

LEARNING in the OUTDOORS

IN SUSTAINABILITY

TOOLKIT 11



TEACHER TOOLKIT SCHEDULE

Outdoors Victoria, in partnership with the Australian Council for Health, Physical Education and Recreation (ACHPER Victoria), Environment Education Victoria (EEV), Geography Teachers Association (GTAV) and Parks Victoria (Parks Vic) will produce 15 Teacher Toolkits between 2018 and 2020. These toolkits will be delivered to the following order:

2018

- 1 Introduction to Outdoor Learning
- 2 Outdoor Learning in the Play Ground
- 3 Outdoor Learning in Water-Based Environments

2019

- 4 Outdoor Learning in Physical Education
- 5 Outdoor Learning in Art
- 6 Outdoor Learning in Geography
- 7 Outdoor Learning in Science
- 8 Outdoor Learning in Mathematics
- 9 Outdoor Learning in Urban Environments

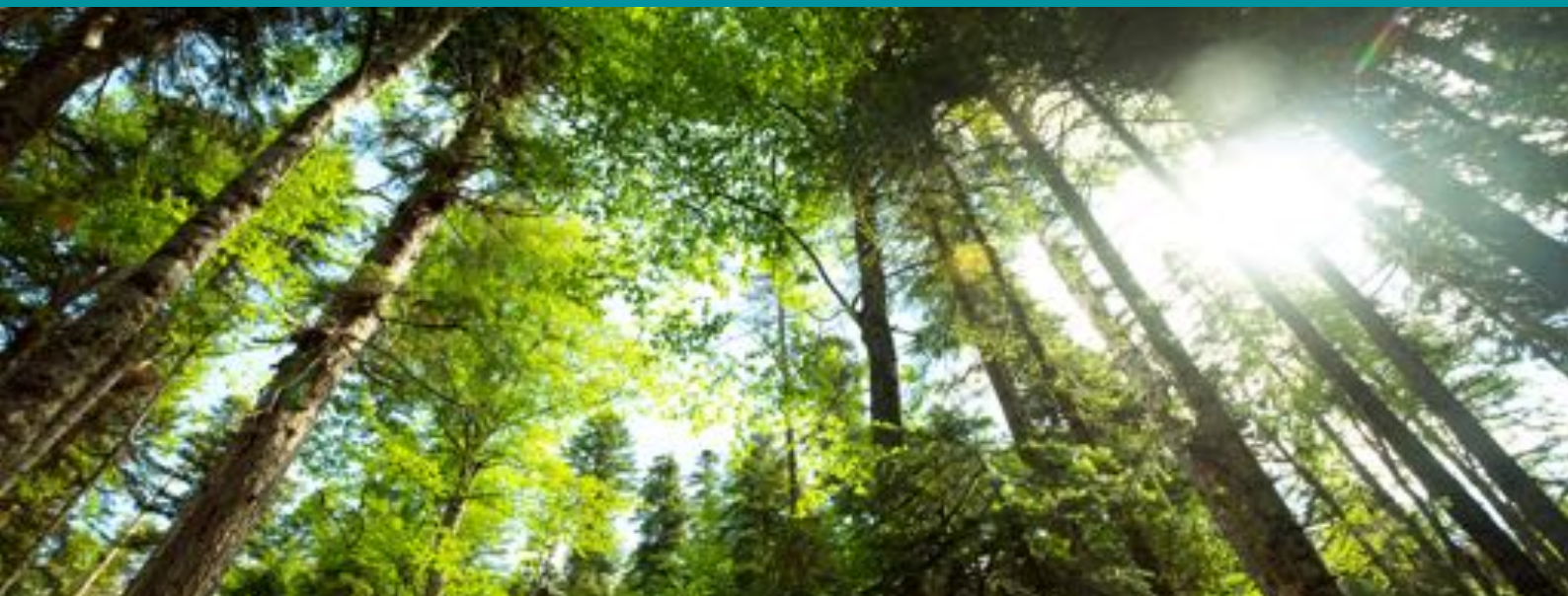
2020

- 10 Outdoor Learning in Health
- 11 Outdoor Learning in Sustainability
- 12 Outdoor Learning in History
- 13 Outdoor Learning in Reading & Writing
- 14 Outdoor Learning in Speaking & Listening
- 15 Outdoor Learning in Indigenous Activities

