children how wonderful the world of nature is (Campbella and Speldewindea,2020).

Vygotsky (1978) suggested that through a model of social learning children will develop at a higher-order function and this model of social learning suggests that through frequency, quality, and timing of interactions between both children and practitioners this can help support a child developing at a higher-order of function and once achieved will set up a child for a lifetime of learning.

The role of an adult is to support the children in getting any task or activity completed and, having this support from an adult will allow the children to gradually move towards finding the confidence to complete tasks in future learning without the support of an adult (First discoveries,2022).

The role of the adult starts by setting up the learning environment for the children and laying out the proper resources to help with development. Nicholson (1971) suggests that loose parts in an outdoor environment such as shapes and materials can empower a child to use their imagination and become more creative when learning new skills (Reading Play, No date).

As shown in the photo above there are a variety of different loose parts that an adult has set up to create a fun learning environment for children these include tyres, small wooden pieces, plastic tubs and leaves having these resources available in a play area will allow the children to use the loose parts as they choose as often children would rather play with different materials that they are not so familiarized with rather than expensive playground equipment this is why practitioners must choose the right resources when setting up an outdoor activity (Play Scotland, No Date).

An example of an activity that will help adults support mathematical and scientific development is by having the children fill up containers with loose parts such as leaves, stones and having the children weigh these parts on the weighing scales allowing the children to be familiarized with the meaning of what is empty and what is full (Early Learning Ideas, No Date).

Using the weighing scales to see what loose part is the heaviest, heavier, or lightest this particular activity will need an adult to support the children when reading the measurements on the scales or showing the children how to use the weighing scales at first as some children might not know how to use this particular item it is also important for the adult to observe the children and answer any questions they may have and also support the children with carrying any heavier items as younger children may not be able to carry all resources themselves (Devlin,2020).

Piaget (1896) suggested that child play is important for early years development Piaget's theory was known as the constructivist learning theory and he felt that children

develop more when they are in charge of their learning in an outdoor environment and not by being sat indoors in a classroom.

Foundation phase Framework (2018) has been influenced by Piaget's constructivist theory as they agree that children develop and learn more through active learning and exploring the different environments, especially more challenging environments where children need to use their brains to think for example if they see a steep hill how they are going to climb this.

Forest schools are a perfect way to put Piaget's theory into practice as through forest school children take learning into their own hands and will gain experience when exploring nature forest schools allow children to explore and learn as individuals and not through a practitioner and by allowing children to become constructivist learners this will allow them to get a sense of the world through activities that they invent themselves (Gibson,2021).

A vast majority of early years settings use forest school once a week as a way in introducing children to the world of outdoors, forest school is based on the Scandinavian model of outdoor play this is where young children will spend a large chunk of their school day outdoors throughout the year no matter what the weather conditions rain or shine (Cutting and McCree,2018).

When children engage in practical activities that allow them to build self-esteem and self-confidence in an outdoor environment children will also learn how to communicate more freely outdoors than in an indoor setting, having forest school as part of an early year's curriculum is a way in which practitioners can support children in developing their confidence through using hands-on learning activities that take place in a woodland environment (Forest Schools,2019).

Frobel (1852) suggested that children learn best through problem-solving and self-activity and having a Froebelian garden as part of an early year's curriculum will allow practitioners to introduce children to the wonders of nature by offering a large space that includes trees, grass, sand, and water this garden's also allowed children to have hands-on experience when learning about nature with the support of an adult.

As shown in the photograph above this garden links with a Froebelian garden as it has been carefully thought out by an adult and designed especially to introduce children with opportunities to learn about different scientific factors like gravity, heights, and speed for example when sliding down the slide shown in the picture or walking on the stepping stones all these small factors thought out by an adult when planning these outdoor activities will support children and allow them to learn new skills at an early age (Tovey, No Date).

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