**Year 2 Science & Technology Unit 2015**

**All Mixed Up (PCR)**

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<th>Term:</th>
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<th>Week:</th>
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**UNIT OVERVIEW**

The *All Mixed Up* Primary Connections unit is an ideal way to link science with literacy in the classroom. In this unit students will learn about materials that don’t mix well, and others that are difficult to separate. Through hands-on investigations, students explore how changing the quantities of materials in a mixture can alter its properties and uses.

**UNIT OUTCOMES**

**Values and Attitudes:**
ST1-2VA – demonstrates a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping sustainable futures.

**Working Scientifically:**
ST1-4WS – investigates questions and predictions by collecting and recording data, sharing and reflecting on their experiences and comparing what they and other know.

**Working Technologically:**
ST1-5WT – uses a structured design process, everyday tools, material, equipment and techniques to produce solutions that respond to identified needs and wants.

**Knowledge and Understanding:**

**Material World**
ST1-12MW – identifies ways that everyday materials can be physically changed and combined for a particular purpose

ST1-13MW – relates the properties of common materials to their use for particular purposes.

**Products**
ST1-16P – describes a range of manufactured products in the local environment and how their different purposes influence their design.

**ASSESSMENT**

Students will be exposed to a number of different types of assessments during this unit.

- **Diagnostic Assessment:** occurs at the beginning of the unit. This assessment is used to elicit students’ prior knowledge so that the teacher can take account of this when planning how the unit will progress.

- **Formative Assessment:** occurs throughout the unit at various points. This assessment type enables the teacher to monitor students’ developing understanding and provide feedback that can extend and deepen students’ learning.

- **Summative Assessment:** occurs towards the end of the unit. This assessment type is used determine students’ achievement of Science Inquiry Skills and Science Understanding as developed throughout the unit.

**ICLT Resources**

ABC SPLASH WEBSITE:
- Cooking

**MATERIALS NEEDED FOR UNIT**

**RESOURCE SHEETS:**
- See Primary Connections book *All Mixed Up*

**OTHER EQUIPMENT:**
- Samples of materials/ ingredients/ mixtures
- Containers, bags, cups
- Butcher’s paper
- Bowls, mixing spoons, colander, sieve, paper towels
## UNIT AT A GLANCE

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<tr>
<th>WEEK</th>
<th>LESSON</th>
<th>OVERVIEW OF TEACHING &amp; LEARNING EXPERIENCE</th>
<th>ASSESSMENT</th>
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</table>
| 1    | Masters of Mixing – What’s my mixture? ST1-4WS, ST1-12MW, ST1-13MW | → discuss similarities and differences between images of characters creating mixtures  
→ explain why they think different characters are creating mixtures  
→ brainstorm what they know about mixtures and their uses  
"HOME CONNECTOR" → Many Mixtures investigation | Diagnostic Assessment: Elicit what students already know and understand about ‘how different materials can be combined, including by mixing, for a particular purpose.’ |
| 2    | Creative Cooking ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW | → work in teams to observe different materials being mixed together  
→ record observations in a table and discuss them | Formative Assessment: Monitor students’ developing understanding of ‘how different materials can be combined, including mixing, for a particular purpose.’ |
| 3    | Sometimes Slimy ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW | → work in teams to explore what happens when cornflour is mixed with water  
→ discuss and compare observations  
→ identify that the properties of mixtures can depend on the quantities of materials used. | |
| 4    | Fun Fluids ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW | → work as a class to investigate what happens when oil, water and detergent are mixed together  
Discuss their recorded observations and make evidence-based claims | |
| 5    | Marvellous Mixtures ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW | → discuss mixtures they have explored and the purposes of the mixtures  
→ sort mixtures according to their purposes using a T-chart  
→ describe what the term ‘mixture’ means | Summative Assessment: Assess students’ ability to plan and conduct an open investigation. These tasks are designed to challenge and extend students’ science understanding and science inquiry skills. |
| 6    | Sifting Solids – Cook’s Dilemma ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P | → make predictions about how mixtures can be separated  
→ investigate what mixtures can be separated using different tools | |
| 7    | Sifting Solids – Can we sift it? ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P | → represent the results of their investigation through a game  
→ make evidence-based claims about separating mixtures. | |
| 8    | Interesting Ink ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P | → make predictions about how black inks can be separated  
→ work in teams to investigate what different black inks are made of | Summative Assessment: Exploring evidence of the extent to which students understand ‘how different materials can be combined, including mixing, for a particular purpose.’ |
| 9    | Musing on Mixtures ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P | → brainstorm a new ideas map about mixtures  
→ complete a page about a mixture for a class book. | |

