FUTURE ANYTHING

ACTIVATE 2021
LEARNING OVERVIEW

Science Stream

OVERVIEW

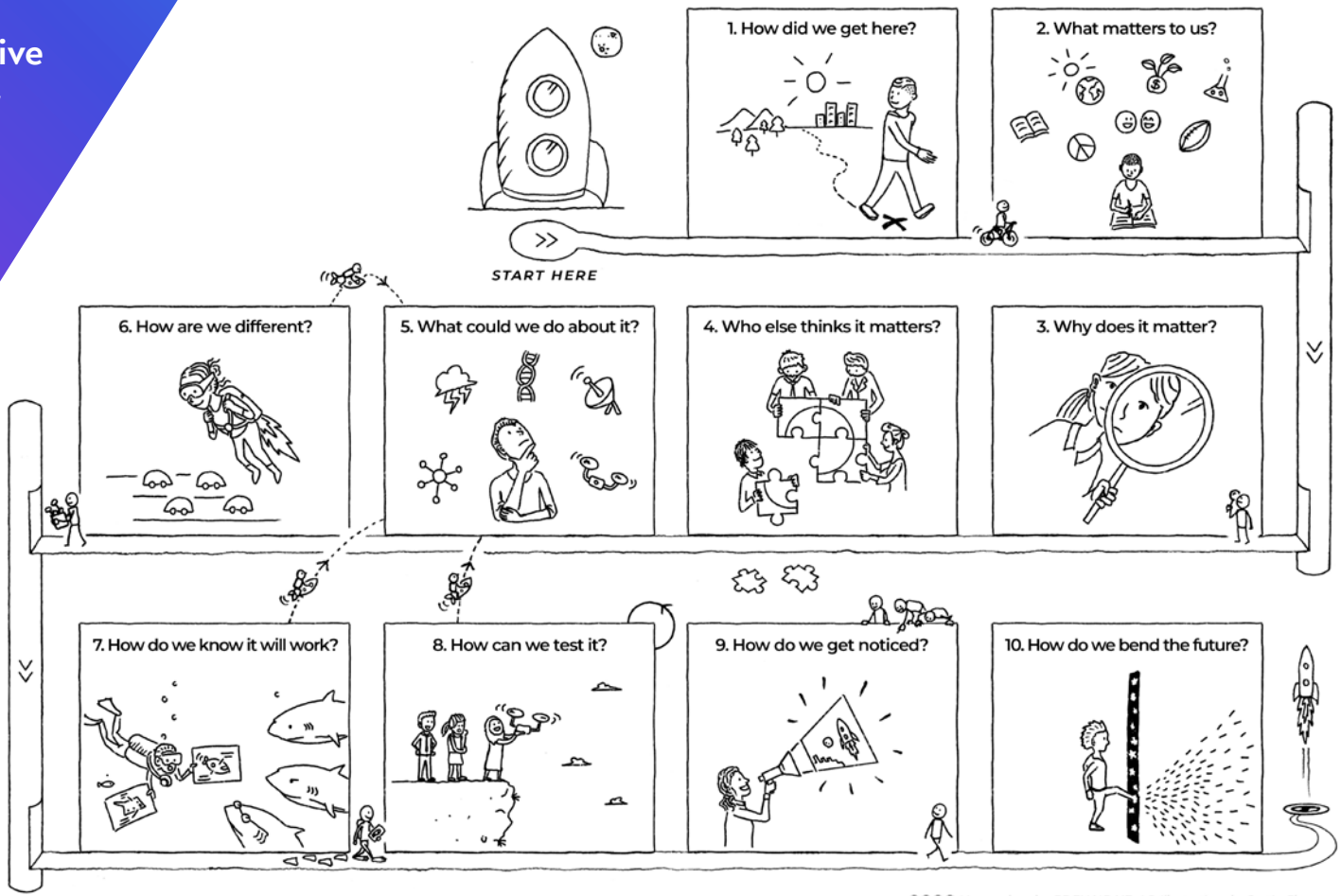
Science Stream
30 x 70 Min Lessons Cross Curriculum

Driving Question:
As an entreprenuer, pitch an innovative solution that makes the world a safer place from human impact or natural disasters.

Future Anything transforms young people's passion and curiosity into innovative ideas that make their world a better place. With supported educators, leading authentic 'future ready' curriculum, we really can bend the future; one youth-led idea at a time.

THE ENTREPRENEUR'S ODYSSEY

Equipping students to think creatively and solve problems.



