



TARONGA
ZOO
SYDNEY

For the Wild



STEM STUDENT ENRICHMENT DESIGN COMPETITION



STEM ENRICHMENT DESIGN UNIT SNAPSHOT



Use the unit to help embed this content into your classroom!

Identify and define

Investigate structural & behavioural adaptations

Enrichment In Zoos:
Defining the Question

Research and Plan

Research animals at the Zoo
or in their own context

Design an enrichment
prototype

Produce & Implement

Bring the plan to life!

Enrichment Pitch

NSW CURRICULUM OUTCOMES

STAGE 3

ST3-4LW-S – examines how the environment affects the growth, survival and adaptation of living things

ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusion

STAGE 4

C4-CLS-01- Cells and Classification

SC4-WS-07 – Working Scientifically Problem-Solving

TE4-PPM-01- Engineering technologies and systems

UNIT & RESOURCES (GOV SCHOOLS)



STAGE 3 NEW CURRICULUM

ST3-DDT-01 Uses design processes to create, evaluate and modify designed solutions

- Develop designs ideas to build a prototype using design criteria
- Test, evaluate and modify the prototype to meet the design criteria

ST3-SCI-01 uses evidence to explain how scientific knowledge can be used to develop sustainable practices

- Observe behavioural and structural adaptations of plants and animals, and suggest how these may help them survive in their environment

UNIT & RESOURCES (NON-GOV)



CHECK OUT SOME OF OUR RESOURCES BELOW!

STEM ENRICHMENT DESIGN *Competition*

ZOO KEEPERS AND VOLUNTEERS AT TARONGA ZOO SYDNEY SPEND A LARGE AMOUNT OF TIME CREATING ENRICHMENT FOR THE ANIMALS IN THEIR CARE.

PUT YOUR DESIGN AND PRODUCTIONS SKILLS TO THE TEST BY SUBMITTING A NEW AND EXCITING ENRICHMENT DESIGN FOR ANIMALS FOUND AT TARONGA!

WHAT IS ENRICHMENT?

Enrichment enhances animal environments within the context of the animals behavioural biology and natural history. Environmental changes are made with the goal of increasing the animal's behavioural choices and drawing out their species-appropriate behaviours, thus enhancing animal welfare.

1999 AZA Behavior Scientific Advisory Group

Enrichment is an important aspect of animal husbandry in zoos and tries to make life at the zoo as natural and stimulating as possible.

The purpose is to induce as near to natural behaviour as possible as well as promoting mental and physical activity.

Visit the [Wild Welfare website](#) to learn more.

There are five enrichment categories:

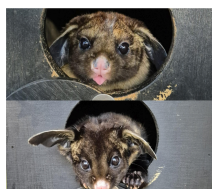
- Social
- Cognitive
- Physical habitat
- Sensory
- Food-related

Read more about each category [here](#)

THE PROCESS

IDENTIFY & DEFINE

Select one of the two animals below and use the stimulus information to familiarise yourself with their needs.



Yellow-Bellied Glider



Meerkat

RESEARCH & PLAN

It is important to have sound knowledge of the species' natural behaviours and physiology when developing an enrichment tool. Undertake further research about the animal as well as existing enrichment designs and materials before designing a device that will encourage natural behaviour as well as promoting mental and physical activity.

PRODUCE & IMPLEMENT

Prototype or create your enrichment design.

NOTE: the enrichment object MUST be able to be added and removed from the animal's exhibit

TEST & EVALUATE

Use the enrichment design checklist at the end of this document to ensure your design meets all the criteria.

DON'T
FORGET TO
USE THE
CHECKLIST

Submit your design via our [Taronga website](#)
ENTRIES CLOSE FRIDAY 26 SEPTEMBER 2025
AT 5PM (AEST)

WINNERS

- The winning enrichment designs will be judged by a Zoo Keeper and Behavioural Specialist from Taronga Zoo Sydney.
- Winners will be contacted using the classroom teacher's details, via email.
- Chosen designers will receive FREE entry for their whole class to visit Taronga Zoo Sydney, or Taronga Western Plains Zoo meet the judges and observe their enrichment object being given to their chosen animal.
- Only one (1) winner will be selected per animal

*Checklist at the end of this document.



