
Dough Gym

What is Dough Gym?

- Many children come to school struggling to hold a pencil and cannot recognise (and write) their name.

- As these children are not developmentally ready to write, they need Dough Gym to help strengthen the important core and hand muscles.

What is Dough Gym?

- Dough Gym is a daily physical intervention that combines the use of large pieces of dough with a series of hand and finger exercises. These strengthen and develop children's fine and gross motor dexterity, hand-eye co-ordination, proprioception, balance, low load control, grip and most importantly, their self-esteem!

What is Dough Gym?

- It is fast-pace, good fun and done in time to music.
- It is led by Miss Wittman who calls out and models instructions which the children follow using their fingers, hands and/or dough.
- It can be used on its own with a small group of children but at the moment we use it as part of a daily whole class physical intervention.

What is Dough Gym?

- Dough Gym is based on accurate assessment and linked to specific physical development.

Gross Motor Physical Development

- Even though it is called 'Dough Gym', it is about much more than the dough.
- Alongside the development of their muscles, children also need to develop their sense of **proprioception** and **balance**.

Gross Motor Physical Development: Proprioception

- This is the brain using all sorts of information from different parts of the body to help it to move effectively within its given space. An essential part of this movement is being able to maintain **balance** whilst still and in motion.
- Large physical movements of the arms and upper body shift the centre of balance and also continually challenge the child's sense of proprioception sometimes resulting in a child falling over or tripping over their own feet.

Gross Motor Physical Development

- Children need lots of practise at moving around to help this development. During Dough Gym to help with this we **give children plenty of space**.
- We also **take away the chairs**. Children do not need to sit down when they are at the malleable materials table. In fact, it can be more detrimental to their development if they do.

Gross Motor Physical Development

- During a session of Dough Gym, children might use some large gross motor arm movements, this will impact on balance and proprioception as well as working the upper body muscles.
- Whilst they are working out, children will also be developing **hand/eye co-ordination** and their **low load control**.

Gross Motor Physical Development

- **Low load control** (simply) is your shoulders' ability to support your arm and hand as you write.
- As you write, your hand should be gliding.
- It is your shoulder and upper arm that are supporting you in achieving this.

Gross Motor Physical Development

- Children need to do lots of shoulder rotating and dough lifting exercises to become really proficient at this.

Gross Motor Physical Development

To develop children's low load control and their sense of balance and proprioception, outside of the Dough Gym sessions, they have access to fixed, permanent structures in the environment. They access this movement during play time as well as enhancements and activities to support it with in the classroom.

Gross Motor Physical Development

- The activities planned will involve the use of the shoulder pivot on both horizontal and vertical surfaces.
- Children are encouraged to reach and stretch as well as use the full circular motion of their shoulder joint in lots of areas of their environment, both indoor and out.

Basic Principle of Dough Gym

Work their bendy bits biggest to smallest!

Gross Motor Physical Development

- How children use their body to aid their early mark making and then writing is by using a sequence of muscle movements.
- Which muscles they use depends on which stage of development they are at.

Gross Motor Physical Development

- Most children follow the same sequence of development, so Miss Wittman creates and develops an appropriate environment to support and extend children at each stage of development.

It is all about the pivot!

The pivot

- Where your children 'pivot' from will let you know where they are up to in their physical mark making development.
- There is an intrinsic link between pivot and grip; this will be covered later.

Stage 1: Shoulder Pivot

Pivot: Shoulder

Grip: Palm/Palmer/Palmer Supinate

During the early stages of development (babies), children are learning to support their head, reach, grasp and walk. They are using groups of muscles in their pelvis, back, shoulders, arms and neck. It is these upper body muscle groups that children use in the very emergent stages of mark making.

Stage 1: Shoulder Pivot

Children will have already developed a grasp that allows them to hold something tight without dropping it. This grasp is formed by wrapping the fingers around an object and making a fist with the object held in the middle. This is known as 'palmer supinate grasp'.

'Palmer' – from the use of the palm

'Supinate' – turning the palm upwards

'Grasp' - grip

Stage 1: Shoulder Pivot

Stage 1: Shoulder Pivot

At this stage in the development, the muscles of their upper body are the most well-developed are the neck, chest and back. It is these muscles that have the most strength, so it is these muscles that are used to help the hand to make those first emergent marks.

