



Catch 'em & Keep 'em



*Design Brief for Year 3
Technologies & Science*

Background: *You have been learning about minibeasts in science, and now know that they all have special needs and are able to be grouped on their observable features.*

Design challenge: *Catchers and Keepers*

To learn more about the minibeasts in our school gardens you need to work together to create a device to catch a minibeast (catcher), or an enclosure to house the minibeast, until we finish our study (keeper). Note - the minibeast will be returned to its natural environment once we have collected the required data.

Criteria:

Your catcher or keeper must:

•keep the mini beast safe •be an appropriate size •provide the required conditions to keep your minibeast comfortable •be constructed from the provided materials

Materials: *What can you use?*

•String •straws •meat trays •cardboard •Styrofoam •balsa wood •pipe cleaners •plastic bottles •poster board •pantyhose •egg cartons •paddle pop sticks •aluminium foil •glad wrap •plastic containers (e.g. yoghurt pot) •vegetation from the environment

Tools:

•Masking tape •sticky tape •hole punch •glue •tacks •ruler •scissors •jumbo paperclips



Information for teachers

This resource includes:

- Page 1 - Design brief
- Page 2 – Information for teachers
- Page 3 – Differentiation and possible extension activities
- Page 4 – Online links
- Page 5 - 'Catch 'em & Keep 'em' guided portfolio
- Page 15 – Rubric

NOTE: All pictures used throughout this resource were sourced from Microsoft Office 2010 Clipart.

Objective: Students will learn that humans design and create things to serve a purpose, want, or desire. They will see that it is imperative that this be done in an ethical way that considers the perspectives of all involved, to ensure the desired outcomes and preferred futures. Students will achieve this through the design process, which will be scaffolded by the guided portfolio.

This resource integrates aspects of the Critical and Creative Thinking, Ethical Understanding, and Literacy general capabilities (ACARA, 2015), and enables differentiation, as students determine and design their own product, individually or collaboratively, and engage in different activities as appropriate.

Curriculum

Cross curriculum priorities: Sustainability

Systems (OI.3) Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

Futures (OI.7) Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

Connected curriculum: Science

Science Understanding

Living things can be grouped on the basis of [observable](#) features and can be distinguished from non-living things ([ACSSU044](#))

New knowledge to be assessed: Technologies

Design and Technologies Knowledge and Understanding

Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes ([ACTDEK013](#))

Design and Technologies Processes and Production Skills

Generate, develop, and communicate design ideas and decisions using appropriate technical terms and graphical representation techniques ([ACTDEP015](#))

General

Materials: List provided on design brief cover page

Preparation: Exemplar and photos of previous creations and/or teacher made example

Safety Issues: Discuss safe use of – scissors, glue, pointy objects, and handling of vegetation

Class Management: 2-3 students per group, inside and outside supervision, delegation of group roles

Time management: (Lessons are 40 minutes long.)

Lesson 1 – Introduce design brief and show videos and images to students. Start discussing and split into pairs

Lesson 2 – brainstorm, plan, design and label figure of how to make catcher or keeper.

Lesson 3 and 4 – build catcher or keeper and confirm suitability using the checklist – complete an extension activity if finished early

Lesson 5 – exchange with buddy group and give feedback to each other: reflect, record, and evaluate your catcher or keeper – complete an extension activity if finished early

After use in science: reflect, record, and evaluate your catcher or keeper based on its use.

Differentiation:

- Use of multi-modal resources for visual learners
- Self-paced
- Use of speech recognition software such as [Speech to Text](#) for learners who require an alternative to writing
- Option for independent work for students who experience social difficulties

Possible extension activities:

- Create a name for your minibeast catcher or keeper
- Design a brochure that tells people about your catcher or keeper
- Storyboard a video that explains how to make your design and what its purpose is
- Create a video using the storyboard

Links to online resources for Lesson 1

Videos:

Fun Kids Craft - Cheap and Easy Bug House <https://www.youtube.com/watch?v=nLoNxPfCSos>

How to make, trap and catch Ladybirds (Ladybugs) <https://www.youtube.com/watch?v=48-aNWXJRXg>

The Wildlife Garden Project - A guide to building a bug hotel! <https://www.youtube.com/watch?v=3hrjD089bTg>

The Wildlife World Mini Bugs Range 2011 <https://www.youtube.com/watch?v=-jVVde2PqnY>

How to make a bug house <https://www.youtube.com/watch?v=iXwq4mZP3iw>

Setting up a stick insect cage https://www.youtube.com/watch?v=e0ULdXcT_Yg

DIY Butterfly House <https://www.youtube.com/watch?v=TGukxwDi9bE>

Images and other ideas:

