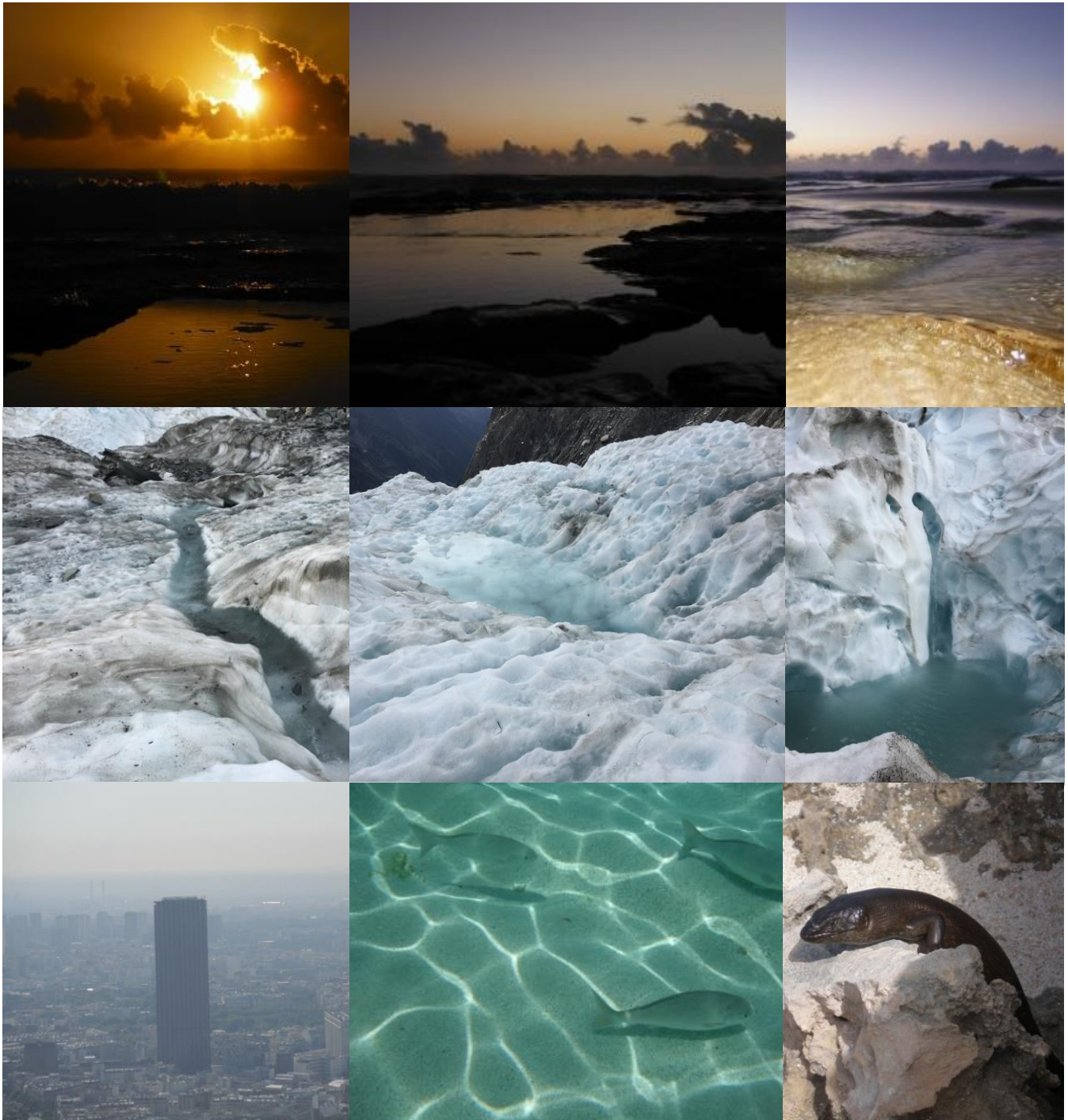


Climate Change and Me: Stage 4 Curriculum



Climate Change and Me: Stage 4 Curriculum (Version 1)

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Cover photos by Kairo Byrne, Sam Lucena and Mathew Jarvie