Stage 1: Shoulder Pivot

- Often at this stage, the child will have a fairly stiff wrist and a straight elbow with most of the movement coming from the shoulder.
- The type of mark that a child at this stage of development can make will be at the maximum range, so they are likely to be long and straight, or large and circular as their range of movement is restricted to the strongest muscle group they have available.

Dough Gym assessment

- If children are pivoting from the shoulder with a palmer supinate grasp.
- Miss Wittman will plan Dough Gym around large gross motor movements, consolidating that range of movement and moving onto the next pivot.

Stage 2: Elbow Pivot

Pivot: Elbow (emergent or advanced)

Grip: Palm

At this stage in development, the shoulder becomes more of a support and the elbow starts to do most of the work.

Stage 2: Elbow Pivot

There are usually two noticeable stages in the elbow pivot. The first is the 'emergent' stage where the elbow bends, allowing for a greater range of movement, but the shoulder is still the main 'power' in moving the arm backwards and forwards. This looks like a sawing motion where the arm tends to move in straight lines across the body or from front to back.

Stage 2: Elbow Pivot

Stage 2: Elbow Pivot

When a child becomes more proficient in their elbow pivot, then they begin to use the muscles in their upper and lower arm to swing their arm in and out from their body in a circular action. This is an 'advanced' elbow pivot (think stirring a pot or creating a figure of eight). This significantly increases the range of movement.

Stage 2: Elbow Pivot

Often when the elbow pivot is developing, the wrist stays quite stiff and the grip is still palmer supinate.

Dough Gym for these children is about really employing the elbow in its full range of movement, as well as continuing with shoulder exercises and strengthening the wrist and hand.

Stage 3: Wrist Pivot

Pivot: Wrist

Grip: Usually palm, but probably about to change!

As the pivot moves to the wrist, the elbow often tucks into the side of the body and the shoulder movement becomes minimal. Low load control is now in play.

Stage 3: Wrist Pivot

By the time that children reach the wrist pivot stage in their lower arms, upper arms and shoulder are all now well-developed and their overall movement and balance tends to be far more fluid than it was when they first started out on this journey of development.

Stage 3: Wrist Pivot

The wrist pivot stage is the one that children tend to stick with for the least amount of time before their pivot shifts again.

Often with a wrist pivot comes a change in a child's grip from palmer supinate to digital pronate.

'Digital' – digit meaning finger

'Pronate' – grasp with the palm turned down

Stage 3: Wrist Pivot

An example of a digital pronate grip

Stage 3: Wrist Pivot

When a child adopts a digital pronate grip, they bend their wrist to nearly 45 degrees, grip their mark making implement with three fingers and use their first finger to manipulate the end of it.

Stage 3: Wrist Pivot

This is a clear sign that their stage of fine motor manipulation is moving forward and is also an indicator that we need to be looking out for and encouraging the next stage of development in both pivot and grip.

Dough Gym for these children has lots of much smaller movements that builds strength in the wrists as well as encourages rotation.

Stage 3: Wrist Pivot

Stage 3: Wrist Pivot

The journey through the pivots doesn't stop here, it keeps on moving across the hands, knuckles and fingers.

Fine Motor Physical Development

- Once the pivots have worked their way down to the wrist, the journey doesn't stop there; although for lots of children it becomes far trickier. This is where children often get stuck.
- The end of the 'pivot' journey will be when we get that mark making to the very last, smallest set of pivots, right at the end of the fingers. If we can hold out mark making tool there, then we have the fullest, most dexterous range of movement that our bodies can provide.

Fine Motor Physical Development

Fine Motor Physical Development

The hand is quite a complex piece of machinery and is made up of lots of joints and muscle groups that interconnect and work together to provide maximum dexterity.

Fine Motor Physical Development

In a child's journey to becoming a mark maker and eventually a writer, they need to become proficient in all of the following:

- Pincer grasp or grip
- Palm arches
- In-hand manipulation
- Thumb opposition
- Finger isolation
- Knuckle, PIP and DIP joints
- Bilateral co-ordination
- Hand/eye co-ordination

Pincer grasp or grip

This enables a child to pick up small items using the thumb and index finger. The most basic form of this skill is when children use all fingers to 'rake' items into the palm of their hand. During the next phase of their development, they might pinch items with the thumb against the side of the index finger before moving on to a more accomplished grip where they can use the end of their thumb and forefinger in a pincer grasp to manipulate small objects effectively.

