Stile

Scope and Sequence

The Victorian Curriculum

Years 7–10 Science, 2024

A world-class science education for *every* student

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Stile is for schools that are **serious about science.**
Serious about challenging their students.
Serious about supporting their teachers.

2024 Edition, Version 2.0

Contents

All units in Stile address the capabilities of the Victorian Curriculum. We have used the following symbols to indicate this:

- Ethical understanding
- Critical and creative thinking
- Personal and social capability
- Intercultural understanding

Acknowledgement of Country

As a science education company, Stile recognises and appreciates the immense knowledge and understandings of both science and education that are held within the Aboriginal and Torres Strait Islander communities.

Stile HQ is located on the traditional lands of the Boon Wurrung and Woiwurrung (Wurundjeri) peoples of the Kulin Nation. We acknowledge that sovereignty was never ceded and pay our respects to Elders past, present and future.

Learn more from Indigenous astronomer, Karlie Noon

Image credit: University of Newcastle

Watch this video!

stileapp.com/go/karlie

Artist: Tasha McAlpine (née Victor)
Language group: Nyul Nyul / Nyikina

Everything in one place

Teacher resources	Student resources
Before class	
Find out everything you need to know from the unit's **Teaching Plan** and **Lab Guide**. In **Prepare Mode** for each lesson, you can: – Read the detailed teaching notes – Print a copy to refer to in class – Customise resources for the needs of your students	**Stile X phone app** – Front-load the unit's scientific terminology through flashcards and quizzes
During class	
Within **Teach Mode** you can: – Implement explicit teaching with learning goals and Key Questions – Use videos, images and text to guide your instruction – Facilitate discussion with live brainstorms and polls – View student data instantly to inform your teaching	**Stile Digital** – Engage in real-world phenomena through: Labs, Projects, Lessons, Hands-on activities, Simulations, Engineering challenges, Open-ended investigations, Extension lessons
After class	
To **Analyse** student work: – View data in Analyse Mode to determine your next teaching steps – See a bird's-eye view of student progress in the Markbook – Release model answers to students – Provide written feedback where it matters most	**Stile X booklets** – Consolidate and revise material learned in class by: • Creating structured revision notes • Recording definitions in the glossary • Completing practice test questions **Stile X phone app** – 60-second summary videos recap key ideas from the Stile lesson

Scan here to view **The Stile Guide**, the essential guide to supercharging your teaching with Stile

A note from our Head of Education

Clare Feeney | Head of Education
and the whole Stile team

Stile is a complete, coherent curriculum for Victorian science classrooms. Our resources are designed to help students be the best learners they can be while supporting teachers to maximise their impact through High Impact Teaching Strategies.

This scope and sequence document offers a world-class starting point for designing your school's science curriculum. It can be used in its current format alongside our comprehensive teaching plans to provide the support that graduate teachers need, or it can be customised to best suit your unique context and provide the flexibility that experienced teachers demand.

If you have any questions or would like to chat more about our science program please reach out. We're a bunch of teachers and science nerds based in Melbourne, with team members across the country, and we love chatting with fellow educators about awesome science education.

Call us on 1300 918 292

Email us at community@stileeducation.com

Stile and the Victorian Teaching and Learning Model

The Victorian Teaching and Learning Model, released by The Department of Education and Training in 2019, aims to support teachers and school leaders to "focus on high impact teaching and learning". In our mission to provide a high-quality science education for every student, we're passionate about empowering teachers to do what they do best. That's why each aspect of the Victorian Teaching and Learning Model is represented in Stile.

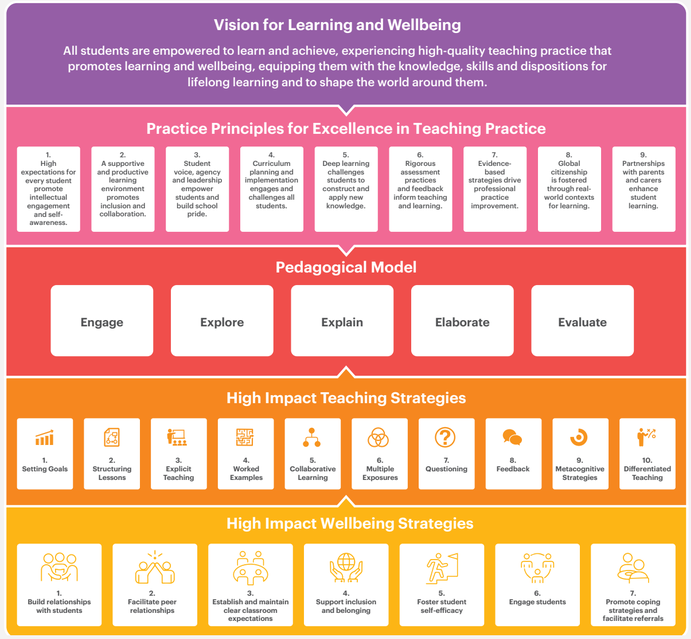
The Teaching and Learning Model is aligned with the core elements of the **Framework for Improving Student Outcomes (FISO) 2.0** and consists of five components:

- The Vision for Learning and Wellbeing
- The Practice Principles for Excellence in Teaching Practice
- The Pedagogical Model
- The High Impact Teaching Strategies
- High Impact Wellbeing Strategies

The following pages detail how Stile aligns with each of the components of the Victorian Teaching and Learning Model. Annotated examples of Stile resources showing alignment to the model can also be found on page 18 of this document.

Adapted from Quick Guide to the Victorian Teaching and Learning Model 2023, Department of Education and Training, Victoria

Victorian Teaching and Learning Model (VTLM)



Our latest resource, Stile X, is a student notebook and revision guide that has been built from the ground up to help students take ownership of their learning. Its evidence-based approach supports students to develop note-taking and study skills that set them up for success in senior science and beyond.

Read more about Stile X on the Stile Blog: **Study skills for lifelong learning** and **The science of Stile X**.

Vision for Learning and Wellbeing
All students are empowered to learn and achieve, experiencing high-quality teaching practice that promotes learning and wellbeing, equipping them with the knowledge, skills and dispositions for lifelong learning and to shape the world around them.

Differentiated learning opportunities

Stile X provides structured, scaffolded revision activities that can be used to **differentiate learning** in the classroom. Within Stile, students are supported to access learning material through audio narration with word-by-word highlighting, video captions, and compatibility with screen readers and translation tools.

Real-world phenomena

Units of learning are centred around **scientific phenomena**, intentionally selected to motivate curiosity. Students are driven to ask questions and seek answers through examples that are relevant to their own lives.