The Climate Change and Me Stage 4 Curriculum

Introduction: The *Climate Change and Me* Stage 4 curriculum involves a collective inquiry process which is streamed across the four key learning areas of Science, English, Visual Arts and Geography. The curriculum is designed as a term-length unit of work which can be run in a single KLA, or it can be run concurrently across multiple KLA's as an interdisciplinary unit of work. The curriculum is based on research undertaken with 135 children and young people as co-researchers in the *Climate Change and Me* project in 2014-2015. The findings from the *Climate Change and Me* research have directly informed the design of the Stage 4 curriculum, including the formulation of the collective inquiry process and supporting resources. The curriculum allows students to sequentially develop and implement their own group research projects in response to the social and environmental impacts of climate change. This involves working through eight phases of inquiry which are differentiated to address learning outcomes in the four KLAs of Science, English, Visual Arts and Geography. Each phase of the collective inquiry process is accompanied by a resource package ready for teachers to use, including powerpoints, videos, web links, student worksheets and project case studies. Students also keep a record of their individual learning in project journals by completing a series of 'assessment for learning' activities. This allows teachers to easily track the achievement of key learning outcomes as the students progress through each phase of the curriculum. Researchers from the *Climate Change and Me* project team are available to support teachers with the integration and implementation of the curriculum in Northern NSW schools in 2016.

Rationale: Today's children and young people require new kinds of knowledge, skills and experience in order to effectively respond to rapidly accelerating social and environmental changes. The *Climate Change and Me* Stage 4 curriculum addresses this pressing need for a research-based and student-driven climate change curriculum in Australian secondary schools. As it stands, climate change has been cut from the Australian National Curriculum for children under 14 years of age. International studies have also indicated that didactic, science-based approaches to climate change education have not been effective in changing the environmental attitudes and behaviours of students. The *Climate Change and Me* research found that students were much more likely to engage with the topic of climate change through creative, student-driven and experiential learning activities. The *Climate Change and Me* Stage 4 curriculum is the first climate change education resource to be developed in direct collaboration with children and young people as co-researchers into their own education. Central to the curriculum is the development of students as researchers and creative practitioners who are able to effectively respond to the challenges of climate change, and also communicate their own findings to a wider audience. The responses of teachers and students to the curriculum are also critical to the ongoing evaluation and dissemination of the *Climate Change and Me* Stage 4 curriculum across New South Wales.

The Collective Inquiry Process

Phase 1: What is Climate Change? (p. 3)

Introduce the unit of work as a collective inquiry into climate change and begin a research journal. Explore the interconnections between social and ecological systems in an era of climate change.

Phase 2: Connecting with Climate Change (p. 5)

Relate climate change to the everyday lives of students. Analyse an object, household product, story, song, video, animal, environment, person, issue or event in relation to climate change.

Phase 3: Becoming a Researcher (p. 7)

Explore different ways of doing research. Experiment with research methods which are relevant to your KLA, such as survey, interviews, narrative inquiry and arts-based research.

Phase 4: Research Design (p. 9)

Form the collective inquiry groups. Draw on ideas and discussion from previous phases to formulate research questions. Design a research project in groups or as a whole class.

Phase 5: Doing Your Research (p. 11)

Students conduct their research in the field, classroom, studio or online.

Phase 6: Analysing Your Research (p. 13)

Explore and reflect on the complexity and possible meanings in your research. Explore ways of analysing and visualising your research. Consider how to give it meaning and purpose.

Phase 7: Communicating Your Research (p. 15)

Plan and develop engaging and sustainable ways to present your research to the community.

Phase 8: Reflecting on Your Process (p. 17)

Evaluate and reflect on the collective inquiry process and its potential for social change.



Phase 1: What is climate change?

Questions: What are some of the social and environmental impacts of climate change? What is the collective inquiry process?

Objectives: Introduce the unit of work as a collective inquiry into climate change. Explore the interconnections between social and ecological systems in the Anthropocene era. Begin a research journal.

Activities

science	english	visual arts	geography
<p>Introduce the unit of work as a collective inquiry into climate change. Explore various sources of information about climate change, including CC and Me resources. Explore and discuss the connection between social and environmental issues in the Anthropocene. Create a cover page and/or mindmap about climate change in your research journal.</p>	<p>Introduce the unit of work as a collective inquiry into climate change. Explore and discuss various texts and images associated with climate change, including CC and Me resources. Explore and discuss the connection between social and environmental issues in the Anthropocene. Create a cover page and/or mindmap about climate change in your research journal.</p>	<p>Introduce the unit of work as a collective inquiry into climate change. Discuss various artists and exhibitions which engage with aspects of climate change. Explore and discuss the connection between social and environmental issues in the Anthropocene. Create a cover page and/or mindmap about climate change in your research journal.</p>	<p>Introduce the unit of work as a collective inquiry into climate change. Explore various sources of information about climate change, including CC and Me resources. Discuss the connection between social and environmental issues, in the Anthropocene. Create a cover page and/or mindmap about climate change in your research journal.</p>

