

Stage 6 Chemistry Lesson Plan – Module 5&6

Water Taste Test



Inquiry questions

- How do we apply an understanding of acids and bases, and their reactions, to everyday life?
- How does the chemistry of acids and bases contribute to the quality people want in their drinking water?
- Why is it essential that the degree of acidity in drinking water is continually monitored?
- Why does scientific communication need to be modified to target the right and specific audience?

Time: 45 - 60 min

Outcomes

- develops and evaluates questions and hypotheses for scientific investigation CH11/12-1
- conducts investigations to collect valid and reliable primary and secondary data and information CH11/12-3
- analyses and evaluates primary and secondary data and information CH11/12-5
- communicates scientific understanding using suitable language and terminology for a specific audience or purpose CH11/12-7
- describes, explains and quantitatively analyses acids and bases using contemporary models CH12-13

Working scientifically

- Questioning and Predicting CH11/12-1
- Conducting Investigations CH11/12-3
- Analysing data and Information CH11/12-5
- Communicating CH11/12-7

Sydney Water aim for activity

This lesson is designed as a practical investigation using primary and secondary information focus on developing positive, informed values and attitudes towards water and chemistry.

Objectives – Values and Attitudes

Students:

- develop positive, informed values and attitudes towards chemistry
- recognise the importance and relevance of chemistry in their lives
- recognise the influence of economic, political and societal impacts on the development of scientific knowledge
- develop an appreciation of the influence of imagination and creativity in scientific research.

Students will learn about drinking water perceptions, Australian Drinking Water Guidelines (ADWG), and then conduct a blind water taste test.

Students will apply their individual scientific research, to recognise the importance and relevance of chemistry in their lives, as well as the influence of different impacts on the development of scientific knowledge.

Teaching and learning

Introduction

Q. Can you describe water? What does it look like? What does it taste like or feel like? What do you want your drinking water to be?

A. Encourage students to think about a substance that they take for granted. Basically, it's a substance that keeps us alive, keeps us clean and is needed to keep us fed and clothed. It also makes us feel good... what an amazing thing! The chemistry involved in managing water for public health is important too. Students can develop positive, informed values and attitudes towards chemistry by understanding the application of classroom learning in their everyday lives.

Q. Have you ever wondered what is the quality of our drinking water?

Resources

Sydney Water resources

[Safe drinking water](#)

[Orchard Hills Water Filtration Plant](#)

Health & Hydration

Other resources

[Australian Drinking Water Guidelines](#)

A. Our drinking water is amongst the world's best. Sydney Water tests up to 70 different parameters, including acids and bases, in your drinking water, daily. We must meet guidelines set by the Australian Drinking Water Guidelines (ADWG). These guidelines are some of the strictest in the world. See Safe drinking water webpage for more information. Q. What is Australian Drinking Water Guidelines (ADWG)? A. The ADWG provides guidance on monitoring and managing drinking water quality. The ADWG set both safety and aesthetic guidelines. This means our drinking water is both safe and meets our expectations. The application of chemistry is not just about making water safe to drink, but also to meet public perception. See ADWG webpage for more information. Q. Why do we set up a 'test a claim' experiment to communicate and target the specific audience? A. Part of working scientifically is to communicate scientific understanding using suitable language and terminology for a specific audience or purpose. It is important to understand how scientific testing is interpreted for communications, marketing and public information. Testing a claim can also be a depth study option to look further into either backing by secondary sourced data analysis and report or doing their own first-hand testing. Q. What aspects that we need to meet when supplying water for Sydney? A. We have legislation, regulations, licenses, standards and expectations that we must meet when we supply water for Sydney. Our scientists are responsible for monitoring our processes and developing innovative ways to improve what we do to protect public health.	
Body - Conduct a blind taste test Aim: To see what your perceptions are about drinking water. Prepare for the taste test 1. Do a risk assessment considering safety, hygiene and ethical considerations when examining people's perceptions and personal opinions. 2. See our HSC Chemistry webpage for information needed to deliver this activity. 3. Gather the materials needed. 4. Develop a hypothesis - you need to consider how to communicate your scientific understanding using suitable language and terminology for a specific audience or purpose. • First question is what are the general qualities that you want in water (put your chemistry thinking caps down) what would you want as a customer? 5. Consider your method – some additional things to consider to test a claim effectively • Was this test the best method to conduct this experiment? Validity? Accuracy? • Think about whether the results were independent? No, you saw your classmates' answers and although you didn't know what the samples, you could have been influenced by the result. • Did you replicate? no if you wanted to design a better experiment, we could have put the same sample multiple times or repeated it in different order. • What else did we control or manipulate, temperature, appearance etc. This is part of thinking and working scientifically, you can analyse any set of data even something like a blind taste test.	Sydney Water resources High School HSC Chemistry Tap water versus bottled water fact sheet Beat the bottle Other resources Choice article - Spinning the bottle

Do the taste test - Follow the activity instructions - Use the result table, conduct a blind taste test using room temperature bottled, boiled, filtered and tap water in cups with labels (try the same test with chilled water). - Collate the results and reveal what type of water was in each cup. Results discussion, ask students about values and attitudes: - Do you realise how important and relevant of water and chemistry in our lives? - In term of drinking water, how the development of scientific knowledge influences the economic, political and societal impacts? - Why imagination and generation of valuable and original ideas influence scientific research? Extension: - Try taste test other bottled water products such as alkaline, mineral, soda water or other brands after this test. - Investigate people's understanding of the mineral content on the side of the bottle. - Think about the impact of our choices on the environment. Plastic bottles are havening a significant impact on your environment. See our Tap water versus bottled water fact sheet for more information. You may even like to participate in one of our Beat the bottle events. See our Beat the bottle page on our Love Water website.	
Conclusion Evaluation questions - How have some bottled water brands convinced you to drink bottled water? - What can a taste test tell you about the perceptions about water sources? - Why is scientific reporting not enough to change public perception? - Why is working scientifically and communication important? Reflection activity - students finish these statements - I used to think (at the start of these lessons) - But now I think (at the end of these lessons) Got students interested in a career with Sydney Water or research and development? See our Sydney Water careers webpage for more information on working here. Find out about the latest research from Sydney Water on our Reports and publications webpage.	Sydney Water resources High School HSC Chemistry Sydney Water Talk Careers Reports & publications Excursion Requests Find out more education@sydneywater.com.au facebook.com/SydneyWater  instagram.com/sydneywater  twitter.com/SydneyWaterNews 