Outdoors Victoria, in partnership with ACHPER (Victoria), EEV, GTAV and Parks Victoria, are always interested in finding out what is occurring in the outdoors in your school.

If you are proud of a new program you have implemented or would like to be involved in, or contribute to any of the Teacher Toolkits, contact any of the above organisations. (Contact details are provided on the final page of this document)

Outdoors Victoria, in partnership with ACHPER (Victoria), GTAV, EEV and Parks Victoria, respectfully acknowledges the Traditional Custodians of the land and their Elders past and present, for the important and enduring role that Aboriginal and Torres Strait Islander peoples play in Australia regarding the land, water and sky used for learning in the Outdoors.



LEARNING IN THE OUTDOORS

IN SUSTAINABILITY

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This Teacher Toolkit is offered as a framework for developing your own curriculum specific ideas and activities for Outdoor Learning. It is quite flexible and should be adapted to suit your needs. Remember to note the benefits of Outdoor Learning in your teaching area, and to provide tips wherever you can for embedding Outdoor Learning into the curriculum. Include relevant research, case studies and examples that might assist teachers. Teacher Toolkit 1 Benefits of Outdoor Learning presents research that will help you argue the case for taking students out of the classroom.

Outdoor Learning in Sustainability

This toolkit will provide a range of activities that can be used to embed outdoor learning into teaching the area of sustainability. Throughout this toolkit, you will find 10 activities that are aligned with the Victorian curriculum and examples of how the effectiveness of teaching sustainability can be increased.

Within the Australian Curriculum and Victorian Curriculum Sustainability is noted as a cross-curriculum priority or curriculum connection. The Victorian Curriculum states that “Learning about Sustainability allows students to develop the knowledge, skills, values and world views necessary to contribute to more sustainable patterns of living.”(1) and that “The concept of sustainability is fundamental for students to understand the ways environmental, social and economic systems interact to support and maintain human life” (1).

The Australian Curriculum notes the following in regards to the combination of outdoor learning and sustainability.

“Outdoor learning provides unique opportunities for students to reflect on the ways humans interact with each other and the environment. It encourages students to reflect on ways of interpreting and engaging with the world and enables students to explore how they connect and interact with natural environments, and with other people” (2)

Furthermore, it is noted that using the outdoors provides students with opportunities to experience and understand ecosystems through seeing, hearing, touching, and smelling, an experience that is only fully effective from direct experience with ecosystems. (2)

Hill (2012) found that “Outdoor learning experiences are ideally placed to facilitate learning about and for sustainability” (3). In addition, Education South Australia (4) finds that outdoor learning environments “connect children and young people to the natural world creating a sense of responsibility for the environment” a key component of sustainability education. For further information on the connection between sustainability and outdoor learning please consult the following references below for further information.

1- <https://victoriancurriculum.vcaa.vic.edu.au/overview/cross-curriculum-priorities>

2- <https://www.australiancurriculum.edu.au/resources/curriculum-connections/dimensions/Id=46776&YearLevels=42653>

3- Hill, A. (2012). *Developing approaches to outdoor education that promote sustainability education*. *Journal of Outdoor and Environmental Education*, 16(1), 15-27.

4- <https://www.education.sa.gov.au/teaching/projects-and-programs/outdoor-learning-environments>

ACTIVITY 1

Compost Bottle

In this activity, students are going to use plastic water bottles they have collected around the school ground in activity 6 to create a sustainable compost garden bottle.