Resources

science	english	visual arts	geography
Powerpoint for whole-class discussion (videos, artworks, discussion questions, CC + Me examples). Accompanying resource book for students.	Powerpoint for whole-class discussion (videos, artworks, discussion questions, CC + Me examples). Accompanying resource book for students.	Powerpoint for whole-class discussion (videos, artworks, discussion questions, CC + Me examples). Accompanying resource book for students.	Powerpoint for whole-class discussion (videos, artworks, discussion questions, CC + Me examples). Accompanying resource book for students.

Concepts: climate change, social, environmental, Anthropocene epoch, globalisation

Assessment for Learning

science	english	visual arts	geography
Has the student started a research journal? Cover page? Mindmap?	Has the student started a research journal? Cover page? Mindmap?	Has the student started a research journal? Cover page? Mindmap?	Has the student started a research journal? Cover page? Mindmap?
Has the student participated in discussion?	Has the student participated in discussion?	Has the student participated in discussion?	Has the student participated in discussion?

Key Learning Outcomes

science	english	visual arts	geography
SC4-13ES explains how advances in scientific understanding of processes influence the choices people make about resource use and management	EN4-5C thinks imaginatively, creatively, and critically about information, ideas, and arguments to compose texts	4.2 explores the function of and relationships between artist – artwork – world – audience	GE4-2 describes processes and influences that form and transform places, spaces and environments.



Phase 2: Connecting with Climate Change

Questions: what do artefacts from our everyday lives have to do with climate change? What social and environmental issues are associated with these artefacts?

Objectives: Relate climate change to the everyday lives of students. Analyse an object, household product, story, song, video, animal, environment, person, issue or event in relation to climate change. Understand the aesthetic, cultural, spiritual and economic value of objects.

Activities:

science	english	visual arts	geography
<p>Bring in an object that says something about climate change. Share your object with the class. Analyse the object like a scientist: Record the material properties of the artefact, its history, social functions, where it came from. Create a mindmap about the object in your research journal.</p>	<p>Bring in a text such as a book, story, poem, image, song or film that says something about climate change. Analyse the text in terms of its meaning to you, and its social meaning. What does the text say about the environment, society and culture? Write a short story or poem about your artefact.</p>	<p>Bring in an object that says something about climate change. Share your object with the class, and describe why you chose it. Draw your object, re-design it, create multiples, assemble your objects together in groups. Then discuss in groups. How does the meaning change when you put objects together?</p>	<p>Bring in an object that says something about climate change. Share your object with the class. Analyse the objects like geographers: map where they came from, how far they have travelled, the working conditions involved with production, energy costs, pollution. Explore social justice issues, environmental degradation human wellbeing and interconnections.</p>

Resources

science	english	visual arts	geography
objects from home, computers for online research mindmapping tools research journals	research journals, texts brought in from home.	visual journal, drawing materials, watercolour or other art materials.	research journals, computers for online research and google maps, the Story of Stuff youtube video.

Concepts: artefact, analysis, inquiry, material, everyday,

Assessment for Learning

science	english	visual arts	geography
Did the student bring in and share an artefact?	Did the student bring in and share an artefact?	Did the student bring in and share an artefact?	Did the student bring in and share an artefact?
Did the student record observations about the artefact in their journal?	Did the student write a story about the artefact in their journal?	Did the student record observations about the artefact in their journal?	Did the student record observations about the artefact in their journal?

Key Learning Outcomes

science	english	visual arts	geography
4.3 identifies areas of everyday life that have been affected by science.	EN4-1A responds to and composes texts for understanding, interpretation, critical analysis	4.4 recognises and uses aspects of the world as a source of ideas, concepts and subject matter in the visual arts	4.7 describes the interrelationships between people and environments



Phase 3: Becoming a Researcher

Questions: what is research? What do researchers do? How do they do it?

Objectives: Understand different ways of doing research. Explore research methods which are relevant to your KLA.