Brinvale Wildlife DIY: No2, Mini Hanging Bug House <http://www.brinvale.com/Blog/Post/16-brinvale-wildlife-diy-no2-mini-hanging-bug-house.htm>

PetDIYS Bugs <http://petdiys.com/pets/bugs/>

Picture Frame Bug Cage <http://petdiys.com/picture-frame-bug-cage/>

Classroom minibeast enclosure <http://jeni.global2.vic.edu.au/files/2009/05/010.jpg>

Butterfly garden school kit <http://www.bouncyhappyypeople.co.uk/weblog/tag/butterfly-garden/>

Praying-mantis home <http://2008sunnybrae5.blogspot.com.au/2011/03/praying-mantis.html>

Catch 'em



&

Keep 'em



NAME: _____

Group Members: _____

What is the Problem or the Need?

Thinking about the task that you have been given...



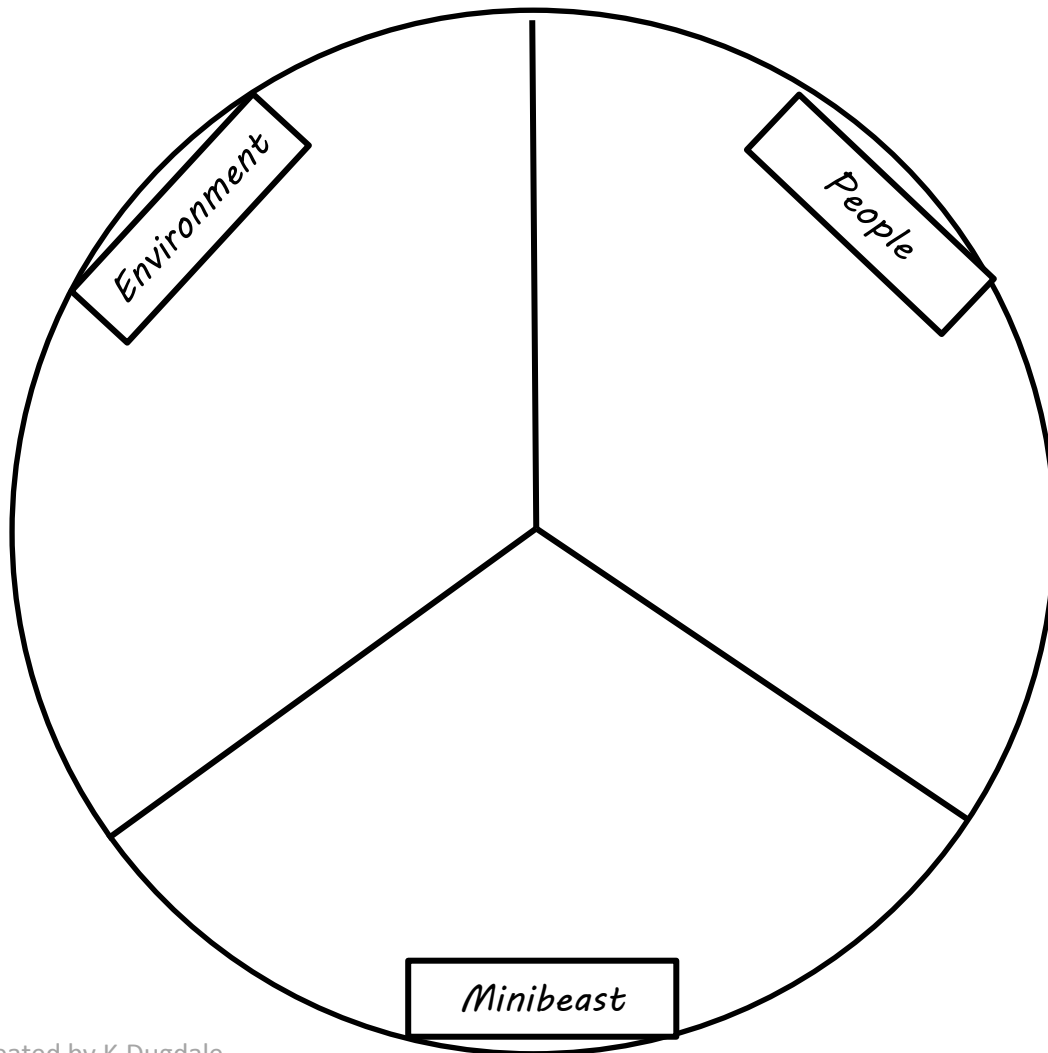
What need has led to you having to design a catcher or keeper for your minibeast? Is there more than one?



