

Part 1



The image is a sloping bank, it slopes down on the right hand side.

Image: Evans, (2022a).

Part 2

This image in part 1 can be suitable for a wide variety of ages, however, the focus will be on children aging between 4 years to 5 years. We will be working with in progression step 1 of the New curriculum for Wales (Welsh Government, 2021) where children will be investigating gravity and how friction can effect gravity. Investigate if weight, height or length can be a factor, problem solve, analyse, predictions and draw a conclusion.



Image: Evans, (2022b).

Log pile

This Image is of a pile of different sized logs, Children are free to climb or move the logs.

Climbing the logs, will cover aspects of maths and science in the outdoors, making prediction as to whether or not the log will hold them, if their foot will grip the log, they are thinking and experimenting with friction may be with out even knowing what it is called. Children climbing first up the stack may communicate with their friends that a log a slippery and to not use it, working on their balance and problem solving, looking for alternative routes, looking at the diameter, length, and shape of the logs.

There may be a child watching and shouting suggestions of which way to go, looking ahead and planning a route.

If the children do not notice that the smooth logs are the slippery ones,

Then the adult observing said “I wonder why that log is slippery?”

A child responds by saying “its shiny!”

Another child states “it’s clean, the rain cleaned it”

“No! it hasn’t rained for days now” states another child.

The first child has reached the top and shouts, “how can I get down!”

A child that has just been watching says “If you go that way (pointing to a path behind the logs) you can go on the path”

The child responds with “that was easy”.

The adult could say “I wonder how many logs you will step on, on your way to the top?” to the next child climbing.

The child counts, then the next child wants to step on more. The adult not getting too involved, the children can carry on their climbing game, building confidence and strength in their own learning. However, just by adding this mega-cognitive talk the children are thinking about why the log is slippery and communicating their opinions as well as listening to others.

This play is holistic learning, the act of climbing also helps to develop fine and gross motor skills, hand, foot coordination and self-esteem and gaining perception information when moving from log to log.



The slope

Image: Evans, (2022c).

One child pushed a log it rolled across the path and down the bank onto the grass, the log did not roll all the way down the bank it stopped halfway down on the grass. As the log had made a noise when it rolled across the path some children had stopped to look, some laughed, some screamed, and some just stared.

When the log stopped, children ran over, one child started to push the log back up the slope, but every time they stopped to adjust their hand position the log would roll slightly back towards them. The Child says "it's hard to push it back up there"

The adult observing said "it looks heavy, why do you think it is harder to push it back up?"

The child replies "because it's opposite ways, its easy to roll down but hard to roll up".

The adult then says "O! I wonder how that log stopped rolling on the grass?"

One child replied saying "the grass is long"

Another child said "it got heavy"

First child replies "it's got a bumpy bit on it".

The adult then says, "What might happen if we rolled the log down the path instead?"

One child pushes the log to the path and rolls it down, the log goes down fast but rolls off the path onto the grass and stops.

A child states "that went far".

Second child says "because the path is hard and straight"

"But it went on the grass" states a child.

"because of the bumpy bit" replies the first child.



Image: Freepik, (n.d.)

One child grabbed on old tyre, which we have in the area, and rolled it up to the top of the bank and shouted, “Look out!” as he pushed it down the hill, the children watch as the tyre built up speed and went all the way down the hill and across the playground, children laughed and chased the tyre as they all wanted a go.

One child said “that went really far”

Another child replied “it hasn’t got the bumpy bit”



Wooden Planks

Image: Evans, (2022d).

These planks of wood are also loose parts we have provide in the outdoor area.

A child was sat on one end of the plank and was trying to shift themselves down the plank. The child then notices that one of the planks is slightly raised on a tyre, so they sit on the tyre end and the bottom of the plank raises slightly, the child looks a bit worried, so they put their hands down on the tyre to steady themselves, as they start to move down the plank it becomes bendy and the child gets off looking scared.

The adult says to the child “that looked fun”

To which the child replies “it was going to break”

The adult then suggests “I wonder if you could make one for the conker”, and the adult gently rolls a conker down the first plank.

The child picks up the conker and rolls it down the plank of wood perched on the tyre a few times.



Image: Evans, (2022e)



Image: Screwfix, (n.d.)

Another child joins and says, "I know, why don't we move this over to the tunnels?"

They drag the wood over and lean it against the tunnels.

The child with the conkers says "I'll go first, you wait at the bottom"

The conker rolls down the plank across the path on stops on the grass. The child at the bottom picks up the conker and moves the plank of wood closer to the tunnel which makes the slope steeper and says "my turn" running up the back. This conkers goes faster down the plank but stops when it hits the grass. The children looked disappointed.

