Embedding career education in the Victorian Curriculum F–10

Science, Levels 9 and 10

An existing learning activity linked to a particular learning area or capability in the Victorian Curriculum F–10 can be easily adapted to incorporate career education, enriching students’ career-related learning and skill development.

1. Identify an existing learning activity

**Curriculum area and levels:** Science, Levels 9 and 10

**Relevant content descriptions:** The values and needs of contemporary society can influence the focus of scientific research ([VCSSU116](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCSSU116))

 Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere ([VCSSU128](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCSSU128))

 Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems ([VCSSU121](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCSSU121))

**Existing activity:** Exploring how living things are adapting to climate change, and the work scientists are doing to ensure organisms can survive this changing climate.

**Summary of adaptation, change, addition:** Extending the existing activity to explore how climate change is affecting scientific research and employment opportunities.

2. Adapt the learning activity to include a career education focus

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| Existing learning activity | Adaptations, changes or extensions that can be made |
| Students work in groups to examine provided media articles and/or case studies related to the effects of climate change on organisms, for example, deforestation, changes in geological distribution of species or suppression of reproduction. Each group presents their findings to other groups as ‘Climate change has affected <organism> by causing… because….’Teacher discusses the evidence demonstrating that organisms are changing due to climate change and that this change is happening more rapidly than has occurred in previous time periods.  | To extend, students consider the links between the task and the work of scientists. Students can use the following questions as prompts:* What branches of science could be involved in this research?
* How has the changing climate altered the focus of scientists such as ecologists, zoologists and evolutionary biologists worldwide?
* Which other non-scientific disciplines may be involved in climate science research?
* Has the rapid adaptation and/or extinction of animals in response to climate change led to new areas of scientific research and/or employment opportunities (see ‘Additional resources’)?
* What skills would individuals in these areas need to demonstrate? How would they gain these skills?

Teacher may also lead a discussion about roles that monitor, analyse or attempt to solve some of the problems arising from climate change. |
| Students explore how organisms are affected by, and respond to, climate change, and the effect this is having on the ecosystems in which they live.  |
| Students write a science-based article detailing the effects of climate change on a selected organism that includes both qualitative and quantitative data. For example, students may choose to write a scientific blog, a magazine article, a pamphlet or a website item. Teacher leads a reflection about change, and how people adapt to environmental and/or climate change, using insights from the activity.  | A section should be added to the report that includes the student’s exploration of any new areas of scientific research and/or employment opportunities related to scientists studying their selected organism.  |

Considerations when adapting the learning activity

* To extend the activity further, students can include the transcript of an interview with a science professional in their report. The professional should have answered questions related to the science task but also provided information about their career journey. This career information can be collated and shared with the rest of the class to facilitate a discussion about different career pathways.
* Teacher should facilitate a discussion around the questions listed to assist students in recognising the link between environmental changes and opportunities for science-related employment.
* Teacher may wish to spend some time explicitly going through how to research this information. Identifying university websites where students can read about the work researchers do within the different faculties might be a useful starting point.
* Teacher could invite someone who is researching the impact of climate change on organisms to talk about their work and how it has changed over time.
* Teacher may wish to include more scientists than those outlined in the questions (ecologists, zoologists and evolutionary biologists). This is a topic that would be studied by those working in many different fields of science in addition to non-scientific fields including mathematics, agriculture, economics, policy development and the arts.

Additional resources to help when adapting the learning activity

* CSIRO, [Shark research](https://www.csiro.au/en/Research/OandA/Areas/Marine-resources-and-industries/Marine-biodiversity/Shark-research) (discusses how climate change affects shark ecology and CSIRO research)
* National Environmental Science Program, ‘[Fire, predators and the endangered northern bettong](https://www.nespthreatenedspecies.edu.au/projects/fire-predators-and-the-endangered-northern-bettong)’

Benefits for students

Know yourself – self-development:

* Students learn to write a science communication for a particular purpose, developing communication skills and recognising that different communication modes have advantages and disadvantages.

Know your world – career exploration:

* Students develop an understanding for how much science professions can change over time in response to environmental changes.
* Students recognise the importance of being a lifelong learner by identifying the changes in the work of scientists as a result of climate change.

Manage your future – be proactive:

* Students gain insight about the changing world of work and how they can find information about new jobs that are available.