

Part 1

Louise Oliver ECEY5005



Earlyyearsstaffroom.com (Accessed 12/09/22)

Part 2

The picture in part 1 consists of a wide range of opportunities for young children to explore and experiment. It links in well with scientific and mathematical concepts, which will help children to develop an understanding about mathematics and science in the outdoor learning environment. The framework for children's learning for 5- to 7-year-olds in Wales states the foundation phase environment should promote discovery and independence on using the outdoor environment as a resource for children's learning. (Gov.Wales 2022).



Earlyyearsstaffroom.com (Accessed 12/09/22)

This image consists of sand on the floor, a small wooden table, tree trunks for seats, frying pans, metal bowls, a metal jug and wooden and plastic utensils.

The things that the children could do to link in with math's and science are:

Counting- the total amount of pans, spoons, tree trunks, how many legs on the table, sorting them into size for example big and small, estimating.

Size-sorting the spoons into size and length, big and small, sorting by color, number. By writing numbers on the tree trunks, pans, table and utensils, to see how many there are on total of each item and then counting them altogether to see how many items there are in total.

Weight-the weight of the jug empty compared to the weight of it full,

Measuring-the shape of the length and width of table, tree trunks, the pans, the spoons, how much water the metal jug holds, measuring the circumference of the tree trunks

Shape-compare the shape of the square table, the oval tree trunks, the round pans, the jug and the utensils.

Time-Using a timer for completing tasks.

The things that the children could do to link in with science are:

Materials-look and compare at the natural materials and discuss with the children how they think they are made.

Whilst observing the children playing and exploring in the chosen outdoor learning environment, child A said to child B what do you think will happen if we sit on the tree trunks. Child B replied let's go and find out. They went over to the tree trunks and sat down and one said to the other It feels rough and the other child said it is hard when you sit down and it's not like sitting on a chair, as it is uneven and I feel like I am going to fall off. Child A said to child B the tree trunk that you are sitting is on bigger than the one that I am sitting on, let's measure them both using our hands to see which is the biggest and which is the smallest. One child put their arms around the tree trunk and said my arms don't fit all the way around and said to the other child you try it to see if your arms fit around, it and we can find out who has got the longest arms. Whilst observing the children doing this activity, I noticed that they were being ambitious, capable learners by asking questions and problem-solving and also finding out about different materials which links with science and math's in the curriculum.

Child A said to child B how many legs do you think are on the table, Child B replied saying I think there are 5, child A said and I think there are 4, shall we count them to see which one of us is right. Then child A said to child B I wonder what material the table is made out of, shall we go and ask miss .Another child said, I wonder how many slats are on the table, lets count them to see .The other child said I think there 10,and the other child replied saying I can count up to 15 and that is more than 10.Whilst child A and child B were sitting around the table they were chatting about different shapes and child A said I know the shape of this table it is square and drew the shape of a square using their hands. This links into the curriculum by the children estimating and problem solving, which links into math' and the curriculum. They are also expressing their thoughts and opinions, which means they are ready to learn throughout their lives.

Whilst the children were sitting around the table, they were chatting about the pans. Child A said to child B let's see who can find the biggest frying pan the fastest. Another child said, ready, steady, go. Child B said I win because I was the fastest. Child A then said to child B I know what we can do. We can put all of the pans in one to see if they fit from biggest to smallest because they are all different shapes and sizes. The children counted the pans as they were putting them in and said there are 6 pans altogether. The children also noticed that the handle of the pan was made of wood and that it was a different material to the metal. The children then decided they wanted to make something using the frying pans. They put sand in the pan and then added some water from the jug and said oh look the sand is wet and a different color just because we added water and it feels different to dry sand. This activity links in with science and math's because the children sorted into shape and size and also problem solving and experimenting by using water to create different textures and materials.

Child A then said to child B, the jug feels heavy with water in it and child B replied pour the water out to see if it feels the same or if it feels lighter because it is empty. Child A emptied the water out and said it feels lighter and look I can now lift it up over my head, which I wouldn't have been able to if it was full, because it would have been too heavy. The children doing this activity includes weighing and measuring which links into math's in the curriculum.

Child A said to child B I think that the jug is metal and child B said I think it is plastic. Child A said how do you think we can find out which one it is. Child B said we could look around the mud kitchen to see if there are any other materials the same and we can match the metal to the metal and the plastic to the plastic. Child A said I think it is metal because when you tap it, it makes a different sound to the plastic one when you tap that one. In this activity the child engaged, expressing their opinions and problem solving, which links into science and math's in the curriculum.

