



# Waterwatch Journaling

Enrichment activities for  
developing 'sense of place'



## ACT Essential Learning Achievement Links:

### Student uses a range of strategies to think and learn:

#### *Early Childhood*

- ◆ Uses pictures and diagrams to help thinking
- ◆ Uses vocabulary of the thinking tools, processes or strategies
- ◆ Understands the importance of thinking and talking about their thinking and learning
- ◆ Use ICT to create solutions for learning

#### *Later Childhood*

- ◆ Understands how visual representations can assist thinking
- ◆ Harnesses imagination to solve problems
- ◆ Reflects on and discusses aspects of their thinking processes as they deal with a problem
- ◆ Values explicit thinking skills
- ◆ Values imagination as a thinking skill
- ◆ Develops values and attitudes about the power of imagination

#### *Early Adolescence*

- ◆ Understands and experiences important knowledge in-depth and in authentic contexts
- ◆ Examines examples of how a practitioner in the field goes about making new knowledge and applies lessons learned to their own thinking
- ◆ Acquires in-depth knowledge within fields and discipline areas

#### *Late Adolescence*

- ◆ Understands important concepts across various fields
- ◆ Uses ICT as a learning tool to develop concepts and demonstrate understanding
- ◆ Understands and experiences important knowledge in-depth and in authentic contexts
- ◆ Identifies and models the sort of thinking practitioners in various fields use as they practise their discipline
- ◆ Discusses their own thinking and evidence of the thinking with others
- ◆ Values developing expertise in a range of fields and disciplines areas
- ◆ Values first-hand information and investigations
- ◆ Maintains and strengthens their curiosity and desire to find out

#### *Late Adolescence*

- ◆ Explores multiple perspectives and partial explanations

### Student understands and applies the inquiry process

#### *Early Childhood*

- ◆ Understands inquiry as a process for creating new information
- ◆ Understands how their inquiries can be enhanced by asking questions, engaging with texts, making observations and using ICT
- ◆ Sees inquiry as a useful process available to them
- ◆ Uses the inquiry process in authentic situations
- ◆ Engages with their world by asking questions about familiar situations
- ◆ Makes observations about what is happening around them using their senses
- ◆ Gathers information or data from a small range of sources
- ◆ Attempts to convince themselves and others about whether their findings were accurate
- ◆ Shares and communicates observations, results, ideas and understandings.

#### *Later Childhood*

- ◆ Discusses and compares the results of their investigation with their predictions, offers and explains conclusions and communicates ideas and understandings
- ◆ Maintains and strengthens their curiosity
- ◆ Uses print and media sources to gather information and data
- ◆ Identifies patterns and relationships in data

#### *Early Adolescence*

- ◆ Uses inquiry process in authentic situations as part of topics or themes within and across the disciplines in the school's curriculum
- ◆ Gathers accurate information and data in the field

- ◆ Identifies possible consequences of different decisions
- ◆ Makes decisions and puts them into effect in authentic situations

#### *Late Adolescence*

- ◆ Uses inquiry process in authentic situations as part of topics or themes within and across the disciplines in the school's curriculum
- ◆ Generates own questions and investigations of situations, events, phenomena and issues with which they are unfamiliar
- ◆ Formulates hypotheses or questions suitable for testing and investigation
- ◆ Explains trends, patterns or relationships in information or data in ways consistent with their understanding
- ◆ Draws conclusions that are consistent with the information or data and addresses their hypothesis or research questions
- ◆ Predicts what might happen in the future or conjectures what might have happened in the past if the decisions and variables were different
- ◆ Maintains and strengthens their curiosity and openness to new fields of inquiry

### **Student understands and applies scientific knowledge**

#### *Early childhood*

- ◆ Understands change in the physical and natural world
- ◆ Distinguishes between living and non-living things
- ◆ Observes structural features in animals
- ◆ Observes how living things change as they grow
- ◆ Evaluates ways in which living things are effected by their environment and how they impact on it and other living things
- ◆ Observes, explores identifies and describes natural phenomenon
- ◆ Values curiosity in exploring the physical and natural world

#### *Later Childhood*

- ◆ Understands features and characteristics, properties and classifications of natural phenomenon
- ◆ Understands how and why change occurs in the physical and natural world
- ◆ Recognizes the interdependence of living things on each other and their environment
- ◆ Applies scientific knowledge to their own lives
- ◆ Understands structure and function of systems that enable living things to survive
- ◆ Groups living things using observable characteristics
- ◆ Understands different environments support different living things
- ◆ Recognizes the interactions between living things, and between living things and their environment
- ◆ Understands life cycles and reproductive processes of different types of living things
- ◆ Observes, explores, identifies, describes, compares, orders and classifies natural phenomenon.
- ◆ Understands ethical issues in science related contexts
- ◆ Carefully and safely handles living things

