DEPTH STUDIES WITH TARONGA ZOO - TEACHER RESOURCE

Year 11 Investigating Science

OBSERVATION BEGINS WITH A KEEN EYE

OBSERVING ANIMAL BEHAVIOUR

This depth study introduces students to the necessity of observation to drive scientific investigation. Taronga zoo is the perfect environment to plan, observe and record animal behaviour. Behavioural observations allow scientists to collect and record data, which enables them to test hypothesis to ensure animal wellbeing and survival.

Students will learn about primary data collection through authentic scientific animal observations, guided by zoo scientists and experts.

OUTCOMES

Knowledge and Understanding:
INS11 – 8 identifies that the collection of primary and secondary data initiates scientific investigations

Working Scientifically:
Questioning and predicting INS11-1
Communicating INS11-7
Planning investigations INS11-2
Conducting investigations INS11-3

DEPTH STUDY OUTLINE

AT SCHOOL - PRE EXCURSION ACTIVITIES

Students are encouraged to:

- explore different scientists who have contributed to Ethology.
- formulate questions and hypothesis after watching animal videos.
- analyse data sets from a Taronga conservation or research project.

AT THE ZOO

Students will enjoy:

- Sessions delivered by working scientists, teachers and zookeepers involved in the study of animal behaviour.
- Opportunity to design and conduct ethograms to gather animal behaviour data from around the zoo.
- Presentation delivered by keepers at the zoo about using animal observations to help them care for animals (e.g. innate and learnt behaviour, conditioning and enrichment objects).
- Exposure to technologies used in animal care.
- Animal encounters.

BACK AT SCHOOL - POST EXCURSION ACTIVITIES

Students are encouraged to:

- create a research report outlining the species they studied.
- design and conduct an ethogram in their school environment.

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AT SCHOOL - PRE EXCURSION ACTIVITIES

NATURE VS NURTURE

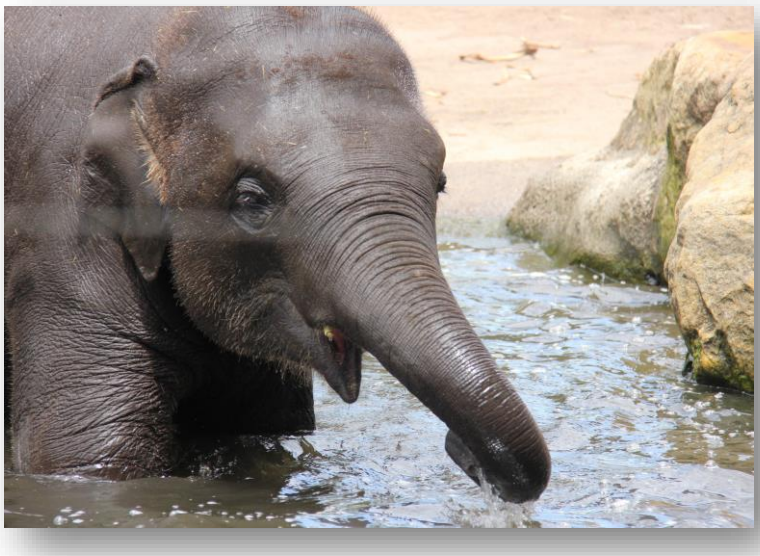
Create a list of human behaviours, such as playing, eating and grooming. Once a list has been made, discuss whether they are instinctive or learned behaviours. How do you determine which behaviour it is. For all the learned behaviours, explain how it was learnt.

THE POWER OF OBSERVATION

Visit the Arkive website to view videos of animals in action. For each video explain why it is important to study the animals behaviour and design a hypothesis you could further investigate in relation to the animals' behaviour.

Suggestions:

- Eastern chimpanzee feeding (exhibiting tool use)
- Superb bird-of-paradise
- Hawksbill Turtle
- Grey-headed flying fox
- Army Ant
- Female cheetah teaching cubs to hunt



THEN...

Research one of the following scientists to summarise their contributions to Ethology: Nikolaas Tinbergen, Konrad Lorenz, Karl von Frisch, Louis Leakey, Jane Goodall, Birute Galdikas and E.O. Wilson.

