

Curriculum Clarity Template

Gaining clarity of the curriculum intent for a unit of study



(a guide with prompts and examples can be found here: <https://school-inclusion.com/inclusion-in-action/teaching-and-learning/>)

Chemistry – Year 10 Science

1. Achievement Standard

By the end of Year 10, students analyse how the periodic table organises elements and use it to make predictions about the properties of elements. They explain how chemical reactions are used to produce particular products and how different factors influence the rate of reactions. They explain the concept of energy conservation and represent energy transfer and transformation within systems. They apply relationships between force, mass and acceleration to predict changes in the motion of objects.

Students describe and analyse interactions and cycles within and between Earth's spheres. They evaluate the evidence for scientific theories that explain the origin of the universe and the diversity of life on Earth. They explain the processes that underpin heredity and evolution. Students analyse how the models and theories they use have developed over time and discuss the factors that prompted their review.

Students develop questions and hypotheses and independently design and improve appropriate methods of investigation, including field work and laboratory experimentation. They explain how they have considered reliability, safety, fairness and ethical actions in their methods and identify where digital technologies can be used to enhance the quality of data. When analysing data, selecting evidence and developing and justifying conclusions, they identify alternative explanations for findings and explain any sources of uncertainty. Students evaluate the validity and reliability of claims made in secondary sources with reference to currently held scientific views, the quality of the methodology and the evidence cited. They construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes.

2. Assessable Content Descriptions

Science Understanding

Chemical sciences

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

Science Inquiry Skills

Questioning and predicting

Formulate questions or hypotheses that can be investigated scientifically.

Planning and conducting

Plan, select and use appropriate investigation methods, including laboratory experimentation, to collect reliable data; and assess risk associated with these methods

Evaluating

Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data.

Communicating

Communicate scientific ideas and information for particular purpose, using appropriate scientific language, conventions and representations.

3. Identify the key components of curriculum, cognition, context and complexity

Achievement Standard and Content Descriptions:

- Chemical reactions
- Formulating hypotheses and questions to be investigated
- Plan and use appropriate investigation methods
- Evaluate conclusions
- Communicate scientific ideas



Year Level Description:

Students explore the chemical evidence of different theories. They learn about the chemical world.



Elaborations:

- Investigate chemical reactions
- Chemistry can be used to produce a range of substances
- Predict the products of simple chemical reactions
- Use word or symbol equations to represent chemical reactions
- Investigate the effect of a range of factors



Literacy:

Word Knowledge

- Understand learning area vocabulary
- Use spelling knowledge

Comprehending texts through listening, reading and viewing

- Comprehend texts
- Navigate, read and view learning area texts
- Interpret and analyse learning area texts

Composing texts through speaking, writing and creating

- Compose spoken, written, visual and multimodal learning area texts

Text knowledge

- Use knowledge of text structures
- Use knowledge of text cohesion

Visual knowledge

- Understand how visual elements create meaning



Numeracy:

Estimating and calculating with whole numbers

- Understand and use numbers in context

Critical and Creative Thinking:

Inquiring

- Organise and process information
- Identify and clarify information and ideas
- Pose questions

Reflecting on thinking and processes

- Transfer knowledge into new contexts

Generate ideas, possibilities and actions

- Imagine possibilities and connect ideas
- Consider alternatives

Analysing, synthesising and evaluating reasoning and procedures

- Apply logic and reasoning

4. Consolidate this information into a Learning Objective and Success Criteria for the unit of study

Students are learning to design and conduct an investigation into a factor that affects the rate of a chemical reaction.

They will be successful when they can:

- Explain how different factors influence rates of reaction
- Develop a question and hypothesis
- Improve a method
- Explain how reliability, safety and fairness have been considered
- Analyse data, select evidence and justify conclusions
- Evaluate the quality of the method and explain sources of uncertainty
- Select and construct appropriate text type to communicate science ideas for specific purpose

In addition, teachers may wish to articulate what students need to know, be able to do and think about in order to be successful in the assessment task and associated achievement standard.

This process draws alignment between the achievement standard, curriculum elements and the context of achievement to explicitly identifying the aspects required for success. It demonstrates the connection between curriculum input and output expectations.

The following unit analysis table for this unit of study has been extended to reflect the provision of substantial (alternate access point) and extensive (individual learning goals) curriculum adjustments to meet the needs of identified students in the class. The concepts and content from Year 10 science have been aligned with that of Year 2 science and with individual learning goals derived from Level 1 of the general capabilities. This process maintains age-equivalent learning experiences and context, and instead provides adjustment to the complexity of that knowledge and skill by drawing on the demands of the Year 2 equivalent, and the associated individualised goals from the literacy and numeracy general capabilities.

