Unit Title: Coral Reefs

Author: Kendra Keen

Grade: 2

Unit Rationale:
Students will need to decode and comprehend nonfiction texts in school, but they will also need to do so independently as employees, consumers, parents, etc. Strategies and habits for reading closely will be crucial to the students’ success. In this unit, students will also need to analyze why the strategies they use work so they are able to reflect as readers and grow. After learning and practicing several strategies through a video and several texts (or portions of texts), students will create a coral reef mural together. The mural itself will be a compellation of the new learning they have done. The components of the mural will include features found in nonfiction texts and serve as a visual reminder of how the information is compiled. Finally, students will create an informational writing piece around the essential questions for the unit. The documentation of thinking during close readings and the mural will support students when sifting through the mass of information to create their final piece. The informational writing will not only be an assessment of their writing, but a view of their understanding of coral reef food chains and webs.

Focus Standards being Explicitly Taught and Assessed

CCSS.ELA-Literacy.RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCSS.ELA-Literacy.W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

Idaho State Content Standards-Science
Goal 3.2: Understand the Relationship between Matter and Energy in Living Systems
2.S.3.2.1 Identify four basic needs of all living things (food, shelter, water, space). (563.01.a)
2.S.3.2.2 Discuss how animals are suited to live in different habitats. (547.01.b)

Unit Enduring Understandings Addressed:

Students will develop an understanding of the importance of balance in a food chain and how people can potentially affect the balance. They will also begin to understand how the food chain in a coral reef is unique, but begin to make connections to the idea of food chains/webs and the energy pyramid in the ecosystems around...
them. Strategies (moving towards independent skills) for reading closely and understanding what the text says explicitly will be practiced. Students will practice a purposeful approach to writing an informational piece, both in accuracy and clear communication with the audience.

### Unit Essential Questions Addressed

Why do we need to understand the food chains & webs of a coral reef?
How might a food chain change if one energy source is removed or damaged?
Why do carnivores rely on a healthy plant population in a coral reef?
What affect, if any, do humans have on the health of a coral reef?

### Texts/Resources Recommended

**Text and Level of Complexity**

*Coral Reef Food Chains*, Bobbie Kalman & Kelley MacAulay
This text has a Lexile of NC880L. Though this is a bit high for second grade, the text can be broken down into smaller pieces and still makes sense. It contains many nonfiction text features that will not only be good examples of a well-written informational piece, but will make the information easy to understand and work with in smaller chunks. There are clear definitions provided for new vocabulary within the text of each section, as well as a glossary. The book is engaging and challenging with a variety of supports to help young readers.

**Scaffolds/Supports for Texts:**

“Oceans”, Disney Nature
*Coral Reefs*, Gail Gibbons
*Coral Reefs*, Seymour Simon
*Life in a Coral Reef*, Wendy Pfeffer
*Who Eats What? Food Chains & Food Webs*, Patricia Lauber

These supporting texts may not all be used in their entirety. Several of them will be used during the small group work (text used in each group will be determined by the students’ needs: extension, reteaching etc.). Others will only have portions copied and used to make text-to-text connections, reinforce difficult concepts, or further expose students to new vocabulary.

### Key Vocabulary Terms: Content and Academic

Review: evidence, connection, question, infer, herbivore, carnivore, omnivore, photosynthesis

Explicitly Taught: coral polyps, skeletons, hard corals, soft corals, energy, food chain, primary producers, primary
Procedures

- Pre-Assessment
  1. Students will complete an assessment with three parts: Coral Reef Background Knowledge, Coral Reef Wonderings, Essential Question. The students will respond to each section.
  2. Optional: Have students draw a picture on the back of the assessment of what they visualize when they think of a coral reef. This may be used for students who may need support writing, but are more independent when asked to draw.

- Frontloading:
  There will be little frontloading early on in the unit. The standard/skill being addressed requires students to be new to the text to practice reading closely. There will be several skills and ideas that will need to be taught and at least briefly practiced before working through this unit (such as questioning, making connections or tracking thinking), but no information will be presented before the students read the central text. Students will be practicing not just one strategy for reading closely, so it would be beneficial for students to have had direction in several or all of the strategies individually before trying to use several strategies at once independently on a text.

- Building Knowledge
  Throughout the unit, students will document their thinking about all of the texts they encounter. They will have a “file” called a Knowledge Folder (an actual folder that will store hand-outs, writing, post-its, etc. from throughout the unit) of new information, connections between new information (and schema) from multiple texts, questions & wonderings, and the changes in their thinking or answers to questions as they work through the unit. They will also play a vocabulary game, after several exposures to the text, to help students become comfortable with new language.

