ACSA IDEAS
Innovative and Dynamic Educational Activities for Schools

CURRICULUM CONTEXT	
Level:	**Years 9–10**
Curriculum area:	**Geography, Science, History, Civics and Citizenship**
General capabilities:	**Personal and social capability, Critical and creative thinking, Information and communication technology (ICT) capability, Literacy, Ethical behaviour**
Cross-curriculum priority:	**Sustainability**

Investigating human impact

In this resource students work collaboratively as a class to conduct an investigation into a site within their community where there is environmental change as a result of human impact. Students shape the investigation by developing the inquiry questions and deciding on what data they will collect. After collating, analysing and sharing the data, students may choose to contribute in some way to addressing the environmental problem.

Background

This resource presents a possible approach to implementing a service learning model with students. It is difficult to develop service learning from outside a specific school environment, since the power and authenticity of service learning is realised when students are closely involved in making key decisions about the focus of the learning and the action within the community. Service learning opportunities will often start from the interests of the students or activities that are already established between a school and its community. In developing service learning from a curriculum-based study, teachers need to be alert to the possibility that students feel little commitment to the activity. However this learning sequence suggests the potential value of service learning: connecting student learning to the solution of problems and issues facing local communities.

Learning outcomes

Students will:

- develop questions for investigation
- engage with an issue and plan a geographical inquiry around it
- collect, evaluate and manage information
- distinguish relevant from irrelevant information
- collaborate with other learners to plan and implement actions to resolve a problem
- appreciate the significance of community awareness to responsible management of the environment
- understand that active citizens can influence the future of places
- reflect on what has been learned and about the process of investigation.

References

Connect — http://research.acer.edu.au/cgi/viewcontent.cgi?article=1195&context=connect

NSW Department of Education and Training — http://www.curriculumsupport.education.nsw.gov.au/volunteering/schools/service.htm

Service Learning Australia — http://www.servicelearning.org.au/

Spatialworlds blog — http://spatialworlds.blogspot.com.au/2012/04/getting-out-and-about-fieldwork-in.html

Upper Parramatta River Catchment Education Resource — http://www.uprct.nsw.gov.au/HTML/Curriculum/HSIE/Stage%206%20Geography%20.htm

Australian Curriculum — http://www.australiancurriculum.edu.au/

Photo Lamiot.

LEARNING SEQUENCE

The impact of people on our environment

In a class discussion, brainstorm the ways in which people have had an impact on the environment. Encourage students to prepare for this activity by allowing time for them to have small group discussions or to do some research on the internet. Accept and record all of the students' ideas, whether they relate to the environment at a global, national or local level.

Analyse the list that the class has generated, identifying examples where the impact has been positive and those that have left a negative legacy. There may be some instances where students have different opinions about whether the impact is positive or negative: encourage students to provide arguments to support their reasoning and explain that these are the types of issues that can create divisions within a community.

Invite students to complete **Worksheet 1** where they nominate the six changes from the class list that they see as most significant (the change could be positive or negative for the environment), rank the importance of these changes and provide a reason for selecting them.

Ask your students to share the example that they have ranked as having greatest significance. Then, as a class, discuss the criteria that students have used in making this selection. Did the majority of students consider factors relating to preservation of the environment or factors influencing the quality of life for humans in determining their priorities? Ask students to consider how communities balance the advantages of development and jobs with cost to the environment. Use the students' responses as a stimulus for a discussion about the importance of articulating the factors that will be explored and measured when designing any investigation.

Investigating human-induced change to the local environment

Students now focus on their local environment, where the issues of concern to communities (in relation to both development and the environment) will vary widely between schools. This learning sequence will follow a hypothetical community where pollution in a creek has become so bad that it is a threat to the natural ecosystem and has resulted in loss of public amenity because it is no longer a safe or attractive environment for people. The processes of investigation and authentic student learning followed in the learning sequence can be adapted to whatever environmental concerns that students identify in your community.