Unit Analysis Table

Unit Analysis			Curriculum Adjustments	
Know	Do	Think	Substantial (Year 2 Access Point)	Extensive (Individual Learning Goals)
Different chemical reactions and factors that affect their reaction rates	Explain how different factors influence the rate of reaction	What is the chemistry of the chemical process? What are the factors that influence the reaction rate? How/why do they influence reaction rates?	Investigate the effects of mixing different chemicals together	Respond to simple questions about chemical reactions using a customised PODD grid Sort or match pictures of chemical reactions according to their features
The purpose of a hypothesis	Develop a question and hypothesis	Which factors can be manipulated and tested? What am I testing? What am I predicting will happen?	Pose and respond to questions about chemical reactions Make predictions about chemical reactions	Respond to simple questions about chemical reactions using a customised PODD grid
The purpose and components of a method	Design and improve a method Explain how reliability, safety and fairness have been considered Evaluate the quality and explain sources of uncertainty	How will an experiment test my hypothesis? How can I conduct an experiment that is reliable, safe and fair? What is the quality of the method I am using? What areas are uncertain and/or in need of improvement?	Participate in a guided investigation to explore and answer questions about chemical reactions	Use pictures to sort or match scenarios that are safe/not safe
How to safely conduct an experiment	Conduct an experiment	Am I following my method? Am I being safe? How do I know?	Participate in a guided investigation to explore and answer questions about chemical reactions	Make a choice to participate in a guided investigation Follow a visual schedule to collect equipment Attempt tasks with support or prompting

Data can be used as evidence to inform a conclusion	Analyse data Develop and justify conclusions	What data do I have? What does the data demonstrate? Is the data accurate/reliable? Does the data support my hypothesis?	Use a range of data collection methods to sort information and compare observations with predictions	Respond to simple questions about what was observed during a guided investigation using a customised PODD grid
Purpose and expectations of a scientific report	Complete a scientific report	What is the purpose of the text? What is the structure of the text? What information needs to be included and where? What is the best way to compose the text?	Represent and communicate observations and ideas in a variety of ways	Respond to simple questions about an experiment using a customised PODD grid

Note: This unit analysis table was adapted from Swancutt, L., Medhurst, M., Poed, S., & Walker, P. (2020). Making adjustments to curriculum, pedagogy and assessment. In L. Graham (Ed.), *Inclusive Education in the 21st Century* (pp. 208 – 243). Allen & Unwin.

5. Consider the literacy demands and proactively plan how these will be taught and adjusted:

Literacy Demand	Support/Adjustment
Read and comprehend questions/texts	Reader Text to speech Clarify understanding Comprehension scaffolds Visuals Prompts and guides Guided investigation to support comprehension
Tier 2 vocabulary	Explicitly teach and review key words Provide visual prompts and student friendly definitions
Write answers/compose texts	Modelled responses Sentence starters and prompts Scribe Speech to text Voice/video record verbal responses Word processing Text type scaffold
Interpret diagrams and numerical representations	Concrete representations Multimodal models Interactive representations Demonstrations Checks for understanding

Note: the general capabilities literacy continuum can be utilised to inform supports and adjustments to the literacy demands

6. Consider the summative assessment conventions (technique, type of text, mode and conditions) and the provision of access adjustments:

The current summative assessment for this example unit of study involves short answer responses and the completion of a scientific report. The curriculum and associated achievement standard do not dictate the ways in which students are to compose their responses, or the conditions in which the responses are to be completed. Therefore, these components can be universally designed so they are accessible and equitable for all students.

Things to consider:

- Provide sufficient time to work through the volume (chunk into sections and complete throughout the unit instead of all at the end)
- Adjust the complexity of the oral and written instructional language
- Provide the identified supports and adjustments for literacy demands
- Provide examples/suggestions of what information is to be included
- Provide a text type scaffold
- Consider if alternate ways of capturing what students know and can do would be more effective/appropriate (universal design)
- Consider if choice in how a student demonstrates their learning can be incorporated
- Consider multimodal representation and demonstration

7. Consider any additional adjustments for individual students:

The student accessing substantial curriculum adjustments will require an assessment task that reflects the knowledge and skills identified at the Year 2 access point. This will require the question complexity of the summative assessment and the associated marking guide to be adjusted.

The student accessing individual learning goals may need to demonstrate their learning in an individualised way – such as collecting a variety of evidence throughout the unit of study. The evidence collected may include photographs, videos, observations, and annotated work samples. This student may also require personalised literacy and communication adjustments (eg. the use of PODD to support receptive and expressive communication) which would need to be considered for the purpose of summative assessment, and throughout the teaching and learning process.

It is recommended that multidisciplinary collaboration occurs in relation to curriculum instruction for both students.