Note-taking strategy

Stile X includes explicit instruction on effective **note-taking strategies**, from outline note-taking in Year 7 to Cornell note-taking in Year 10. These strategies help students to build self-efficacy, and skills for lifelong learning. This empowers them to achieve in senior science subjects, contributing to overall confidence and wellbeing.

Expert study tips

Helpful **expert study tips** include a range of revision techniques that help students become **lifelong learners**, including self-regulation and focus strategies, mindfulness and time management.

Metacognitive monitoring

Every Stile lesson includes opportunities for students to reflect on their learning through thinking routines and structured reflection activities. Opportunities for **metacognitive monitoring** can also be found throughout Stile X. Students reflect on their own learning, mindsets and attitudes leaving them **empowered** to take action that can improve their learning and achievement.

Gradual release of responsibility

Students are steadily introduced to **appropriately challenging** strategies for studying and note-taking that increase in complexity from Year 7 to Year 10.

Stile supports teachers to incorporate the actions described by the nine Practice Principles. Specific examples for each of the practice principles are detailed on this page.

Practice Principles for Excellence in Teaching Practice

1. High expectations for every student promote intellectual engagement and self-awareness.
2. A supportive and productive learning environment promotes inclusion and collaboration.
3. Student voice, agency and leadership empower students and build school pride.
4. Curriculum planning and implementation engages and challenges all students.
5. Deep learning challenges students to construct and apply new knowledge.
6. Rigorous assessment practices and feedback inform teaching and learning.
7. Evidence-based strategies drive professional practice improvement.
8. Global citizenship is fostered through real-world contexts for learning.
9. Partnerships with parents and carers enhance student learning.

PRINCIPLE 1

High expectations for every student promote intellectual engagement and self-awareness

Stile incorporates evidence-based thinking routines in almost every lesson to scaffold and develop students' self-reflection and self-awareness. Eight different routines are used throughout the collection, which are particularly relevant to science learning.

PRINCIPLE 2

A supportive and productive learning environment promotes inclusion and collaboration

Stile uses collaborative questions and tasks where students work together to achieve a common goal. This ranges from collaborative brainstorming and poll questions, where students share their ideas with one another, to completing practical activities with a partner, or group work tasks such as research projects or building models. Teaching notes provide teachers with guidance on facilitating discussion and respectful questioning between students, as well as connecting to students' experiences, community and backgrounds to incorporate diverse perspectives.

PRINCIPLE 3

Student voice, agency and leadership empower students and build school pride

Driving Questions Boards are used in a number of Stile units as a strategy that allows students to exercise authentic agency in their own learning. Students generate questions around a topic, which the teacher uses to direct the learning journey. Examples of this approach can be seen in the Waves unit.

PRINCIPLE 4

Curriculum planning and implementation engages and challenges all students

Stile's scope and sequence documents provide teachers with guidance and curriculum alignment to support them to deliver their science programme. This document is fully editable, allowing teachers to customise it to the needs of their students and school context.

PRINCIPLE 5

Deep learning challenges students to construct and apply new knowledge

Stile supports teachers to set work and goals that align with students' abilities. Lessons use SOLO Taxonomy (Biggs & Collis, 1982) to progress students from lower-order thinking to higher-order thinking and provide a point of entry for students of all abilities. Intentional scaffolding supports this progression and guides students to successful outcomes. Teaching notes throughout Stile lessons include suggestions for differentiation to ensure that all students can experience success.

PRINCIPLE 6

Rigorous assessment practices and feedback inform teaching and learning

Every Stile lesson contains at least one Key Question, which is used for formative assessment of student progress against the lesson's curriculum-aligned learning goal. At the unit level, formative check-in lessons provide an opportunity to ensure students have grasped key concepts at pivotal points in the sequence of learning. Every unit also includes at least one summative test.

Teachers are guided on the process of providing written feedback and using assessment data to plan for learning through routine training, teacher support material and in-lesson teaching notes. Automated feedback is also provided on drag and drop and multiple choice questions to supplement verbal and written feedback provided by the teacher.

PRINCIPLE 7

Evidence-based strategies drive professional practice improvement

Stile's regular high-quality, online professional learning workshops explore a range of evidence-based pedagogies. These include Discourse Moves (Windschitl, Thompson & Braaten, 2018), SOLO Taxonomy (Biggs & Collis, 1982) and the use of High Impact Teaching Strategies (Department of Education and Training, 2017) with Stile.

PRINCIPLE 8

Global citizenship is fostered through real-world contexts for learning

Every Stile unit is based on a real-world scientific issue. Resources focus on supporting students to recognise the impact they have on the world around them and how the science they learn in the classroom applies to their daily lives.

In the Ecosystems unit, for example, students calculate how much plastic waste their class generates during a year and consider actions they could take to reduce this. In the Cells unit, students discuss the potential social impact of cultured meat through the perspectives of different stakeholders in a Socratic seminar.

PRINCIPLE 9

Partnerships with parents and carers enhance student learning

Stile provides teachers with resources to support communication with parents, carers and kin. Each unit includes an email template that informs parents and caregivers what their child will be learning about, provides questions they can ask to engage with their learning and gives suggestions for how they can support students at home.

Reference: *Department of Education and Training. (2017). High Impact Teaching Strategies. https://www.education.vic.gov.au/Documents/school/teachers/support/high-impact-teaching-strategies.pdf*

Biggs, J.B., & Collis, K.F. (1982). Evaluating the Quality of Learning: The SOLO taxonomy. New York: Academic Press.

Windschitl, M., Thompson, J. & Braaten, M. (2018). Ambitious Science Teaching. Harvard Education Press.

The Victorian Pedagogical Model is made up of five phases: Engage, Explore, Explain, Elaborate and Evaluate. Each of these phases is visible within Stile's teaching and learning resources, as illustrated here and in the annotated examples provided on pages 18–24.

Pedagogical Model

Engage | Explore | Explain | Elaborate | Evaluate

Engage

Students are motivated and empowered to monitor their own learning and develop agency. Stile's resources draw on real-world issues and contexts that matter to young people. Lessons are designed to connect with students' prior knowledge and lived experiences in a way that makes learning meaningful.

Explore

Students generate and investigate questions, gather information and develop ideas, expand their understanding and prepare to navigate their own learning. This involves making explicit connections between learning goals, activities and assessment tasks; assessing students' prior knowledge, and challenging misconceptions.

