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| Cynllun Gweithgaredd<br><i>Activity Plan</i>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Gweithgaredd:</b><br><br><b>Activity:</b> Den building, using outdoor objects and resources to build big and small dens.                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                    |
| <b>Nifer o blant:</b><br><br><b>Number of children:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Oed y plant:</b><br><br><b>Age of children:</b> 3 - 4         | <b>Nifer o oedolion:</b><br><br><b>Number of adults:</b> 2         |
| <b>Lleoliad:</b><br><br><b>Location:</b> school woodland                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Amser paratoi:</b><br><br><b>Preparation time:</b> 10 minutes | <b>Amser gweithgaredd:</b><br><br><b>Activity time:</b> 40 minutes |
| <b>Resources:</b> Crates, large boxes, different fabrics, covers, waterproof cushions, twigs, branches, fastening materials, pegs and rope.                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                    |
| <b>Aim/s of activity:</b> The aim of this activity is for the children to understand the mathematical concept of size, shapes, height, weight, length and width.                                                                                                                                                                                                                                                                                                         |                                                                  |                                                                    |
| <b>Links to outcomes:</b> The activity supports the four purposes as it enables children to have the advantage of using their own knowledge and skills; to think creatively, come up with new ideas, able to enjoy solving problems, working together in physical activities and to show respect to the environment. The outcome for this activity in the foundation nursery phase would be for the child to understand counting, measuring, sizes and 2D and 3D shapes. |                                                                  |                                                                    |
| <b>Differentiation:</b> What I would have done differently would be to provide the children with 1-1 support with additional learning needs and to extend the activity time for the children to play more.                                                                                                                                                                                                                                                               |                                                                  |                                                                    |
| <b>Health and safety:</b> A risk assessment in line with the school's policy has been done for the children's den building activity.                                                                                                                                                                                                                                                                                                                                     |                                                                  |                                                                    |
| <b>Role of adult/adults:</b> The role of the adults was to make sure that the area was safe for the children,<br>The adults should engage in sustained shared thinking with the children during the activity.                                                                                                                                                                                                                                                            |                                                                  |                                                                    |

The adult role is to enable the children to self-directed their own play and make their own choices.

The adults should only intervene when the children invites them to do so.

***The activity:***

Firstly, the practitioners need to take the children outside and sit them down on the tarpaulin sheet where the activity will be explained to them. The practitioners will set up the necessary resources for the activity and allow the children to decide what resources they would like to use to build a den and where they would like to build it. Once the children have decided, the practitioner will then observe the children on how they built the den and which resources were used.

## **Section 2 – Evaluation.**

The activity plan has provided a clear understanding on how the Foundation Phase Nursery outcomes were supported. During the time of the den building activity, the children had to make use of numbers and counting from one to ten, shapes of 2D and 3D and length and weight of objects of different sizes (Gov.Wales, 2015).

The activity plan was situated outside and according to Muddy Days Blog (2017) this promotes children's learning. It will build the child's confidence in trying new things, it promotes a healthy lifestyle as children are using physical movement and fine and gross motor skills, and challenges to build on their social skills with other children and practitioners. Tucker (2016) states outdoor mathematical learning is beneficial for their learning of mathematics as it is all around them. Practitioners can plan outdoor learning to link with the learning outcomes and children are able to take in more mathematical skills and learning in the outdoors.

Muddy Days Blog (2017) discusses how den building could provide further mathematical learning linked to the children's Independence. Muddy Faces (no date), discusses how children can learn more mathematics from their own independences by hands on learning, for example, den building. Children will be using natural resources such as sticks, twigs, leaves and mud and throughout the mathematical concepts, the children would be learning problem solving skills on how they are able to build the den, the size and the shapes of sticks, twigs, leaves and stones and the balance to see if the den will balance on its own or if it needs more support. Muddy Days Blog (2017) states the weather could also be a problem as it could be extreme weather. Some children may not show interest and not like the outdoors and there could be potential risk of harm to the child where some areas may be deemed unsafe or unhygienic.

We are going on an adventure (2018) suggests that den building helps children develop better problem-solving skills, Piaget supports this, as according to Medical News Today (2020) cognitive theory is for children going through different stages of learning where they problem solve about the different environments and experiences they go through and to think of creative solutions. It also builds on their team working skills and is all about the child having fun in the outdoors.