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## LEARNING AND TEACHING ACTIVITIES

1. Display an enlarged copy of ‘*Mix Masters*’ and ask students to identify what is similar & different about what is happening in the 3 pictures.
   - **Questioning:**
   1. What is similar about the pictures?
   2. What is different?
   3. What about...?
   4. Is there anything else?
   5. Did you notice that?
2. Display an enlarged copy of ‘*Looking in the Bowl*’ and model how to record ideas about what is occurring.
3. **Independent Activity:**
   - Record ideas on ‘*Looking in the Bowl*’ resource sheet.
4. On a large piece of paper write the word *Mixtures* in the centre. Create an ideas map about mixtures and their uses.
5. Ask students what questions they have about mixtures and their uses, and record them.

### PLENARY:
- Discuss key words from the lesson and add them to the word wall.

### ASSESSMENT TASK

**Assessment:**

(ST1-4WS, ST1-12MW, ST1-13MW)
Explore what students know about mixtures and their uses – record in science journals in the form of a concept map.

### RESOURCES

- Mix Masters (R.S. 1) enlarged copy
- Looking in the Bowl (R.S. 2) enlarged copy
- Butcher’s Paper
- Word wall cards

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<tr>
<th>WE <strong>ONE:</strong> Masters of Mixing - What’s My Mixture?</th>
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<tr>
<td>ST1-4WS ST1-12MW ST1-13MW</td>
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## Diagram

- **Mixtures**
- **We find them...**
  - in the laundry
  - in the shed
  - in the kitchen
- **We use them...**
  - to eat
  - to clean
  - to drink
  - to build things like roads
  - when we cook
- **We make them...**
  - in the kitchen
- **They can be...**
  - foamy
  - smelly
  - sticky
  - runny
- **in the laundry**
- **in the shed**
- **in the kitchen**

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<tr>
<td></td>
<td>Brainstorm with students some examples of mixtures they might use at home – Examples muesli, seed mix, salad or paint. Record answers.</td>
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<td>Introduce the ‘Information Note for Families’ and read through it with students.</td>
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<td>Discuss how students might ask family members to help them find mixtures, determine what is in mixtures and what they are used for.</td>
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<td>Discuss how packaging can provide clues as to if the items are mixtures.</td>
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<td>Introduce the ‘My Mixtures’ activity sheet and discuss how students will use it to record information. Discuss the purpose and features of table.</td>
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<td>Model how to record a written observation.</td>
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<td>Explain the due date for the observations and record in diary.</td>
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<td>Discuss key words from the lesson and add them to the word wall</td>
<td>Assessment: (ST1-4WS, ST1-12MW, ST1-13MW) Students observe, record and report on mixtures that they can see around their homes.</td>
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**TWO:** Masters of Mixing - Many Mixtures