LESSON	TITLE	LEARNING GOALS	SUCCESS CRITERIA	EXIT PASS
1	The Entrepreneur's Odyssey	1. Become familiar with the 'Need to Knows' of the Future Anything program through the exploration of the Driving Questions and Entrepreneur's Odyssey. 2. Reflect on your own entrepreneurial strengths and identify areas of growth.	Use what you know to explain to your caregiver what the Future Anything program is, what you will be expected to complete for assessment and your personal strengths and areas of growth.	Need to Know worksheet Habits of Mind reflection* Completed Pre-Program Survey
2	Do You Get The Drift?	1. Understand how evidence has led to the development of the theory of plate tectonics. 2. Understand limitations in the evidence for the theory of plate tectonics. 3. Compare the location of tectonic events with the location of current plate boundaries.	Use what you know to explain how the theory of plate tectonics has developed over time, and opportunities for further research in this area.	Evidence Map – Plate tectonics Completed Puzzling Continents Activity including summary Wegener paragraph
3	Cut To The Core	1. Describe Earth's structure. 2. Describe the processes that drive tectonic plate movements.	Use what you know to describe the Earth's structure and the processes that drive tectonic plate movements.	'Layers of the Earth' worksheet Observations & explanations from student experiment
4, 5	Breaking Boundaries	1. Identify and compare different types of plate boundaries. 2. Explain events and processes occurring at plate boundaries. 3. Describe the relationship between plate tectonics and Earth hazards such as earthquakes, volcanoes and tsunamis. 4. Reflect on your personal learning style.	Use what you know to explain events and processes occurring at plate boundaries.	Completed Plate Boundary Researchers-Graphic Organiser Personal learning reflection* Progress check template

LESSON	TITLE	LEARNING GOALS	SUCCESS CRITERIA	EXIT PASS
6	Earth Hazards	1. Evaluate the impact of tectonic events on ecosystems. 2. Evaluate the impact of tectonic events on human populations. 3. Reflect on your personal ability to work independently.	Use what you know to explain the impact of one tectonic event on humans and ecosystems.	Case study on a major tectonic event^ Individual Reflection*
7, 8	Making The Unpredictable Predictable	1. Understand how scientific and technological advancements assist human populations in understanding, predicting, monitoring and managing tectonic events. 2. Examine scientific and technological advancements in the ongoing research of plate tectonics. 3. Identify career opportunities. 4. Reflect on your personal teamwork skills.	Use what you know to explain how one scientific or technological advancement has assisted human populations in understanding, predicting, monitoring and/or managing tectonic events. Use what you know to describe at least three career opportunities related to plate tectonic research and innovation.	Case study on technological solution^ Visual diagram or model of the technology Oral presentation to class Reflection on teamwork*
9	The Circle of Life	1. Appreciate the importance of the environment. 2. Differentiate between abiotic and biotic factors in an ecosystem. 3. Understand the key interactions in an ecosystem. 4. Become familiar with key ecosystem vocabulary.	Use what you know to distinguish between abiotic and biotic components of ecosystems. Use what you know to name and describe key interactions in ecosystems.	Frayer Model of ecosystem Concept map of ecosystem key terms Research on ecosystem of your choice
10	Zooming in on Ecosystems	1. Model the flow of matter and energy through an ecosystem. 2. Describe the process of photosynthesis and how it provides energy for an entire food web.	Use what you know to explain how matter and energy moves through ecosystems. Use what you know to explain how photosynthesis works and provides energy for ecosystems.	Completed food web in an ecosystem of your choice Flow of energy in ecosystems worksheet completed

LESSON	TITLE	LEARNING GOALS	SUCCESS CRITERIA	EXIT PASS
11	How Do Ecosystems Respond To Change?	1. Describe the process of succession. 2. Describe the consequences of one natural hazard on an ecosystem and identify one way in which humans can support ecosystem recovery. 3. Reflect on how your work skills have progressed over the course of this unit so far.	Use what you know to describe how ecosystems respond to different types of changes.	Process diagram of a specific ecosystem responding to a natural disaster^ Personal reflection*
12, 13	Can We Fix It?	1. Identify many ways in which humans can impact ecosystems. 2. Appreciate the reasons why human activities interfere with ecosystems. 3. Propose creative solutions to human impacts on the environment. 4. Reflect on your own personal ability to have an impact on the ecosystem.	Use what you know to explain how human activities can have a wide range of effects on ecosystems, and make suggestions about how those impacts can be prevented or managed.	Completed report on environmental impact^ Presentation Personal reflection*
14, 15	Why Does It Matter?	1. Reflect on your own capabilities and interests. 2. Understand that most problems are multifaceted and complex.	Use what you know to explain the causes and consequences of a problem.	Know Myself template A shortlist of three problems that link to the student's passions and lived experience. A completed Root Cause Tree
16	Who Else Thinks It Matters?	1. Identify experts and spokespeople locally, nationally and globally on the chosen problem. 2. Understand the value of strategically approaching big problems.	Use what you know to determine a 'gap' or refined problem to focus on.	Completed Impact Gap Canvas with a chosen 'gap' identified.
17, 18	Diving Deep	1. Develop a deep understanding of the scientific background behind your chosen challenge. 2. Creatively communicate your understanding to a specific audience.	Use your research skills to independently learn about a new scientific concept. Use what you have learned to confidently explain a new scientific concept in written, visual and oral formats.	Lesson 16 – at least one paragraph per concept in students' own words describing their chosen concepts^ Lesson 17 – Visual representation of 1–3 scientific concepts related to your challenge^

