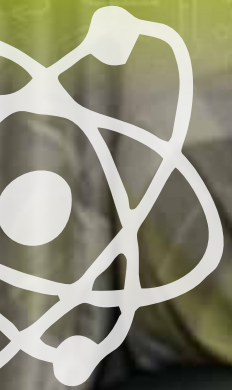




#ThinkSTEM

**STEM Activity Pack for
Childminders and Families**

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SCMA is working in partnership to #ThinkSTEM with



It's time to #ThinkSTEM



STEM stands for **S**cience, **T**echnology, **E**ngineering and **M**athematics. The subjects may sound better suited to a classroom than your living room, but it's amazing how many day-to-day activities and areas of play involve these skills.

Have you ever looked at objects floating in a water tray, baked cakes with your children, built junk models or counted out play money? Yes? Well then, you've already touched upon the key elements of STEM without even noticing.

In this **#ThinkSTEM Activity Pack**, we'll give you ideas for carrying out your own STEM-based learning activities within your own childminding service. We'll also suggest other ways you can extend the activities and encourage learning through play:

- #ThinkSTEM - An Introduction for Childminders and Exploring Your Senses
- #ThinkSTEM - Science Inquiry and STEM Outdoors

All the activities mentioned in this Activity Pack should be suitable to carry out either in the home or in your local area and require low or no cost household items.

In addition, we have included 'With the Family' sections to encourage children to extend activities into the home. This helps to strengthen their learning as well as ensuring that parents are actively involved and included whilst supporting the childminder-family relationship.



Why STEM?

We know from research, that children's interests and career choices tend to be influenced by the experiences and opportunities they are given in early childhood. By introducing young children to a wide range of topics from an early stage, we are giving them the opportunity to make informed and more positive decisions later in life.

Most importantly we know that children learn best through play, and as a childminder you are ideally placed to provide quality play opportunities that can promote STEM learning.

Being aware of STEM learning and play opportunities, you – as a high-quality professional childminder - can offer an invaluable range of experiences and activities to support children's learning, development and wellbeing.

In addition, this allows you to inform and assure parents that you are providing relevant activities which tie in with what they may already be learning at school or will learn in the future but in a fun play-led way.



Quick #ThinkSTEM ideas...

Here's a few quick #ThinkSTEM ideas and suggestions to get you started:

- Building structures with blocks, sticks and other materials you can find – how about paper cups or boxes?
- LEGO – no matter what age, everyone loves LEGO! What can you create with LEGO?
- How many red cars have you seen on the road? Make maths fun with simple, but engaging games and activities.
- Can you think of any other STEM-based learning activities yourself?



Over to you...

STEM is a hot-topic, and to help stimulate children's learning, we must encourage them to take an interest in STEM-related activities, how things work, making science and maths fun and engaging, and related to the world around us.

Whilst you're doing these activities, it's important that you recognise the full impact of what you are doing with your minded children and their families at home – it's probably more beneficial to their learning, development and wellbeing than you think...

Think!
How many of the eight Wellbeing Indicators (sometimes referred to as SHANARRI) would these activities achieve?



#ThinkSTEM

Exploring Your Senses



Learning about our bodies is possibly one of the first science topics that children are aware of and show a natural curiosity for; they love to touch, taste, hear, smell and look at everything that is going on around them.

Touch



'Feely Tubs'

You'll need:

- Empty, clean two-litre water or juice bottles
- Scissors
- Strong tape e.g. electrical or duct tape
- A selection of objects (i.e. cotton wool, marbles, pegs, shells etc.)
- Large socks

1. After rinsing and drying the empty bottles, carefully cut them in half to create a tub-like section.
2. To prevent any cuts or scratches, cover the cut edges with tape.

3. Prepare several bottles in this way and place various objects in each tub. This could be anything from cotton wool to shells or toys.
4. Place the tubs inside large socks so that the contents cannot be seen, and this also adds extra protection from any sharp edges.
5. Encourage the children to feel the objects in your 'Feely Tubs' and describe what they can feel. This activity can also be used to encourage sensory play, new language and numeracy skills.