Explain

Teachers explicitly teach knowledge, concepts and skills. They present information in a number of different ways and continue to make connections between students' new and existing knowledge. Teachers monitor progress and give opportunities for students to practise skills they have learned.

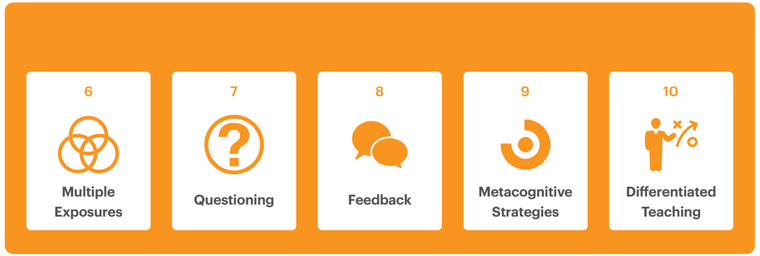
Elaborate

Students deepen their knowledge as teachers support the progression from lower-order thinking to higher-order thinking. They apply knowledge and skills to novel situations and are encouraged to reflect, question and monitor their own learning.

Evaluate

Assessment and feedback helps students to learn and develop agency. Teachers monitor student progress and analyse data to draw conclusions about their own teaching practice and address student needs.

Stile is specifically designed to support the implementation of evidence-based, High Impact Teaching Strategies (HITS) in the classroom.



1. Setting Goals

Each lesson includes clear learning goals that indicate what students should be able to know, understand and do at the end of the lesson.

2. Structuring Lessons

Learning sequences within lessons use SOLO taxonomy to scaffold students from lower-order thinking to higher-order thinking. This is evident in the cognitive verbs that are included in each Stile question. Our science team also uses the 5E instructional model to structure learning at the unit and lesson level.

3. Explicit Teaching

Teach Mode lets teachers intentionally model what to do and how to do it. A lesson includes learning goals accompanied by Key Questions, which give students an opportunity to demonstrate their progress against the learning goal. This makes the purpose of the lesson transparent to students.

4. Worked Examples

Both model answers and the use of teacher modelling in Teach Mode provide students with access to worked examples that demonstrate the steps required to answer a question. These provide scaffolding that supports students to acquire new knowledge and skills.

5. Collaborative Learning

Collaborative question types, such as Live Polls and Live Brainstorms, are intentionally used to get students working together and communicating with one another. Collaborative activities, including engineering challenges and Socratic seminars, require students to collectively negotiate roles, responsibilities and outcomes.

6. Multiple Exposures

Following lessons with an associated quiz, activity from a Stile X booklet, or videos, flashcards and quizzes from the Stile X app give plenty of opportunities for students to encounter, engage with, and elaborate on their learning.

7. Questioning

Questions within Stile lessons are crafted to elicit students' understanding of key concepts. Key Questions in particular are aligned with the lesson's learning goals, and provide a formative assessment opportunity that helps determine next teaching steps.

8. Feedback

Student data is instantly available through Teach Mode, so teachers can immediately identify students who need support and provide them with timely verbal feedback. Model answers and rubrics help teachers to formulate specific feedback, whether written or verbal, that includes specific advice students can use to improve their performance.

9. Metacognitive Strategies

Reflection activities included in Stile lessons and Stile X encourage students to analyse their thinking. Students regularly evaluate their progress and receive explicit instruction on self-regulation and note-taking strategies through expert study tips.

10. Differentiated Teaching

Lessons are designed using SOLO taxonomy, and aim to extend the knowledge and skills of all students. By scaffolding students from lower-order thinking to higher-order thinking, lessons provide a point of entry for all levels of understanding. Stile includes a number of tools to support students to access learning material. Videos include captions, text comes with audio narration and word-by-word highlighting, and our resources are compatible with screen readers and translation tools. Open response question types provide students with the ability to choose how they communicate their knowledge. Lessons can be further modified using Stile's editing and customisation tools to accommodate specific needs.

Stile's award-winning digital teaching and learning tools help educators implement evidence-based strategies that foster inclusive, collaborative classrooms.

Reference: *Department of Education. (2022). High Impact Wellbeing Strategies: Resource.* ***https://www.education.vic.gov.au/Documents/school/teachers/teachingresources/practice/High_Impact_Wellbeing_Strategies.pdf***

Biggs, J., & Collis, K. (1982). Evaluating the Quality of Learning: The SOLO Taxonomy. New York: Academic Press.

High Impact Wellbeing Strategies (HIWS)

HIWS 1

Build relationships with students

HIWS 2

Facilitate peer relationships

HIWS 3

Establish and maintain clear classroom expectations

HIWS 4

Support inclusion and belonging

HIWS 5

Foster student self-efficacy

HIWS 6

Engage students

HIWS 7

Promote coping strategies and facilitate referrals

HIWS 1

Build relationships with students

Stile's highly interactive teaching and learning platform is built on the connection between teachers and students. Teachers can see student responses as they work, provide them with timely feedback, and facilitate class discussions via stimulus material on Stile. These interactions are the foundation of student–teacher relationships. By providing teachers with resources to support the planning, teaching and assessment processes, Stile gives teachers more time to focus on their students and on building meaningful relationships that form a foundation for effective teaching and learning. Finally, through teaching notes in lessons, Stile provides guidance to teachers on connecting the learning to students' experiences, community and backgrounds. Making these connections further supports teachers to develop relationships with students.

HIWS 2

Facilitate peer relationships

Stile uses collaborative questions and tasks where students work together to achieve a common goal. These range from collaborative class brainstorms and polls to practical activities with a partner or group work tasks such as research projects or building models. Teaching notes included in these lessons provide teachers with guidance on facilitating discussion and respectful questioning between students.

HIWS 3

Establish and maintain clear classroom expectations

Stile offers teachers a structure that helps them to create a sense of order and predictability in the classroom. Learning goals are used in each lesson and teaching notes guide teachers in effectively introducing and discussing expectations for learning with students. This consistent aspect of Stile lessons offers routine for students and makes it clear what is expected of them during a lesson.

HIWS 4

Support inclusion and belonging

Teaching notes throughout Stile lessons incorporate prompts for teachers to connect to students' experiences, community and backgrounds. By following these prompts, teachers are learning from students about their lived experience and promoting an understanding of multiple and diverse perspectives. Stile units are written and designed to incorporate diversity in age, race, gender, sexual orientation and body type. Displaying this range of diversity in the classroom through Stile's resources helps teachers to ensure students feel valued and accepted.