ST1-4WS  
ST1-12MW  
ST1-13MW

**PLENARY:**

- Discuss key words from the lesson and add them to the word wall

**ASSESSMENT TASK**

- Information note for families
- My Mixtures activity sheet
- Word wall cards
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| THREE: Creative Cooking | □ Introduce the three ingredients and describe appearance/smell.  
   **NB**: remind students to not touch or smell substances.  
   - Cocoa powder  
   - Icing sugar  
   - Rice puffs  
   □ Introduce the ‘Crazy Cooking’ recording sheet. Explain that groups will be creating each of the mixtures described. Make predictions about what will happen/ change.  
   □ Demonstrate how to use a tablespoon to measure out substances, place them in a cup and mix them together.  
   □ Brainstorm a list of words students might use to describe their mixtures and add them to the word wall → smooth, gritty, brown, white, lumpy  
   □ Model recording observations using an annotated drawing → discuss the features and purpose of an annotated drawing (to show an idea or object and includes pictures, words and/or descriptions).  
   □ Collaborative Learning Groups:  
   - Divide students into groups of about 3 or 4  
   - Allow time for teams to complete their investigations.  
   - Questioning:  
     - How would you describe…?  
     - Why do you think it looks like that  
     - How is it different to…?  
     - How is it similar to…?  
     - What might this mixture be used for?  
     - Did it remind you of other mixtures? What are they used for?  
   | Assessment:  
   (ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW)  
   Students examine how different materials can be combined, including by mixing, for a particular purpose. | | →Crazy Cooking recording sheet | →Word wall cards |
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   Students examine how different materials can be combined, including by mixing, for a particular purpose. | | →Crazy Cooking recording sheet | →Word wall cards |
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<tbody>
<tr>
<td>FOUR</td>
<td>Sometimes Slimy</td>
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<td>ST1-4WS</td>
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<td></td>
<td>ST1-5WT</td>
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<td></td>
<td>ST1-12MW</td>
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<td>ST1-13MW</td>
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<td>□ Discuss the purpose and features of a procedural text (to find out how something is done – title, materials, steps, labelled diagrams).</td>
<td>Assessment: (ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW) Students examine how different materials can be combined, including by mixing, for a particular purpose.</td>
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<td>□ Introduce the ‘Just Add Water’ procedural text.</td>
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<td></td>
<td>□ Model completing the steps</td>
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<td>Just Add Water text</td>
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<td></td>
<td>□ Collaborative Learning Teams:</td>
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<td></td>
<td>o Form teams</td>
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<td></td>
<td>o Allow teams time to make their observations and record them in their science journals</td>
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<td></td>
<td>o Discussion:</td>
<td></td>
<td></td>
<td>cornflour</td>
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<td></td>
<td>▪ How difficult was it mixing only a tablespoon of water into the cornflour?</td>
<td></td>
<td></td>
<td>water</td>
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<td></td>
<td>▪ What words would you use to describe the mixture that you have made?</td>
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<td></td>
<td>bowl</td>
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<td></td>
<td>▪ What does mixing cornflour and water together remind you of?</td>
<td></td>
<td></td>
<td>tablespoon</td>
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<td></td>
<td>▪ What were your original thoughts about this mixture? Is what you have found similar? Why or why not?</td>
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<td>o Make predictions ⇒ what would happen if twice as much water was added? Record predictions in Science journals</td>
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<td>o Add an extra half-cup of water to their mixing bowls and make observations.</td>
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<td>o Questioning:</td>
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<td></td>
<td>▪ What happened when we added more water?</td>
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<td></td>
<td>▪ Did that match our predictions? Why or why not?</td>
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<td>▪ When making a mixture, why is it important to pay attention to the quantity of things mixed together?</td>
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<td>□ Discuss key words from the lesson and add them to the word wall</td>
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<td></td>
<td>Word wall cards</td>
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<td></td>
<td>☐ Discuss why scientists might be interested in studying oil and water such as oil spills</td>
<td>☐ Discuss liquids that mix well with water and those that don't</td>
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<td>→Slick Oil sheet</td>
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<td></td>
<td>☐ Explain that we will investigate what happens when oil, water and detergent mix together.</td>
<td>☐ Discuss key words from the lesson and add them to the word wall</td>
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<td>→vegetable oil</td>
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<td></td>
<td>☐ Read <em>Slick Oil</em> and discuss how students will compare the substances when mixed together.</td>
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<td>→water</td>
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<td>☐ Predict what will happen when each mixture is made. Record predictions.</td>
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<td>→dishwashing detergent</td>
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<td>☐ Complete activity, inviting volunteers to make each mixture.</td>
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<td>→cups</td>
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<td>☐ Questions:</td>
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<td>→paddle pop sticks</td>
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<td></td>
<td>☑ What happened when…?</td>
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<td></td>
<td>→measuring cup</td>
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<td></td>
<td>☑ What did you notice…?</td>
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<td>→table covering</td>
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<td></td>
<td>☑ What have we learned about mixtures…?</td>
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| SIX: Marvellous Mixtures ST1-4WS ST1-5WT ST1-12MW ST1-13MW | □ Review the mixtures students discovered at home.  
□ Questions:  
  o How do we know it is a mixture?  
  o What is the mixture used for?  
□ Brainstorm ways we could group the mixtures and record ideas  
  → e.g. colour, texture, uses, size of grains  
□ Introduce a **T Chart** on butcher’s paper and explain that we are going to sort mixtures according to their purpose.  
□ Brainstorm some uses that could be used as headings for the T chart such as – to eat, to clean or to have fun  
  o Are there purposes that we have not represented here?  
  Which ones?  
  o What other mixtures can you think of for this group?  
□ Write the term **Mixture** and describe what students think the term means. Record an agreed definition.  
  o Ask: **According to our definition, is ______ a mixture? Can you think of other examples of mixtures? Are there other ways in which the word ‘mixture’ is use? What about mix?**  
□ How can we make sure something is a mixture?  
□ What do we know about mixtures? **PLENARY:**  
□ Discuss key words from the lesson and add them to the word wall | **Assessment:**  
(St1-4WS, ST1-5WT, ST1-12MW, ST1-13MW)  
Students examine how different materials can be combined, including by mixing, for a particular purpose. | | ➝Slick Oil sheet |