STEM ENRICHMENT DESIGN *Competition*



MEET THE ANIMALS

Yellow-Bellied Glider
Petaurus australis

Meerkat
Suricata suricatta



MEERKAT

Suricata suricatta



LEARN MORE ABOUT
THE MEERKAT

DOWNLOAD FACTSHEET

LEARN MORE ABOUT
MEERKAT NATURAL BEHAVIOUR

[WATCH VIDEO HERE](#)

MEERKAT ENCLOSURE



Taronga Zoo Sydney.

THE JUDGES



Ellen Wilson
Carnivore Keeper
Exotic Fauna
Precinct
Taronga Zoo Sydney

EXAMPLE OF AN ENRICHMENT DESIGN



Food to be added by keepers
to the enrichment object
(optional): Mealworms.

DON'T
FORGET TO
USE THE
CHECKLIST



Brendan Host
Behavioural Husbandry
Supervisor
Taronga Conservation
Society Australia



YELLOW-BELLIED GLIDER

Petaurus australis



LEARN MORE ABOUT
THE YELLOW_BELLIED GLIDER

[DOWNLOAD FACTSHEET](#)

LEARN MORE ABOUT
GLIDER NATURAL BEHAVIOUR

[WATCH VIDEO HERE](#)

YELLOW-BELLIED GLIDER ENCLOSURE

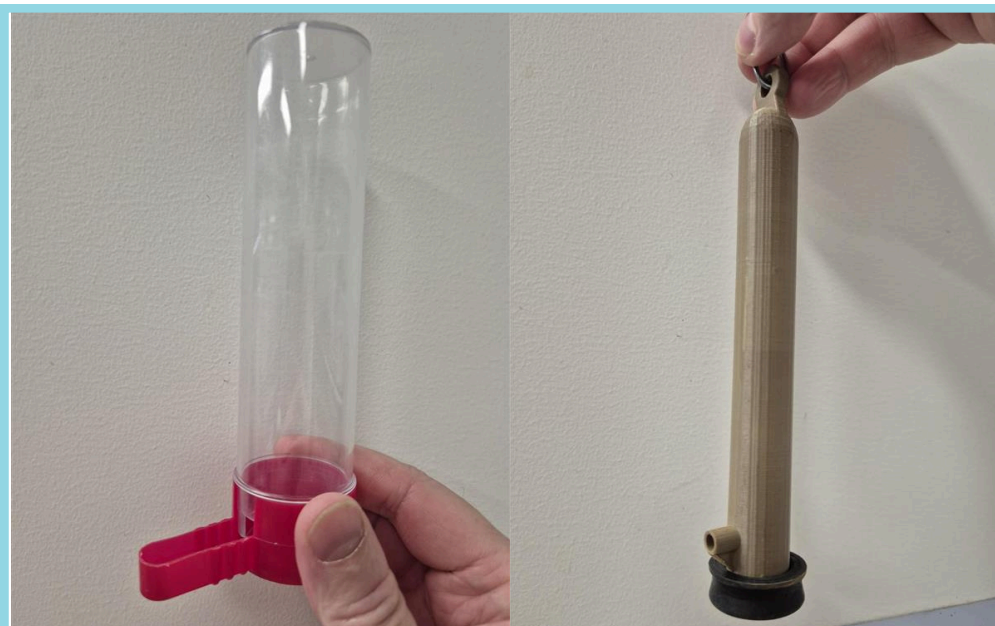


Taronga Institute of Science & Learning, Taronga Zoo Sydney.

CHALLENGE

Design a 3D-printed feeder for the Yellow-bellied Glider that releases nectar for lapping, just like in the wild, and resembles something natural in its habitat.

EXAMPLE OF CURRENT DESIGNS THAT ARE NOT SUCCESSFUL:



This design doesn't reflect the glider's natural habitat or provide suitable access to the nectar mix.

This design prevents the mix from flowing properly, causing pooling at the base and limiting access for gliders.

