Citizen Science – School Biodiversity Trail Lesson 5 – Years 7 & 8

Teacher preparation

Learning intentions:

- Students are able to use their learning to engage the local community in taking action for climate change and local biodiversity.
- Students are able to drive the processes of planning and executing a social action project.

Success criteria: Students can…

- … use their skills and interests to engage their community in actions for change.
- … collaborate and communicate in groups.
- … follow the processes and steps required for planning and executing a social action project.

Teacher content information: [ClimateWatch](#) is a citizen science developed by [Earthwatch](#) initiative that seeks to educate people from across Australia on the issue of climate change and empower them to contribute to solutions. Through its ClimateWatch program, Earthwatch works with educators to help them bring their experiences back to the classroom to foster new generations of environmental leaders. By incorporating ClimateWatch into curriculum, students and teachers will become more knowledgeable about climate change and its impacts, and inspired to contribute to scientific and environmental efforts in their daily lives or future career path. These actions could range from

community efforts to protect biodiversity through to encouraging others to be more involved in such activities. Increasing appreciation for the environment and scientific literacy in communities will empower long-term climate action as well as the development of adaptation and mitigation strategies.

Hot tips:

- This lesson is part 5 of a unit about creating a creating a school biodiversity trail. The full unit of lessons can be found here: Citizen Science - Geography and Science - Years 7 & 8.
- This unit has been designed to be taught in either Geography or Science. To further enhance the learnings from this unit for students, consider teaching this as a cross-curricula unit of work.
- This lesson may be completed over several sessions, with extra time required for the delivery of students projects.
- In this unit students create a school biodiversity trail inspired by the ClimateWatch Trails for use now and in the future. Once the trail is established, future cohorts of students can complete Lesson 1 and participate in a single biodiversity survey along the trail in a single lesson. If you are interested in furthering this process and establishing an official ClimateWatch Trail, visit the Create a ClimateWatch Trail page.

Teaching sequence

10 minutes – Part A: What am I Most Interested in?
30 minutes – Part B: Developing Ideas for Action
35 minutes – Part C: Part C: Project Planning
60+ minutes – Part D: Project Delivery (this could be done in one day or over a number of weeks to complete the project)
30+ minutes – Reflection

**Work through this resource material in the following sequence:**

Introduction: Explain to students that in this lesson they will be developing a plan to engage the community in their school biodiversity trail. The aim of this lesson is to find one action per group that you believe will excite people enough for them to download the ClimateWatch app and walk along your trail recording sitings.

Before commencing the project planning phase of this lesson, emphasise to students that each group member should take responsibility for collecting evidence their own work in the project, including their drafts of everything they create as part of the whole project and records of any opportunities they pursue (either successfully or unsuccessfully). The most important thing for students to remember is that the PROCESS of completing the project is really important – perhaps even more than the final product. In the final reflection, students will have the chance to demonstrate the growth and learning that they experienced both personally and as a group as a result of facing the challenges inherent in a project of this type.

> TIP: THE TEACHER COULD DOCUMENT STUDENT WORK AND THE PROCESS REQUIRED TO DESIGN AND DELIVER A PROJECT USING VIDEO OR PHOTOS. THE FOOTAGE COULD THEN BE EDITED BY STUDENTS AT THE END OF THE PROJECT DELIVERY TO SHARE WITH THE SCHOOL COMMUNITY.

Part A: What Am I Most Interested in?

Step 1. Work with your class to create a mind map that identifies some of the key topics and conservation issues that they feel their school biodiversity trail encompasses, for example, loss of biodiversity, habitats, native plants and animals, introduced species, climate change, revegetation, etc.
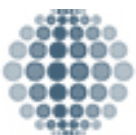
Once complete, work with students to group these ideas into themes. Each student then needs to align themselves with the theme they are most interested in, ensuring that no group has less than four students.

Explain to students that they will now use a design challenge question to help them think, explore and create many ideas for action around the theme they are interested in.

Step 2. Invite each group to complete the following sentence by adding their theme. This completed sentence will guide the group through the following ideation phase:

- *How might we use our school biodiversity trail to engage the community in … (add theme)?*

If needed, provide your students with the example 'how might we use our school biodiversity trail to engage the community in recording pest animal species in our local park'

Part B: Developing Ideas For Action

Step 1. Invite students to arrange the classroom furniture so that they are comfortable enough to think expansively and creatively. The groups may like to work on the floor, around paper attached to the wall, or on a whiteboard. Provide each group with three sheets of A3 paper, marker pens and sticky-notes.

HOT TIP: STICKY-NOTES ALLOW STUDENTS TO PHYSICALLY MOVE TWO OR MORE IDEAS AROUND, MIXING AND MATCHING TO SHAPE SOMETHING SPECIAL.