LESSON	TITLE	LEARNING GOALS	SUCCESS CRITERIA	EXIT PASS
19, 20	What Could We Do About It?	1. Understand some of the conditions that make creativity and divergent thinking possible. 2. Create a prototype to communicate and workshop your ideas. 3. Explore the value of giving and receiving feedback on your ideas.	Use what you know to ideate 50+ possible solutions to your problem. Use what you know to develop prototypes for your top two ideas.	Two prototypes with peer feedback. Group reflection*
21	Team Work Makes The Dream Work	1. Learn about project management skills to set up 'norms' which create a healthy environment for collaboration.	Use what you know to develop a Team Contract and a Project Map.	Completed Team Contract and Project Map.
22	How Do We Know It Will Work?	1. Understand the structure and importance of a business plan.	Use what you know to develop a business plan for your project	Completed Profit for Purpose Canvas
23	How Do We Get Noticed?	1. Understand the structure and delivery of a persuasive pitch. 2. Create your own pitch.	Use what you know to develop a persuasive pitch and sizzling slidedeck for your project	Final draft of pitch and slide deck^
		Drafting: Week 8 **Assessment: Week 9** **Shark Tank + Showcase: Week 10**		
30	How Do We Bend The Future?	1. Understand the role reflection can play in personal growth and team functioning.	Use what you know to explain what went well, what didn't go well and what you would do differently to identify directions for improvement in the future	Completed Denouement* Completed Post Program Survey*

* Future Anything: Activate has never intended to be a 'plug and play' program. We recognise and celebrate the diversity within and between schools and work with each teaching team to contextualise this curriculum for implementation during the face-to-face professional learning opportunity provided to all schools. Each school also has access to unlimited coaching and support throughout the duration of the program to ensure you have access to the skills, support and space to successfully run Future Anything your way for your students.

KEY

^ Assessment Portfolio
***** Reflection portfolio

Science Curriculum

Science Understanding

Achievement standard: students explain global features and events in terms of geological processes and timescales.

- **ACSSU180** – the theory of plate tectonics explains global patterns of geological activity and continental movement

Achievement standard: Students analyse how biological systems function and respond to external changes with reference to interdependencies, energy transfers and flows of matter.

- **ACSSU176** – Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems

Science as a Human Endeavour

Achievement standard: They describe social and technological factors that have influenced scientific developments and predict how future applications of science and technology may affect people's lives.

- **ACSHE157** – Scientific understanding, including models and theories, is contestable and is refined over time through a process of review by the scientific community
- **ACSHE158** – Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries
- **ACSHE160** – People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities
- **ACSHE228** – Values and needs of contemporary society can influence the focus of scientific research

Science Inquiry Skills

Achievement standard: Students design questions that can be investigated using a range of inquiry skills.

- **ACSIS164** – Formulate questions or hypotheses that can be investigated scientifically

Achievement standard: They design methods that include the control and accurate measurement of variables and systematic collection of data and describe how they considered ethics and safety.

- **ACSIS165** – Plan, select and use appropriate investigation types, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods

Achievement standard: They analyse trends in data, identify relationships between variables and reveal inconsistencies in results.

Achievement standard: They evaluate others' methods and explanations from a scientific perspective and use appropriate language and representations when communicating their findings and ideas to specific audiences.

- **ACSIS170** – Use knowledge of scientific concepts to draw conclusions that are consistent with evidence
- **ACSIS171** – Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data
- **ACSIS172** – Critically analyse the validity of information in primary and secondary sources and evaluate the approaches used to solve problems
- **ACSIS174** – Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations

Sustainability (SUS)

OI.1 The biosphere is a dynamic system providing conditions that sustain life on Earth.

OI.2 All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.

OI.3 Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

OI.4 World views that recognise the dependence of living things on healthy ecosystems, and value diversity and social justice, are essential for achieving sustainability.

OI.5 World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.

OI.6 The sustainability of ecological, social and economic systems is achieved through informed individual and community action that values local and global equity and fairness across generations into the future

OI.7 Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

OI.8 Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgements based on projected future economic, social and environmental impacts.

OI.9 Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments.

Literacy (LI)

Navigate, read and view a wide range of more demanding subject-specific texts with an extensive range of graphic representations.