Pincer grasp or grip

Palm arches

There are several arches within the palm of your hand that enable the hand to grasp a range of different objects of various sizes and shapes. These arches direct the skilled movement of your fingers and control the power of your grasp. Your palm arches are directly related to your ability to manipulate a mark making implement (like a pencil or paint brush).

In-hand manipulation

This skill relates to the ability to move and position objects within one hand without the assistance of the other hand. Children (and some adults) often find this really hard. Children need lots of practice with items such as elastic bands and pencils, being able to move them in between their fingers. Also, round objects like conkers or marbles which they have to rotate in the palm of one hand.

In-hand manipulation

Usually with fine motor dexterity exercises you would start with large objects because they are easiest. With in-hand manipulation, it is the opposite. The larger the object, the more challenge.

Thumb opposition

This refers to the ability to turn and rotate the thumb so that it can touch each fingertip of the same hand. Start with the palm spread and then get the children to use their thumb to touch each of the fingertips in turn. After each individual touch, always return to a spread palm. When they become proficient at doing each hand individually, then get them to do both hands at the same time.

Thumb opposition

To extend this challenge further, ask the children to do both hands together, but start with the index finger on one hand and the little finger on the other. This is not only good for developing dexterity, but also bilateral brain work.

Finger isolation

To do this, you need to be able to move each finger one at a time. At the early stages of dexterity development, children will move all of their fingers together in a grasping motion. As they develop, they learn to move the fingers individually. This ability is very important in the development of fine motor skills. It is the mechanism that will allow children to hold and manipulate a pencil or a paintbrush as well as tie laces, push buttons and a host of other everyday essential skills.

Finger isolation

Knuckle, PIP and DIP joints

These are the joints in your hand, thumb and fingers. The first one that you come to is the knuckle (metacarpophalangeal joint). This is usually very flexible and used for grabbing, raking and also in pencil grips like palmer supinate.

Knuckle, PIP and DIP joints

The next joint is the PIP joint. PIP stands for Proximal Interphalangeal Joint. This is used for all major grips and finger manipulations.

Knuckle, PIP and DIP joints

The final finger joint is the DIP joint. DIP stands for Distal Interphalangeal Joint. This is the one that you need to be able to manipulate well to support a tripod grip. To develop this joint you need to work with things that are small and fiddly and malleable materials that give a high level of resistance.

Bilateral co-ordination

We all need to be able to co-ordinate both sides of the body at the same time in a controlled way. This can mean using both sides to do the same thing, like pushing open a door or jumping into a puddle. We also need to be proficient at using alternating movements when both sides of the body are doing the same thing but not at the same time.

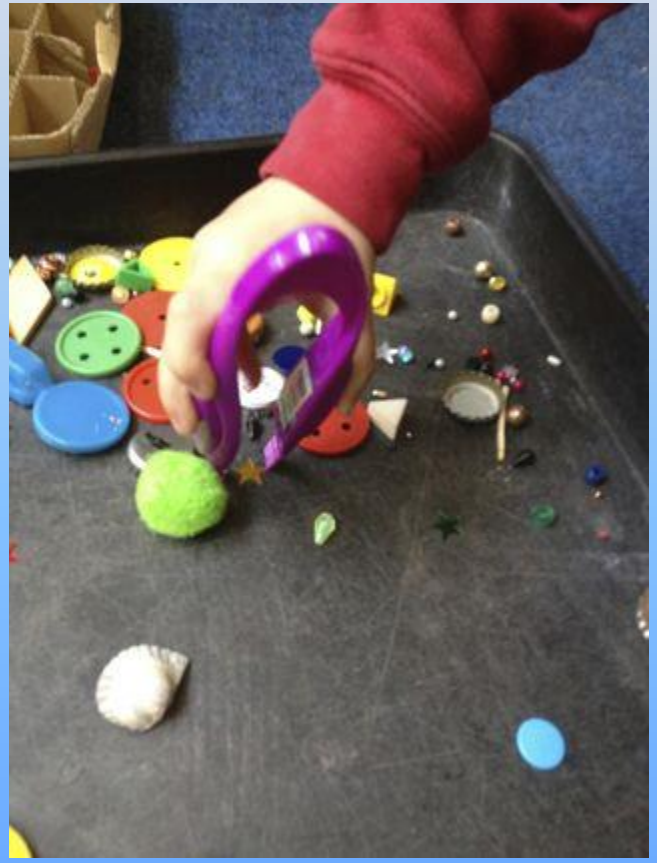
Bilateral co-ordination

Walking is a good example of this where our arms and legs will be making a similar movement to each other but in sequence. The most complex level of bilateral co-ordination is where the body has to do two completely different movements on each side, but at the same time, such as when cutting with scissors while holding and controlling the paper with the other hand.