HIWS 5

Foster student self-efficacy

Stile supports teachers to provide set work and goals that are aligned with student abilities. Stile lessons are structured using SOLO Taxonomy (Biggs & Collis, 1982) to progress students from lower-order thinking to higher-order thinking. This means that there is a point of entry for students of all abilities. Intentional scaffolding is used to support this progression and guide students to successful outcomes. Additionally, teachers are provided with teaching notes that contain suggestions for differentiation to ensure that all students can experience success.

HIWS 6

Engage students

Stile units are specifically designed to engage students in learning through fascinating real-world science. Teachers also have the option to edit lessons to tailor tasks to student interests and capabilities throughout each of Stile's units. The use of 11 different interactive question types, simulations and varied activities including 43 engineering tasks, 115 hands-on or practical lessons and 43 research tasks provide a variety of meaningful and challenging ways for students to complete classwork and assessments.

IMPROVEMENT CYCLE

Evaluate and diagnose → Prioritise and set goals → Develop and plan → Implement and monitor

For maximum impact on student wellbeing, the "implement and monitor impact" phase of the improvement cycle is critical.

HIWS 7

Promote coping strategies and facilitate referrals

When exploring issues that may be challenging for some students, Stile consults with experts to determine the best way to support students. Practical advice and resources are included in teaching notes to support teachers in facilitating safe, appropriate discussion and in promoting coping strategies.

Annotated examples of Stile and the Victorian Teaching and Learning Model

Classification and Biodiversity

Do we need to save the bees?

It's a question that scientists have been asking for more than 100 years, but new research may finally have an answer. Explore classification through this real-world context, and help your students discover if the process of classification is black and white...

Big ideas:
- What key features can be used to distinguish between one animal and another?
- Why do we need to classify organisms and give them scientific names?
- What are dichotomous keys and how do they work?

Highlights
- Design a social media profile to classify an animal
- Construct a dichotomous key
- End of unit test

Teacher resources
- Teacher Plan
- Parent Email Template

Explore
Each unit is centred around a guiding question that has students thinking about **real-world issues** and engineering solutions to **authentic problems.**

A unit's Teacher Plan provides guidance around **challenging students' misconceptions** through the learning process.

Engage
Parent email templates support teachers to establish **connections with parents and carers.**

PRACTICE PRINCIPLE 8

Teachers support students to explore their role as global citizens by guiding them through real-world current issues where they consider their role in our planet's future.

PRACTICE PRINCIPLE 9

Teachers establish open and sustained communications with parents/carers through templates that accompany each unit in Stile.

Engage
Pre-tests are designed to activate students' **prior knowledge** of how animals are classified and the role that bees play in Earth's ecosystems. They also give insight into how future lessons can **connect with their current understanding.**

This unit at a glance

Do we need to save the bees?

What do you already know?

1. Lesson: A bee or not a bee?
2. Lesson: How can we tell bees apart?
3. Lesson: Why are bees important?
4. Lesson: How do bees impact biodiversity?
5. Engineering challenge: Defining the problem
6. Lesson: How do humans impact bee populations?
7. Lesson: Why do bees dance?
8. Engineering challenge: Research and brainstorm
9. Engineering challenge: Designing a solution
10. Engineering challenge: Improving your solution
11. Engineering showcase

Glossary: Do we need to save the bees?

Test: Do we need to save the bees?

Elaborate
Engineering challenges engage students through **inquiry, problem solving** and **collaboration.**

Sharing their engineering projects lets students **share learning** and **challenge one another** with questioning.

PRACTICE PRINCIPLE 2

Teachers develop capacity to collaborate Teachers guide students to collaborate through structured group work.

Stile units are **aligned to content descriptions** from the science learning area, and **general capabilities** are integrated throughout.

Curriculum alignment

Science understanding	VCSSU089	VCSSU090	VCSSU091
	Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science	Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations	There are differences within and between groups of organisms; classification helps organise this diversity
Science inquiry	VCSIS107	VCSIS108	VCSIS110
	Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships

Strategy 5
Collaborative Learning

Engage

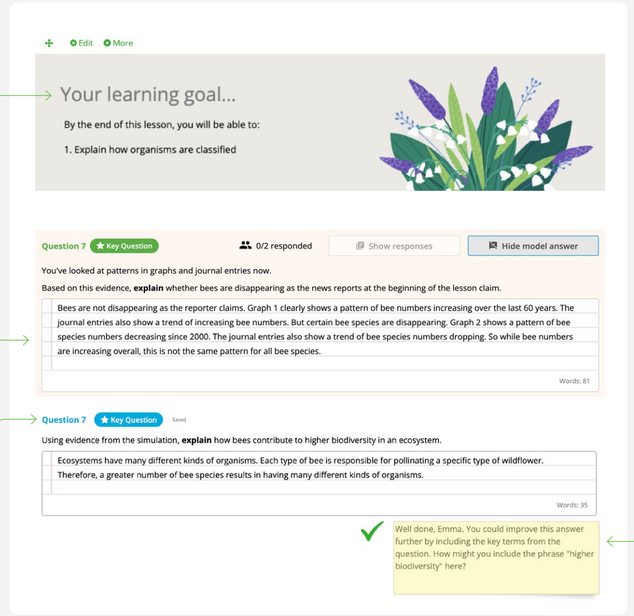
Each lesson includes **explicit learning goals**, which articulate what students should know and be able to do by the end of the lesson.

Explain

Worked examples are used to support development of skills and **scaffold** student learning.

Explore

Key Questions allow students to identify and **articulate success** criteria and provide an **explicit connection** between the learning **goals and activities.**



PRACTICE PRINCIPLE 6

Teachers provide regular feedback to students on their progress against learning goals and curriculum standards

Key Questions indicate where questions are aligned to learning goals and teacher feedback will be most valuable. This allows teachers to provide quick, timely feedback to students.