Step 2. Facilitate groups to complete a three phase brainstorming activity:

Phase 1: What actions could we take?

Invite students to create a list of actions (or doing words) that could be taken to address their '*How might we use our school biodiversity trail to engage the community in …?*' question. Inform groups that they should aim to come up with as many different actions as they can. There will be time to consider the best ideas after the brainstorm. Ask students to write the heading "Actions" on the first piece of paper. If necessary, share a few examples of actions before students begin the first phase of the brainstorm, such as:

PLANT   BUILD   WATCH   DONATE   CHANGE

Ask students to only put one action on each sticky-note and to use only one colour sticky-note for this phase. (This is important for the third phase, which requires the notes to be moved around.)

Get students off and running for three minutes of fast thinking, using this online stopwatch to track time. Once the time is up, congratulate students on quick thinking and ask them to put that piece of paper to one side for now.

Phase 2: What are our skills and interests?

Ask groups to select a different colour sticky-note and a new sheet of paper. Invite groups to write the heading: "Skills and Interests". Explain that the next five minutes will be used to list the skills and interests of all the people within the group. Groups should be sure to take time to focus on each groups member's skills. Help students get started by providing examples, then start the timer for another five minutes. Ensure that students write one skill or interest per sticky-note.

Examples of skills and interests could include:

PHOTOGRAPHY WRITING SHORT STORIES MUSIC TENNIS
ANIMALS MOVIES SKATEBOARDING

Hot tip: Encourage thinking about hidden or quirky skills, e.g. French-braiding hair, knowing some constellations, or pitch-perfect whistling.

Phase 3: Mix and match to create ideas to make change.

Ask groups to take the last sheet of paper and write their '*How might we use our school biodiversity trail to engage the community in …?*' question at the top of the page. Challenge groups to come up with five or more ideas to address the '*How Might We…?*' question by matching sticky-notes. Encourage students to come up with all the ideas they can – let groups know that they don't yet need to think about how feasible the ideas are. For this phase, students should just aim to have fun playing around with possibilities. If necessary, scaffold this phase by providing some examples:

PLANT — PHOTOGRAPHY — HAVE A PHOTOGRAPHY EXHIBITION OF PLANTS ALONG THE TRAIL

BUILD — ANIMALS — BUILD AND SELL HABITAT BOXES FOR ANIMALS IN YOUR AREA

DONATE — MUSIC — HOLD FUNDRAISING MUSIC NIGHT TO RAISE MONEY FOR TREE PLANTING

Give students up to ten minutes for this phase of the brainstorm, and encourage them to think expansively and creatively and to talk through their ideas with each other. While students are working, watch for indications of a slowing down of ideas.

Step 3. To help groups land on an idea for action, including key logistics and framing how it will actually work, ask groups to talk through their favourite ideas and apply the SMART criteria to their idea (SMART criteria also available on the Student Worksheet). Be sure to emphasise the importance of the 'relevant' stage. For their idea to be relevant it needs to be able to interest and engage the community.

S PECIFIC — THE IDEA IS CLEAR AND UNAMBIGUOUS. WHAT IS EXPECTED? WHY IS IT IMPORTANT? AND WHO IS INVOLVED?

M EASURABLE — CAN YOU MEASURE YOUR IDEA? STAY ON TRACK WITH THESE QUESTIONS: HOW MUCH? HOW MANY? HOW WILL I KNOW IT IS DONE?

A CHIEVABLE — AIM HIGH BUT ATTAINABLE. AS YOUR PROJECT GROWS AND EVOLVES YOUR IDEA WILL BECOME MORE ACHIEVABLE.

R ELEVANT — MAKE SURE YOUR IDEAS ARE RELEVANT TO WHAT YOU ARE TRYING TO ACHIEVE. CONSIDER QUESTIONS LIKE: WILL THIS HELP US TO ACHIEVE OUR DESIRED END RESULT? DOES THIS MATCH OUR NEED?

T IMELY — A TIME-BOUND DEADLINE WILL HELP ESTABLISH A SENSE OF URGENCY, AND WILL HELP YOUR PROJECT STAY FOCUSED AND ON TRACK.

Step 4. Ask students to decide on their idea. If required, they could cast a vote within their groups. Once a decision has been made, invite students to record their idea to address the '*How might we use our school biodiversity trail to engage the community in…?*' question on the Student Worksheet.

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Part C: Project Planning

Step 1. Once groups have decided on the action they will take, explain to them that it is time to plan their idea in detail. Distribute a copy of the [Project Planning Tool](#) to each group and invite them to fill it out.