Hand-eye co-ordination

The correct term for this is Visual Motor Integration. It is one of the fundamental skills which hold the key to so many of the things that children need to be able to do, not only to become successful mark makers, but to have success in virtually every aspect of their life. It is this ability to control hand movement guided by vision.

Hand-eye co-ordination



Creating a Dough Gym

- The children have been assessed in relation to their gross and fine motor dexterity, I have set up Seahorse Dough Gym.
- **What is Dough Gym?**
- Dough Gym is a gym for children where you work out with dough – Simple!
- Dough Gym is a specific **daily** intervention - If it is going to have impact it has to be regular and consistent.
- Dough Gym is directly linked to assessment and attainment.

Creating a Dough Gym

Dough Gym is done as part of a whole class session where one group works out in the Dough Gym and the other children do dexterity related exercises.

Dough Gym is done to music – I have found that this is key to its success. Children are highly engaged by music and the beat is crucial when it comes to performing the Dough Gym moves.

What do I need?

Dough

Every child needs to have a piece of dough that corresponds to the areas of development that they are working on.

As a general rule of thumb, when working with **gross motor** dexterity they need a piece of dough as big as the child's head! If working on **mid range development** then a nice big ball and if working on **hand and finger dexterity** then smaller pieces of stiffer dough (or malleable material) that will give a higher level of resistance is needed.

What do I need?

Dough

How does a session work?

Children's backs need to be straight and their legs shoulder width apart. The children will find it very tempting to bend forward thus using their back rather than their shoulders and arms to support the dough. I always tell mine to squeeze their bum cheeks as this tightens the 'core' and helps prevent bending.

How does a session work?

When doing a session of Dough Gym children will be swapping between hand and finger exercises and palm, arm and shoulder workouts. The children won't constantly have their hands in the dough.

Hand warm ups

Jazz Hands - In time to the music, stretch your arms out straight and repeatedly 'flex' your Jazz Hands!

Hand warm ups

Sharks - Bend your elbows and put your flat palms onto your tummy. Stick up your thumb so it is nice and straight (like a sharks fin). Keep your fingers tightly together and then bend your knuckles, DIP and PIP joints to make your fingers move like a fishes tail. Swim your hands separately out to the side, up above your head and then back down again. Keep your fins straight and your tails tight!

Hand warm ups

Hand warm ups

1,2,3,4,5,5,5 - Count to five on alternate hands starting with the thumb. Every time you shout out a number you extend your arm until it is straight and lift up the correct number of fingers. When you get to five, repeat the number three times, really stretching out your fingers and your palm.

Dough work

- Once you have done a couple of warm up exercises then you can get stuck into your dough.
- Use the dough for resistance work. Anything from squashing it with a flat palm and a straight arm to pinching small bits out of it. The large ball of dough is also useful for developing arm muscles and pivots by lifting as well as hand arches and finger pivots by squeezing.