WITH THE FAMILY

Take the 'Feely Tubs' home and ask your parents to guess what's inside. Think about what else could we try in Feely Tubs at home? Why not try to name the fruit in the fruit bowl without looking, using touch alone – did you get everything right?

Think!

How about extending this activity by creating a sensory box with related loose parts or things that relate to a theme or topic you're covering in your service, i.e. nature, animals or shapes.

This could lead to a discussion about how people who are visually impaired use touch where others may use sight. Look at braille writing or explore the bumps in the ground at road crossings.



Smell

'Sniffy Bottles'

You'll need:

- Small empty juice or water bottles (ideally with a sport cap, e.g. 500ml)
 - Fruit (in pieces)
 - Herbs
 - Sock
 - Elastic band
1. Thoroughly clean and dry the bottles, remove the lids. You will also need to remove the silicone membrane from inside the drinking spout.
 2. Place a piece of fruit inside one bottle (such as an orange or lemon) or some plants or herbs from the garden; for example, mint.
 3. Use a sock to cover the bottle and secure round the neck with an elastic band.
 4. Open the flip lid of the bottle and encourage children to use their sense of smell to work out what is inside the bottle.

Top Tip! Always use the same bottle for the same scent as re-using them with different items can contaminate the smell, making it harder to identify and become confusing for the child. Also make sure fresh items are removed immediately from the bottles after use to prevent rotting.

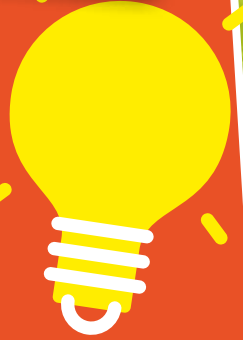
WITH THE FAMILY

Take the 'Sniffy Bottles' home and ask your parents to guess what's inside. Think about what else could we try in Sniffy Bottles at home? Is there a smell you like best?

Think!

Use flashcards or pictures of the items within the bottles so the children can try and match them up to what they can smell.

Extend this activity by taking a trip to the local park or your back garden to find plants and trees that have an identifiable smell. Talk about how smell adds to how we experience food. Ask the children to pinch their noses while eating – can you still taste the food?



Sound

'Shaky bottles'

You'll need:

- Small empty juice or water bottles (with lids)
- A selection of materials (e.g. sand, gravel, feathers, rice etc.)
- Elastic bands
- Socks



1. Clean and thoroughly dry the bottles and add a little amount of one of the objects to each bottle.
2. Replace the lids on the bottles and cover with socks, securing the socks with elastic bands.
3. Encourage children to shake the bottles and listen to the different sounds.
4. In larger groups, why not make multiples of each bottle type and ask the children to match their bottle with someone who has the same sound.

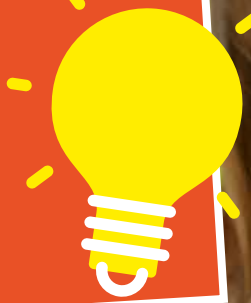


WITH THE FAMILY

Take the 'Shaky Bottles' home and ask your parents to guess what's inside – you might want to clap along to the sounds too? Use the bottles to create a rhythm and ask other children to follow your rhythm. What other sounds can you make at home? Have you tried making your own music? Try using different items from your home, e.g. pots, pans and wooden spoons?

Think!

Use cards with pictures or examples of the actual materials inside the bottles and ask children to try and match up what they think is in their bottle.





Learn with SCMA

SCMA is actively encouraging childminders to #ThinkSTEM and feel confident in delivering STEM-based activities and learning opportunities for their minded children.

SCMA and SSERC have developed two Learn with SCMA programmes based on key themes within STEM for our members (available as Interactive Learning and e-Learning) to add to your Continuous Professional Learning (CPL):

- Think STEM: An Introduction for Childminders and Exploring Your Senses
- Think STEM: Science Inquiry and STEM Outdoors

These courses also provide you with references to Curriculum for Excellence so you can easily demonstrate how you are meeting experiences and outcomes. This not only links the learning that children are doing now with what they will be doing in the future, it also provides valuable evidence for your inspection.