The adult says, "o no, do you think there is somewhere different we could put that plank so that the conker would travel further?"

One child suggests the area by the trees which is muddy and has trees close to each other.

The adult replies asking "do you think there is a lot of room there? Or shall we try up the top of the path, near the log pile?"

A child replies "yes up by the logs, we can roll it like the tyres then".

Another child said: "We could try the white thing, that looks slidey"

Adult replies: "do you think we could use the string to see how far its travelled?"



Image: BBC, (n.d.)



Image: Rainbow Creations, (n.d.)

These activities above are working on progression step one in science and technology, they are being curious, observing things in their environment and communicating it with others. The children are also looking at shapes and comparing them, moving in different directions, and starting to use mathematical language to describe that, this is all part of progression step one in geometry. Counting the logs covered the number system, where a child is starting to count objects, they are touching. The children are also looking at how forces can be transferred, this is part of progression step two in forces and energy. Children are starting to problem solve, and understand what a heavy object feels like, this is all part of progression step one in geometry. The children are also working on progression step one of design, where they are constructing ramps for the conkers to slide down, they are also using non-standard units to measure length, hitting progression step two in geometry. This is according to the new curriculum for Wales (Welsh Government, 2020a and 2020b).

Part 3

RISK BENEFIT ASSESSMENT

Location / Activity:	Grass bank with small, wooded area	Date:	20 th September 2022
Assessor:	Jessica Evans	Review date:	20 th March 2023

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
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Exploring the outdoors.	Children will learn to manage their own risk, be in control of their own learning, using an holistic approach.	Boundary – child going into the neighbouring school. Animal faeces – getting infection/illness from touching it. Weather – burn skin / heat stroke.	Children Children and adults	There is a large boundary fence around the site, which can not be climbed however, the boundary between the setting and their neighbouring setting is a very low mound of grass, A discussion is had with the children that over the mound is the property of next door and children are not able to access that area. The adult will do regular head counts to ensure all children are within the boundaries. The caretaker walks around the area every morning before the area is accessible. If any faeces are found, they are disposed of and the area is cleaned as best as it can be. A discussion is had with the children that even though the area is secure there might be some animals that visit during the night and If a child does come across animal faeces which has been missed by the caretaker, they are advised to stay away and report it to an adult. If an accident happens and they stand or fall in the mess, then the adult will clean the child, whilst wearing rubber gloves, if the mess is on the clothing, then the clothing will be changed. The parents are advised that activities will be carried out in the outdoor area. The appropriate clothing is suggested for parents	Low
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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
				to provide for their child. As the weather was very sunny, a sun hat, sun cream and a water bottle is suggested for each child to bring to school. If a child did not have a hat or sun cream then they would be monitored and activities in the shaded areas would be suggested, A child with out a water bottle would be provided with a cup so they could fill from the water fountain at any time. The children will be monitored at all times and reminded to drink plenty of water. Depending on the temperature would then determine how long the outdoor activities would be. Higher the temperature the shorter the outdoor activities would be.	
Exploring the woodland area.	Children can explore the different textures, colours, they may have visual experience of something naturally falling to the floor, like a leaf off a tree, therefore, starting to understand gravity.	Stingy nettles – Emotional distress.	Children	Discussed with the children about where the stingy nettles are, what they look like and what may happen if they touch them. Suggest wearing long sleeves and trousers to cover legs and arms.	Low

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
Climbing the log pile.	Children will become more aware of their own bodies, as their whole body will need to work together to balance and coordinate movement, developing fine motor skills as well as exploring gradient, forces and gravity. Children will also learn how to manage their own risk and work as a team.	Log pile – child may fall and hurting themselves. Pallet – Nail sticking out may cause cut or worse.	Children and adult	The logs have been climbed by an adult to make sure they are secure. A discussion has been had with the children about climbing the logs, If they choose to do so, we have spoken about going slowly to make sure the log is not slippery and can hold your weight. The pallet is also inspected for loose nails or nails that are sticking out. These will be removed.	Low

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
Discovering living things.	Discovering mini beasts and other living things is helping children to appreciate the world around them and teaching them about the life cycle.	Insects – Emotional distress or even allergic reaction.	Children	Allergies are checked with the parent for each child, parents have also been informed to advise the setting if there are any changes. Medication is kept in a safe place, where all staff have access to. If the allergy is severe then medication is carried by the adult. Discuss with the children about living things, and how we should appreciate that this is their home, most mini beasts will not disturb us, however, bees, wasps and hornets can sting, so children are advised to stay still if they approach, as they are looking for nectar, once they realise you are not, they should fly away. If a child is stung, then we will wash the sting with soap and water and keep a close eye on the child. If the child has a reaction to the sting, then the onsite first aider will be called.	Low