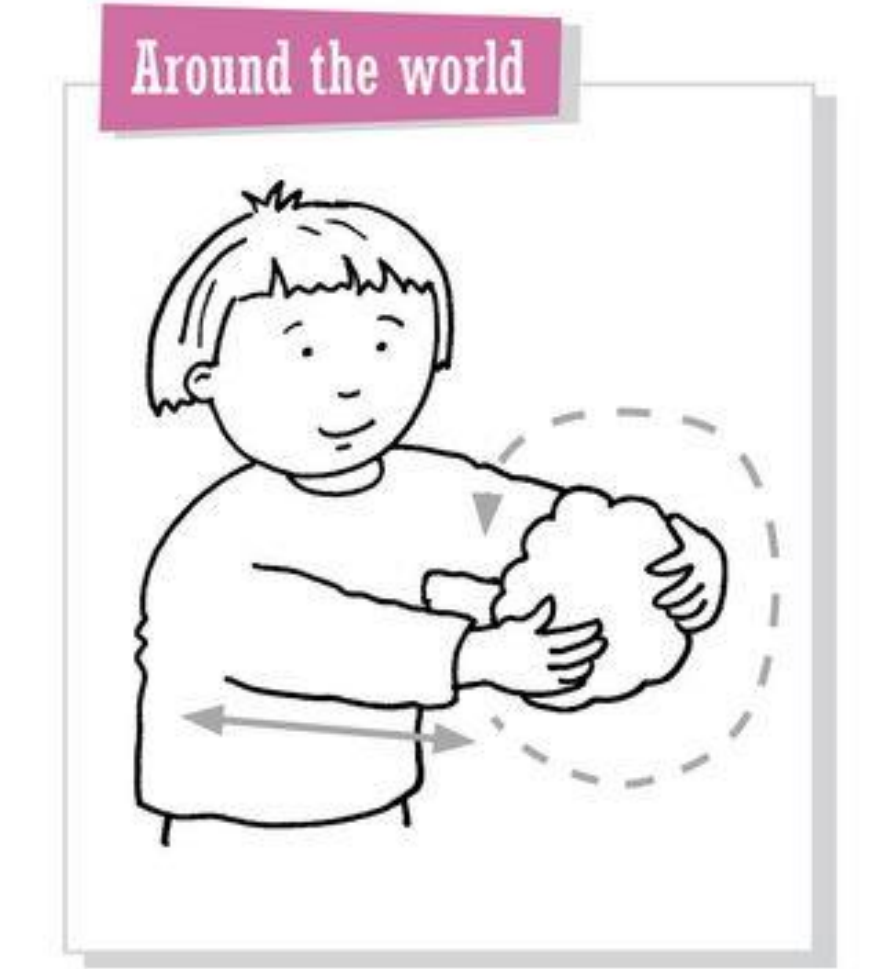
Dough work

If you are working upper body, then you want lots of pushing, lifting, rotating and squeezing

Upper body workouts

Around the World – children hold their complete piece of dough with both hands. With arms outstretched and with **no** bend in their elbow they take their dough in a complete circle as if it was a moon going around the Earth.