Strategy 1
Setting Goals

Strategy 3
Explicit Teaching

Strategy 4
Worked Examples

Strategy 7
Questioning

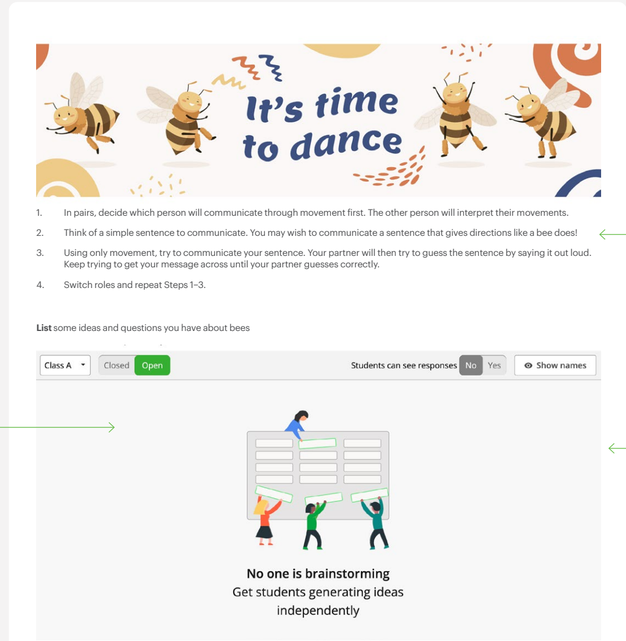
Engage

Collaborative question types encourage students to **actively participate in discussion.**

Students **actively engage in the learning process** by **generating their own questions** and discovering the answers through learning activities.

Explore

Questions are designed to **elicit student misconceptions** and teachers are provided guidance on **challenging these** in the unit's Teacher Guide.



Facilitate peer relationships

Collaborative questions and tasks have students working together to reach a common goal.

Build relationships with students

Teachers facilitate class discussions using stimulus material in Stile.

Strategy 5
Collaborative Learning

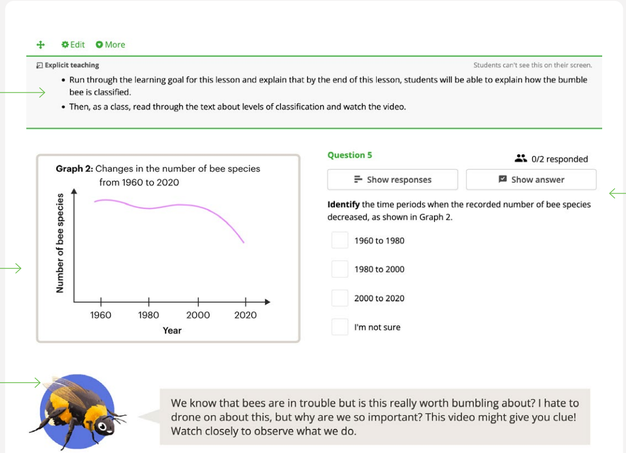
Explore

Teacher tips are designed to facilitate **High Impact Teaching Strategies**, including explicit teaching.

The general capability of numeracy is integrated throughout the unit.

Elaborate

Each lesson addresses a new aspect of the unit's phenomenon to **engage and re-engage** students with new content.



PRACTICE PRINCIPLE 1

Teachers scaffold and differentiate learning to enable students to achieve their goals

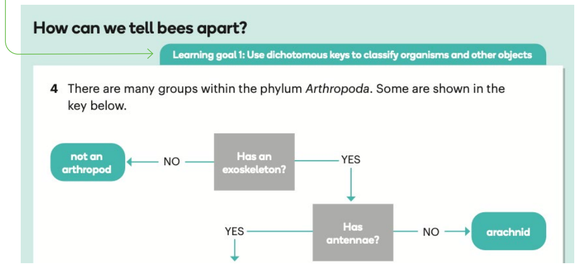
Lessons are developed using SOLO Taxonomy, and cognitive verbs indicate the progression of questioning within a lesson.

Explore

Revision tasks are **explicitly linked to learning goals.**

Evaluate

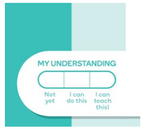
Practice test questions let students understand the **connections between learning activities and assessment tasks.** This helps students **understand assessment criteria** and what they need to do to **progress their learning**.



Strategy 6
Multiple Exposures

Evaluate

Metacognitive activities and self-assessment opportunities in both Stile and Stile X help students to **self-monitor** their progress, understand **assessment criteria** and what they need to do to **progress their learning**.



Check your understanding

Learning goal 1

- ○ I can summarise patterns in data to determine cause and effect relationships
- ○ I can explain how changes to biodiversity in an ecosystem affect food production

Learning goal 2

- ○ I can identify ways that humans can disrupt ecosystems
- ○ I can describe human impacts on an ecosystem
- ○ I can explain how disruptions to an ecosystem affect populations living in it

The *Connect, Extend, Challenge* routine helps you to make connections between your new and old ideas. Identifying what still challenges you will suggest the next steps for extending your understanding.

Reflect on how your thinking has changed during this lesson. Connect what you've learnt to what you already knew and identify what you still find challenging.

Connect	Extend	Challenge
How is the information in this lesson *connected* to what you already knew?	What new ideas surprised you or *extended* your thinking in new directions?	What still *challenges* you or makes you wonder?

PRACTICE PRINCIPLE 1

Teachers build student capacity to monitor and evaluate their own progress and achievement

Stile X uses a gradual release of responsibility model and metacognitive questioning to develop students' ability to self-regulate and self-monitor. Stile lessons also incorporate metacognitive questions to encourage reflection.

PRACTICE PRINCIPLE 5

Teachers support students to be reflective, questioning and self-monitoring learners

Reflection activities in Stile and Stile X encourage the process of reflection and scaffold self-monitoring behaviours.

Strategy 9
Metacognitive Strategies

Year 7

Suggested Scope & Sequence

All units have a Stile X booklet with videos, flashcards and quizzes available in the Stile X app. Find out more about Stile X at **stileapp.com/go/stilex**

An artist's impression of an astronaut on Mars
If humans are to colonise Mars, we'll need to learn how to keep water in the states we can use.

Download an editable spreadsheet version **here**.

Introduction to Science

What is science and how can it help us solve global problems?

Mixtures

Can we 3D-print new bones to replace broken ones?

VCSSU095

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

States of Matter

Why is liquid water so important for humans to live on Mars?

VCSSU096

The properties of the different states of matter can be explained in terms of the motion and arrangement of particles

Food Chains and Food Webs

Why do cats have slit-shaped pupils?

VCSSU093

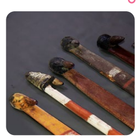
Interactions between organisms can be described in terms of food chains and food webs and can be affected by human activity

Classification and Biodiversity

Do we need to save the bees?

VCSSU091

There are differences within and between groups of organisms; classification helps organise this diversity



Forces

How have people used forces for thousands of years?

VCSSU103

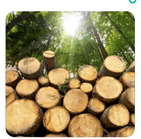
Change to an object's motion is caused by unbalanced forces acting on the object; Earth's gravity pulls objects towards the centre of Earth

The Water Cycle

Would you ever drink your own urine?