Step 1- Have the students collect the bottles from the school ground or bring from home (Speak to students about how plastic bottles are harmful to the environment).

Step 2 - Have students take the label off the bottle and then thoroughly clean and rinse the bottle ensuring no remnants are left.

Step 3- The teacher can then cut off the top 1/6th of the bottle (2-3cm below the rim of the bottle lid to create a hole big enough to fill the bottle in future steps), keep the top of the bottle separate.

Step 4- Using a sharp knife or a nail, puncture the bottle with 8-10 holes along the side and then bottom of the bottle (these holes will be used as air and drainage holes).

Step 5- Using the hole in the top of the compost bottle half fill the bottle with dirt, old leaves, old shredded newspaper. Using a spray bottle wet the dirt, leaves and newspaper to start the process.

Step 6- As your classroom uses compost items such as food scraps place them inside the bottles

Step 7- Using the bottle top that was cut off in step 3, turn it upside down and place back into the bottle. This will be used to add water into your compost bottle each day.

Step 8- For the remainder of this process, it is important that sunlight can reach the bottle and that water is applied every 2 - 3 days. When not using the compost bottle cover it with some form of a tea towel or kitchen towel.

Have students check on the compost each day and have them stir the contents of the compost ensuring everything is damp. As this compost breaks down to add more scraps into the bottle. If you see fluffy mould growing inside the compost you need to ensure it is covered when you are not working with it.



Equipment & Materials

- Plastic Water bottles,
- Dirt & Leaves,
- Newspaper,
- Various Compost,
- Small nail for holes,
- Spray bottle for watering



EXTENSION SUGGESTION

Once your bottle has been composted take the healthy soil out and place it in a pot or your school garden, add a seed and water the plant grow using the soil you have composted.

Curriculum Outcomes

- F-2** • Earth's resources are used in a variety of ways (VCSSU047)
- 3-4** • Recognise the role of people in design and technologies occupations and explore factors, including sustainability, that impact on the design of solutions to meet community needs (VCDSTS023)
- Recognise the role of people in design and technologies occupations and explore factors, including sustainability, that impact on the design of solutions to meet community needs (VCDSTS023)
- 5-6** • Identify the types of resources (natural, human and capital) and explore the ways societies use them in order to satisfy the needs and wants of present and future generations. (VCEBR003)
- Explain how student-developed solutions and existing information systems meet current and future community and sustainability needs (VCDTCD034)



Additional Resources:

Make A composter: <https://www.pbs.org/parents/crafts-and-experiments/make-a-composter>

Seed Library

In this activity students are going to create a school seed library, this activity is inspired by The Australian National Botanic Gardens National Seed Bank. By creating a seed library your school will become a “seed keeper”, this helps keep the biodiversity and local adaptations of the seeds. In comparison to buying seeds from foreign areas that have not gone through this adaptation process.

Step 1 - Discuss with students the importance of this project, and explain to students how you will be using local seeds that have adapted to the local conditions over time. Additionally, you can discuss with students how this method is used to keep rare seed varieties alive such as the Svalbard seed vault in Norway.

Step 2 - Start with trying to buy local seeds as opposed to store bought seeds. The local community garden is a great starting point (Try and avoid Hybrid seeds as these seeds are typically only used for one season and instead choose open-pollinated seeds).

Step 3 - Once you have selected the seeds (most common seeds used in seed libraries and seed banks are lettuce, beans and peas) have students research why that particular seed has been chosen (students can be involved in the initial discussion around what seeds should we choose). Have students write down a blurb about the particular seeds.

Step 4 - Purchase blank seed packets, go outside with students with a range of markers and have them decorate and then copy their blurb from step 3 onto the blank seed packet. Furthermore, students may write on the seed packet the season the seeds grow, the year they were packed, history of the seed and any further notes.