THE JUDGES



Grey Fisher
Senior Keeper
Taronga Institute of
Science & Learning,
Taronga Zoo Sydney



Brendan Host
Behavioural Husbandry
Supervisor
Taronga Conservation
Society Australia



DON'T
FORGET TO
USE THE
CHECKLIST



STEM ENRICHMENT DESIGN *Competition*

MEERKAT CHECKLIST



SAFETY:

- ☐ Cardboard or paper products are free from wax, staples, glue, paint or plastic tape.
- ☐ The device (including fixings/attachments) will prevent animals from becoming entrapped or entangled.
- ☐ The items holes will not entrap body parts.
- ☐ The enrichment can be added and removed from the animal's exhibit easily.
- ☐ The size of the item is large enough that it cannot be swallowed by the animal.
- ☐ The enrichment item does not contain ingredients that may be toxic or pose an allergenic risk to the animal.
- ☐ The enrichment item is not likely to carry disease.

CONSTRUCTION:

- ☐ I have included ALL the measurements of the object (heights, length, width) and all the openings (diameter)
- ☐ I have included the weight of the object
- ☐ The item is sturdy and durable.
- ☐ Parts are firmly secure and cannot be detached.
- ☐ The fixings and attachments cannot be ingested.
- ☐ The item is non toxic (including plant material).

BEHAVIOUR & FOOD:

- ☐ The device has the ability for Keepers to include food from the animals daily food allowance.
- ☐ The items can be cleaned to prevent disease transfer between usages (not single use)
- ☐ The item offers the meerkats the opportunity to display their natural behaviour and engage socially

DIGNITY AND RESPECT AND EXHIBIT AESTHETIC:

- ☐ The enrichment item maintains Taronga's philosophies in displaying animals in a way that celebrates the nature of the species and promotes natural behaviour.
- ☐ The item is natural looking and compliments the exhibit design.



STEM ENRICHMENT DESIGN *Competition*

YELLOW-BELLIED GLIDER CHECKLIST



SAFETY:

- ☐ Cardboard or paper products are free from wax, staples, glue, paint or plastic tape.
- ☐ The device (including fixings/attachments) will prevent animals from becoming entrapped or entangled.
- ☐ The items holes will not entrap body parts.
- ☐ The enrichment can be added and removed from the animal's exhibit easily.
- ☐ The size of the item is large enough that it cannot be swallowed by the animal.
- ☐ The enrichment item does not contain ingredients that may be toxic or pose an allergenic risk to the animal.
- ☐ The enrichment item is not likely to carry disease.

CONSTRUCTION:

- ☐ I have included ALL the measurements of the object (heights, length, width) and all the openings (diameter)
- ☐ I have included the weight of the object
- ☐ The item is sturdy and durable.
- ☐ Parts are firmly secure and cannot be detached.
- ☐ The fixings and attachments cannot be ingested.
- ☐ The item is non toxic (including plant material).

BEHAVIOUR & FOOD:

- ☐ The device has the ability for Keepers to pour in the nectar mix easily.
- ☐ The items can be cleaned to prevent disease transfer between usages (not single use)
- ☐ The item offers the glider the opportunity to display natural feeding behaviours.

DIGNITY AND RESPECT AND EXHIBIT AESTHETIC:

- ☐ The enrichment item maintains Taronga's philosophies in displaying animals in a way that celebrates the nature of the species and promotes natural behaviour.
- ☐ The item is natural looking and compliments the exhibit design.

Animal:

Where in the world does it live?



Description of habitat:

Diet:

Structural adaptations:

Behavioural adaptations:



Animal: _____

Description or image of the Zoo based exhibit?

Description or images of enrichment for this animal:



Animal:

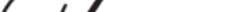
Any other information or images about your animal that you found interesting:

A large, empty rectangular box with a thin black border, intended for students to provide additional information or images about their animal.

What are some possible limitations that you may encounter with this project?

Rewrite the problem in your own words:

Create a set of success criteria for your enrichment object
(How will you know you have been successful?):








Sketch the design of your enrichment object in all views.

PLAN/TOP VIEW











Sketch the design of your enrichment object in all views.

SIDE VIEWS

EVALUATION



Education



Was your prototype successful?
Explain why or why not.

Write down some problems
with your design.

What modifications need to be made to your design to improve it further?

Create your NEW modified design:

PITCH PLANNER



Education



What is the problem that you have created a solution for?

What is your company?
Sketch a logo

Name of your product
that you are pitching:

Three ways your design is
more unique than others:

Images of your product:

What does your product do for customers? How does it work?

Future plan (next steps, how could you grow/change/modify product)?
What would you do with the additional funding?