

UNIT 2A FISH RULE THE WORLD

YEARS 3 - 4 BIOLOGICAL SCIENCE



This unit is designed to focus on the following aspects of the Australian Curriculum Science for year 3 and year 4 students.

Biological sciences

Living things grow, change and have offspring similar to themselves (ACSSU030).

Nature and development of science

Science involves making predictions and describing patterns and relationships (ACSHE050).

Questioning and predicting

Pose and respond to questions, and make predictions about familiar objects and events (AC SIS037).

Planning and conducting

Participate in guided investigations to explore and answer questions (AC SIS038).

Use informal measurements to collect and record observations, using digital technologies as appropriate (AC SIS039).

Processing and analysing data and information

Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (AC SIS090).

Compare data with predictions and use as evidence in developing explanations (AC SIS218).

Evaluating

Reflect on and suggest improvements to scientific investigations (AC SIS091).

Communicating

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (AC SIS093).

Sample learning sequence 2 A

Fish rule the world

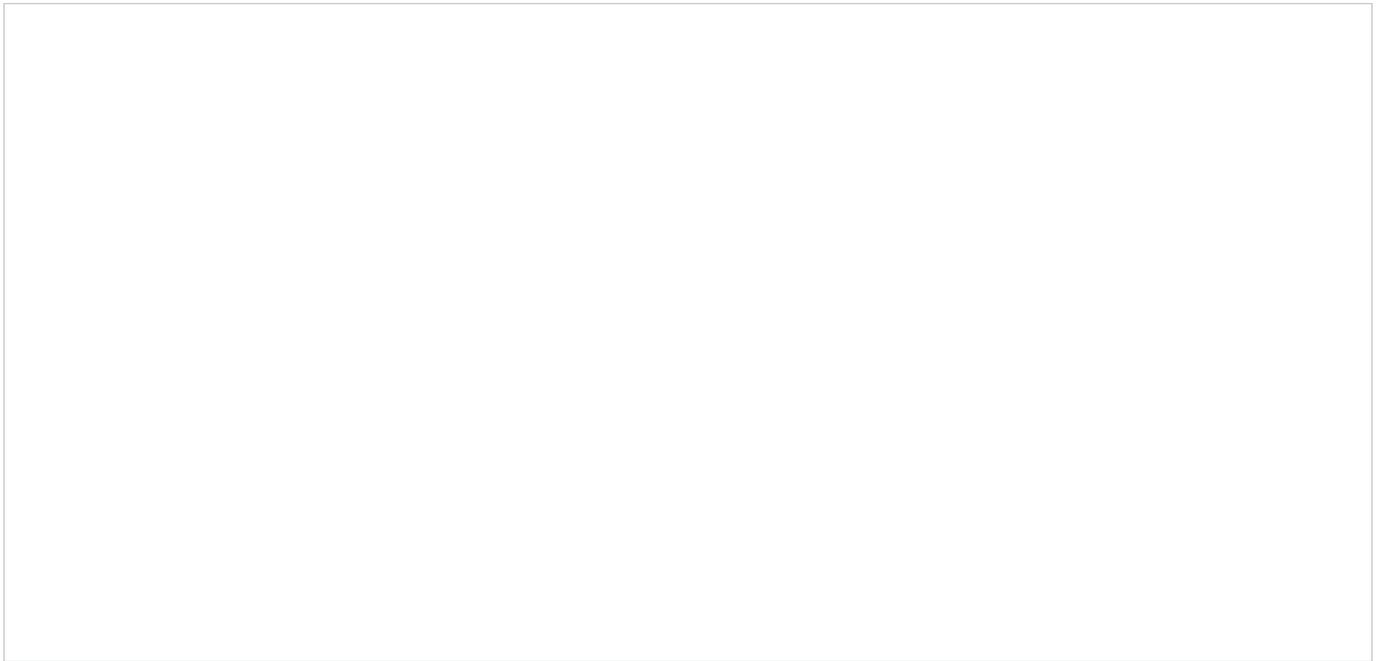
Year 3-4 Science

<p>Learning Intention:</p> <p>Students learn how fish are born, grow and change. Students recognise that different fish species have different distinguishable characteristics. Students have the vocabulary and knowledge to discuss the importance of fish in the world.</p>		<p>Evidence of learning</p> <p>Collect samples either digitally, anecdotally or from student recording that match aspects of the AC content and achievement.</p>
<p>Hook</p> <p>Introduce the students to the idea of visiting Granite Island through photos, video or prepared talk.</p> <p>Tell your stories about Granite Island. Allow students to tell theirs and discuss that knowledge in depth.</p>	<p>Establish what the students already know.</p> <p>Quick write draw</p> <p>Explain to the students that this is a science excursion to learn about fish. Ask students to work individually to draw and write anything they know about fish. After three minutes allow students to share in small groups and discuss what they know and what they wonder about.</p> <p>Read some information to the students similar to this from http://easyscienceforkids.com/all-about-fish/</p> <p>Fish rule the world. That is, they're one of the oldest animal families to live on Earth. They were here long before the dinosaurs – about 500 million years ago — and they still thrive. There are over 25,000 known species of fish. There are probably many more that we haven't discovered yet.</p> <p>Fish are vertebrates. That means they have a backbone. But unlike mammals, fish don't have lungs. They breathe by taking oxygen from the water in through their mouths, where it passes over the gills. The gills then absorb oxygen from the water and send the oxygen throughout the body. Some fish are carnivores. They eat other fish and small animals and insects. Other fish are omnivores, eating both plants and animals.</p> <p>Ask students to draw a fish and a person (or use template); label all the common features in blue; mark all the unique features in red.