To find out more, please call the Learn with SCMA team on **01786 445377**.

#ThinkSTEM

Science Inquiry Skills

Science Inquiry

One of the simplest ways to start thinking about science inquiry is to give children a collection of random materials - perhaps in a box or tray - and see what sort of questions they ask.

Examples of things included could be stones, leaves, coins, toys or household items. You might want to make all the objects suit a theme such as the seaside or toys - this way you can focus on one topic at a time. Try and include something unusual the child may not have seen before.

Arranging and grouping leads to what a lot of children tend to do naturally which is classifying, or what we might think of as sorting.

Ask children to look at a supermarket catalogue and ask them to cut out objects and then group them. How about looking at different types of food and then discussing why they have made their choices. This will encourage a discussion about being healthy, being active and eating well.

We always encourage children to tidy up after themselves and this can be used as a classification exercise in your setting. Perhaps you have a dressing-up area that needs to be sorted, can the children sort the items into hats, shoes, dresses?

What about clothes that would keep you warm or dry? This exercise could lead you into the fair testing aspect of science inquiry. How do we know which clothes will keep us dry?



WITH THE FAMILY

Take this idea home and ask families or older children to look at the packaging on their lunch or snack and try and spot which items can be recycled by looking for the symbols and then sorting them into recyclable and non-recyclable.

Think!

Always be aware of risks and what could represent a danger to the child. For example, anything that could be a choking hazard or cause an allergic reaction.



Observing and Exploring

This area of science inquiry looks at observing things carefully to see how they change over time. Observing and exploring can also involve thinking about:

- What happens if...?
- How could I...?
- When does that happen...?
- Why does it change...?

For example, what happens if I leave an ice cube in a glass? Over time we know it will melt but we could also look at how we speed up or slow down the melting process.

Use these sorts of questions to allow children to make their own observations and carry out

investigations. Put a few ice cubes in bowls and let them place them in various locations in the house, perhaps the windowsill, the fridge or under a towel. Check every five or ten minutes or so and see what has happened. Has one melted quicker than the others? Why could this be?

Allow the children to test different ways to melt the ice cubes – why not encourage them to wrap them in various fabrics? Would pouring anything on them make a difference? Perhaps some lukewarm water?

These sorts of activities can be related to real world experiences; talk about why snow and ice melt once it gets warmer or in areas where there is more sunshine.



Think!

Always be risk aware. Remember to risk assess these activities to make sure there is no burning or scalding risks from sources of excess cold or heat.

WITH THE FAMILY

Take this idea home and ask children to think about warm or cold areas of their own house – why are they warm? Why are they cold? Or when they are on an outing and have an ice-cream – why does it melt quicker if you stand in the warm sunshine?



Share your STEM ideas with us via Facebook and Twitter @ScotChildmind
Encourage your minded children to #ThinkSTEM!

#ThinkSTEM

STEM Outdoors



Nature Crown

Making a nature crown when you are out and about is another great way to record what you have seen and where you have been. Keep a record and produce a fantastic crown to wear with pride!

Before you go out, take approx. 4cm wide strips of card with a piece of double-sided sticky tape running all the way along the middle and measure them to your children's heads. Tape them to fit into a band around the child's head and then off you go.

Once you are outside, remove the outside covering from the double-sided tape and allow the children to collect fallen leaves and stick them to their crown. Whilst you're gathering the leaves, can you match them to the trees they came from?

WITH THE FAMILY

Take your Nature Crown home to show your family and have a look in your own garden or at a nearby park to see if you can add more elements of nature to your crown. Can you find anything new or different in other locations? You could make a crown at home with your parents and see if what different leaves you can collect, compared to the first one?