Activities

science	english	visual arts	geography
<p>Discuss qualitative and quantitative research methods. Discuss ethical issues in research. Formulate interview or survey questions in student journals. Interview your classmates about their scientific understanding of climate change or design an online survey using survey monkey.</p>	<p>Discuss visual and narrative methods of doing research, using The Changes as an example. Students bring in photos or magazine clippings with images related to climate change. Use combinations of images and text to create a response to climate change in your journals. Can use photovoice, fiction, poetry, mindmaps, drawings.</p>	<p>Discuss visual and arts-based methods, using Past Now Future as an example. Students bring in photos or magazine clippings with images related to climate change. Use combinations of images and text to create a response to climate change in your journals. Can use drawing, text, collage, mindmaps, mixed media.</p>	<p>Discuss qualitative and quantitative research methods. Discuss ethical issues in research. Formulate interview or survey questions in journals. Interview your classmates about their understanding of climate change—how it affects different groups of people and the differing approaches to action. Design an online survey using survey monkey.</p>

Resources

science	english	visual arts	geography
Powerpoint on qualitative and quantitative research, Computers for designing surveys and recording device for interviews.	Powerpoint on visual methods and narrative research (cc and me resources). Printed photos and clippings from home, some drawing supplies.	Powerpoint on visual methods and arts-based research (cc and me resources). Visual journals, drawing supplies, printed photos and clippings.	Powerpoint on qualitative and quantitative research, Computers for designing surveys and recording device for interviews.

Concepts: research; method; qualitative; quantitative; arts-based research; observation; ethics, scale, distribution (of populations).

Assessment for Learning

science	english	visual arts	geography
Did the student formulate interview or survey questions in their journal? Did the student conduct an interview or design a survey?	Did the student create a photovoice, poem or narrative in their journal?	Did the student create an artwork, collage or other creative response in their journal?	Did the student formulate interview or survey questions in their journal? Did the student conduct an interview or design a survey?

Key Learning Outcomes

science	english	visual arts	geography
SC4-8WS selects and uses appropriate strategies, understanding and skills for problem-solving	EN4-2A effectively uses a widening range of processes, skills, strategies and knowledge to compose texts in different media	4.5 investigates ways to develop meaning in their artworks	GE4-4 examines perspectives of people and organisations on a range of geographical issues.



Phase 4: Research Design

Questions: What questions would you like to research about climate change? How will you do your research?

Objectives: Form the inquiry groups. Draw on ideas and discussion in previous phases to formulate a question to drive the inquiry. Design a research project in groups or as a whole class.

Activities

science	english	visual arts	geography
Discuss examples and the proposal scaffold. Develop research questions in groups. Select methods: interviews or surveys. Set realistic timeframes. Consider public outcomes.	Discuss examples and the project scaffold for a book. Develop research questions about climate change as a class (mindmap on board). Take notes in your visual journals. Choose what you would like to contribute to the book in response to the question: story, poem, reflection or photovoice.	Discuss examples and the project scaffold for an exhibition. Develop research questions about climate change as a class (mindmap on board). Take notes in your visual journals. Assembling resources and materials from home: found objects, recycled materials, magazines, newspapers, etc.	Discuss examples and the proposal scaffold. Develop research questions in groups. Select methods: interviews or surveys. Set realistic timeframes. Consider public outcomes and plan for an achievable, local event or social change activity.

Resources

science	english	visual arts	geography
Powerpoint about the group inquiry process, including ethical protocol. Scaffolded research proposal worksheets.	Powerpoint scaffolding the group inquiry process, and four areas of practice: story, reflection, poem or photovoice. Project scaffold sheet.	Powerpoint scaffolding the group inquiry process, and three areas of practice: assemblage, collage and drawing. Project scaffold sheet.	Powerpoint about the group inquiry process, including ethical protocol. Scaffolded proposal worksheets.

Concepts: inquiry; collaboration; proposal; research design.

Assessment for Learning

science	english	visual arts	geography
Did the student join an inquiry group? Did the student complete a research proposal worksheet?	Did the student take notes on whole class discussion? Did the student complete a project worksheet?	Did the student take notes on whole class discussion? Did the student complete a project worksheet?	Did the student join an inquiry group? Did the student complete a research proposal worksheet?

Key Learning Outcomes

science	english	visual arts	geography
SC4-5WS collaboratively and individually produces a plan to investigate questions and problems	EN4-2A effectively uses a widening range of processes, skills, strategies and knowledge to compose texts in different media	4.6 selects different materials and techniques to make artworks	GE4-4 examines perspectives of people and organisations on a range of geographical issues. GE4-6 explains differences in human well-being



Phase 5: Doing Your Research

Questions: What is fieldwork? How do researchers collect or produce data?

Objectives: Students conduct their research in the field, classroom or online.