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<td>SEVEN:</td>
<td>Review previous lessons and discuss the usefulness of mixtures and how their properties change depending upon the relative amounts of their substances or ingredients.</td>
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<td>→ 3 tablespoons icing sugar</td>
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<td></td>
<td>View the bowls of mixture and ask students to identify the ingredients in them → three bowls each with 3 tablespoons each of icing sugar, cocoa powder, coconut and puffed rice</td>
<td></td>
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<td>→ 3 tablespoons cocoa powder</td>
</tr>
<tr>
<td></td>
<td>What could we do if someone was allergic to one of the ingredients? How would we remove it?</td>
<td></td>
<td></td>
<td>→ 3 tablespoons coconut</td>
</tr>
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<td></td>
<td>Introduce the colander, sieve and paper towel. Describe how they are used. What is the same/different about each sieve and the paper towel?</td>
<td></td>
<td></td>
<td>→ 3 tablespoons puffed rice</td>
</tr>
<tr>
<td></td>
<td>Introduce question <em>Does the size of the sieve holes affect what can be separated in a mixture?</em></td>
<td></td>
<td></td>
<td>→ 3 large mixing bowls</td>
</tr>
<tr>
<td></td>
<td>Introduce investigation planner:</td>
<td></td>
<td></td>
<td>→ 1 mixing spoon</td>
</tr>
<tr>
<td></td>
<td>Question: Does the size of the sieve holes affect what can be separated in a mixture?</td>
<td></td>
<td></td>
<td>→ plastic tablecloth</td>
</tr>
<tr>
<td></td>
<td>We will change – size of sieve holes</td>
<td></td>
<td></td>
<td>→ 1 colander</td>
</tr>
<tr>
<td></td>
<td>We will observe – which ingredients are separated</td>
<td></td>
<td></td>
<td>→ 1 sieve</td>
</tr>
<tr>
<td></td>
<td>We will keep the same – the type of mixture</td>
<td></td>
<td></td>
<td>→ 1 piece of paper towel</td>
</tr>
<tr>
<td></td>
<td>Introduce enlarged copy of <em>Sifting Investigation Results</em></td>
<td></td>
<td></td>
<td>→ 1 jar</td>
</tr>
<tr>
<td></td>
<td>Have students predict what they think will happen and why.</td>
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<td></td>
<td>Discuss the results of the investigation:</td>
<td></td>
<td></td>
<td>→ Word wall cards</td>
</tr>
<tr>
<td></td>
<td>o Which sieve let the largest-sized ingredients through? Why did that happen?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Which sieve let the smallest-sized ingredients through? Why did that happen?</td>
<td></td>
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<tr>
<td></td>
<td>o What is the answer to our question <em>Does the size of the sieve holes affect what can be separated in a mixture?</em> What evidence do we have for our answer?</td>
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<td></td>
<td>o Discuss why people sieve mixtures.</td>
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<td></td>
<td>Discuss key words from the lesson and add them to the word wall</td>
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<tr>
<td>WEEK</td>
<td>LEARNING AND TEACHING ACTIVITIES</td>
<td>ASSESSMENT TASK</td>
<td>EVALUATION</td>
<td>RESOURCES</td>
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</tbody>
</table>
|      | □ Review previous lessons investigation  
     □ Discuss how we can represent our findings using a whole class role play.  
     □ Introduce the ‘Sifting Game Labels’ – pegs used to attach labels to clothes.  
     □ Explain the game:  
       o ½ class given randomly selected labels & clothes pegs (represent ingredients in a mixture)  
       o Other ½ form a circle and join hands  
       o Call ‘All Mixed Up’ ingredients students enter the circle and walk around randomly to represent being mixed together  
       o Call ‘Colander’, ‘Sieve’ or ‘Paper Towel’ and hold up an example. Students think about whether their ingredient would pass through it, and if it does they leave the circle  
     □ Repeat the game several times, giving students the opportunity to participate at least twice as different ingredients. | Assessment: (ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P)  
Students examine how different materials can be separated from a mixture. |  | ▸ 1/2 cup icing sugar in clear plastic container/ bag  
▸ 1/2 cup coconut in clear plastic container/ bag  
▸ 1/2 cup of cocoa powder in clear plastic container/ bag  
▸ 1/2 cup puffed rice in clear plastic container/ bag  
▸ Sifting game labels  
▸ 1 colander  
▸ 1 sieve  
▸ 1 piece of paper towel  
▸ completed copy of previous lessons worksheet  
▸ Word wall cards |