Child A said to child B what do you think of this idea. We could practice writing our numbers in the sand and doing adding up and taking away or we could draw boxes on the floor using and write the numbers in to play hopscotch. Child B replied I think we should play hopscotch. This links into curriculum by the children being creative learners, expressing what they would like to do which will help them learn throughout their lives.

Child A said to the other children I have got a really good idea. I know what we could with the pans, utensils, the tree trunks, the table and the jug, we could make a band and to show it the rest of our friends and teachers. We could sort out which of us are going to use what and count the utensils altogether to make sure there are enough for us all to have something to play as an instrument. One of the children said I would like the wooden spoons because I would like to use the tree trunks as drums and the wooden spoons as the drumsticks because they are long. One of the children replied by saying measure them because there are different sizes. This activity links to curriculum using math's and science by the children using counting skills. sharing things equally and making sure there is enough for everyone and using a variety of materials. This shows the children are capable learners.

Part 3

RISK BENEFIT ASSESSMENT

	Mud kitchen	Date:	September 5 th 2022
Assessor:	Louise Oliver	Review date:	March 5 th 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.

Experience exploring outdoor space in photograph	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
Mud kitchen	Creativity Messy play Imagination Social skills Team work. Health benefits by being outside. Giving the children the opportunity of freedom to express themselves and to be more active which will help build up their immune system. Good for sensory play.	Eating mud and sand. Mud and sand in eyes.	All	Explain to the children what activity we are going to be doing and talk to them about what behaviour is expected whilst in that environment. First aid to be administered by a qualified first aider if necessary. Staff to supervise activity.	L
Tree trunks	Good for balance. Somewhere to sit. Explore different textures. Social skills when sitting and chatting.	Uneven tree trunks. Fall and hurt themselves causing cuts, bruises and scratches. Splinters.	All	Get the children to practice sitting on uneven surfaces beforehand. Wear suitable clothing and footwear and gloves to protect hands from splinters. Take the children beforehand to show them the area where they will be doing the activity.	L

Experience exploring outdoor space in photograph	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
Table	Teaching them to sit for meals at home and at school. Social skills.	They could trip and fall over the legs of the and cut themselves. Corners could be sharp.	Children.	Make sure the table is securely into the ground. Check for any sharp edges or broken word and remove it. Appropriate footwear. Children to wear gloves to protect their hands.	L
Sand	Different textures and materials. Using wet sand to mould into different shapes. Using it to form numbers.	If wet it could be slippery and they could fall and hurt themselves. Sand in eyes. Eating sand.	All	Appropriate footwear. First aid to be administered by a qualified first aider if necessary. Staff to supervise. Water to drink if needed.	L

Experience exploring outdoor space in photograph	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
Collecting materials	Children can explore a variety of materials and choose which ones they want to use. It can support maths by children experiencing items that could relate to number, counting and shape. Working as a team.	Splinters in certain materials Cuts to hands If there are sticks, they could get poked in the eye.	All	Staff to check materials before use and if possible before the children pick them. Staff and children to wear gloves to protect hands. Staff to supervise at all times in case of any injuries.	M
Weather conditions and wet and dirty clothes.	Different temperatures. Hot, cold, wet and dry. They can monitor risks such as being too hot or too cold. Children can identify harmful risks due to the weather conditions. Children become responsible for their own belongings, Children practice skills of dressing and changing shoes	Children getting too hot and getting sun stroke. Getting cold and a chance of hyperthermia. Severe winds which could cause serious damage or possibly result in death. Wet ground, could slip and fall and possibly twist an ankle.	Children and adults	Appropriate clothing and footwear. Sun cream if it's a hot day. Drink plenty of water. Coats and hats for the cold weather. Waterproofs and wellies if it is raining. Keep checking the weather. Check the ground is dry.	H

Experience exploring outdoor space in photograph	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
Pots and pans	Pots and pans provide a container for children to pretend to cook with. Children see their parents cooking and will mimic what they have seen from home. Creates role play. Musical instruments.	Loose handles. Heavy for the children to pick up. If dropped could injure a child's foot. Playing to rough when doing role play and could hit one of the other children by accident.	Children	Check equipment for any loose parts or broken bits before use. Check the weight of them before placing them on the table. Talk to the children before the activity and explain that the pots and pans are to stay on the table and to be swung around. Appropriate footwear.	L
Utensils	Utensils are an important part of a kitchen. Utensils can help children practice fine motor skills, allowing them to mix and create pretend food.	They could be sharp, with rough edges. Children might use them to play fight. Splinters from the wood. Could cause cuts on hands.	All	Chat with the children and explain what the utensils are used for and need to be used in the correct way. Gloves to protect hands. Staff to check equipment before use and dispose if not safe for the activity.	L