Activities

science	english	visual arts	geography
Students conduct interviews or surveys using recording devices or online. Students store their data securely.	Students produce texts using four areas of practice to address the research question: stories, poems, reflections and photovoices. Students reflect on their creative process in their journal.	Students produce artworks using the three areas of practice to address the research question: assemblage, collage, and drawing. Students reflect on their creative process in their journal.	Students conduct interviews or surveys using recording devices, cameras or online. Students store their data securely. Students reflect on the effectiveness and limitations of different methods.

Resources

science	english	visual arts	geography
Recording devices for interviews. Clipboards, survey sheets and pens for surveys.	Computers and journals for writing texts. Cameras for taking photos for integration into texts.	recycled materials, magazines, photos, newspapers and text clippings, glue, drawing materials, paper or canvas supports.	Recording devices for interviews and computers for surveys. Cameras for taking photos.

Concepts: data; fieldwork; participants (sample populations); ethics; limitations

Assessment for Learning

science	english	visual arts	geography
<p>Did the student conduct an interview or survey in the field?</p> <p>Did the student comply with ethical protocol?</p> <p>Did the student store the data securely?</p>	<p>Did the student create a text which responds to a research question about climate change?</p> <p>Did they reflect on the process in their journal?</p>	<p>Did the student create an artwork which responds to a research question about climate change?</p> <p>Did they reflect on the process in their journal?</p>	<p>Did the student conduct an interview or survey in the field?</p> <p>Did the student comply with ethical protocol?</p> <p>Did the student store the data securely?</p>

Key Learning Outcomes

science	english	visual arts	geography
<p>SC4-6WS follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually</p>	<p>EN4-5C thinks imaginatively, creatively, and critically about information, ideas, and arguments to compose texts</p>	<p>4.1 uses a range of strategies to explore different artmaking conventions and procedures to make artworks</p>	<p>GE4-4 examines perspectives of people and organisation on a range of geographical issues.</p>



Phase 6: Analysing Your Research

Questions: what does your research say? What did you learn from your fieldwork?

Objectives: to explore and reflect on possible meanings in your research; to critically analyse your data; to visualise your data.

Activities

science	english	visual arts	geography
Transcribe the best parts of your interviews and edit your video interviews. Visualise your survey findings into graphs and tables using Wordle or Excel. Identify the main themes or trends in your data. Put together a powerpoint using video, graphs, tables and key points.	Explore ways of bringing your texts together into a book. Discuss what the texts say about climate change and how they relate to each other. Design the cover for the book and organise the texts into sections or chapters, using The Changes as an example.	Explore ways of bringing the artworks together for an exhibition. Discuss what the artworks say about climate change and how they relate to each other. Write an artist statement and title for your artworks and exhibition, using Past Now Future as an example.	Transcribe the best parts of your interviews and edit your video interviews. Visualise your findings into graphs and tables or create a skit (short drama scene) using your quotations. Identify the main themes or trends in your data. Draw conclusions. Put together a powerpoint using video, maps, graphs, tables and key points.

Resources

science	english	visual arts	geography
computers with Word, Powerpoint and Excel.	Computers with microsoft Word template for book.	Visual journals and drawing materials, whiteboard.	Computers with Word, Powerpoint and Excel, camera images.

Concepts: transcription; analysis; reliability and usefulness; visualisation; interpretation; evaluation; prediction; multiple perspectives, outlier

Assessment for Learning

science	english	visual arts	geography
<p>Did the student identify key themes in the data?</p> <p>Did the student visualise their findings using Excel and Powerpoint?</p>	<p>Did the student contribute to group discussion about the book?</p> <p>Did the student document the group discussion in their journal?</p>	<p>Did the student contribute to group discussion about the exhibition?</p> <p>Did the student write an artist statement in their journal?</p>	<p>Did the student identify key themes and variations in the data? Did the student draw a conclusion from the data? Did the student visualise (or organise) their findings? Students reflect on the complexity, reliability and usefulness of data.</p>

Key Learning Outcomes

science	english	visual arts	geography
<p>SC4-7WS processes and analyses data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions</p>	<p>EN4-6C identifies and explains connections between and among texts</p>	<p>4.7 explores aspects of practice in critical and historical interpretations of art 4.9 begins to acknowledge that art can be interpreted from different points of view</p>	<p>GE4-3 explains how interactions and connections between people, places and environments result in change.</p>



Phase 7: Communicate your research

Questions: how will you communicate and connect your research to the community?

Objectives: to develop engaging and sustainable ways to present your research to the community and contribute to social change. Work in groups or as a whole class.