Step 5 - Fill the seed packets (typically 5-8 seeds per packet)

Step 6 - Store your seeds in the classroom, you may wish to create a partnership with a local school who is also creating a seed library and swap packets of seeds (this could also be another class at your school who have used different seeds). Once you have developed your seed library/seed bank you can use these in your school garden project, allow families to take some seeds and encourage them to create their own sustainable garden project.



Equipment & Materials

- Various Seeds
- Empty seed packets

Curriculum Outcomes

- F-2** • Earth's resources are used in a variety of ways (VCSSU047)
- 3-4** • A significant example of change and a significant example of continuity over time in the local community, region or state/territory (VCHHK073)
- Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
- 5-6** • The growth and survival of living things are affected by the physical conditions of their environment (VCSSU075)
- Living things have structural features and adaptations that help them to survive in the environment (VCSSU074)
- Environmental and human influences on the location and characteristics of places and the management of spaces within them (VCGGK096)

Additional Resources:

School Seed Bank - <https://mountwaverleyheightsps.vic.edu.au/school-seed-bank/>

National Seed Bank - <http://www.anbg.gov.au/gardens/living/seedbank/index.html>

Youtube Video Explanation- https://www.youtube.com/watch?v=03C9_A3ioVc&feature=youtu.be

Create a Seed Bank - <https://www.slideshare.net/pd81xz/xwb68>

Worm Farm

This activity can be used as a continuation from activity 1 - Compost bottle, in this activity students are going to create a worm farm for the school. Worm farms are a fantastic way to recycle organic waste that may typically end up as landfill, this includes food scraps, lunch box leftovers or garden waste.

Step 1 - For this activity, you will need 2 large tubs and 2 bricks. Firstly place one tub on the ground and place a handful of sheets of newspaper and then put the 2 bricks in the middle of the tub, in the 2nd tub place 2 holes in the bottom and the lid of the tub and then place this tub directly onto the top of the 2 bricks (this space allows for air and urine).

Step 2- Once the 2 tubs are joined fill the top tub to ½ with newspaper whilst adding 1 shovel full of soil on top.

Step 3 - Water the soil/paper (moist not damp) and add a box of worms into the top tub.

Step 4 - Place the lid onto the top of the box, when your class has food scraps, lift the lid and put them into the top tub and add further shredded paper on top ensuring you are watering to the worm farm (moist, not damp)

Step 5- Once full, empty the bottom tub of urine (This can be used to fertilize your garden).



Equipment & Materials

- Worms
- A drill
- 2 Plastic tubs (not clear ones)
- 2 Bricks
- Newspapers
- Food scraps
- Paper

Curriculum Outcomes

- F-2** • Living things have a variety of external features and live in different places where their basic needs, including food, water and shelter, are met (VCSSU042)
- 3-4** • Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
- Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
 - Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes (VCDSTC027)
- 5-6** • The growth and survival of living things are affected by the physical conditions of their environment (VCSSU075)
- Living things have structural features and adaptations that help them to survive in the environment (VCSSU074)

Additional Resources:

Make Your Own Worm farm - https://seed.vic.gov.au/Resources/seed/283_waste%20activity%203%20-%20making%20your%20own%20worm%20farm.pdf

Energy Audit

In this activity, students are going to perform an 'Energy Audit' together, by doing this students are not only looking at how they can save the school money but importantly how they can save the environment at the same time.

Step 1 - Have students form groups and walk around the school noting down places where energy is being used etc - Basketball court lights, fridges, empty classrooms with lights left on, projectors, smartboards.

Step 2 - Have students assess where energy might be getting wasted around the school and what are alternatives to decrease this energy use.

Step 3 - Students can then create a checklist of the most common problems they found whilst they were doing their school audit. Using this checklist students go through the school every day for the next 2 weeks noting down what energy was being used (for students to get into good habits have them turn off lights and A/Cs that are currently not being used).

Step 4 - Have students create a presentation highlighting how much energy was wasted over the 10 day period that they were recording. Students could present this to the staff at the school to highlight the importance of being mindful with energy use.