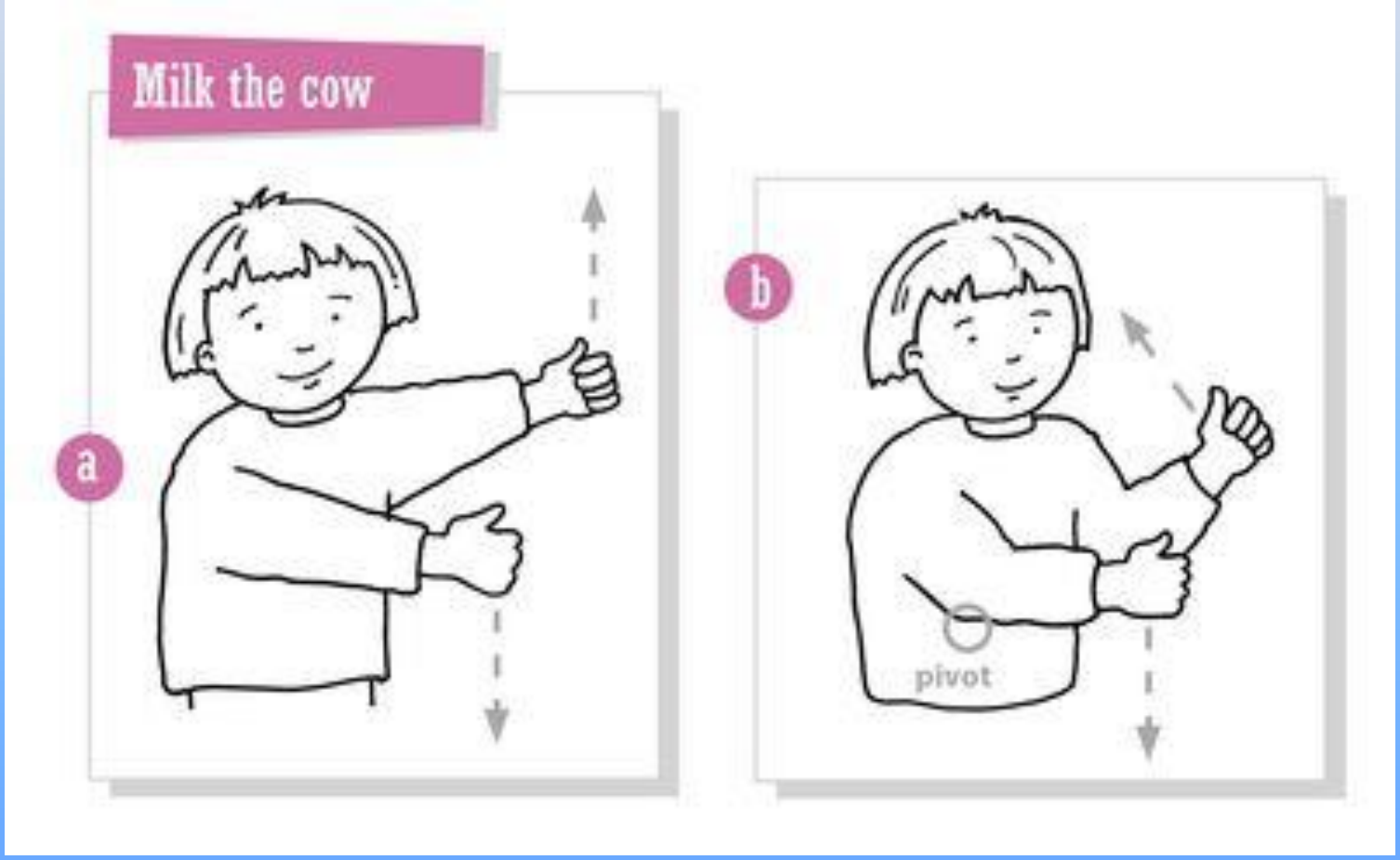
Upper body workouts



Upper body workouts

Milk the cow – This can be done with completely straight arms or by bending at the elbow. With straight arms the children stretch their arms out in front of them and make a fist. They move their arms up and down alternately squeezing their fists as they do so.

Upper body workouts



Upper body workouts

Lasso – Children start with their arms out to the side at shoulder height (like a scarecrow) and then bend at the elbow. They then make a fist, as if they are holding the lasso. Whilst maintaining the bend in the elbow and a fist they rotate their wrists either alternately or at the same time ending with a complete arm extension out in front of them as if they are throwing the lasso.

Upper body workouts

Upper body workouts

Swim – The children begin with their elbows bent, palms down, thumbs touching each other and the backs of their hands under their chin. Keeping their thumbs together they push their hands out in front of them until their arms are fully extended before bringing their hand back under their chin to start again (like breast stroke).

Dough Gym session

- In between all of these exercises we would be returning to the dough to do more pushing, rolling, lifting squeezing etc.
- The session is fast paced and hard work but most of all fun.

Funky Fingers

One group of children will be working with an adult having a Dough Gym Session. The rest of the children will be split into groups identified by assessment of their need and stage of development.