State the problem or need in your own words:

What are the Different Viewpoints?

Think about the different viewpoints that may be affected by your design. Talk with your buddy group and put dot points into the Circle of Viewpoints. Then complete the questions.



Who will be affected by your project?

Who will care about your project?

Is it fair for the environment? _____

Is it fair for the minibeast? _____

Is it fair for people? _____

What are the benefits of your project? _____

What are the risks of your project? _____

What new ideas or questions do you now have? _____

Brainstorm Solutions

Use these boxes to write/draw your ideas for your catcher or keeper.



Draw and Label Your Final Design



We think that this is the best design for the problem or need because:



List of Materials and Tools Needed



Materials



Tools



Design Checklist

Remember - your catcher or keeper must:



- keep your minibeast safe
- be an appropriate size
- provide the required conditions to keep your minibeast comfortable
- be constructed from the provided materials

Does your design meet the criteria? Explain how.

Buddy Feedback

Get your buddy group to give you feedback on your built design.

We really like...

You could improve it by...

Have you thought about...?



Evaluate Your Catcher or Keeper

Evaluation 1 - after feedback/before use

What is good about your design? _____

What might you add or change to make it better? _____

Evaluation 2 - after use

What was good about your design? _____

What might you add to make it better? _____

Would one of your other designs have been better? _____

Why? _____

If you made it again, what would you do differently? _____

Why? _____

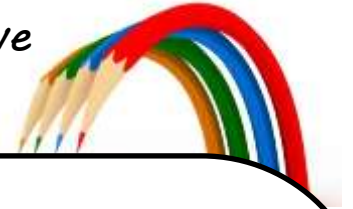
What Does Your Catcher or Keeper Look Like?



*Here is a photo of our
final design*

A large, empty rounded rectangular box for drawing the final design.

*How it would look if we
made it again*

A large, empty rounded rectangular box for drawing how the design would look if made again.

Rubric

Student Name: _____

Year 3 Technologies

Unit: Catch 'em & Keep 'em

Term 2, 2015

Date marked: _____

Assessable Criteria	A Excellent	B Good	C Satisfactory	D Developing	E Limited
Identifies and states the problem or need for the design	Identified and clearly explained several needs for the design	Identified and explained one need for the design	Identified and stated one need for the design	Identified one need for the design but could not expand on answer	With assistance was able to identify one need for design
Generates a range of design ideas	Generated 4 thorough and insightful design ideas	Generated 4 thorough design ideas	Generated 4 satisfactory design ideas	Generated at least 2 satisfactory design ideas	With assistance was able to generate some design ideas
Selects appropriate design for the needs and purpose	Selected design idea shows significant consideration for the needs of the design	Selected design idea shows good consideration for the needs of the design	Selected design idea shows some consideration for the needs of the design	Selected design idea shows little consideration for the needs of the design	With assistance is able to select a design idea with consideration for the needs of the design
Creates visual representations of designs	Created exceptionally clear and detailed drawings and labels to communicate the design	Created clear and detailed drawings and labels to communicate the design	Created detailed drawings and labels to communicate the design	Created drawings and labels to communicate the design	With assistance was able to create drawings and labels to communicate the design
Identifies appropriate materials for intended use based on their properties	Consistently identified highly appropriate materials for designs, based on their properties and the need	Mostly identified appropriate materials for designs, based on their properties and the need	Identified some appropriate materials for designs, based on their properties and the need	Sometimes identified materials for designs, based on their properties and the need	With assistance was able to identify materials for designs, based on their properties and the need
Identifies appropriate tools for intended use	Consistently identified highly appropriate tools for use in creating the design, based on their purpose	Mostly identified appropriate tools for use in creating the design, based on their purpose	Identified some appropriate tools for use in creating the design, based on their purpose	Sometimes identified tools for use in creating the design, based on their purpose	With assistance was able to identified tools for use in creating the design, based on their purpose
Considerations of multiple viewpoints leading to ethical decisions in design	Design process and design insightfully and accurately considers multiple viewpoints including the unique needs of the identified minibeast	Design process and design accurately considers some viewpoints including the unique needs of the identified minibeast	Design process and design considers viewpoints and the unique needs of the identified minibeast	Some of the design features consider the unique needs of the identified minibeast	With assistance some of the design features consider the unique needs of the minibeast
Investigate suitability of materials for a range of purposes	Insightfully evaluates and reflects on suitability of materials and considers alternatives based on results	Effectively evaluates and reflects on suitability of materials and considers alternatives based on results	Evaluates and reflects on suitability of materials and considers alternatives from results	Evaluates and reflects on materials used	With assistance can evaluate and reflect on materials used