Equipment & Materials

- Notepads
- Checklists
- Pencils / Pens

Curriculum Outcomes

- F-2**
 - Differences and similarities between students' daily lives and perspectives of life during their parents' and grandparents' childhoods, including family traditions, leisure time and communications (VCHHK061)
 - Explore needs or opportunities for designing, and the technologies needed to realise designed solutions (VCDSCD018)
- 3-4**
 - Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
 - Recognise the role of people in design and technologies occupations and explore factors, including sustainability, that impact on the design of solutions to meet community needs (VCDSTS023)
 - Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes (VCDSTC027)
- 5-6**
 - Explore the concept of opportunity cost and explain how it involves choices about the alternative use of limited resources and the need to consider trade-offs. (VCEBR002)
 - Identify the types of resources (natural, human and capital) and explore the ways societies use them in order to satisfy the needs and wants of present and future generations. (VCEBR003)
 - Consider the effect that consumer and financial decisions of individuals may have in themselves, their family, the broader community and the natural, economic and business environment. (VCEBC005)

Additional Resources:

Carbon Track - <https://carbontrack.com.au/blog/sustainability-classroom/>

Carbon Footprint Reductions

This activity is a continuation of activity 5 "Energy Audit", in this activity students are going to record their travels for a 10 day period to conduct a carbon footprint for their school day.

Step 1 - It is important to start by explaining what a footprint is and how this footprint can affect everyone, the simplest way of explaining this is using the following explanation - "When we walk we leave a footprint that you may have seen if you have ever walked in sand, in life many of the things that we do also leave a type of footprint such as when we drive a car or when big factories are operating. These types of footprints don't leave a footprint on the ground like our footprint but because they are gases they leave a footprint in the air, lots of the things we use every day leave behind this gas (also known as carbon compound) it can contribute to Climate change. So today we are going to measure how much of this gas we use every day which is known as a carbon footprint."

Step 2 - Students are going to record the following data over the course of 10 days. (one small part of someone's Carbon Footprint) Mode of transport (Car, Walking, Bike Riding, Scooter, Rollerblade etc) Distance (Km) of the trip if there was an alternative mode of transport.

Step 3 - Once the 10 days are over, discuss with students how many times they were in a car, walked, used their bike/scooters etc. Ask students to reflect on if there was any time they were in a car but could have walked instead?

Step 4 - Have students examine and compare their own, small group and whole-class data. Discuss what the results might mean. Once students have collated the results explain that while a score closer to zero is ideal for the planet that it is not always possible for this to happen so people and companies try to reduce this as much as they can by reducing our electricity use (As evidenced in Activity 5), or using the 5 R's (refuse, reduce, reuse, rot or recycle).

Step 5 - Have students go outside into a central part of the school and observe the habits of students and staff in the playground and look at observable characteristics for peoples footprints (for example are people walking, are they using a phone, are they eating out of recycled containers, do they have rubbish ?) Students could write down suggestions for these people to decrease their footprint?

Step 6 - Have students consider ways they can reduce their own carbon footprint. (Common ways include walking instead of driving, turning off lights, reducing water use)

Curriculum Outcomes

F-2 • Earth's resources are used in a variety of ways (VCSSU047)

3-4 • Earth's surface changes over time as a result of natural processes and human activity (VCSSU062)
• Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
• Main climates of the world and the similarities and differences between the climates of different places. (VCGGK081)

5-6 • Energy from a variety of sources can be used to generate electricity, electric circuits enable this energy to be transferred to another place and then transformed into another form of energy (VCSSU081)
• Environmental and human influences on the location and characteristics of places and the management of spaces within them (VCGGK096)

Additional Resources:

5 ways to reduce carbon footprint - <https://www.goingzerowaste.com/blog/5-ways-to-reduce-your-carbon-footprint/>

Easy actions to reduce carbon footprint - <https://www.gokid.mobi/think-global-act-local-22-easy-actions-and-apps-for-families-to-help-reduce-their-carbon-footprint/>



Equipment & Materials

- Pencils / Pens
- Paper

Sustainable Rubbish

In this activity, students are going out into the schoolyard and have to identify whether the rubbish they can see is in an ethical and sustainable place (if it's not in the correct bins, how does it affect the animals, how does it affect our waterways and oceans?).