</p> <p>At the end of the session ask students to record any questions or wonderings on their drawing. (I wonder if Fish sneeze, I wonder if baby fish know who their mother is, I wonder how fast fish grow, I wonder what fish feel like). Collect the drawings and group like questions and display on the wall.</p> <p>Discuss with students that some questions can be investigated and some need to be researched. Group students. Ask each group to identify one question that they can research and one they can investigate.</p>	<p>Descriptions of living things.</p> <p>Develop and pose questions.</p> <p>Annotated diagrams that illustrate relationships.</p>
<p>Investigate, research and go deeper</p>	<p>Visit Day</p> <p>Students take their questions/wonderings. They explore the area, they have opportunities to observe fish, develop and pose questions, interact with the fish to gather information and data. They also interact with the guides, teachers and their peers to answer questions. They have time to complete their own inquiries.</p>	<p>Develop, pose and answer questions.</p> <p>Gather information and data.</p> <p>Critically analyse/interpret information.</p> <p>Guided investigation.</p>

<p>Explain</p>	<p>Each student has a picture of a stage in a fish's life and they must find others until they complete a life cycle.</p> <p>The guides (or teachers using provided scripts) explain and demonstrate the life cycle of a fish.</p> <p>The guides (or teacher) interact with students to teach the physical features of a number of different fish, student answers are elicited and students have opportunity to demonstrate prior learning from their research. Misunderstandings are actively exposed and corrected.</p> <p>Guides (or teachers) support a number of investigations: e.g. how do fish eggs float/ can eggs float in a polluted ocean?</p> <p>Students record on the sheet provided. Support for students who may need vocabulary cards can be made available.</p>	<p>Sequential explanation from egg to mature fish.</p> <p>Investigative reports.</p>
<p>Extend and stretch</p>	<p>Whip around</p> <p>Ask students to record three things they learned and record on a sticky note. As soon as they are finished they stick their note on their workspace. In this time students are completing their investigative reports. When every student has a completed sticky note ask all students to stand up, one student reads out the three things he or she learnt on the visit, if other students have the same or similar they give a tick to the item on their own sticky note. When a student has read all three or ticked all three he or she sits down.</p> <p>Ask students to hand their named sticky note to the teacher.</p>	<p>Student reflections.</p> <p>Response to learning.</p>
<p>Reflect, respond and evaluate</p>	<p>Students use the photos and videos taken at the visit to create a book (either digitally or manually) to reflect on their first Quick Write Draw and they discuss what they know now that they did not know before.</p> <p>Use the reflection prompts to aid discussion.</p>	<p>Recount Information report orally digitally or written.</p>