Listen to a range of extended spoken and audio texts, including audio-visual texts, and respond to, interpret and evaluate ideas, information and opinions.

Interpret and evaluate information within and between texts, comparing and contrasting information using comprehension strategies.

Compose and edit longer and more complex learning area texts.

Use pair, group and class discussions and formal and informal debates as learning tools to explore ideas, compare solutions, evaluate information and ideas, refine opinions and arguments in preparation for creating texts.

Plan, research, rehearse and deliver presentations on more complex issues and learning area topics, combining visual and multimodal elements creatively to present ideas and information and support opinions and engage and persuade an audience.

Use comprehensive knowledge of the structure and features of learning area texts to comprehend and compose complex texts in innovative ways, using conventions for citing others.

Use subject-specific vocabulary to express abstract concepts, and refine vocabulary choices to discriminate between shades of meaning.

Evaluate the impact of different visual choices in the composition of images, including symbolic images and movement of camera or light, to achieve different nuances.

Numeracy (NU)

Use different ways to represent very large and very small numbers including scientific notation.

Create and interpret maps, models and diagrams using a range of mapping tools.

Information and Communication Technology (ICT)

Assess the impact of ICT in the workplace and in society, and speculate on its role in the future and how they can influence its use.

Select and use a range of ICT independently and collaboratively, analyse information to frame questions and plan search strategies or data generation.

Develop and use criteria systematically to evaluate the quality, suitability and credibility of located data or information and sources.

Use advanced search tools and techniques or simulations and digital models to locate or generate precise data and information that supports the development of new understandings.

Select and use ICT to articulate ideas and concepts, and plan the development of complex solutions.

Design, modify and manage complex digital solutions, or multimodal creative outputs or data transformations for a range of audiences and purposes.

Select and use a range of ICT tools efficiently and safely to share and exchange information, and to collaboratively and purposefully construct knowledge.

Manage and maintain data securely in a variety of storage mediums and formats.

Critical and Creative Thinking (CCT)

Pose questions to critically analyse complex issues and abstract ideas.

Clarify complex information and ideas drawn from a range of sources.

Critically analyse independently sourced information to determine bias and reliability.

Create and connect complex ideas using imagery, analogies and symbolism.

Speculate on creative options to modify ideas when circumstances change.

Assess risks and explain contingencies, taking account of a range of perspectives, when seeking solutions and putting complex ideas into action.

Give reasons to support their thinking, and address opposing viewpoints and possible weaknesses in their own positions.

Balance rational and irrational components of a complex or ambiguous problem to evaluate evidence.

Identify, plan and justify transference of knowledge to new contexts.

Analyse reasoning used in finding and applying solutions, and in choice of resources.

Use logical and abstract thinking to analyse and synthesise complex information to inform a course of action.

Evaluate the effectiveness of ideas, products and performances and implement courses of action to achieve desired outcomes against criteria they have identified.

Personal and Social Capability (PSC)

Reflect critically on their emotional responses to challenging situations in a wide range of learning, social and work-related contexts.

Assess their strengths and challenges and devise personally appropriate strategies to achieve future success.

Evaluate the effectiveness of commonly used learning strategies and work practices and refine these as required.

Reflect on feedback from peers, teachers and other adults, to analyse personal characteristics and skill set that contribute to or limit their personal and social capability.

Critically analyse self-discipline strategies and personal goals and consider their application in social and work-related contexts.

Establish personal priorities, manage resources effectively and demonstrate initiative to achieve personal goals and learning outcomes.

Evaluate, rethink and refine approaches to tasks to take account of unexpected or difficult situations and safety considerations.

Plan, implement and evaluate ways of contributing to civil society at local, national regional and global levels.

Formulate plans for effective communication (verbal, nonverbal, digital) to complete complex tasks.

Critique their ability to devise and enact strategies for working in diverse teams, drawing on the skills and contributions of team members to complete complex tasks.

Develop and apply criteria to evaluate the outcomes of individual and group decisions and analyse the consequences of their decision making.

Generate, apply and evaluate strategies such as active listening, mediation and negotiation to prevent and resolve interpersonal problems and conflicts.

Propose, implement and monitor strategies to address needs prioritised at local, national, regional and global levels, and communicate these widely.

Ethical Understanding (EU)

Distinguish between the ethical and non-ethical dimensions of complex issues.

Investigate reasons for clashes of beliefs in issues of personal, social and global importance.

Analyse the objectivity or subjectivity behind decision making where there are many possible consequences.

Evaluate diverse perceptions and ethical bases of action in complex contexts.

Use reasoning skills to prioritise the relative merits of points of view about complex ethical dilemmas.

futureanything.com
hello@futureanything.com
FutureAnything
future_anything
future_anything