Step 1 - Gather students into groups of three, make sure they have the appropriate materials to record their findings/ observations.

Step 2 - Ask them to make notes on where they see the rubbish, whether it's in a sustainable/ethical spot, who and what will it affect.

Step 3 - Each group collects one piece of rubbish and further analyses the sustainable and ethical repercussions of it not being placed in the appropriate bin.

Step 4 - If they finish early, the groups can construct a creature out of rubbish (not from the trash can, but collected over the previous weeks) to demonstrate how to have fun with sustainable materials.

Step 5 - Students can make signage to promote responsible recycling.



Equipment & Materials

- iPads to take photos or paper to record
- Glue
- Scissors
- Paper
- Pipe cleaners
- Googly eyes

Curriculum Outcomes

- F-2** • Explore actions that help make the classroom a healthy, safe and active place (VCHPEP078)
- 3-4** • Science knowledge helps people to understand the effects of their actions (VCSSU056)
- Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
- Types of natural vegetation and the significance of vegetation to the environment, the importance of environments to animals and people, and different views on how they can be protected; the use and management of natural resources and waste, and different views on how to do this sustainably (VCGGK082)
- Discuss the ways to identify ethical considerations in a range of problems (VCECU006)
- 5-6** • The growth and survival of living things are affected by the physical conditions of their environment (VCSSU075)
- Generate, develop, communicate and document design ideas and processes for audiences using appropriate technical terms and graphical representation techniques (VCDSCD039)

Additional Resources:

What can be recycled - <https://www.netwaste.org.au/recycle-it/what-can-be-recycled/>

Sense of EcoSystem

One of the powers of Outdoor Learning as stated by the Australian curriculum is that “Outdoor learning gives students unique ways of experiencing and understanding ecosystems. Sensory experiences of seeing, hearing, touching and smelling can only be obtained in an outdoor setting”. In this activity, you are going to choose a specific environment on school grounds or located elsewhere and let students understand the ecosystem by hands-on learning.

Step 1 - Armed with pencils or pens and paper take students into the outdoor environment (this can be on school grounds or external to the school).

Step 2 - Once you are at your chosen environment have students sit down (with separation) and for 10 minutes have them write down all of the ecosystem / geographical features of the specific place, things to look for include birds, water source, bugs, colour, terrain, rivers, etc.

Step 3 - Once students have recorded the different features of the environment you are going to get them to look at the health of each of the aspects listed. Using seeing, hearing, touching and smelling let the students interact with the environment and provide a ranking out of 10 for each aspect they noted in step 2.

Step 4 - Once students have identified the perceived health level of each ecosystem / geographical feature ask them to propose actions to care/increase the health of each identified feature.

Step 5 - Back in the classroom, have students compare and contrast the different features and ways in which the health could be continued to be improved.

Equipment & Materials

- Pencils / Pens
- Paper

Curriculum Outcomes

- F-2**
 - The history of a significant person, building, site or part of the natural environment in the local community and what it reveals about the past (VCHHK063)
 - Identify and explore natural and built environments in the local community where physical activity can take place (VCHPEP079)
- 3-4**
 - A significant example of change and a significant example of continuity over time in the local community, region or state/territory (VCHHK073)
 - Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
 - Similarities and differences in individuals' and groups' feelings and perception about places and how they influence views about the protection of these places. (VCGGK083)
- 5-6**
 - Living things have structural features and adaptations that help them to survive in the environment (VCSSU074)
 - Environmental and human influences on the location and characteristics of places and the management of spaces within them (VCGGK096)

Additional Resources:

Outdoor Learning: Sustainability - <https://www.australiancurriculum.edu.au/resources/curriculum-connections/dimensions/?Id=46776&YearLevels=42653>

Understanding Ecosystems (Youtube) - <https://www.youtube.com/watch?v=bJEToQ49Yjc>

Bird Baths

An unwanted byproduct of the urban spread is a reduction in environmental habitats for Australian wildlife including birds which will be the focus of this activity.