Funky Fingers

Activity 1
Dough Gym

Activity 2 Palm strength & pincer grip exercises

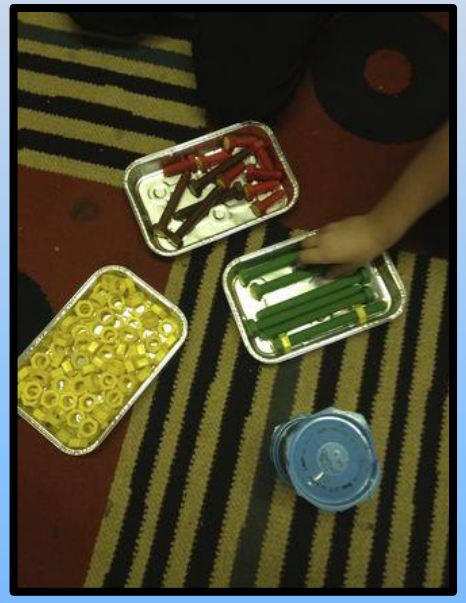
Activity 2 Development Pincer movement

Activity 3
Wrist and arm rotation

Activity 4 DIP & PIP joint flexibility

Funky Fingers

Keep the spinners spinning until the timer runs out



Screwing nuts onto bolts against the timer

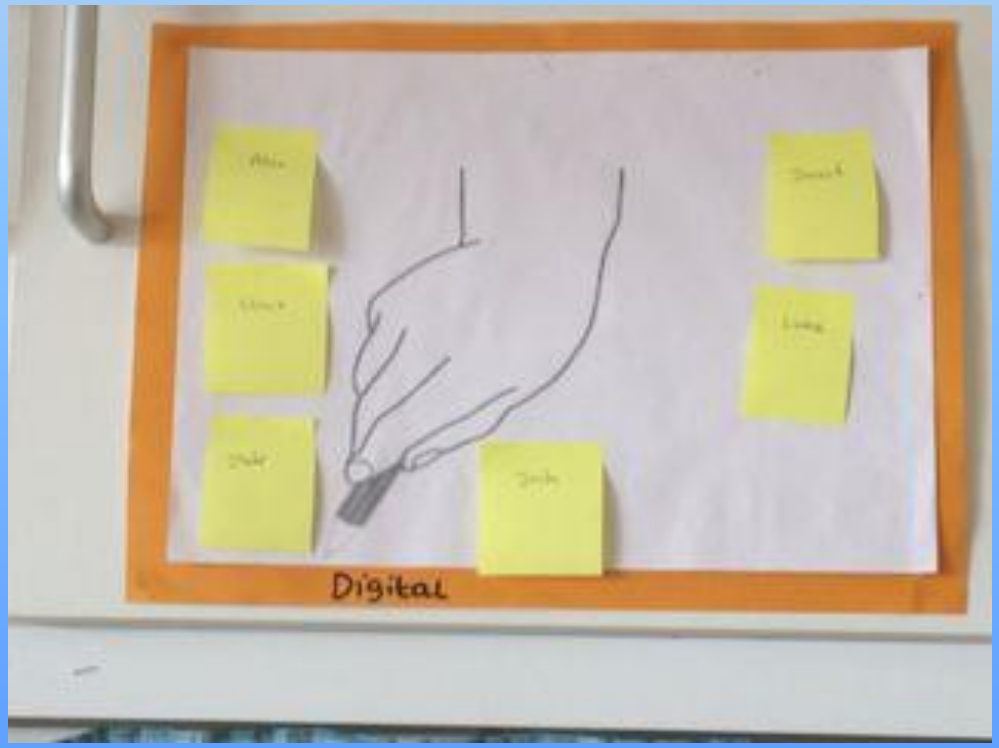
Thread the (differentiated) objects onto the skewer

Funky Fingers

The Funky Fingers activities stay for a week. They are only used at Funky Fingers time and not as part of continuous provision. This helps Miss Wittman to monitor how the children are using them to make sure they have ultimate impact, it also stops the children from getting bored with them.

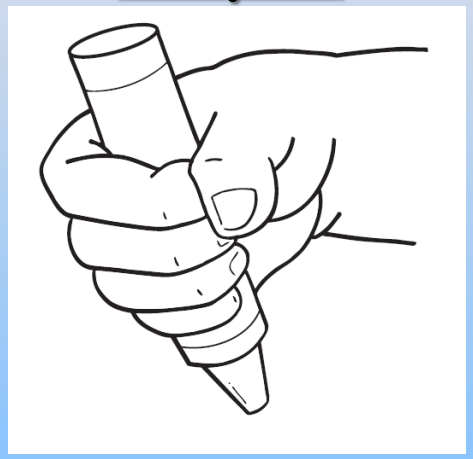
Grip assessment

We use 'Grip Assessment' displays to help to remind where the children are up to and where they are going next.

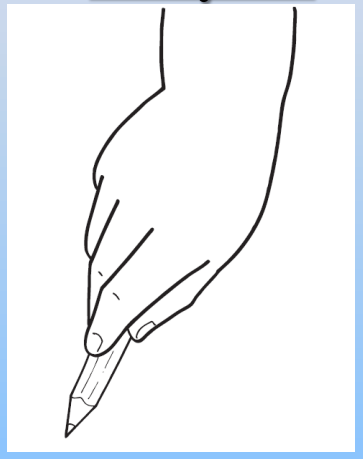


Grip assessment

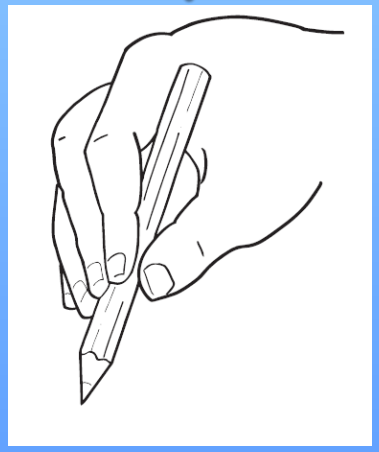
Grip 1



Grip 2



Grip 3



Grip 4