Rubbings and Prints

As part of science inquiry, we looked at classifying objects – how about grouping objects into living and non-living. When you get outdoors, this is an ideal environment to extend sorting and collecting activities, take a closer look at the differences and encourage questions and a discussion.

Most childminders will already be familiar with the idea of leaf rubbings or tree bark rubbings. Taking some paper and using the edge of a crayon to rub over the surface and create an outline of the material below. Encourage children to find different objects that are manmade, such as signs or plaques to see what the difference is between manmade and natural objects:

- Do you recognise any patterns?
- Are manmade objects different from natural objects? If so, how? Can you describe them?
- What are they made from?

All these things are helping children to compare and contrast objects from two already defined groups.

Playdough prints are another fun way to look at patterns when you are out and about, see how many items or objects you can find to make imprints off and look at the patterns, perhaps on drain covers or tree bark, what shapes can they see in the patterns? This is an important part of mathematics where children can investigate objects and shapes, can sort them, and describe and be creative with them.

Top Tip! Use homemade playdough to protect the environment. If you are using shop-bought playdough, make sure you don't leave any behind once you're done.

WITH THE FAMILY

Together with your family, have a think about what other things you can take a rubbing of in your house, and think about whether it's a natural object or manmade. What about the wall of your house, a leaf in the garden or the bark of a tree?

Cone Line

Perfect for autumn! With lots of colourful leaves, alongside pinecones, chestnuts and sycamore seeds all falling from the trees - collect together a selection of natural objects, pick two nearby trees, and ask the children how many cones and other natural objects it would require to stretch from one tree to the other?

Layout all the objects to see how close they were to the correct answer - was your estimation correct? Estimating is an important life skill; not only does this encourage estimating and counting skills, children are also using natural materials, which will hopefully spark their interest and invite more discussion about what they are, where they came from and how they grew.

Think!

Extend this activity by using stones or other items along with the pinecones to encourage the child to make repeating patterns, for example one stone, two pine cones, can they keep the pattern going?

Use your leaves and pinecones to make some temporary artwork on the ground, introduce some technology by letting the child take photos of their art.



WITH THE FAMILY

Have you tried to write your name in nature - try using twigs and branches? Next time you're out at the park with your family (or even in your back garden) try to spell out your name using things you've collected from the ground. How about making shapes - a square, a triangle or a circle?

Ice Garden

Get creative with the great outdoors and the wonder of ice - bring the outdoors, inside! Collect a variety of objects from nature, such as petals, leaves, seeds, stones and anything else you can find that is safe to pick up.

Place them in a container and cover them in water. Watch what sinks and what floats - and talk about where they come from and which are manmade or natural. You might want to add in some other materials that are manmade, such as coins, buttons or marbles, which provides an opportunity to reinforce sorting and how to group items.

You could also try adding some fresh herbs to add a fragrance to this activity? Place the tub in the freezer overnight to create a beautiful ice garden. Do this throughout the year and look at how the colours and materials you find change with the seasons.

Extend this Activity

Once it is frozen, let it melt either in a tray in the sunshine or by placing in a basin of water and observing how a large heavy block of ice floats, which items become detached from the ice garden first, and if those items sink or float.

Did you notice the scents and colours being released as the ice garden melts? This makes a lovely sensory experience, that can promote discussion about favourite smells and how we can detect smell with our noses.

When your ice garden is frozen, look at the petals and the fresh leaves - have they stayed the same? Why is this? What else do we put in ice to preserve it? Encourage a discussion about frozen food - such as fresh fish and garden peas - and why do we keep things frozen?



Think!

Be careful with berries as children may be tempted to eat them and some can be toxic.

Place them in a container and cover them in water. Watch what sinks and what floats - and talk about where they come from and which are manmade or natural. You might want to add in some other materials that are manmade, such as coins, buttons or marbles, which provides an opportunity to reinforce sorting and how to group items. You could also try adding some fresh herbs to add a fragrance to this activity?

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Scottish
Childminding
Association

committed to quality childcare

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Working in partnership to #ThinkSTEM



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