Water is extremely important to birds as they lose water through respiration and droppings and typically need to drink at least twice a day and with the increase of urban spread many traditional opportunities are no longer available. Bathing is an important part of ensuring feather maintenance as by dampening the feathers loosen the dirt and make's their feathers easier to preen.

Step 1 - To start this activity have the students go into the outdoor environment and record down all of the birds they see within a 10 minute period.

Step 2- Have the students investigate the drinking habits of each of the birds that they identified (generally most common birds in Australia have a similar requirement of twice a day).

Step 3 - Using materials found amongst the school, create a birdbath to place in the school garden. Common bird baths are made out of an upside-down terracotta pot and a pot base placed on top, additionally, students could use a bowl placed upside down as the base and then glue a curved plate on top for the water. Students may also use materials sourced around the school ground to design and build their own version of a birdbath.

Step 4 - After placing the birdbaths throughout the school ground have students count how many birds use the bird baths each day.



Equipment & Materials

Depending on your intended structure the equipment and materials may change, typically this activity uses:

- A terracotta pot and pot lid

Curriculum Outcomes

- F-2**
 - Living things have a variety of external features and live in different places where their basic needs, including food, water and shelter, are met (VCSSU042)
 - Identify how people create familiar designed solutions and consider sustainability to meet personal and local community needs (VCDSTS013)
- 3-4**
 - Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
 - Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes (VCDSTC027)
 - Evaluate design ideas, processes and solutions based on criteria for success developed with guidance and including care for the environment and communities (VCDSCD031)
- 5-6**
 - Environmental and human influences on the location and characteristics of places and the management of spaces within them (VCGGK096)

Additional Resources:

- Make a birdbath* - <https://kids.nationalgeographic.com/explore/books/make-a-birdbath/>
- Build a Birdbath tips* - <https://www.biodiversityinschools.com/build-a-bird-bath.html>

Nature Walk

Students have the opportunity to explore the natural environment with their class through a nature walk. Students can be provided in advance with a checklist and images of insects and animals that they are to look out for (depending on your local environment).

Step 1 - Elicit background knowledge from students about what they know about animals and insects in their local environment. Provide images and information on insects and animals that are relevant to their context that they will be able to find on a nature walk.

Step 2 - Students go on a nature walk with their classroom teacher. Throughout this process, students will take photos or draw the insects they find (it is important to provide students with the time to complete this).

Step 3 - Along the way, ask prompting questions to get the students thinking about the insects and animals they find in relation to the ecosystem. Eg: Here is a lizard. How do you think lizards help the ecosystem? Why do you think they are important for our world?

Step 4 - Students will use their images and drawings to create a Powerpoint or poster about the insects they found in their natural environment and will provide one or two facts as to how that insect helps the ecosystem. Eg: if a student finds a worm they will have a sentence about worms being good for the soil.

Step 5 - Students present a PowerPoint or poster to class.