VCSSU101

Water is an important resource that cycles through the environment

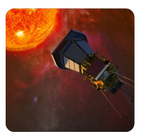


Resources

How has our use of resources changed over time?

VCSSU100

Some of Earth's resources are renewable, but others are non-renewable

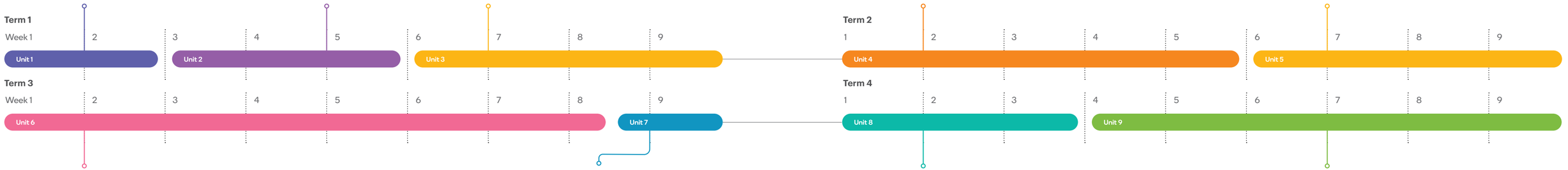


Our Place in Space

Can we travel to the Sun?

VCSSU099

Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the Sun, Earth and the Moon



Year 7 | Science inquiry skills

		Introduction to Science	Mixtures	States of Matter	Food Chains and Food Webs	Classification and Biodiversity	Forces	The Water Cycle	Resources	Our Place in Space
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
VCSIS107	**Questioning and predicting** Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge	✓		✓		✓	✓	✓	✓	
VCSIS108	**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	✓	✓	✓			✓		✓	
VCSIS109	**Planning and conducting** In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task	✓	✓	✓			✓	✓		✓
VCSIS110	**Recording and processing** Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships	✓	✓	✓	✓		✓			✓
VCSIS111	**Analysing and evaluating** Use scientific knowledge and findings from investigations to identify relationships, evaluate claims and draw conclusions	✓	✓	✓	✓	✓	✓			✓
VCSIS112	**Analysing and evaluating** Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method	✓	✓				✓	✓		✓
VCSIS113	**Communicating** Communicate ideas, findings and solutions to problems including identifying impacts and limitations of conclusions and using appropriate scientific language and representations	✓	✓		✓	✓	✓		✓	

Year 7 | Science as a human endeavour

		Introduction to Science	Mixtures	States of Matter	Food Chains and Food Webs	Classification and Biodiversity	Forces	The Water Cycle	Resources	Our Place in Space
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
VCSSU089	Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science	✓		✓			✓			✓
VCSSU090	Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations	✓	✓	✓	✓	✓	✓	✓	✓	✓

Year 8

Suggested Scope & Sequence

All units listed, except for Student Research Project, have a Stile X booklet with videos, flashcards and quizzes available in the Stile X app. Find out more about Stile X at **stileapp.com/go/stilex**

Pizza in a wood-fired oven
Researchers have found that the magic formula for cooking a pizza is two minutes at about 315°C.

Year 8 | Science understanding

Download an editable spreadsheet version **here**.

Cells

Would you eat lab-grown meat?

VCSSU092

Cells are the basic units of living things and have specialised structures and functions

Body Systems

What does it take to be a cold-blooded killer?

VCSSU094

Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce

Elements and Compounds

Why is helium so rare?

VCSSU097

Differences between elements, compounds and mixtures can be described by using a particle model

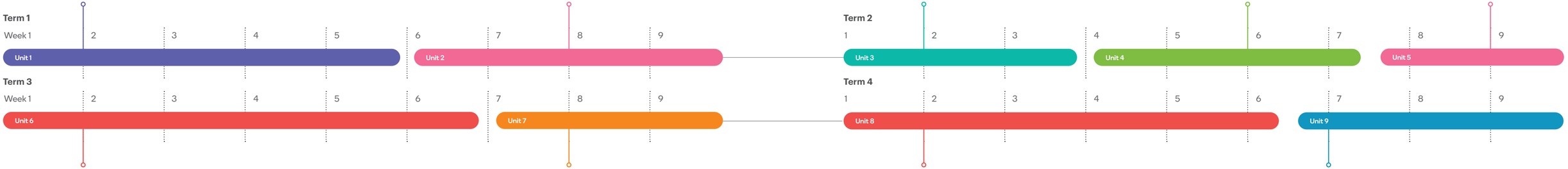
Physical and Chemical Change

What does chemistry have to do with chocolate making?

VCSSU098

Chemical change involves substances reacting to form new substances

Student Research Project



Energy

What can we learn from nature's energy engineers?

VCSSU104

Energy appears in different forms including movement (kinetic energy), heat, light, chemical energy and potential energy; devices can change energy from one form to another

Heat

How do you make the best pizza?

VCSSU104

Energy appears in different forms including movement (kinetic energy), heat, light, chemical energy and potential energy; devices can change energy from one form to another

Waves

How does someone on the other side of the world see and hear you?

VCSSU105

Light can form images using the reflective feature of curved mirrors and the refractive feature of lenses, and can disperse to produce a spectrum which is part of a larger spectrum of radiation

VCSSU106

The properties of sound can be explained by a wave model

Active Earth (Part 1: Rocks)

How do we build future-ready cities?

VCSSU102

Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales

Year 8 | Science inquiry skills

		Cells	Body Systems	Elements and Compounds	Physical and Chemical Change	Student Research Project	Energy	Heat	Waves	Active Earth (Part 1)
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
VCSIS107	**Questioning and predicting** Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge			✓	✓	✓	✓	✓	✓	✓
VCSIS108	**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		✓	✓	✓	✓	✓	✓		✓
VCSIS109	**Planning and conducting** In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task			✓	✓	✓	✓	✓		✓
VCSIS110	**Recording and processing** Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships		✓	✓	✓	✓	✓	✓	✓	✓
VCSIS111	**Analysing and evaluating** Use scientific knowledge and findings from investigations to identify relationships, evaluate claims and draw conclusions	✓	✓	✓	✓	✓	✓	✓	✓	✓
VCSIS112	**Analysing and evaluating** Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method			✓		✓	✓	✓		✓
VCSIS113	**Communicating** Communicate ideas, findings and solutions to problems including identifying impacts and limitations of conclusions and using appropriate scientific language and representations	✓	✓	✓	✓	✓		✓		✓

Year 8 | Science as a human endeavour

		Cells	Body Systems	Elements and Compounds	Physical and Chemical Change	Student Research Project	Energy	Heat	Waves	Active Earth (Part 1)
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
VCSSU089	Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science	✓					✓	✓	✓	✓
VCSSU090	Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations	✓	✓	✓	✓		✓		✓	✓

Year 9

Suggested Scope & Sequence

All units have a Stile X booklet with videos, flashcards and quizzes available in the Stile X app. Find out more about Stile X at **stileapp.com/go/stilex**

The aurora borealis or northern lights
This beautiful phenomenon is caused by energetic particles from the Sun interacting with the atmosphere, which is one of Earth's four systems.