Part 4

In order to promote effective mathematics and science in the outdoors, it needs to be planned by the teacher or adult in charge. They must do this by using the right environment and having good resources. Science and Mathematics in the early years should be a fun and exciting time where children can explore, play freely, actively learn and critically think. By using the right setting for outdoor learning, it gives children the opportunity to reach their full potential and to achieve their goals. That is according to website supporting mathematics outdoors in the Early Years. Teachers also need to be aware about the way they teach and how they teach it their interactions in children's play through role play (Anthony & Walshaw, 2009; Hedges & Cullen, 2012). From this the teacher can make an assessment by noticing, recognising and responding to the children's learning.

Ways in which the adult can support Science and Mathematics in the outdoors are, by observing and communicating with the children. By doing this it helps with practical learning and all areas of their development. The adult will acquire information from the observation, which can then lead on to the adult interacting and having discussions about different environments, materials and the world around them. By the children having the opportunity to explore it gives them a better understanding of their environment and it gives them the chance to ask questions freely. Teachers need to have knowledge and good understanding about science and the topics within that area and the potential limits of those skills. It also means that teachers need some idea of how learning and development progress in order to support children's movement along learning pathways or strategies for science (Duschl et al., 2007; Gelman, Brenneman, Macdonald, & Román, 2009). Briefly, it requires not just knowing what to teach but how to teach it based both on general understandings of development and on the needs and interests of child with regard to science.

According to Greenfield, Jirout, et al., 2009 reports show the lack of confidence from teachers in an early year's setting, in regards to their ability to teach science and support children's learning, due to their lack of knowledge about the subject. Looking at the early education teacher training programs these concerns are not surprising, given there is not a lot of emphasis on teaching science, through classroom environment or practicum training (See Brenneman et al., 2009, for a review). In order to support the children's learning of science, the teacher often spends extra time planning and preparing to teach it by researching and filling in the gaps of their own knowledge (Worth & Grollman, 2003).

Robson & Rowe (2012) states the importance and significance that reflection and self-regulation and being aware of one's feelings has on a child's learning. A key part of a Froebelian approach is to start where the child is. Focus and support the things they are interested in and extend it in meaningful and worthwhile ways. Knowing the children well, paying attention and careful observation will help guide the adult as to when to intervene and actively participate and when to stand back.

Froebel's idea of the adult making rich provision, directing children in their play and interactions, opening up opportunities rather than forcing or implementing them, helping children with self-discipline and develop autonomy within a framework of respect for others remains a powerful approach today. Freedom is not just about eliminating barriers or obstacles; it needs to provide opportunity and encouragement. This is why the role of the adult is important and is essential in ensuring that all children's freedoms are protected. Froebel also states an approach for which adults can support children in science and maths are ,resources that are challenging for the children of all ages and to give the children a variety of experiences for example, sand-pit, ropes and pulleys .Rich provision of two and three dimensional materials and giving them the opportunity to explore the indoor and outdoor learning environment, helping the children to reflect on their activity and giving them the opportunity to discuss and ask questions about what they have been playing and helping them to understand about making links with previous experiences and continuity of arrangements and facilities so that children can gain skills experience on a regular basis.