**EIGHT:**  
Sifting Solids – Can we sift it?  
ST1-4WS  
ST1-5WT  
ST1-12MW  
ST1-13MW  
ST1-16P
<table>
<thead>
<tr>
<th>WEEK</th>
<th>LEARNING AND TEACHING ACTIVITIES</th>
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<th>EVALUATION</th>
<th>RESOURCES</th>
</tr>
</thead>
</table>
| NINE | □ Review previous investigation | □ Discuss the results of the investigation: | | → Travelling Ink sheet  
Each team will need: |                         |
|      | □ Introduce the *Travelling Ink* sheet and discuss with students. | o What did we learn? | | → 1 blank piece of A4 paper  
→ 1 cup  
→ 2 strips of filter paper / paper towel  
→ 2 different felt tip pens with soluble black ink  
→ plastic tablecloth  
→ water | |
|      | Model how to perform each step. | o Which inks were similar? | | | |
|      | □ Brainstorm things that might affect what happens to the ink of the pens and record answer on sticky notes. | o Which inks were different? | | | |
|      | □ Introduce investigation planner: | o What could this be used for? | | | |
|      | **Question:** What are different black inks made of? | | | | |
|      | **We will change** – the type of ink | **Assessment:**  
(ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P) | | | |
<p>|      | <strong>We will observe</strong> – what happens to the ink | Students plan and conduct an investigation of what different black inks are made of | | | |
|      | <strong>We will keep the same</strong> – the type of filter paper, the amount of water, where the ink is put on the paper, how the paper is held and how long the paper is dipped into the water | | | | |
|      | □ Collaborative Learning Teams: | | | | |
|      | o Form teams | | | | |
|      | o Allow groups time to complete the investigation | | | | |
|      | □ <strong>PLENARY:</strong> | | | | |
|      | □ Discuss the results of the investigation: | | | | |
|      | o What did we learn? | | | | |
|      | o Which inks were similar? | | | | |
|      | o Which inks were different? | | | | |
|      | o What could this be used for? | | | | |
|      | □ Discuss key words from the lesson and add them to the word wall | | | | |
|      | | | | | |</p>
<table>
<thead>
<tr>
<th>WEEK</th>
<th>LEARNING AND TEACHING ACTIVITIES</th>
<th>ASSESSMENT TASK</th>
<th>EVALUATION</th>
<th>RESOURCES</th>
</tr>
</thead>
</table>
|      | Review previous lessons and revisit the ideas map created in Lesson 1. Asking questions such as:  
  o Do you still think that? What do you think now? Why?  
  o Have we learned more about ______?  
  o Does this fit our description of a mixture? Why do you think that is? | Assessment:  
(ST1-4WS, ST1-5WT, ST1-12MW, ST1-13MW, ST1-16P)  
Students demonstrate how different materials can be combined, including by mixing, for a particular purpose |  | Mixed Up sheet |
|      | Introduce the ‘Mixed Up’ sheet and model how to record thinking in the areas of  
The mixture is …; This is a mixture of …; This mixture is used for…  
NB: You could use mobile devices to allow students to represent their understanding electronically whilst also creating a multimodal text that includes words, pictures and possibly even audio. Using apps like Tellagami, Educreations or Book Creator etc. |  |  | Word wall cards |
|      | Introduce a variety of mixtures for students to use in task. |  |  |  |
| PLENARY: | Discuss the learning from the unit:  
  o What were the most interesting thing you have learned about mixtures?  
  o Which activities did you enjoy? Why?  
  o What helped you learn?  
  o What did you learn about working in teams?  
  o What did you learn about listening to other people’s ideas?  
  o What are you still wondering about? |  |  |  |
|      | Discuss key words from the lesson and add them to the word wall |  |  |  |
Introducing the 'My Mixtures' Project