Year 9 | Science understanding

Download an editable spreadsheet version **here**.

Non-contact Forces and Electricity

Are we on track for sustainable transport?

VCSSU130

Electric circuits can be designed for diverse purposes using different components; the operation of circuits can be explained by the concepts of voltage and current

VCSSU131

The interaction of magnets can be explained by a field model; magnets are used in the generation of electricity and the operation of motors

Active Earth

(Part 2: Plate Tectonics)

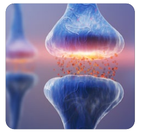
How do we build future-ready cities?

VCSSU127

The theory of plate tectonics explains global patterns of geological activity and continental movement

The Survival of Species

How can reproductive strategies help a species survive?

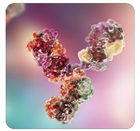


The Nervous System

How can your gut influence your mood?

VCSSU118

An animal's response to a stimulus is coordinated by its central nervous system (brain and spinal cord); neurons transmit electrical impulses and are connected by synapses



The Immune System

How can we protect communities from diseases?

VCSSU117

Multicellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment

Term 1

Week 1 2 3 4 5 6 7 8 9

Unit 1 | Unit 2 | Unit 3

Term 2

1 2 3 4 5 6 7 8 9

Unit 4 | Unit 5

Term 3

Week 1 2 3 4 5 6 7 8 9

Unit 6 | Unit 7 | Unit 8

Term 4

1 2 3 4 5 6 7 8 9

Unit 9 | Unit 10

Atoms

How can the building blocks of atoms help us see further?

VCSSU122

All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms

Chemical Reactions

What happens when sodium explodes in water?

VCSSU124

Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed

Acids and Bases

Why are our oceans becoming more acidic?

VCSSU126

Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer

Earth Systems

How does our planet recycle?

VCSSU126

Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer

VCSSU132

Energy flow in Earth's atmosphere can be explained by the processes of heat transfer

Climate Change

Climate change... Is there even a debate?

VCSSU128

Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere

Year 9 | Science inquiry skills

		Non-contact Forces and Electricity Unit 1	Active Earth (Part 2) Unit 2	The Survival of Species Unit 3	The Nervous System Unit 4	The Immune System Unit 5	Atoms Unit 6	Chemical Reactions Unit 7	Acids and Bases Unit 8	Earth Systems Unit 9	Climate Change Unit 10
VCSIS134	**Questioning and predicting** Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables	✓	✓		✓	✓		✓			
VCSIS135	**Planning and conducting** Independently plan, select and use appropriate investigation types, including fieldwork and laboratory experimentation, to collect reliable data, assess risk and address ethical issues associated with these investigation types	✓				✓		✓		✓	✓
VCSIS136	**Planning and conducting** Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability		✓			✓		✓	✓	✓	✓
VCSIS137	**Recording and processing** Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data	✓	✓	✓		✓		✓	✓	✓	✓
VCSIS138	**Analysing and evaluating** Analyse patterns and trends in data, including describing relationships between variables, identifying inconsistencies in data and sources of uncertainty, and drawing conclusions that are consistent with evidence			✓	✓		✓	✓		✓	✓
VCSIS139	**Analysing and evaluating** Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VCSIS140	**Communicating** Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

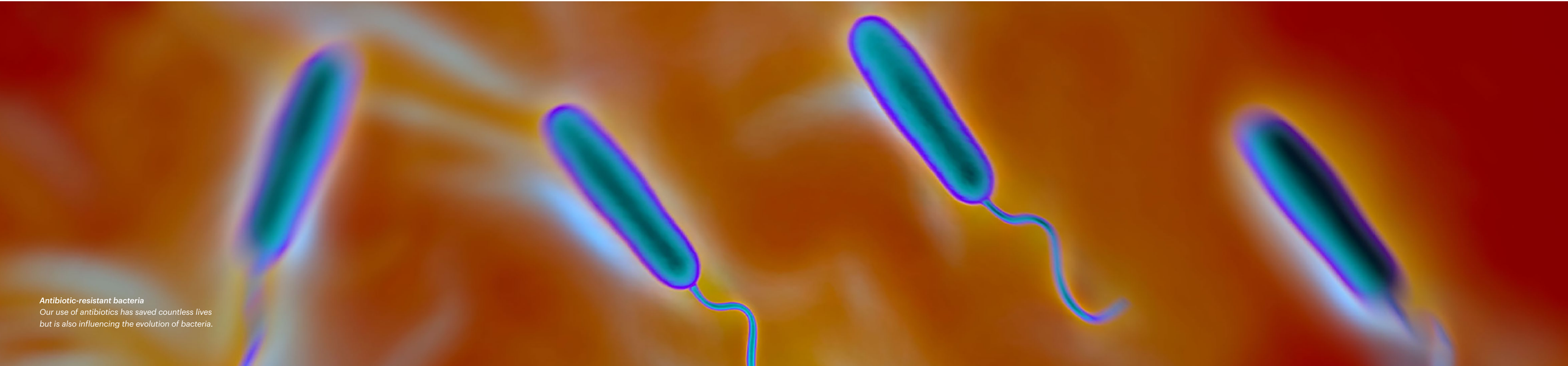
Year 9 | Science as a human endeavour

		Non-contact Forces and Electricity Unit 1	Active Earth (Part 2) Unit 2	The Survival of Species Unit 3	The Nervous System Unit 4	The Immune System Unit 5	Atoms Unit 6	Chemical Reactions Unit 7	Acids and Bases Unit 8	Earth Systems Unit 9	Climate Change Unit 10
VCSSU114	Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community	✓	✓		✓	✓		✓			✓
VCSSU115	Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries	✓	✓	✓	✓	✓	✓				✓
VCSSU116	The values and needs of contemporary society can influence the focus of scientific research	✓	✓	✓	✓	✓			✓	✓	✓

Year 10

Suggested Scope & Sequence

All units have a Stile X booklet with videos, flashcards and quizzes available in the Stile X app. Find out more about Stile X at **stileapp.com/go/stilex**



Antibiotic-resistant bacteria
Our use of antibiotics has saved countless lives but is also influencing the evolution of bacteria.

