Muddy mixtures and salty solutions

Your Name ……Date……

Imagine you're driving in the outback with your family. Suddenly, baamo!! You swerve to avoid a kangaroo and roll your car.

You didn't come prepared for this emergency. You are miles from anywhere and have no water with you. Fortunately, it has rained in the last few days. But yuck! The water is all muddy. It's a mixture of pure clean rainwater, and dirt. What can you do? You are all going to die of dehydration.

However, because of your expertise in science, you know you can use **filtration**. Filtration is a way of removing solid particles, such as dirt, from liquids, such as water. So you fill your Billycan with muddy water, and start to filter out all that disgusting mud. After using your filtration method several times, you have some nice, clean drinking water. Your family loves you.

Imagine if you had crashed near the ocean. Could you use filtration to remove the salt from sea water? The answer is 'definitely not'. Salt is not in the form of small particles in water.

The reason for this is that salt forms a **solution** in water. Solution means a liquid with a solid that has 'dissolved' in it. A dissolved solid allows water to still be see-through, but some dissolved solids change the colour of the solution. If something dissolves, it means that there are no small particles of solid left. The salt became part of the water solution.

Salty water and muddy water are both examples of **mixtures**. Mixtures are made of two or more different substances. Muddy water is a mixture of dirt and water. Seawater is a mixture of salt and water. Air and coins are other examples of mixtures.

Salt is soluble in water, whilst dirt is not soluble. 'Soluble' means that a solid is able to dissolve in a liquid. That means salt becomes part of the solution when in water, but dirt stays as a solid that is suspended in the water. Salt is therefore much more difficult to remove.

In the lab session, your teacher will be responsible to help your group to separate salt water from a salt water solution. Be ready for action.

Part 1. **Purpose** of the text

Find the key ideas from the text, and their meaning in the context of the experiment. **Organise** below.

a. Title (purpose)

Key word(s)

Meaning in context

Part 2. **Synthesise** an answer to the following question:

a. After you have filtered the muddy water, where will all the dirt be now?

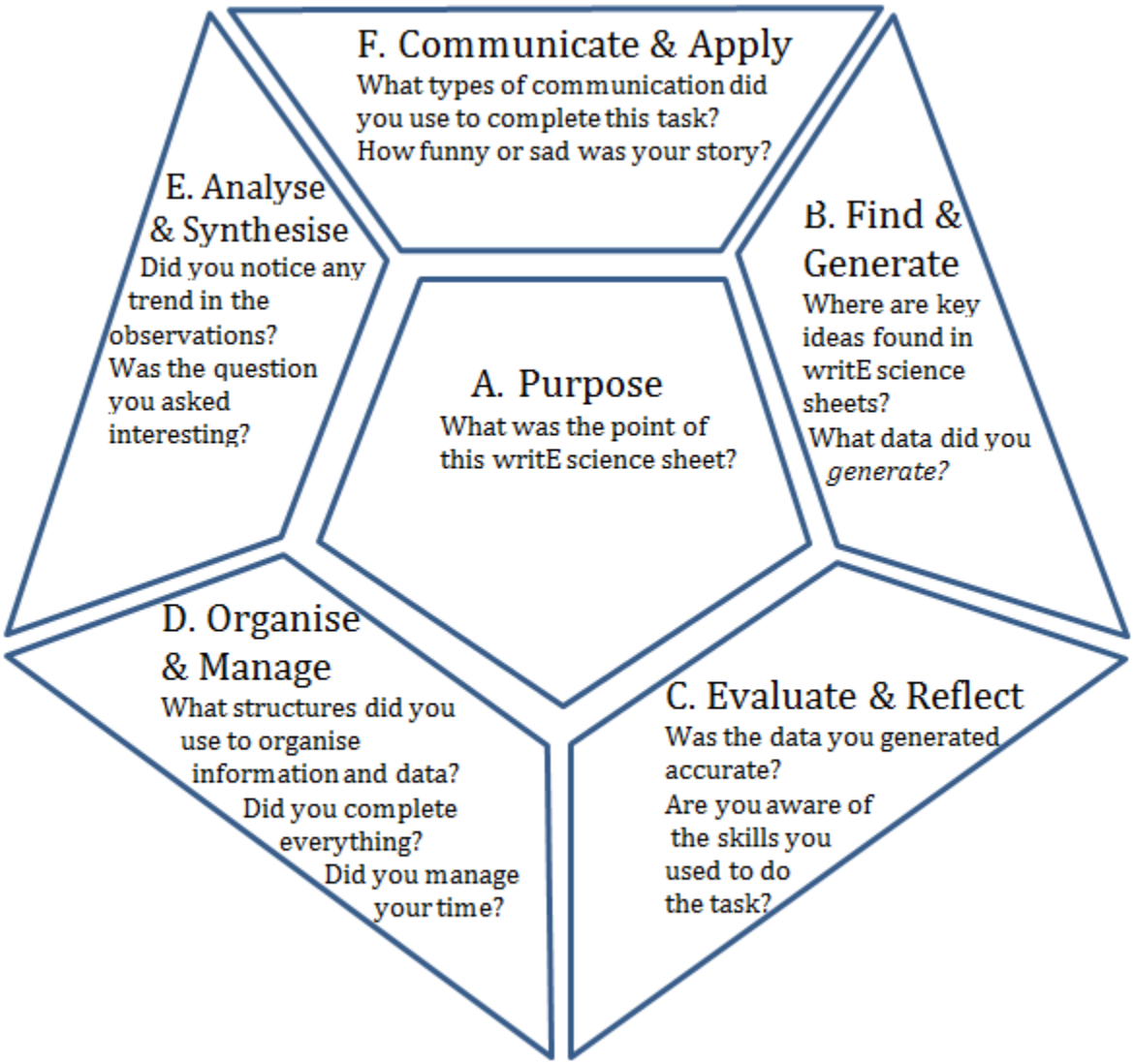
Part 3. **Apply** your new knowledge.

a. What is the mixture that makes up air?

b. What is the mixture that makes up a gold coin?

c. How could you separate the salt from seawater? Explain and describe a possible setup of equipment.

Part 4. **Communicate** and **apply** your understanding of the key words: write an imaginary newspaper article about a factory that manufactures a mysterious new powdered drink. Make up a title, and include the word ‘dissolve’.



Part 5. **Evaluate** and **reflect**.

Evaluate this activity and reflect by suggesting ways to improve it.

Page 3 and onwards given out at teachers' discretion.

Teacher's notes:

1. The story is written so that the key words we are concentrating on are in bold type. These are always the leading idea of a paragraph, and so are in the first sentence of that paragraph. These keywords are to be placed in the small bubbles in the structured overview. The second sentence contains a definition of the key word. Students should be assisted with as much effort as you can afford, to write this definition in point form, leaving out joining words at least. I think constant modelling is necessary, especially from other students when they show good note-taking skills. The rest of the paragraph contains supporting details about the keyword. Again, point-form notes are to be taken.

2. Remember, this is part of a year-long strategy to assist students in developing note-taking skills. The idea is to make their writing an activity that requires their brain. Converting text to notes means they have to actively engage with the text. They struggle to make meaning of it, and so it can assist their understanding. For them to be able to use their notes and write good sentences/paragraphs from them is also something we will develop. This is all very difficult for many students. But these skills are common to other work across the learning areas. Set the kids a high standard for this piece, so all other work can be compared to it. Any questions you have, please feel free to ask.
John W.