Step 2. You should sit with each group to discuss their plan, using the following questions to guide the discussion:

- What are you planning to do?
- How is it addressing your *'How might we use our school biodiversity trail to engage the community in...?'* question?
- What help do you need to get it done?
- When do you plan to have completed your project by?

Step 3. Provide students with information about the deadline for delivery of their project and any relevant logistics relating to your school, such as other staff who could support them, how to book resources such as cameras and rooms, or who to speak to for permission for their intended action.

* BE CLEAR ABOUT TIME ALLOCATION — REMIND STUDENTS HOW MUCH TIME THEY HAVE TO COMPLETE THE PROJECT AND ENCOURAGE STUDENTS TO BE REALISTIC ABOUT THE TASKS THEY HAVE TO COMPLETE IN THAT TIME.
* KEEP COMMUNICATION HIGH, MAKING SURE EVERYONE HAS EVERYTHING THEY NEED TO COMPLETE THE WORK THEY HAVE BEEN ALLOCATED, AND THAT EVERYONE KNOWS WHAT THEY SHOULD BE DOING.
* TALK TO YOUR PRINCIPAL, PARENTS AND STAFF ABOUT WHAT THE STUDENTS ARE DOING AND HOW/WHY THEY ARE COMPLETING THEIR PROJECTS.
* REMIND STUDENTS TO PREPARE FOR SET-BACKS, AND REMIND THEM THAT MAKING CHANGE CAN BE HARD; ENCOURAGE THEM TO CONTINUE EVEN IN THE FACE OF OBSTACLES OR CHALLENGES.

Part D: Project Delivery

Step 1. After students have completed the planning process, allow time for them to deliver their projects. This could be done on one allocated day or over a number of designated weeks. This Project Checklist can be used to help groups keep track of what they need to do to deliver their project.

* ENSURE GROUPS ARE ALLOCATING ROLES AND DIVIDING UP THE WORKLOAD FAIRLY.
* ENCOURAGE ALL GROUP MEMBERS TO CONTRIBUTE SO THAT ALL STUDENTS HAVE OWNERSHIP OVER THEIR PROJECTS.
* REMIND STUDENTS TO BE REALISTIC AND MAKE THE PROJECT ACHIEVABLE.
* ADVISE STUDENTS TO CONSIDER POSSIBLE CHALLENGES AND OBSTACLES — BEING PREPARED IS A GREAT WAY OF ENSURING THE PLAN WILL BE A SUCCESS.
* ENCOURAGE GROUPS TO KEEP COMMUNICATION LINES OPEN AT ALL STAGES OF PROJECT PLANNING AND ACTIONING.

Step 2. The teacher should check in with each group to discuss their progress, using the following questions to guide the discussion:

- What have you done so far?
- What needs to be done next?
- When will it be finished?
- What help do you need to get it done?

Step 3. You may also choose to publicly showcase students' achievements by working with them to create a class newsletter (written or video) about their projects that could be distributed to other teachers and students at your school, and parents/carers and community members.
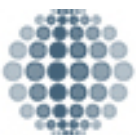
Reflection

Conclude by inviting students to participate in a class discussion to celebrate their achievements. It may be that not every group was able to deliver their project by the set date or that the project they did deliver was not what they had hoped for. Emphasise to students that this is often the case for projects and that success should instead be measured by recognising and learning from the process.

The teacher can then share the skills, attitudes and capabilities observed throughout the process, and should discuss the importance and transferability of these qualities in the ability to succeed in life.

Then, invite students to complete the project reflection and self refection (available on the Student Worksheet). Invite students to work independently to complete both sets of reflection questions:

Project reflection:

- What parts of the project were the most successful and why?
- What parts of the project were the least successful and why? If you could repeat the project, how would you improve these parts?

- Overall, how do you think your project could be improved?
- What challenges did you face and how did you overcome them?
- How could you extend or continue your project?

Self reflection:

- Which of your skills and interests were involved in delivering your social action project?
- How did you contribute to your group's success?
- What would you do differently next time?
- What was the best part of working on this project and why?
- What was the worst part and why?
- What impact did you have?
- What are you most proud of?

Extensions/Homework

Invite students to create and host an exhibition to share the project and the process with the school community. If the teacher (or any students) recorded any parts of the process and project using video or photos, these could be edited to create a display or short film that could form part of the display. If students are personally hosting the exhibition, encourage them to respond in person to questions from guests (for instance, school leadership, other school staff, students, families and local community representatives).

Teacher Reflection

Note: Cool Australia and Earthwatch have also partnered to create citizen science units of work for maths and science. To further enhance students' learning, consider teaming up with teachers in these complementary faculties to run a cross-curricular project on phenology and citizen science.

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