Upon reflection of the den building activity, there could have been more specific discussions within the planning with regards to the hygiene of the forest area and the health and safety checks. According to Health and Safety Executive (no date) a risk assessment must be included to identify risk and to prevent any future harm, to take more action on hazards so there is less risk during the activity and to keep staff and children safe from any future harm. GOV.UK (2018) agrees with the last statement for future activity plans to work better in health and safety schools need to take risks and hazards seriously, as it is a duty of care to protect children and staff from any potential harm during any activity they have planned.

The role of the adult within the planning could have been explained more clearly. According to Rose and Rogers (2012) the role of the adults is to guide children in their learning, support the child's needs and to scaffold a child's learning. The activity plan did not clearly explain how the adult should scaffold the child's learning.

The Open University (no date) explains how Vygotsky considers the adult peer role in supporting and helping the children's learning until they are independent enough to do everything on their own. So, the practitioner was present to support the learning if needed however, there was not enough information and the practitioner missed out on supporting mathematical learning, as the UKEssay (2016) states the role of the adult is there to support to the child's learning and to support them into become independent learners.

Cherry (2019) discusses Piaget theory of Cognitive development which speaks about the different stages of a child's learning. The child will need support with learning until they become independent. However, Rose and Rogers (2012) also state that pedagogies have a different way of supporting children by staying back and letting child explore on their own and develop their own learning by self-direct play and with very little adult intervention.

The activity plan provided ample resources, as according to Thornton (2016) any natural and outdoor resources can be found any way and it is great for the children's exploration. Loose parts are linked in with mathematical concepts because according to Lipp (2020) loose parts can be found naturally and can be used for mathematical concepts such as, counting by using different loose parts either on paper or in a muffin

number tray, creating patterns and shapes with loose parts and exploring and experiencing with loose parts.

Croner-i (2020) explains how Montessori believed that all children learn better through hands on experiences. Children learn best through natural and real materials to help develop their skills in mathematics, self-directed learning activities in different environments and giving a safe and secure environment for children, as it benefits them to become independent learners. This supports the activity as the children were engaged with the outdoors environment and it was also hands on learning and experiences.

The activity plan makes use of the outdoor environment. According to Richardson (2014) the outdoor environment has plenty of space, it expands on a child's learning and experiences with natural resources. Sanza (2015) continues to explain about the advantages of outdoor environments, how it helps improve the mental health of children, it expands on their imagination and creative thinking and it is helps the child to be able to problem solve and come up with better solutions to problems. Donaldson (2015) agrees with Sanza (2015) as he speaks about how children manage to take risks and challenge themselves, which is good for their mental health, express their creative thoughts and ideas to others and it also supports mathematics as children are able to use numbers and counting using their own knowledge of mathematics to apply it to mathematical concepts.

The activity plan could have provided more guidance within the differentiation section. Additional learning needed to be included within the planned activity because The good schools guide (no date) explains a child with Additional learning needs, needs to have 1 to 1 support with a staff member, in a quiet area incase the child becomes too stressed during the activity and need extra time for learning, so that the child can reach their learning developments. Welsh Government (2017) states each child with Additional learning needs has to have a plan for what support they need, what outer agencies they are entitled to, and the equipment needed to meet their Additional learning needs. Cardiff Steiner School (2018) agrees with the last statement, as children with Additional learning needs must be given a chance to learn, express their opinions and are included with decisions on their learning. This ensures that all children's Additional learning needs are met. Educate (no date) discusses Bruner's

theory on how children's learning is broken down into chunks allowing for a better understanding for the child. The child would also be getting peer support until they are able to become independent learners, which supports Vygotsky's thinking as First Discoverers (2020) states, children are able to learn better from experienced peers in order to become independent learners.

### **Section 3 – Discussion.**

There are many indoor resources within early years settings that have a wide range of benefits that supports the mathematical concepts. Early Years Matters (2020) states resources should fit to children's needs and children should have access to them, such as building blocks for building, pens or pencils for writing numbers and shapes and cars and dolls to sort them in to size or colours.

Within a setting child should have their own choice of resources as this supports mathematical concepts during activity and play. According to Skinner and Stevens (2012) during free play, children have access to a variety of everyday items that serve as mathematical resources, for example, in the home corner they have clocks and watches to tell the time, they have phones and mobile phones to know about numbers and shapes, calendars and appointment cards, so they understand the concept of times and dates and shopping and recipe lists that support mathematical learning about amounts of ingredients and weight. Skinner and Stevens (2012) discusses more examples of mathematical resources that children and adult peers use within settings, such as money that can be used for counting therefore, using coins to understand how to use money and pay for items supporting counting. Skinner and Stevens (2012) continues to explain how other stimulating resources can be used within early years and school settings, such as the washing line. Children can use different socks and match them in a pair with colours, shapes or sizes.