#### *Early Adolescence*

- ◆ Applies scientific knowledge to explain and predict causes and effects
- ◆ Understands physical and natural systems, balance and equilibrium and change
- ◆ Understands the impact of science and its applications on their own lives
- ◆ Recognizes the applications of biological classifications systems
- ◆ Understands food chains, and webs as models of relationships in living communities or systems and flow of energy through a system
- ◆ Recognizes structural and behavioural adaptations of species to their environments
- ◆ Identifies and describes relationships and explains and predicts changes
- ◆ Applies scientific knowledge in considering current issues and problems and suggesting creative change
- ◆ Values the usefulness of scientific knowledge in everyday life

#### *Later Adolescence*

- ◆ Understands relationships between progress in science and social issues and priorities, impacts of scientific advances on society.
- ◆ Recognizes how organism's body systems interact to meet its needs
- ◆ Uses scientific knowledge and models to explain the interdependence of populations of organisms and the environment and to predict the consequences of changes to an ecosystem
- ◆ Uses scientific models and terms to explain phenomenon

### **Student creates artistic works**

#### *Early Childhood*

- ◆ Understands how qualities such as colour, thickness, length, and density can assist them to depict things in painting and drawing

#### *Later Childhood*

- ◆ Understands how to use different materials, techniques, skills and processes to make 2D and 3D artistic works

#### *Early Adolescence*

- ◆ Makes artworks that explore subject matter of personal or social interest

#### *Later Adolescence*

- ◆ Values their own artistic works

### **Students acts for an environmentally sustainable future:**

#### *Early Childhood:*

- ◆ Understands how humans and other living things depend on the environment around them for essential elements they need for survival
- ◆ Understands how their local environment changes over time
- ◆ Understands the connections between their own actions and environmentally friendly strategies
- ◆ Identifies parts of familiar environments and describes some simple relationships
- ◆ Values the scope and beauty of the natural world
- ◆ Feels responsibility within their community for the quality of their immediate environment and resource conservation
- ◆ Understands the importance of conserving resources, protecting the environment and participating in positive environmental education

#### *Later Childhood*

- ◆ Understands systems in the natural environment and how changes in elements of them affect the system as a whole
- ◆ Understands elements that make up significant local, national, and global natural and built environments and the ways in which the features of these environments are connected
- ◆ Understands the effects of change on local national and global natural environments
- ◆ Understands the need for and ways to conserve finite natural resources

#### *Early Adolescence*

- ◆ Recognizes some processes by which human activities effect changes to the natural environment
- ◆ Acts responsibly when making consumer choices based on knowledge of a product's construction from reusable renewable or non-renewable resources
- ◆ Evaluates conflicting values and interests of different groups in caring for a place
- ◆ Conducts and interprets field studies
- ◆ Understands the need to preserve the diversity of Australian and world ecosystems for future generations
- ◆ Understands their responsibility as a consumer to make responsible choices in order to develop sustainability

#### *Later Adolescence*

- ◆ Understands environments as complex systems encompassing ecological, socio-economic, cultural and political components
- ◆ Recognizes how natural disasters and global environmental issues are related to natural processes of equilibrium and balance
- ◆ Makes connections between local, national and global environmental systems and resource issues