In a class discussion, ask students to think about human impact on the environment in your local region. Some questions that might guide their discussion include:

- How was the environment different 200 years ago? 100 years ago? 50 years ago? 10 years ago? How can we find out?
- Where is human impact on the environment most evident? What are the indicators of this impact? How can they be measured?
- What are some of the negative consequences caused by human impact? Is the environmental problem less significant than the activities that caused it (development and jobs)?
- In what ways has the environment been improved? What does 'improved' mean?
- Do you think that the current land use patterns are sustainable?
- Are there any sites that have been degraded that may be able to be restored?

When students have explored these ideas, invite them to identify a local site where the class could investigate the nature and extent of damage to the environment caused by human impact. Allow time for discussion and, if necessary, assist by asking questions that may help students to reach a consensus about a site for investigation.

When students have decided on a local site, encourage them to develop questions that they could explore by visiting the site and conducting fieldwork. Record the questions and refine them if necessary as they will be critical in shaping the students' investigation.

Build on these questions and brainstorm indicators of environmental damage that may be able to be observed and measured on site: what information should they collect and analyse to use as evidence in their inquiry? Examples include weed growth, water pollution, soil salinity, feral animals, siltation, air quality, evidence of oils and grease, pesticides and herbicides, and litter. Work with students to identify ways of measuring and recording each of the indicators on the list developed by the class. Students also need to allocate responsibility for making the measurements and records that they have identified to different groups of students, so that the inquiry becomes a collaborative investigation.

Challenge your students to identify existing sources that may provide evidence about the previous condition of the site or about the changes that have resulted from human impact. Sources may include local/state government reports and archives; photos and records available through a local historical society; census data; environmental groups such as Landcare or Conservation Councils; and Environmental Impact Statements required for development applications. As a class, decide on who will take responsibility for locating and researching each of the sources that has been identified so that the class has access to the data to inform its investigation.

Before doing the fieldwork, allow time for students in each group to meet and prepare for the tasks that they have been allocated. Encourage students to take responsibility for developing their own work program and act as a resource to guide their planning; where necessary, ask questions to clarify whether students' planned collection of data will provide the evidence that they need to explore the questions that the class has identified. Activities that they plan may include classifying animal and vegetation types, field sketching, water and soil testing, mapping and report writing.

Visit the site, ensuring that you provide enough time for students to explore it fully and complete the data collection activities that they have developed. Back in the classroom, students will need time to collate, analyse and share the data that they have collected. The process of analysis and interpretation should include any sources that provide evidence relating to the site in previous years so that students gain some indication of the scale and/or speed of change.

It is not possible to be specific about the course of this student inquiry as the questions that are being explored will be different in every classroom. However students should be encouraged to review the data that they have collected in relation to the questions that they formulated at the start of the investigation. What have they learned from the investigation? How will they report on their findings?

Responding to the investigation

At this stage, students should have enough data to decide whether they think that an environmental problem exists at the site that they have investigated. Encourage students to consider the benefits to the community of the activities that have caused the problem, and to evaluate whether the costs of fixing the problem make a proposed solution worthwhile.

Students may determine to be part of the process of addressing any environmental problem that is identified. However, if your students have no inclination to explore the issue further or to investigate ways of remedying the problem, then the process of service learning—where students work collaboratively with the community to remedy the environmental problem—will not have any authenticity and may, in fact, lead to negative outcomes if pursued.

Where students have become engaged with the study of local environmental issues, the next step is for them to carefully define the environmental problem/s that their investigations have revealed. Invite your students to identify any aspect of the problem where they could contribute to a remedy. In this discussion, encourage students:

- not to be overwhelmed by the scale of the problem but to see any action that they identify as a positive contribution to an ongoing process of restoration
- to recognise education of the community about the problem as part of the solution
- to identify any other people in the community who may be concerned about the problem
- to explore possible collaboration between the school and other groups in the community in working to address the problem, and ways of contacting them
- to find examples of projects in other communities that have addressed similar problems
- to identify specific skills, equipment or funding that may be required to address the problem, and the role that they as students can best play
- to understand that involvement in the project will take real commitment, including giving up some of their own time out of school.