GRANITE ISLAND Education Resource 2A

1. Quick Write Draw. In three minutes write or draw everything you already know about fish.

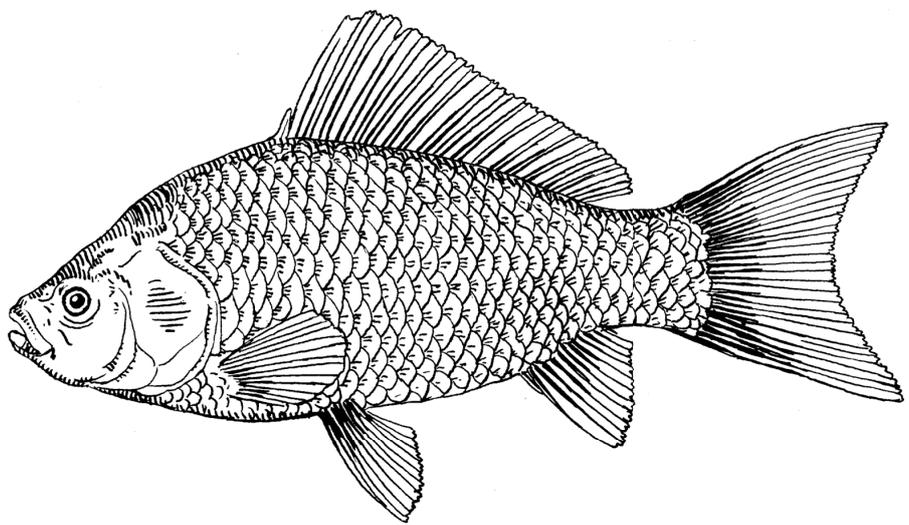


Predictions

2. Predict how many fish will you see altogether?
3. How many different types of fish will there be?
4. Will the biggest fish be bigger than your schoolbag?
5. How small will the smallest be?
6. Are all fish the same colour?

Compare and contrast you and a fish as you grow up

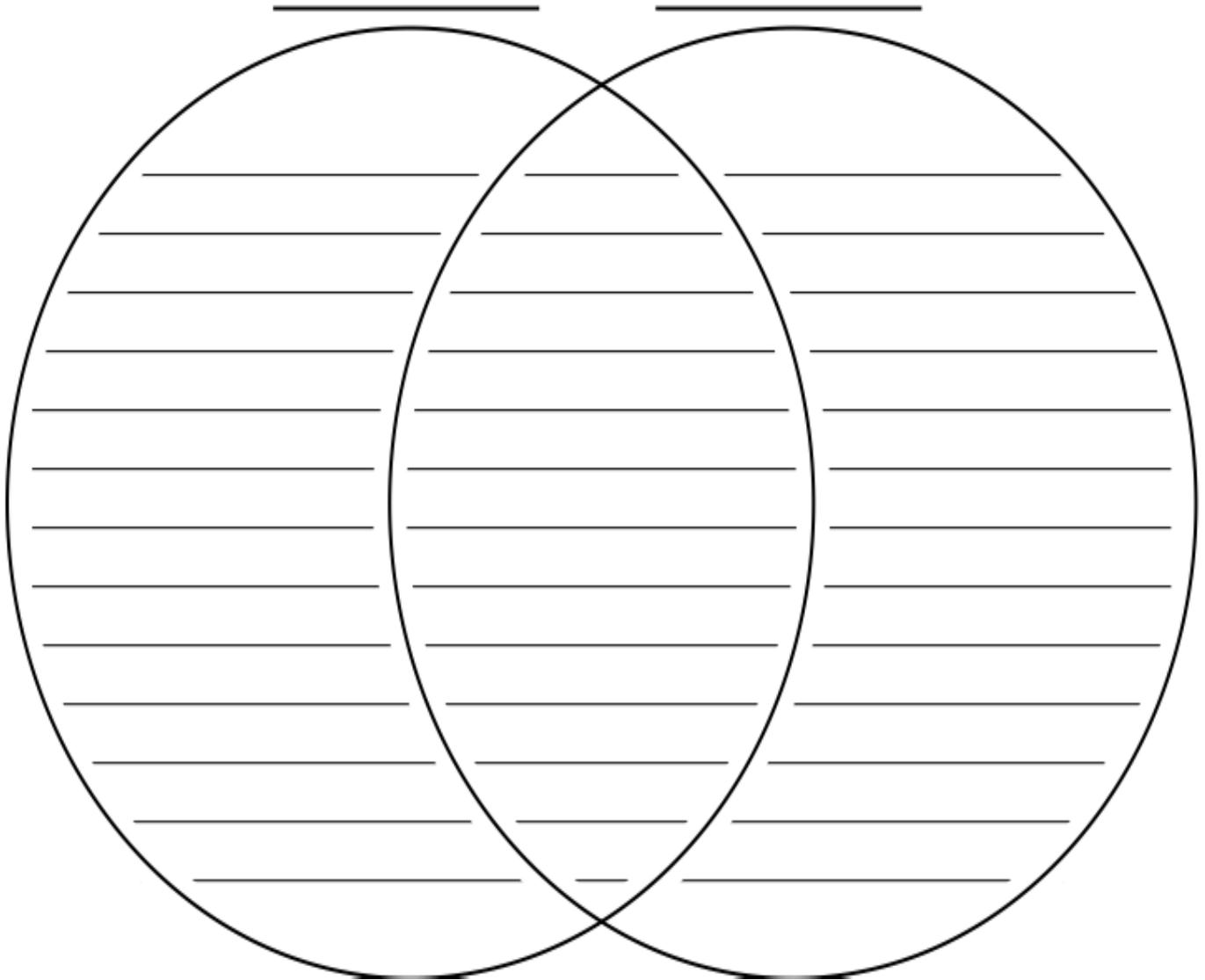
You and a Fish



Compare two different fish species

Name : _____

Venn Diagram



Comparison of two different fish

Rubric to support student reflection:

Name: _____ Title: _____ Date: _____

Kid-Friendly Informational Writing Scoring Guidelines						
	Focus	Content	Organization	Style	Conventions	
4	Advanced	You show a clear understanding of what information was required, and who your audience is. You write about one clear topic, and gave many details to support your topic.	You use plenty of details to support your topic. You show a clear understanding of the purpose for writing this piece, and you clearly understand the information.	Your writing is very organized. You use transitions well, and the order of your information makes good sense. This paper is easy to read and understand!	You demonstrate an excellent use of language and your sentence structure. You clearly understand how informational pieces are written, and your tone is clear.	You use a variety of sentence structures. You have very few errors in grammar, usage, spelling, and punctuation. Any errors that are there do not make the writing unclear.
3	Proficient	You show an understanding of what information was required, and who your audience is. You write about one clear topic, and included details in most of your writing.	You give the appropriate amount of details to support your topic. You show a good understanding of the purpose for writing this piece, and you understand the information.	Your writing is organized well. Most of your transitions are used correctly, and your order of information does make sense. This paper can be read and understood with very few problems.	You show good control of language and sentence structure. Your writing has many parts that resemble informational pieces, and your tone is clear.	You use a variety of sentence structures. You have some errors in grammar, usage, spelling, and punctuation. A few of these errors may make parts of the writing unclear.
2	Basic	You show a partial understanding of what information was required, and who your audience is. You have a topic, but some of the details do not support this topic clearly.	You give some details to support your topic. You do not demonstrate a strong understanding of the purpose for writing this piece, and you may not fully understand the information written.	Your writing is not very organized. Some of your transitions may be used correctly, but overall the errors make it difficult to understand.	Your use of language and sentence structure makes it difficult to clearly identify tone. You demonstrate some knowledge of how informational pieces are written.	You do not use a variety of sentence structures, and some sentences may be fragments. There are many errors in grammar, usage, spelling, and punctuation.
1	Below Basic	You do not show an understanding of what information was required, and who your audience is. A specific topic is unclear and details are not clear.	You give very few details to support your topic. You do not demonstrate understanding of the purpose for writing this piece, and you do not show understanding of the information written.	Your transitions are not present, or not used correctly. The information is not organized well. This paper is unclear and difficult to understand.	You demonstrate very little control of language and sentence structure, which makes it difficult for the reader to recognize tone. You show little understanding of how informational pieces are written.	Many sentences are awkward or are fragments. There are many errors in grammar, usage, spelling, and punctuation. These errors make the paper very difficult to read.
Score:			Total Score:		out of 20 possible points	

Resources to support teaching and learning in this unit:

Digital resources:

1. <https://australianmuseum.net.au/fishes>
2. <http://www.kidzone.ws/animals/fish1.htm>
3. <http://www.ducksters.com/animals/fish.php>
4. <http://idahoptv.org/sciencetrek/topics/fish/facts.cfm>
5. Read "World without Fish" by Mark Kurlansky and Frank Stockton 9780761185003 for older students or as a reference: 50 Ways to Save the Ocean by David Helvarg
6. For schools using Primary Connections templates can be used



At the completion of the unit students may have provided the following evidence of learning:

Unit 2A aims to address the following areas of the Year 3 Achievement Standard

By the end of Year 3, students group living things based on observable features and distinguish them from nonliving things. They describe how they can use science investigations to respond to questions.

Students use their experiences to identify questions and make predictions about scientific investigations. They follow procedures to collect and record observations and suggest possible reasons for their findings, based on patterns in their data.

This unit aims to address the following areas of the Year 4 Achievement Standard

By the end of Year 4, students describe relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal. They identify when science is used to understand the effect of their actions.

Students follow instructions to identify investigable questions about familiar contexts and make predictions based on prior knowledge. They describe ways to conduct investigations and safely use equipment to make and record observations with accuracy. They use provided tables and column graphs to organise data and identify patterns.

Students suggest explanations for observations and compare their findings with their predictions. They use formal and informal ways to communicate their observations and findings.