AND NOW....

Get to know Our Scientists before you meet some of them in person at the zoo.

CITIZEN SCIENCE

Find and contribute to a citizen science project in your local area using:

- https://www.inaturalist.org
- https://scistarter.com/
- http://www.ala.org.au/biocollect/

Create your own citizen science project using the Citizen Science Toolkit.

AT THE ZOO

- This excursion will contribute five hours to a depth study
- A student worksheet will be emailed before the zoo excursion

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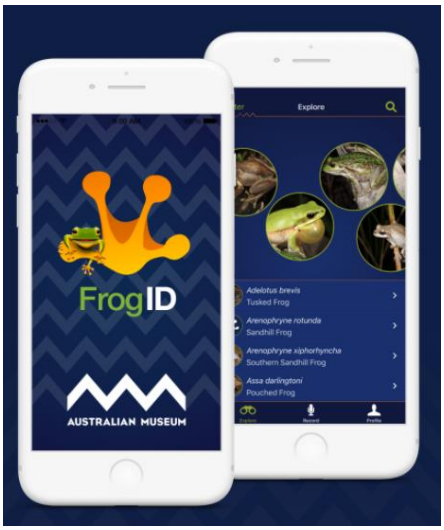
BACK AT SCHOOL - POST WORKSHOP ACTIVITIES

FROG ID

Use the Australian Museums new app FrogID to record and discover what frogs live around you and help contribute to their citizen science project.



CONDUCT AN ETHOGRAM

Create and undertake an ethogram at school.

- Choose an animal you can readily observe. This may be a bird or an insect.
- Pick a time of day or an activity, such as feeding time, when you will observe the animal's behaviour closely for a few days.
- Choose one of the sampling methods undertaken at the zoo and justify your choice based on the specific animal.
- Complete your ethograms.
- Speculate on the consequences of the behaviours for the animal in terms of its health, chances of survival, and reproductive success.
- Categorise the behaviours as instinctive, learned or cannot decide. Explain your reasoning.

AUSSIE BACKYARD BIRD COUNT

Participate in the Aussie Backyard Bird Count and contribute data that assists BirdLife Australia and scientists understand more about the birds that live in urban environments.

Photo by Dean Ingwerson

RESEARCH REPORT

Create a report documenting the research you undertook at the zoo. Your research report should contain the following:

- **Cover page:** Descriptive title including the name of the study species
- **Introduction:** Background information on your study species (e.g. photo, habitat, diet, ICUN red list status, why you are interested in the animal).
- **Methods:** Where did you observe your species, how many individuals did you observe, how long did you observe them? What sampling method did you use and why? Number of observations you made? What were the weather or other conditions that could have affected your observations?
- **Results:** Present your results in a table or graph. Explain what you found.
- **Discussion:** Design a scientific, testable hypothesis that could be investigated from your observations. Explain how the hypothesis could be tested.
- **Recommendations:** Based on the data you collected, make recommendations to alter the study species zoo enclosure or design an enrichment object to be used by the study species
- **Bibliography**

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RESOURCES

Arkive
www.ARKive.org

Army Ant
http://www.arkive.org/army-ant/eciton-burchellii/video-03.html

Aussie Backyard Bird Count
https://aussiebirdcount.org.au/

Australian Museum Frog ID
https://www.frogid.net.au/

Citizen Science Toolkit
http://www.environment.nsw.gov.au/research-and-publications/your-research/citizen-science/project-toolkit

Eastern chimpanzee feeding (exhibiting tool use)

http://www.arkive.org/chimpanzee/pan-troglodytes/video-sc08c.html

Female cheetah teaching subs to hunt
http://www.arkive.org/cheetah/acinonyx-jubatus/video-09d.html

Grey-headed flying fox
http://www.arkive.org/grey-headed-flying-fox/pteropus-poliocephalus/video-00.html

Hawsbill Turtle
http://www.arkive.org/hawksbill-turtle/eretmochelys-imbricata/video-09b.html

Superb bird-of-paradise
http://www.arkive.org/superb-bird-of-paradise/lophorina-superba/video-00.html

Taronga Science: Conservation happening in action
https://taronga.org.au/taronga-science#scientists