Year 10 | Science understanding

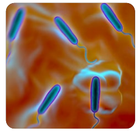
Download an editable spreadsheet version **here**.

Genetics

Can genes increase the risk of cancer?

VCSSU119

The transmission of heritable characteristics from one generation to the next involves DNA and genes



Evolution

Are we responsible for the rise of antibiotic-resistant superbugs?

VCSSU120

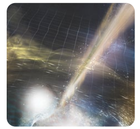
The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence

Reaction Types

Are self-healing space suits science fiction or just science?

VCSSU125

Different types of chemical reactions are used to produce a range of products and can occur at different rates; chemical reactions may be represented by balanced chemical equations

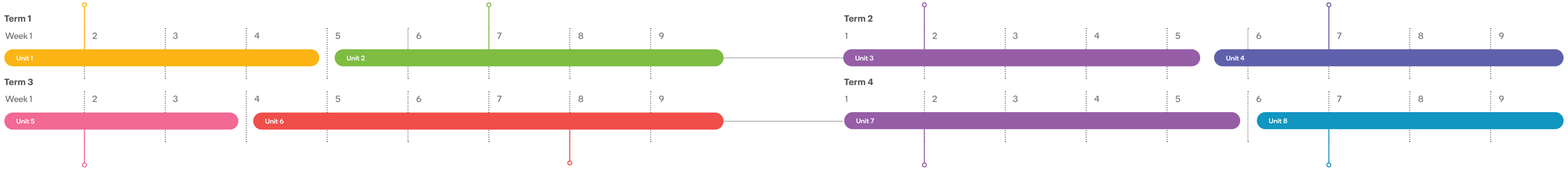


The Periodic Table

How do exploding stars create heavy metals?

VCSSU123

The atomic structure and properties of elements are used to organise them in the periodic table



Kinematics

Are self-driving cars the way of the future?

VCSSU133

The description and explanation of the motion of objects involves the interaction of forces and the exchange of energy and can be described and predicted using the laws of physics

Newton's Laws of Motion

How can we apply Newton's Laws to car crash investigations?

VCSSU133

The description and explanation of the motion of objects involves the interaction of forces and the exchange of energy and can be described and predicted using the laws of physics

Ecosystems

How can we prevent plastic from harming marine life?

VCSSU121

Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems

The Universe

How do gravitational waves give us a new way of understanding the universe?

VCSSU129

The Universe contains features including galaxies, stars and solar systems; the Big Bang theory can be used to explain the origin of the Universe

Year 10 | Science inquiry skills

		Genetics	Evolution	Reaction Types	The Periodic Table	Kinematics	Newton's Laws of Motion	Ecosystems	The Universe
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
VCSIS134	**Questioning and predicting** Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables		✓				✓	✓	
VCSIS135	**Planning and conducting** Independently plan, select and use appropriate investigation types, including fieldwork and laboratory experimentation, to collect reliable data, assess risk and address ethical issues associated with these investigation types		✓			✓	✓	✓	✓
VCSIS136	**Planning and conducting** Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability	✓	✓	✓	✓	✓	✓	✓	
VCSIS137	**Recording and processing** Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data			✓		✓		✓	
VCSIS138	**Analysing and evaluating** Analyse patterns and trends in data, including describing relationships between variables, identifying inconsistencies in data and sources of uncertainty, and drawing conclusions that are consistent with evidence			✓		✓	✓	✓	✓
VCSIS139	**Analysing and evaluating** Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data			✓	✓	✓	✓	✓	
VCSIS140	**Communicating** Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations	✓	✓	✓	✓	✓	✓	✓	✓

Year 10 | Science as a human endeavour

		Genetics Unit 1	Evolution Unit 2	Reaction Types Unit 3	The Periodic Table Unit 4	Kinematics Unit 5	Newton's Laws of Motion Unit 6	Ecosystems Unit 7	The Universe Unit 8
VCSSU114	Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community		✓		✓				✓
VCSSU115	Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries	✓				✓	✓		✓
VCSSU116	The values and needs of contemporary society can influence the focus of scientific research	✓	✓	✓		✓	✓	✓	✓

Supplementary units

These units can be used in addition to those within the scope and sequence to elaborate on the content descriptors listed.

Metals

How can metals help us fight cancer?

VCSSU123

The atomic structure and properties of elements are used to organise them in the periodic table

Radiation

Why is cosmic radiation so dangerous?

VCSSU122

All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms

Classification

Why do zebras have stripes?

VCSSU091

There are differences within and between groups of organisms; classification helps organise this diversity

Human Impacts on Ecosystems

Are corals going extinct...again?

VCSSU121

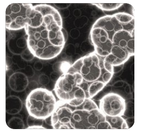
Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems

Reactions and Energy

How can metals help us fight cancer?

VCSSU124

Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed



Reproduction

Which was the first species to have sex?

VCSSU094

Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce

Electrical Circuits

How can wearable electronics help us?

VCSSU130

Electric circuits can be designed for diverse purposes using different components; the operation of circuits can be explained by the concepts of voltage and current

Sound

In space no one can hear you scream – or can they?

VCSSU106

The properties of sound can be explained by a wave model

Light

Can you turn your smartphone into a microscope?

VCSSU105

Light can form images using the reflective feature of curved mirrors and the refractive feature of lenses, and can disperse to produce a spectrum which is part of a larger spectrum of radiation

Supporting resources

Use these units to support students' learning beyond the science understanding strand of the Australian Curriculum.

Skill builders
Lessons to boost your students' science inquiry skills

Women in STEM career profiles
Explore a range of careers in STEM

Science news lessons
Real-world science based on the news

Breaking news lessons
Short, literacy-focused lessons about news you need to know

Escape rooms
Engage your students in fun scientific puzzles

Teacher resources and templates
Useful resources to help you get the most out of Stile

A photograph of trees during fall.
The seasons are caused by the tilt of the Earth on its axis.

stileeducation.com

Call us on 1300 918 292

Email us at community@stileeducation.com

Swing by the office to say hi!
Level 5, 128 Exhibition Street, Melbourne, Victoria

Stile HQ is located on the traditional lands of the Boon Wurrung and Woiwurrung (Wurundjeri) peoples of the Kulin Nation. We acknowledge that sovereignty was never ceded and pay our respects to Elders past, present and future.