

Water Beads – Syllabus Points

By Louise Lopes

Year 7:

Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (ACSSU113)

- recognising the differences between pure substances and mixtures and identifying examples of each
- identifying the solvent and solute in solutions

Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE223)

- considering how water use and management relies on knowledge from different areas of science, and involves the application of technology

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE120)

- considering issues relating to the use and management of water within a community

People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE121)

- recognising that water management plays a role in areas such as farming, land management and gardening

Year 8:

Cells are the basic units of living things; they have specialised structures and functions (ACSSU149)

Properties of the different states of matter can be explained in terms of the motion and arrangement of particles (ACSSU151)

- modelling the arrangement of particles in solids, liquids and gases

Differences between elements, compounds and mixtures can be described at a particle level (ACSSU152)

- recognising that elements and simple compounds can be represented by symbols and formulas

Chemical change involves substances reacting to form new substances (ACSSU225)

- identifying the differences between chemical and physical changes

People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE136)

- investigating how scientists have created new materials such as synthetic fibres, heat-resistant plastics and pharmaceuticals

Year 9:

Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)

Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)

- exploring how and why the movement of energy varies according to the medium through which it is transferred
- exploring the properties of waves, and situations where energy is transferred in the form of waves, such as sound and light

Year 10:

Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)

- investigating how chemistry can be used to produce a range of useful substances such as fuels, metals and pharmaceuticals

All Grades – Science Inquiry Skills:

- QUESTIONING AND PREDICTING:** Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge.
- PLANNING AND CONDUCTING:** Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed. Measure and control variables, select equipment appropriate to the task and collect data with accuracy.
- PROCESSING AND ANALYSING DATA AND INFORMATION:** Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate. Summarise data, from students' own investigations and use scientific understanding to identify relationships and draw conclusions based on evidence. The students learn how to use develop a method that is safe, and follow that method to achieve reliable results. Students will use digital technology to record their results and produce the graph
- EVALUATING:** Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements.
- COMMUNICATING:** Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate.

	Demonstrated inquiry	Prescribed inquiry	Structured inquiry	Guided inquiry	Open inquiry
Questions	No question	Provided question	Sharpened question	Learner selects	Learner poses questions
Plans	No planning	Provided procedure	Discussion with teacher	Guided during planning	Learner determines plans
Conducts	Teacher conducts	Conducting and recording method told	Sharpened plan and conduct	Guided during conducting and recording	Learner conducts and records
Analyse	Teacher analyses	Analysis method told	Discussed analysis	Guided analysis	Learner analyses data studying trends
Problem Solve	No problem solving	Teacher provides reasoning and links	Discussed reasoning and conclusion	Guided reasoning and formulating conclusion	Learner reasons to formulate conclusions
Communicate	No conclusion	Teacher writes conclusion	Student writes	Guided justification and findings	Learner justifies findings and conclusions