This term Year 2 will be exploring everyday mixtures and their uses. As part of the science unit *All Mixed Up*, your child will investigate simple mixtures in their home. Examples of simple mixtures in the home might include breakfast cereals, seed mix and detergent mixed with water.

Your child is asked to complete the 'My Mixtures' resource sheet and are also encouraged to take photos, draw pictures and bring some of the items to school for display.

Please make sure you reinforce that some mixtures might be poisonous and they are not to taste, smell or eat anything unless they are given adult permission.

Students will be asked to share their observations with their classmates on Friday 14th August.

Kind Regards,

Mrs Alice Vigors and Mrs Louise Bailey
Year 2 Class Teachers
Name: ______________________ My Mixtures
Find some simple mixtures around your home. Write and draw your answers.

<table>
<thead>
<tr>
<th>What is the mixture called?</th>
<th>What is in the mixture?</th>
<th>What is the mixture for?</th>
<th>What is the mixture called?</th>
<th>What is in the mixture?</th>
<th>What is the mixture for?</th>
</tr>
</thead>
<tbody>
<tr>
<td>cup of black tea</td>
<td>tea-leaves</td>
<td>to drink</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>water</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>sugar</td>
<td></td>
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<tr>
<td>soft</td>
<td>hard</td>
<td>lumpy</td>
<td></td>
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<tr>
<td>gooey</td>
<td>runny</td>
<td>smelly</td>
<td></td>
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<td></td>
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<tr>
<td>yummy</td>
<td>milky</td>
<td>wet</td>
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<td></td>
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<tr>
<td>sticky</td>
<td>cooking</td>
<td>baking</td>
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<td></td>
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<tr>
<td>mixing</td>
<td>stirring</td>
<td>mixtures</td>
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<td></td>
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<tr>
<td>goo</td>
<td>slime</td>
<td>squishy</td>
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<td>slimy</td>
<td>cool</td>
<td>hot</td>
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<td></td>
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<tr>
<td>rough</td>
<td>smooth</td>
<td>bumpy</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>crunchy</td>
<td>oil</td>
<td>water</td>
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<tr>
<td>absorb</td>
<td>sifting</td>
<td>bowl</td>
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