## Bibliographic and Supplement Information Sources

- Identification and Ecology of Australian Freshwater Invertebrates* <http://www.mdfrc.org.au/bugguide/index.htm>
- Stream Bio-monitoring Unit Key to Aquatic Macro-invertebrates* <http://www.dec.state.ny.us/website/dow/stream/orderpageone.htm>
- Stream Health and the Aquatic Macro-invertebrate Long Term Ecological Monitoring Program* [http://www.nps.gov/applications/nature/documents/stream\\_aquatic\\_macro.pdf](http://www.nps.gov/applications/nature/documents/stream_aquatic_macro.pdf)
- Indicator: Aquatic Macro-invertebrates in the ACT* <http://www.environmentcommissioner.act.gov.au/SoE/SoE2000/ACT/Indicatorresults/Aquaticmacro-invertebrates.htm>
- The Stream Study* <http://www.people.virginia.edu/~sos-iwla/Stream-Study/StreamStudyHomePage/StreamStudy.HTML>
- Are We Sustaining Australia?* <http://www.deh.gov.au/esd/national/indicators/report/value20.html>
- Australian Aquatic Invertebrates* <http://www.lucidcentral.com/keys/lwrrdc/public/Aquatics/>
- NSW Water Bug Survey* [http://www.waterwatch.nsw.gov.au/08\\_bug\\_survey/index.html](http://www.waterwatch.nsw.gov.au/08_bug_survey/index.html)
- Aquatic Macroinvertebrate Resources* [http://www.bgsd.k12.wa.us/hml/jr\\_cam/macros/resources.html](http://www.bgsd.k12.wa.us/hml/jr_cam/macros/resources.html)
- Meet the Invertebrates* <http://www.watersheds.org/nature/macrovinv.htm>
- Waterwatch Australia* <http://www.waterwatch.org.au/index.html>
- Sidman, J. (2005) *Song of the Water Boatman & Other Poems*
- Silver, D. (1994) *One Small Square Pond*
- Bugasaurus Explorus* <http://www.bugsurvey.nsw.gov.au/>
- Signal 2 Scoring System for Macroinvertebrates* <http://www.environment.gov.au/water/publications/environmental/rivers/nrhp/pubs/signal.pdf>
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- Davis J. and Christidis, F. 1997, *A Guide to Wetland Invertebrates of Southwestern Australia*, Western Australian Museum.
- Gooderum J. and Tsyrlin E. 2002 *The Waterbug Book, A Guide to the Freshwater Macro-invertebrates of Temperate Australia*. CSIRO Publishing, Collingwood Vic.
- Harvey, M. S. and Yen, A. L. 1989, *Worms to Wasps, An illustrated Guide to Australia's Terrestrial Invertebrates*, Oxford University Press, Melbourne.
- Hawking, J.H. and Smith F.J., 1997, *Colour Guide to Invertebrates of Australian Inland Waters*, Cooperative Research Centre for Freshwater Ecology, Identification Guide No 8, Albury.
- Hawking, J.H. 1994, *A Preliminary Guide to Keys and Zoological Information to Identify Invertebrates From Australian Freshwaters*, Co-operative Research Centre for Freshwater Ecology.
- Ingram B. A. , Hawking, J. H. and Shiel R.J. 1997 *Aquatic Life in Freshwater Ponds*, Co-operative Research Centre for Freshwater Ecology, Albury.
- Miller R., 1983, *Freshwater Invertebrates*, Gould League of Victoria. This is a helpful beginners guide to identification.

## **Materials you may want:**

Field guides  
Example journals ( Your Waterwatch Coordinator can loan these)  
Magnifying glasses  
Crayons, colour pencils, paints, brushes  
Hand sanitizer  
Milk cartons  
Plastic wrap  
Large plastic bands  
Meter sticks  
Microscope

## **General Journaling:**

Ideally, students should be provided with ring bound un-lined notebooks for these exercises. Artist sketchbooks available at news agents are inexpensive and ideal.

Encourage students to incorporate feelings, moods, and observations, they might attribute to wildflowers, meadows, rivers, mountains, and streams.

Successful journaling requires repetition of some or all of the activities suggested below to build observation skills and a sense of place.

Journals should be informal. Drawings, photographs, glued or taped in items and descriptive sentence fragments should be common. Editing will break student's flow and spontaneity.

These activities can be done as a group at a wetland or waterway near the school. Alternately, students can nominate sites that are convenient to their homes, and done as homework.

Students should be encouraged to draw pictures with words, incorporate photographs or press leaves, flowers and feathers into the pages of their journal

Encourage the use of coloured pencils, crayons and paints; these activities should allow students to express their observations uniquely and encourage different learning and communication styles.

For safety reasons, students under the age of 12 should never visit a body of water alone. However, journaling is NOT a social activity. Students should not sit together or work together on these activities.

After a journaling session, invite students to share and discuss their discoveries with their classmates

Students should start each journal entry with:

Date  
Time  
Weather  
Location

## **One Small Square**

Establish each student at a nominated site near a waterway or wetland. Have each student measure out 1 square meter. Place each student in their square and ask them to draw or describe all the plants and animals they discover. Remind them to note sounds and smells.

Students need to return to their nominated squares on a regular basis. (weekly or monthly)

## **Question Time**

As students move through these activities, encourage them to ask questions. Ex. “What kind of insect is that?” “What is that bird doing when it turns its head sideways?” “Is that a native plant or not?” Provide students with time to do research on their questions using print and ICT. Encourage students to note their hypotheses, and the answers they discover in their journals.

## **In the Eye of the Beholder**

Have students sketch a small part of a beautiful view from their area without looking at the paper or their pencil. Explore with students how this method helped them observe more carefully.

## **Up and Down**

Have students draw a picture of the view looking straight up. Then draw another picture of the view looking straight down in their square or other nominated place.

## **Map The Square**

Have students map their square including things like the warmest spots and coldest spots, wettest and driest, etc.

## **Axe-in Hand**

Have students search their area for plants they know and express any biases they have about each plant (either positive or negative).

## **Smell Me**

Challenge students to find and identify three different smells in their area.

