



# Learning through Science for students with Complex Needs

Learning through Science activities allows for all students to benefit from multi-sensory, hands-on experiences. While engaged in scientific activities students can “do” and observe a reaction as a result of their input and action. Choosing experiments that have a quick reaction can support observational skills. Science activities can:

- Foster the desire to explore and experiment
- Nurture an understanding of cause and effect, trial and error
- Help develop an understanding of the world
- Enhance the development of [communication](#) and collaboration skills
- Expands vocabulary

Using photographs / videos to detail a science experiment is useful, equally taking photographs / videos as an experiment is being carried out can support students to recall and record their experiment.

Each student should be encouraged and supported in work through the science activities as independently as possible. A visual breakdown of the steps involved in the experiment can help to support this.

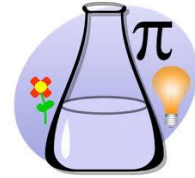
Most science activities will help to develop many important skills, for instance, fine and gross motor skills, problem solving and planning, hand-eye coordination, developing communication skills, patience and perseverance etc.

Many simple and home friendly science activities can be found here:

<https://funlearningforkids.com/science-activities-kids/>

In this resource we will consider some science experiments that can develop scientific skills as well as some of the skills above.





**Some Science suggestions for students with complex needs:**

Experiment	Web Links to videos / visual resources
Under the Sea Sensory Jar	<a href="https://www.thechaosandtheclutter.com/archives/ocean-sensory-bottle">https://www.thechaosandtheclutter.com/archives/ocean-sensory-bottle</a>  <a href="https://www.youtube.com/watch?v=h-ROWYUHCUG">https://www.youtube.com/watch?v=h-ROWYUHCUG</a>
Cloud in a bottle	<a href="https://www.youtube.com/watch?v=VNwZjkq92Y">https://www.youtube.com/watch?v=VNwZjkq92Y</a>  <a href="https://www.weatherwizkids.com/experiments-cloud.htm">https://www.weatherwizkids.com/experiments-cloud.htm</a>
Sensory Slime	<a href="https://www.youtube.com/results?search_query=sensory+slime">https://www.youtube.com/results?search_query=sensory+slime</a>  <a href="https://www.science-sparks.com/fine-motor-skills/">https://www.science-sparks.com/fine-motor-skills/</a>
Milk Art	<a href="https://www.youtube.com/watch?v=nY055I4cVvE">https://www.youtube.com/watch?v=nY055I4cVvE</a>  <a href="http://www.sciencefun.org/kidszone/experiments/">http://www.sciencefun.org/kidszone/experiments/</a>
Sink or Float	<a href="https://www.youtube.com/watch?v=cSjNd2kZW-k">https://www.youtube.com/watch?v=cSjNd2kZW-k</a>  <a href="https://happyhooligans.ca/sink-or-float-experiment-preschoolers/">https://happyhooligans.ca/sink-or-float-experiment-preschoolers/</a>

**Cotton ball water absorption:**

This activity encourages scientific exploration as well as development of fine motor skills. It also offers sensory integration which can support many students with complex needs with their learning. This activity can also encourage independent learning particularly if supported by a visual breakdown of the task.

**Baking soda science experiment:**

Another instantly observable fun science activity, where students can watch how their action causes an immediate reaction. This activity also supports fine motor development. A multi-sensory experience is also offered when you can hear, see and feel the fizzing of the gases erupting.

On the following pages are examples of a “**task analysis**” sheet which helps to break down the steps of the above activities for a student.

## Cotton Wool Absorption Experiment:

### What you will need

White cotton wool balls



Clothes peg



Plastic cup of water



Eye dropper or medicine dropper



Food colouring  
(any colour)



Tray



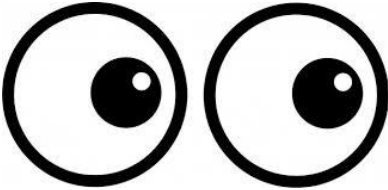

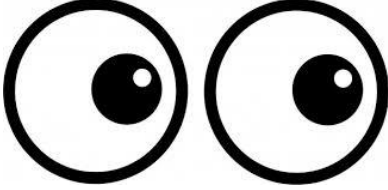
What to do

**First**, add food colouring to water.



**Next**, with the eye / medicine dropper put some liquid onto a cotton wool ball.



<p><b><u>Now</u></b>, watch as the coloured water soaks into the cotton wool.</p>	
<p><b><u>Then</u></b>, pick up the cotton wool balls with clothes peg and add to the cup.</p>	
<p><b><u>Finally</u></b>, watch the as the water is soaked into the cotton wool.</p>	

This simple activity can lead to lots of language development, questions posed and considered. Students can be led to explore their learning and observations by being asked open-ended questions, or posing statements for the student to think about, for instance:

- What colour would you like?
- How much food colouring should we add?
- How many cotton wool balls should we add?
- What do you think will happen if.....
- Look at how much water is soaking in.....

Students that are pre or non-verbal can enjoy this activity, listening to the language alongside the actions as they happen. These types of activities can encourage receptive understanding.

More information for this activity can be found here:

<https://teachpreschool.org/2013/01/05/cotton-ball-science-in-preschool/>

## Baking Soda Science Experiment:

### What you will need

Baking powder



Vinegar



Eye dropper or  
medicine dropper



Plastic cup



Spoon



Food Colouring  
(optional)



What to do

**First**, fill the plastic cup about  $\frac{1}{4}$  with baking powder.



**Next**, add the food colouring to the cup.  
(optional)



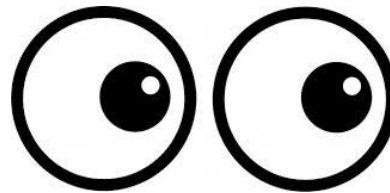
**Now**, stir with the spoon.



**Then**, add the vinegar.



**Finally**, watch what happens.



There are lots of child friendly, engaging videos of this experiment available on YouTube.

Here are some YouTube links you can follow:

<https://www.youtube.com/watch?v=r4twHjtv0iw>

<https://www.youtube.com/watch?v=h5pPwXCtm60>

<https://www.youtube.com/watch?v=nFZhbEi19M8>

Other useful link for visual breakdown of experiment:

<https://preschoolinspirations.com/vinegar-baking-soda-science/>