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
To sit on, to slide down or to roll things on.	Children will start to understand gravity and gradient, learning that the higher the slope the faster and longer distance the conker would travel. Learning that friction could stop an object.	Planks of wood – splinter.	Children and adults	The planks have been checked for loose bits of wood, and if any found they were removed. Children can still get splinter so a discussion with the children about being careful when carrying and playing on the planks in case they hurt someone or get a splinter. If a child has a splinter and it is sticking out the tape can be placed over the splinter and pulled off the opposite direction to entry. If the child is distressed, then calming the child is a main priority and asking the onsite first aider to assist.	Low

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
To explore gravity and gradient by rolling.	This is a fun and child led activity, the children will be exploring gravity, gradient, friction, direction, length, ordering, predictions, conclusions to name a few.	Conkers – Thrown at someone or eaten. Tyres – Trip hazard or even hit someone over when rolling down the hill.	Children and adults	A discussion about the dangers of throwing things or rolling large objects where people are and how that can hurt a person and take the fun out of the activity by stopping the distance the object is traveling. Also, a reminder of the golden rule of nothing in the mouth, and always wash hands after we have finished activity. Children are shown the tyres and conkers before the activity starts so they can gain an understanding of what they look and feel like. Then during the activity, they have a better knowledge to assess their own risk.	Low

Part 4

Can we create, or is there already, an awe and wonder about science and mathematics in the outdoors?

The funded non-maintained settings curriculum for Wales (Welsh Government, 2022), is focused on children having natural free-flowing experiences, by being able to explore and lead their own learning, the role of the adult is to observe the children and be the knowledgeable other, so that they can provide an environment that will interest the child and develop their knowledge and understanding further. The curriculum also looks at a holistic approach and believes that children should be free to go between the indoors and outdoors. Very much like the Froebelian approach,

A Froebelian approach (Tovey, 2017), is about allowing children to explore and create their own learning, in the outdoors through play. By children having access to natural outdoor areas, they are able to experience the ever-changing beauties that can be all around us. Through the seasons they are able to gain a vast amount of knowledge and understanding about science and mathematics, For example gravity, gradient, friction, forces, can be experienced by climbing, rolling, things falling, and experimenting this, with different objects. This in turn is covering aspects of mathematics, like estimating, problem solving, height, length, width, making prediction and conclusions.

However, these areas of learning can surely be covered indoors. What does the outdoors offer?

Froebel (Tovey, 2017) believed that experiences in a natural outdoor area can target all the senses, therefore, giving children the full potential for their growing brains. The outdoors targets health and well-being, being active improves physical and mental health, by allowing children to climb trees, rocks, log piles, uneven surfaces, helps to improve their balance and begin to understand gravity and ways to master it, by rolling down a hill, sliding, running fast, falling, all help with the understanding of gradient and starts to develop the vestibular organ, this is developed by having the movement sensation. The vestibular sense helps to improve balance and

coordination, make you aware of your body and plays a vital part with reflexes and eye movement according to White, (2013). The proprioception sense is when you become aware of your body and its movements, by rolling down the hill, climbing the log piles, picking up small objects like conkers are all ways you are developing the knowledge of your own body, your spatial awareness, and how forces work like pushing and pulling according to Berkshire Healthcare, (n.d.). Holst-Wolf, Yeh, and Konczak, (2016) believe that both these sensory systems are fully developed by the time a child leaves Primary education. Therefore, it is vital that opportunities are given to children in order for these senses to develop. A child with processing issues of these senses can have difficulties with their balance, they may fall over often, bump into things, have difficulty in touching things. Children with Sensory processing issue's may need to be referred to the Occupational Therapist, however, by giving children the opportunities to move their arms and legs simultaneously like climbing or pushing and pulling objects for example pushing tyres or logs back up the slope after pushed them down can improve the proprioception and vestibular senses (Kelly, 2022). Spatial awareness is a vital life skill, as well as covering many mathematical concepts. For young children developing spatial awareness are also developing geometric skills, higher order mathematical skills. Reasoning, problem solving, organizing, estimating is to name a few suggests Numeracy for all, (2022).

With children exploring mathematics and science concepts through play they are discovering cause and effect of their own actions, therefore, deepening their learning by strengthening connections in the brain (Witty, 2018), also giving them confidence as they manage their own risk, as well as perseverance, resilience, and independence, these are all key skills to have for their adult life. Williams, (2022) and Pacey Cymru, (2022) agree and believe that all six areas of learning can be accessed outdoors, therefore, acknowledgment of the outdoors being just as important as the indoors in the New Welsh Curriculum supports this.