However, outdoor resources are more natural, eco-friendly and easier for children and adult peers to collect. Tucker (2010) states outdoor learning and experiences are essential for a child's learning and growth, as natural resources can be used across curriculum resources that will support all concepts of learning. Montessori (2020) supports this, as Montessori believed all children should have opportunities for their learning experiences to take place outdoors to understand nature. Age of Montessori (2020) continues to state natural resources are beneficial to a child's learning, as they can be cross-curriculum besides supporting mathematical concepts. Tucker (2010) explains the collecting of natural resources can be easily collected by children and practitioners, such as leaves, twigs, sticks, rocks, conkers, sea shells, acorns and pebbles and these natural resources can all be used for mathematical learning such as counting, ordering, looking at shape and size Children are able to collect these

items for their own outdoor learning purposes. Froebel's thinking supports this as Tovey (no date) states Froebel believes children should be allowed to have outdoor learning as it gives them a chance to understand nature around them. Children learn best through first-hand experiences. Piaget's thinking supports this also, as according to Ojose (2008) Piaget believes children learn mathematical skills through hands on experiences in the outdoor environment and children learn more about mathematical concepts when they are given a choice and are outdoors. Likewise, Donaldson's thinking supports this, as Donaldson (2015) explains children will have a better chance of understanding mathematical concepts through hands on experiences. Tovey (no date) continues that Froebel explains children who use open ended materials gain a better understanding of mathematical concepts such as shapes, colours, weight and height.

Loose parts are natural resources and as discussed above these form part of children's learning while also supporting mathematical concepts. Beloglovsky (2015) explains that loose parts are widely used within early years settings and they have many benefits for developmental learning in early years if children have free access to loose parts indoors or outdoors. Loose parts support mathematical concepts, as children are able to critically think of other ways they can use them during their play and learning. This supports problem solving to see how much loose parts are needed for their activity or does the child need objects of loose parts out for their own learning and experiences. According to the Guardian (2017) loose parts are linked with problems solving, as it helps children to come up with new ideas and to think of solutions to solve a problem they have encountered in their mathematical learning.

Sprouts (2018) states Piaget believes that children learn about objects in their early years through play when the child is old enough to understand objects and materials. They can ~~then~~ use materials and objects in their own mathematical learning as they gain a better understanding by using natural resources.

According to Axelsson (2018) there is a common argument in what is a better mathematical resource for children's learning, concerning natural resources or plastic resources. TTS (2017) states children are supported to achieve a wider range of learning from natural resources and real objects, as children will experience the smell, taste, touch and look of natural and real resources. However, TTS (2017) states plastic

resources do not provide children with the opportunity to experience the temperature, weight and smell. TTS (2017) continues to say a plastic lime to the child would only know it as a fruit however, how would they know if the lime is sour or sweet when they bite into it; how would the child know when you cut a lime it has white and green under the skin; how would the child know when you cut a piece of lime, they can be different shapes such as a circle, a semi-circle or a triangle. Children would not have these real-life experiences from a plastic fruit. Montessori supports this, as according to Montessori Group (no date) Montessori believes in the more natural and real materials than plastic, because children learn more from natural resources than plastic objects, for example using a glass jar to measure water and to understand the weight of a glass jar or using stone, conkers or seas shells for counting and measuring. Children take in more knowledge from real objects and real experiences through mathematical concepts, by using chalk to write numbers on the concrete floor and using natural materials to match the numbers underneath.

Natural resources are more beneficial to a child's learning than plastic resources because according to Shorey (2018) children gain better knowledge and experience by using natural resources. Shorey (2018) continues mathematical concepts can be supported such as, counting with seashells, acorns, leaves, feathers and sticks. Children can also sort natural objects into groups, for example fruit where they can explore shapes and sizes, making use of mathematical language. According to Gov.Wales (2015) children can use water play to experiment with capacity, for example using glass jars and cups to understand weight and how much water can be held in a glass jar or cup, therefore supporting mathematical concepts as discussed within the Foundation Phase outcomes. Both bought and natural resources can be used to make patterns and pictures according to Gov.Wales (2015). In the learning outcomes children can use symmetry, as it supports mathematical concepts because children can use symmetry with natural resources to make 2D shapes.

**Section 4 – Explanation.**

The role of the adult is important whilst supporting children through mathematics learning. According to Gov.Wales (2015) within the Foundations Phase outcomes, the role of the adult is to support the child with their mathematical learning, such as counting, shapes and subtractions. Tucker (2016) states the adult's role should be to provide support for the child in mathematics by providing the child with natural resources to help with their mathematical learning. Tucker (2016) continues that there should be an area of learning specifically for mathematical learning, so the child can develop mathematics through play.