Equipment & Materials

- Images of insects and animals
- Fact sheets
- Clipboard, paper and pencils for drawing their insects
- iPads, cameras etc. Laptops (for Powerpoint)
- Poster paper and coloured pencils (for poster)
- Walking shoes, hats, & sunscreen

Curriculum Outcomes

- F-2**
 - Explore actions that help make the classroom a healthy, safe and active place (VCHPEP078)
 - Identify and explore natural and built environments in the local community where physical activity can take place (VCHPEP079)
- 3-4**
 - Collect and record relevant geographical data and information from the field and other sources (VCGGC074)
- 5-6**
 - Environmental and human influences on the location and characteristics of places and the management of spaces within them (VCGGK096)

Additional Resources:

Insects - <https://kids.nationalgeographic.com/animals/invertebrates/insects/>

Insect Groups - <https://kids.britannica.com/kids/article/insect/353292>

Mammals - <https://kids.nationalgeographic.com/animals/mammals/>

Reptiles - <https://kids.nationalgeographic.com/animals/reptiles/>

Bug / Insect Hotel

In this activity students are going to create a bug hotel, this simple activity has a multitude of benefits for the ecosystem. Firstly, a bug hotel allows your students the opportunities to research insect life cycles, habitats and food chains. Other important reasons behind the creation of an insect hotel include having a place for students to compassionately relocate slugs and snails and importantly there are a range of inherent benefits for the bugs such as giving them a nook or cranny to take a break, to lay some eggs and for shelter.

Step 1 - Firstly, you need to create a box that is going to house the hotel. This box typically is affixed via hanging so it needs to be sturdy enough that it doesn't collapse. Most people will use the basic design of a bird with an open front.

Step 2 - Once you have created your hotel you need to look at what sort of bugs/insects you want to attract into your hotel. Common materials used in filling the hotel include lengths of bamboo, timber off-cuts, sticks, old pots, pieces of plastic pipe, chicken wire, broken bricks, straw, dried grass and pine cones.

Step 3 - To attract Solitary bees you need to provide hollow stems (holes) into the wood or bamboo, these bees will pack a number of themselves into the stem before closing off the access with mud until it is spring.

Step 4 - To attract ladybugs you would typically stack sticks and twigs together, that allows ladybugs to squeeze in the gaps and wait for warmer days.

Step 5 - To attract beetles, spiders and friends you would provide a variety of materials throughout your bug hotel to encourage these selected bugs/insects to find a home.

Step 6 - Once you have created your bug/insect hotel have students go back and look at what insects and bugs are using what they have created.



Equipment & Materials

Materials to make the hotel (similar to a birdhouse), to fill the hotel include:

- Lengths of bamboo
- Timber off-cuts
- Sticks
- Old pots
- Pieces of plastic pipe
- Chicken wire
- Broken bricks
- Straw
- Dried grass
- Pine cones.

Curriculum Outcomes

- F-2** • Living things have a variety of external features and live in different places where their basic needs, including food, water and shelter, are met (VCSSU042)
- 3-4** • Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
- 5-6** • The growth and survival of living things are affected by the physical conditions of their environment (VCSSU075)
- Living things have structural features and adaptations that help them to survive in the environment (VCSSU074)

Additional Resources:

Build a Bug Hotel - <https://gardentherapy.ca/build-a-bug-hotel/>

Conclusion

There are countless possibilities to teach Sustainability in the outdoors. These activities provide a starting point and you are encouraged to develop more teaching outdoors. Most importantly, take as many opportunities as you can to take your classes outside to learn.

As educators we are continually seeking development. If you have feedback or would like to share your experiences or activities please add a comment on the FUSE Webpage or email outdoorlearning@outdoorsvictoria.org.au and we will review it and get back to you as soon as possible.

Acknowledgments

This teacher toolkit could not have been created without the work and dedication of educators throughout Australia. Educators often need to look at their local environment and create activities that suit their needs for that day, we thank you for sharing your activities and hope others reading this document can utilise your creative thinking and implement these activities.

Furthermore, the following organisations and staff have assisted in the creation of this document including;

- Outdoors Victoria
- ACHPER (Victoria)
- Environment Education Victoria
- Geography Teachers' Association of Victoria (GTAV)
- Parks Victoria

Get in contact:

Outdoorlearning@outdoorsvictoria.org.au
www.outdoorsvictoria.org.au/contact