Activities

science	english	visual arts	geography
Stage an event to present your research to the public, such as a research showcase, assembly presentation, workshop, science expo, article or website. Consider ways to showcase your research, such as using video, powerpoint slides, graphs and interactive features.	Stage a book launch to release your book to the public. Consider the school or local library as a venue for your launch. Design a poster to promote your launch. Print copies of your book for the public to read. Have a feedback form for people to respond to your book.	Work together as a class to stage a public exhibition of the works you've produced. This can include final works as well as process works (visual journals, photos, reflections, etc.) Design a poster to promote your exhibition. Have a feedback form for people to respond to your exhibition.	Stage an event to present your research to the public, such as a research showcase, assembly presentation, skit, workshop, science expo, article or website. Consider ways to showcase and connect your research to the community, such as a website, video, skit powerpoint slides, maps, graphs and interactive features.

Resources

science	english	visual arts	geography
Computers for producing videos, powerpoints and	Computers to design poster. Printed copies of the book. Feedback forms.	Computers to design poster. Materials for hanging the	Computers for producing websites, videos, skit scripts,

other research findings.		exhibition. Feedback forms.	powerpoints, maps, and research findings.
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Concepts: change; social justice; engagement; communication; participation; community; sustainable research.

Assessment for Learning

science	english	visual arts	geography
<p>Did the student visualise their research for a public audience?</p> <p>Did the student contribute to the planning of a public event?</p>	<p>Did the student contribute to the book as a final product?</p> <p>Did the student contribute to the planning of a public event?</p>	<p>Did the student contribute work for the final exhibition?</p> <p>Did the student contribute to the planning of a public event?</p>	<p>Did the student visualise/perform or make accessible their research for a public audience?</p> <p>Did the student help to plan a public event or social change action?</p>

Key Learning Outcomes

science	english	visual arts	geography
<p>SC4-9WS presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations</p>	<p>EN4-7D demonstrates understanding of how texts can express aspects of their broadening world and their relationships with it</p>	<p>4.7 explores aspects of practice in critical and historical interpretations of art</p>	<p>GE4-8 communicates geographical information using a variety of strategies. GE4-6 explains differences in human well-being</p>



Phase 8: Reflect on Your Process

Questions: What have you learned through this process? What would you do differently next time?

Aim: Evaluate and reflect on the collective inquiry process using a variety of methods.

Activities

science	english	visual arts	geography
<p>Annotate your journal entries with post-it notes. Write a reflection on your process in your visual journal. Respond to these questions:</p> <p>What did you do? How did it work? What did you enjoy? What would you do differently next time? What questions did your research bring up? How has your perspective changed?</p>	<p>Annotate your journal entries with post-it notes. Write a reflection on your process in your visual journal. Respond to these questions:</p> <p>What did you do? How did it work? What did you enjoy? What would you do differently next time? What questions did your research bring up? How has your perspective changed?</p>	<p>Annotate your journal entries with post-it notes. Write a reflection on your process in your visual journal. Respond to these questions:</p> <p>What did you do? How did it work? What did you enjoy? What would you do differently next time? What questions did your research bring up? How has your perspective changed?</p>	<p>Annotate your journal entries with post-it notes. Write a reflection on your process in your journal or film your classmate's responses. Respond to these questions:</p> <p>What did you do? How did it work? What did you enjoy? What would you do differently next time? What questions did your research bring up? How has your perspective changed? Can research like this produce social change?</p>

Resources

science	english	visual arts	geography
Research journals.	Research journals.	Visual journals.	Research journals.

Concepts: reflection; evaluation; assessment

Assessment for Learning

science	english	visual arts	geography
<p>Did the student write a reflection about their research process?</p> <p>Did the student identify areas for growth and improvement?</p>	<p>Did the student write a reflection about their research process?</p> <p>Did the student identify areas for growth and improvement?</p>	<p>Did the student write a reflection about their research process?</p> <p>Did the student identify areas for growth and improvement?</p>	<p>Did the student write a reflection about their research process?</p> <p>Did the student identify areas for their own growth and improvement?</p> <p>Did the student identify purpose or meaning for the activity in a broad context?</p>

Key Learning Outcomes

science	english	visual arts	geography
SC4-15LW explains how new research changes people's understanding of the world	EN4-9E uses, reflects on and assesses their individual and collaborative skills for learning.	4.8 explores the function of and relationships between the artist – artwork – world – audience	GE4-8 communicates geographical information using a variety of strategies.