It is the role of the adult to make outdoor learning and play successful. If the children can see that all staff are participating and supporting the class teacher by enjoying and having fun then that's when outdoor play will be a success. By an adult showing they are not enjoying outdoor play it can come across negative to a child. If outdoor learning is viewed as not as important as indoor learning, then it can have a negative effect on the child's learning. Outdoor learning and play are seen as a crucial part of education and must be provided for. As McMillan (1930) argues, the success of children's learning rests with the teacher. According to Lally the role of the nursery teacher is a complicated one; she sees it as a 'dynamic occupation' and it requires continual investigation and reflection of themselves, the children and their families (1991: xi). Vygostky 1978 and Wells 1987 state the importance of the interaction between the child and adult should be of a high standard and it should be maintained, to get the best results and performance from the children. The adult needs to provide opportunities for the children, which involves them using their imagination and really having to think through ideas whilst playing and exploring. By them having the opportunity to do this it will also help with problem solving skills and analysing. This will help logical thinking and the development of intellectual self-control and can also help with concentration. Play is not an easy game and requires lots of preparation and organising from the teacher. Adults need to interact, cooperate and join in and assist and explain when necessary. The interaction approach stated by Bruce (1987 and 2005) places a responsibility on adults to make sure children have a partnership role. Staff, therefore, have roles to carry out and fulfil before, during and after children have been in the setting. Beforehand, staff need plan accordingly and think about the needs of the children. They need to think, plan and organise the best way for the resources and equipment to be set up. As well as the staff working with the children while they are playing outside, they will also be observing them and assessing the effectiveness of the experiences which they have absorbed. In order for the staff to plan prepare for the next day's experiences, they will need to reflect on their day. The role of the adult is to bring the indoor and outdoor learning environment together and link it with the curriculum. Stephenson cites Gilkes (1987), Bilton (1993), Davies (1997) and Stine (1997) because of the nature of equipment staff feel they have little control over it. In these studies, fixed climbing apparatus was seen as something which could not be changed.

But in Stephenson's study staff felt they had complete control over developing the space even if it did have fixed apparatus. This is why staff need to consider very carefully the outside space and how it can be developed to help children. In the Stephenson study the staff saw outside as being able to offer them 'opportunities to respond to children's needs and interests in the way they set up that environment. So, they did what they did for the children's benefit, not for the adult's benefit.

Richardson states ways of the adult supporting science and mathematics in outdoor learning. These include courses for teaching or non-teaching staff as well as in-service training sessions that look at certain areas and space of outdoor provision, for example mathematical and science development. This may include visits to other settings or outdoor centres for ideas, inspiration and to and it gives the staff the opportunity to exchange any thoughts and any suggestions they may have. This could also mean sharing information or materials that support teaching and learning outdoors. An audit is a good way at looking at what resources they are available in the settings and if they are any lose parts that can be used rather than purchasing new resources. It is important to identify why some of the resources might be damaged and might not be fit for purpose and also to look at any gaps in the current provision.

According to Hildren ways in which the adult can support children in science and mathematics are, rich environments which should include the outdoors, as it is an important part of learning as it gives children excellent opportunities in all areas of their development, but especially with mathematics. She states counting is important. The children could count a range of objects, use of different strategies for problem solving and be encouraged to count verbally. It is stated by 64Douglas H. Clements and Julie Sarama hildren that counting helps in a creative way and beyond. Clements & Sarama, 2014; Rittle-Johnson, Fyfe, & Zippert, 2018). From the children having these experience it will give them a good foundation for lots of areas in mathematics such as, measurement, using different patterns, arithmetic and reasoning along with many more. They can engage in mathematical processes, reasoning, and communicating about their reasoning and learn to understand different structures and patterns. (Mulligan, Mitchelmore, & Crevesten, 2013; NCTM, 2006; NGA/CCSSO, 2010). It sets them different challenges and helps them to think more independently without being prompted and helps them build on what they already know. Children model problems which will help with their mathematical process and this will help them with problem solving (Andrews & Trafton, 2002). Myth/Misconception 3: Time Spent on Math is Time Taken Away from Play and from Social-emotional Development and Literacy Children engage in spontaneous mathematics during almost half of every minute of free play (Seo & Ginsburg, 2004; see also van Oers, 1994), including toddlers (Reikerås, Løge, & Knivsberg, 2012). Whilst it is good to plan the lesson, it is said that structured mathematical experiences may actually deprive the children of joy and fascination of free play of mathematics (Balfanz, 1999; Clements & Sarama, 2014; Fuligni, Howes, Huang, Hong, & Lara-Cinisomo, 2012; Stipek, 2013) other studies show the higher-quality play

results in children's increase of mathematical knowledge. In other studies, preschool mathematics programs promoted children's language, literacy, and social-emotional development as much as literacy- or socially-focused programs did (Preschool Curriculum Evaluation Research Consortium, 2008; Sarama, Lange, Clements, & Wolfe, 2012).

By introducing children to Loose Parts, or unstructured materials which are found in everyday life and the world, you as the adult are advocating good practice and helping them to become more independent in their learning. The theory of Loose Parts emphasizes the importance of combining materials that can be explored and by being taken apart, and moved around to see what the children could come up with. (Gribble, 2013). These materials and the unstructured play, and by the children having these opportunities it prepares them for school, and plays an important part in a child's readiness and success in science, technology, engineering, and math (STEM).

Word count-4088

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