## **The Big Picture**

Have students draw a map of the environs near their square. Focus them on habitat aspects such as logs, hollow standing trees and vegetation. Also focus their mapping on areas of disturbance or possible sites of habitat degradation.

## **Once**

Have students locate a community member (parent, grandparent, older friend) who has lived in the vicinity for a number of years. Have students interview the community member about how their square once was. Students should note the time, and location the community member discusses. Ask students to compare the changes that have occurred since the time to which the story teller has referred. Have these changes been positive, negative, or mixed? Describe how and why?

## **What’s Left Behind**

Students aren’t the only visitors to their wetland or waterway. Have students draw or describe the evidence of animals at their site. These may include tracks, scat, shells, skins, feathers, fur, nests, holes or paths. Challenge students to create an animal species list based on their findings. Have students reflect on the diversity of the site, and what features at the site seem to encourage this diversity or lack thereof.

## **Water Bug Watch**

Schedule your Waterwatch coordinator to present an in-class or field version of this lesson. Have students describe their findings in their journals

## **Pond Viewer**

With students, cut the tops and bottoms off 2-litre milk cartons. Cover one end with heavy plastic wrap and secure with large plastic bands. Instruct students to lay on the edge of a water body and carefully lower the wrapped end into the water. Students should not let water get inside the container. Students should look inside and describe in their journal what they see.

## **A Little Lunch?**

Have students tie a small piece of raw meat to string. (Provide hand sanitizer for this activity!) Lower it into the water until it touches the bottom. After ten minutes, pull it out and examine with a magnifying glass. Describe what animals are enjoying the feast.

## **Twilight Talk**

Have students go to their site at dawn or dusk. Ask students to describe especially what they hear. (Waterwatch provides Frogwatch Programs, which fit nicely into this activity.)

## **Surface Situations**

Many plants and animals live in the space between air and water. Have students describe plants and animals they discover living on the surface of their water body.

## **Micro Monsters**

Students should collect a sample of water from their site in a small glass or plastic container and bring it into the classroom. (Students should note the site their sample was taken from, time, date and weather.) Have students place samples under a microscope and describe what they see.

## **Feeling a Place**

Have students sit in their square for 10 minutes with their eyes closed. Ask them to describe how their experience made them feel. Encourage the tying of feelings to sensory experiences such as the wind blowing or animals calling. This description can be used to develop language arts extensions into poetry or essay writing.

## **Sound Map**

Have students mark a large X in the centre of a journal page. This represents the student looking down from the top. Have students take a few minutes to listen. Encourage them to close their eyes, so they can really focus on the sounds around them. When they hear a sound, they should draw it into their journals in relation to where the X is placed. Students should use the page like a map: if the sound is in front, students should draw it above the X on the page, towards the top. If it's on the left, students draw it on the left side of the page, and so on. If the sound is close, students should mark it close to the X. If the student knows what made the sound, like a bird, they can draw or name it. If they hear a sound they don't know, have them try to spell it out ("dzzzz-dz-dzzzz!") or describe it. A big question mark is fine, too!

## **Little Big**

Have students search their area to find the largest and smallest plant. Have them describe and list how the plants are the same and how they are different.

## **Come High Water**

Have students find a discarded item in their area, describe it and figure out how to use it for other purposes than it was intended.

## **If I Were the Wind**

Have students list as many ways as they can think of to prove the wind is present

## **Eye Catching**

Have students take a short walk and keep a record of things that 'catch their eye.' Challenge them to explain why certain things attracted their attention

## **Sown for Survival**

Have students select and describe one plant in their areas. Challenge them to list the ways it is adapted to survive where it lives.

### **Bird Behaviour**

Have students find a bird and observe its behaviour for as long as possible.

### **The Black Swans**

If students were black swans, where would they land and feed and rest for the night in the wet area they are observing?

### **A Mighty Fortress**

Have students find some plants that have been damaged. Challenge them to figure out what caused the damage, and how the damaged areas affect animals.

### **Great Possessions**

Have students select an object to observe and list its quantitative information (using numerals) and qualitative information (using adjectives).

### **Bark Rubbing**

Students should select a smooth barked tree in or near their square. (Rough bark can be tricky.) Using the side of a crayon and their journal, students should gently rub along the paper, picking up the pattern of the bark underneath on it. Encourage students to try other objects including leaves.

When students are ready for a challenge, try to do rubbings from rougher trees... or even rocks! The key to challenging rubbings is: start out very lightly!

Encourage students to use field guides to identify the tree species.

### **We Were Here**

Have students describe from their square the signs of human impact on their area. This may include small things like cigarette butts to large things like the acknowledgement of large scale clearing, dam construction and urban features.

### **What if:**

Have students sit in their square and describe how the place would look if it were ideal habitat. What would need to change or be different to get their area to that point. What sort of ways could they contribute?