The National Strategies Primary (2019) states the role of the adult should be to support and expand a child's mathematical learning, observe a child's learning on mathematics and be ready to adapt future activities, while also ready to plan for future mathematical activities. Sarikas (2020) explains that Vygotsky discusses how children gain better learning when being supported by an experienced adult. This means that children will be supported to understand and access mathematical concepts better with support, eventually they will become independent learners. Bruner supports this as, according to Clark (2010) Bruner's Spiral Curriculum Theory states children learn better when mathematical concepts are broken down into pieces and explained to them by practitioners. Once the child has gained a better understanding of it, the child will then be an independent learner.

If the practitioner has a negative attitude towards mathematics, this can have consequences for the child. As Pound (2018) explains negative attitudes towards mathematics will affect how the child perceives mathematics. National Numeracy (no date) states the negative attitude towards mathematics can have an impact on the child, because the child may be very anxious and nervous and may feel a lack of support from a practitioner in their mathematical learning.

Pound (2018) continues to explain that to support children in mathematics, practitioners should have a positive attitude towards mathematics and ensure children are comfortable around learning numbers and other mathematical concepts. Pound (2018) explains, this can be done by encouraging the child to give mathematics a try, be positive about maths and to support the child in their mathematical learning.

The role of the practitioner is to ensure that the activities planned are based upon the child's interests and capabilities. Bunck et al. (2017) explains practitioner's complete observations on children to gain a better understanding of the child's learning levels and to see if the child needs extra support in mathematics. This is supported by the Foundation Phase which explains practitioners use the mathematical outcomes to observe a child and gain a better understanding of the child's mathematical learning (Gov.Wales, 2015). When observing a child, the practitioner would identify the current skills and then plan activities in line with both the Foundation Phase and Numeracy Framework. Gov.Wales (2015) explains children should have a clear understanding of mathematical concepts. The role of the adult is to provide opportunities that will support the learner to become independent learners of counting, subtraction, fractions, shapes, measuring, weight, height in line with the Foundation Phase and numeracy outcomes Gov.Wales (2015). Donaldson (2015) states children should be able to problem solve independently, should have an understanding of using numbers in different ways and to take information and understand the mathematical concepts. Therefore, it is important that the practitioner provides a range of activities that will support this as suggested by Discover Early (2020). Piaget and Montessori children need hands on experiences as they learn from what they see, touch, smell and taste and they use these skills for mathematical learning. If a practitioner notices a child struggling with mathematics Rodger (2016) states the practitioners would complete an observation, whereby the practitioner would reflect over where the child is falling behind and give the child support in that area until they are independent enough to do it on their own. Observations are ways for practitioners to understand the child, their level of development and importantly their interests. Pacey (2016) explains we observe children to learn more about the child's interest, to see if the child is reaching the expected level within their mathematical developments, to identify if the child needs any extra support in any of the mathematical concepts and to understand the child's learning style of how the child likes to learn.

There are different Curriculums around the world that have different views on teaching mathematics to the Foundation Phase Framework as according to Hislop (2013) the Reggio Emilia view and learning on mathematics is, no sitting down and writing on paper, it is all about children using open-ended objects or loose parts such as, rocks, pebbles, ice-lolly sticks, twigs, leaves and glass beads. These are used to support

their mathematical concepts such as counting, subtracting, weighting and measuring. Both Montessori and Piaget support this because Montessori and Piaget believe this as The learning web (no date) explains, it allows children to experience hands on learning, making use of their senses on how to use natural resources in their mathematical learning. This approach also supports the ethos of the Foundation Phase as Gov.Wales (2015) states the mathematical outcomes in the Foundation Phase are based on the same curriculum as Reggio Emilia Mathematical outcomes. This helps children learn more with open-end objects rather than sitting down and writing on paper.

Furthermore, according to SBS Dateline (2016) the Scandinavia Curriculum also have a different way of teaching children within their classrooms. Scandinavia have Forest Schools where they allow children to learn and play outdoors all day. Children will be using natural resources such as, sticks, leaves, shells, rocks, twigs as well as whatever they find and through these experiences Howard (2015) discusses mathematical learning is supported, as children will be learning about balance, height, weight and problem solving on a daily basis. This is discussed by Pratt (2011), cited in Tucker, 2014) who explains whilst mathematics is all around them indoors, the children will also be learning mathematics and natural resources while outdoors.

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