If students do not engage with the concept of environmental restoration it is possible that their discussion has highlighted some of the advantages of development projects, such as jobs. If unemployment in the local area is an issue that is of great concern to them, it is possible that a service learning project may develop from their discussions. For example, students may decide to interview job-seekers to identify skills they would like to learn or to work with community groups to provide assistance and support to unemployed members of the community.

Action for a sustainable environment

The scope of involvement at this stage will be determined by the commitment of the students and their own ideas about what they can achieve. As a class, students need to decide what their goals are and how they plan to work towards realising these goals e.g. regular class meetings, group leaders who meet regularly to coordinate actions. You also need to establish how much class time will be provided for this student activity and what level of support/guidance will be available to students as they undertake their planning.

Student action will take many forms and will be shaped by the students themselves. Examples of possible student action include:

- publishing a newsletter where students share the findings from their investigation with the community and invite comments or suggestions e.g. to a Facebook page or website
- planning a campaign to make everyone in the school aware of the problem, and suggesting changes in their behaviour that could contribute to a solution
- inviting local environment groups to meet so that students can share the results of their investigation and develop ideas about addressing the problem
- planning a 'working bee' at the site (students would need to work in groups to plan such aspects as identifying skills and tools that are required, encouraging community members to participate, seeking sponsorship for any costs/catering, press coverage of the day)
- contacting local government authorities to arrange a meeting where results of the investigation are shared, a long-term plan of action is explored and an ongoing role for the school is established
- identifying the causes of environmental damage and contacting the people/companies responsible to share the results of the investigation or approaching local media with the complete results of the investigation.

Reflection

In this activity students reflect on both their investigation into environmental change and their actions to address an environmental (or community) problem.

First, ask students to work in the groups that completed the data collection during the fieldwork and the investigation into environmental change. They should reflect on the process of undertaking the investigation and record their responses on **Worksheet 2**.

Then ask each student to complete **Worksheet 3** where they reflect on the actions that they planned and undertook to address the problem that they had identified.

As a class, discuss the different perspectives that exist in the community about the impact of humans on the environment. Encourage students to identify which of these perspectives are given most coverage in the media, and which are represented by the elected members of local, state and federal governments. Challenge the students to each define what they believe is an acceptable level of impact for humans to have on the natural environment.

WORKSHEET 1 — THE IMPACT OF PEOPLE ON OUR ENVIRONMENT

On the table below list six examples of human impact on the environment that you consider to be significant. Then rank each one from 1 to 6 and record why you consider them to be significant.

Rank the significance of each impact	Describe the impact that people have had on the environment	Why have you included this example as one of the six most important?

WORKSHEET 2 — REFLECTING ON THE PROCESS OF INVESTIGATION

Think back to the investigation that you participated in about environmental change in your community. What did you learn about the process of conducting an investigation?

1. What makes a good question for an investigation?

2. How might you change the questions that the class developed for your investigation?

3. Do you think that the data the class decided to collect was appropriate to answer the questions? Explain your response.

4. What factors should be considered when deciding what data to collect and how to collect it?

5. How would you change the data that was collected for the investigation? Consider usefulness and reliability.

6. What are some of the factors you need to consider when interpreting the data that is collected?

7. Would you prefer to participate in an investigation that is very specific or one which explores very broad questions? Why?

WORKSHEET 3 — BEING PART OF THE SOLUTION

Reflect on the decisions and actions of your class in responding to the problem that you identified in your community.

1. Write three words that describe your feelings
   (a) during the discussions when the class was planning what action to take

   (b) when you were involved in actions aimed to address the problem

2. How would you describe the contribution that your class has made to the local community?

3. What do you think that people in the community might think about the work that you and the other students did?

4. What were the greatest challenges you experienced while you were working with other people during this project?

5. What skills did you use during the project that you think would be useful in a workplace?

6. What advice would you give to other students who are involved in a similar project in the future?