MacKenzie and Carolan, (2019) states, that even if you do not have access to a natural environment, then with enabling adults, you can enhance the area you do have by adding loose parts. Early Years Educator, (2016) believes that loose parts should be natural objects or if not, then neutral in colour, as they agree that children explore with their senses, and an adult's role is to not provide a copious amount, to avoid a sensory confusion, for example, by having brightly coloured object may cause a visual overload. Some loose parts that could be added to the environment to spark curiosity, creativity, discovery, and fun, are things like old tyres, wooden

pallets, logs, planks of wood, guttering, conkers, and string. These are loose parts that do not need to be provided by the setting, but, like Nicholson's theory, (1971), of loose parts, there is great joy and connectiveness to be achieved by including family and friends of the children to assist in gathering these loose parts.

Involving the child's family and friends can also assist with finding out the likes and dislikes of the child, therefore, adults can gain knowledge and understanding of the child, in order to provide loose parts of high affordance. High affordance is when the environment and what it has to offer meets the child's perception and capabilities, (Greeno, 1994. And Early Years Educator, 2016).

Montessori also believed that the outdoors was just an extension of the indoor classroom, where children can explore and develop holistically, with all of their senses, thus gaining a better understanding of the world we live in (Montessori Community School, 2022). However, not all practitioners are comfortable with the outdoors, for many reasons like lacking in confidence, due to previous bad experiences, not willing to change as they are familiar with their topics and where the development needs to go, lack of support from their setting, lack of imagination and how to lead the children's learning outdoors and the fear of it looking untidy, with some of these limitations there are ways in which we can overcome them. Staff having training, going to visit other settings, gaining confidence by talking and sharing ideas according to Bilton, (2020). However, some settings have many other obstacles to face, for example the lack of outdoor space, the outdoor space not being secure, the lack of funding to provide adequate outdoor facilities, worry about backlash from parents, however, Richardson, (2013) suggests that there are ways to overcome these obstacles, by getting parents involved in collecting equipment for the outdoors or asking for help to make area secure, can give them the opportunity to voice concerns, and have discussions with staff. If a setting is lacking in outdoor space, then time for visits to local areas is a option however, this does require a lot of planning, as to transport and risk assessment, but will be beneficial in the long term for future classes, and there can be an area indoors to accommodate outdoor activities.

The adult's role is to observe children, monitoring their capabilities as well as the areas that need to be developed, to get a good balance of observing from the side and then knowing when to ask the right questions to deepen their learning and spark problem

solving. Also, by observing you know what direction to take the learning. (Head Start | ECLKC, 2022). However, there are many limitation practitioner face when documenting the children's development, Many feel that time plays a big factor, not having enough time to complete document, and when they do so there is a lack of consistency with staff, the information is not considered, they do not work together with the same structured document, therefore, may result in a lack of knowledge about the document according to Rintakorpi, (2016).

A good balance would be for the adult to be close enough to hear what play is happening but not too close, so that children can be relaxed enjoy play, not feel like they are being watched, Vygotski theory of scaffolding a child's learning is when you allow the child time to have an experience which has been led by the child and maybe try to solve a problem, the easiest way, this can be self-regulating, however, for the adult to step in and ask questions or offer ways to find a different solution, maybe just even talk out loud, as if to themselves using other solutions, is scaffolding their learning, giving them the option of higher levels of thinking (Van Kuyk, 2011). Talking out loud offering other solutions or options to develop their learning experience is called metacognitive talk, an example of this would be a child rolling a log on the grass and it not going very far, the adult could then roll a different log and say "I wonder why my log stopped rolling then? What will happen if I roll it somewhere else?" The child then has the option to offer solutions to you or even try it out for themselves. Metacognitive talk can be taught to children in order for them to work through their thought process, gain their peers perspectives on things and develop their own reasoning and problem solving skills according to Parrish, (2022). The adult trying to roll the log on the grass and talking out loud can further develop into sustained shared thinking with a child, by suggesting other surface areas and listening to the child's suggestions, then maybe moving the development on to suggesting other objects to roll, who's object rolled the fastest or furthest and why. Sustained shared thinking is when the adult plays alongside the child, showing curiosity and the need to explore and discover to find explanations as to why something has happened. Listening to their explanation and maybe offering another. This shows the practitioner the knowledge and understanding a child has of a subject states Arnerich, (2019).

With enabling adults, practitioners who are enthusiastic about the outdoors, are able to scaffold children's learning by using metacognitive talk and sustained shared thinking, utilise their space with high affordance loose parts and give children the opportunity to explore and guide their own learning, all of this can bring awe and wonder to the outdoors where children can increase their knowledge and understanding about science and mathematics according to Campbell and Speldewinde, (2020).

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