Water Beads – Syllabus Points

Stage	Year	Australian Curriculum	NSW	VIC
Stage 4	Year 7		In a chemical change, new substances are formed, which may have specific properties related to their uses in everyday life.	Chemical change involves substances reacting to form new substances
	Year 8	Chemical change involves substances reacting to form new substances		
Stage 5	Year 9	Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed Chemical reactions, including combustion and the reactions of acids, are important in both nonliving and living systems and involve energy transfer	Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed. Different types of chemical reactions are used to produce a range of products and can occur at different rates and involve energy transfer.	Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed
	Year 10	Different types of chemical reactions are used to produce a range of products and can occur at different rates		
Stage 6	Years 11/12	Select, construct and use appropriate representations including chemical symbols and formulae, molecular structural formulae, physical and graphical models of structures, chemical equations and thermochemical equations, to communicate conceptual understanding, solve problems and make predictions The rate of chemical reactions can be quantified by measuring the rate of formation of products or the depletion of reactants	Construct word and balanced formulae equations of chemical reactions as they are encountered	The writing of balanced chemical equations, including the use of oxidation numbers to write redox equations, and the application of chemical equations to volumetric and gravimetric analyses pH as a measure of strength of acids and bases; K_w, K_a for weak acids

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