- Guided Practice
  The first several sections of the central text will help determine independent abilities and strategies used by the students. The following readings of each section will be used to model specific strategies. Each section may fit specific strategies better than others. Students will work with the teacher and classmates to decide which strategies they are finding most useful and think through making choices about which ways of interacting with the text best fits them and the piece they are studying.

- Student Groupings
  Much of the unit will be taught whole group, with quick processing loops (student conversations about multiple ideas presented by the teacher and themselves- change daily) throughout each lesson. There will be small group activities that will be directed by student needs (reteaching, language support, enrichment, etc.). During the crafting of the mural students will be grouped by interest, they will have some choice in what they depict and explain in the coral reef.

- Independent Practice
  The main text being used will serve as the modeling piece. Students will be required to interact with the text independently each time, but will then be supported by modeling of strategies, conversations with classmates, and daily reflections of the text.

Part One: Engage students by watching a clip from “Oceans” by Disney Nature
- This clip is filled with interesting animals that inhabit the coral reef. There is enough information to peak students’ interest and getting them wondering about the different elements of this unique habitat. The movie is 90 minutes long, only Chapter 11 is all that is needed as an introduction.
- After viewing the clip, students should do a brief reflection with peers to process new information and questions. Have students document their thinking in a short summary and store in Knowledge Folders.
- Throughout the unit, students should view the clip several more times and add to the original documentation in Knowledge Folders.

### Part Two: Whole Group Close-Reading – *Coral Reef Food Chains*, Kelley MacAulay & Bobbie Kalman

- In Knowledge Folders, students should record what they notice and questions they might have from viewing the cover of the book.
- The first two sections of the book will serve as an indicator of what strategies students use to understand and interact with a text. If there are not enough copies for all students to attach sticky notes to track thinking, it would be beneficial to make a photocopy of each section for students to write on. Teachers may also want to make photocopies for all students so they are able to highlight, underline, and write notes directly on the text.
- In addition to the students having their own copies, the teacher may wish to use the powerpoint attached of the pages of the central text as a group reference during conversations.
- After students have had a chance to read the sections and note their thinking, students should share the information they gathered and/or wonderings with their classmates. Throughout all of the lessons, students will have multiple opportunities to converse with each other about their thoughts and inquiries. It is important, in most cases, that students first share in a small group to get a chance to process and organize their thinking. Also, students that are struggling to understand the text will have an opportunity to hear thinking from others, so even if they don’t understand after reading independently, they won’t be lost during a whole group discussion. After small groups have had a chance to discuss the text, the teacher will have a better idea of common misconceptions, confusions, and questions from listening in on these quick conversations.
- Following the processing loops, students should share some of their thinking as a whole group. During this time, the teacher should also present the text-dependent questions that will guide student writing for the day. Discussing and providing evidence from the text will be important to review before requiring students to complete answers to text-dependent questions in writing.
- Students should end the analysis of the first two sections by answering some text-dependent questions in Knowledge Folders.
  - What parts of the text were confusing?
  - What new information did you gain from the text?
  - How are coral reefs formed?
  - How are soft and hard coral reefs different?
- Pages 8-27 will be the bulk of the text used to gain information about coral reefs and practicing reading closely (analyzing informational text structure, if instruction is needed for informational writing for students that may still be struggling). This unit isn’t designed to teach a specific reading strategy for the first time. The purpose is to begin using strategies in conjunction to best fit the text and self-monitor understanding, moving towards knowing what can be done to clarify. With second graders, a teacher will need to model strategies that have been previously taught to remind students how to show thinking and begin to merge ways of interacting with a text. The goal is to make independent readers that are no longer trying to decide which strategy to use or being told which would be best, but using skills that are part of their repertoire to read closely.
  - Strategies being reviewed in this unit are: questioning (finding answers to questions), text-text (and connections within the same text) connections, identifying confusing parts, noticing big ideas and themes.
- There are several “general” text-dependent questions that will be part of the daily work, as well as questions specific to certain content. These questions could be displayed on an anchor chart for students to reference during all conversations and writing.
What parts of the text are confusing?
What new information did you notice from the text?
Did you notice in connections between the information you found today and information you have noticed in previous readings?
How are plants and animals connected in the food chain?
How do plants and animals differ in how they get food?
Why does a shark need plants in a coral reef?

- The amount of text that is closely read will be determined by the needs of the students. Some classes may be able to finish every page of the book, while others may need to shorten the number of pages analyzed. When reading closely, it is important to provide students with multiple exposures to a reasonably short piece of text. The way in which this text is structured will make that easy to do, no matter the needs of the students. The book is “chunked” so that the teacher will be able to pick and choose the most important pieces and the information will still make sense.
- At the end of each reading session, students should take notes from the reading tasks (or summarize) and respond to several text-dependent questions. The information and thinking recorded daily in the Knowledge Folders will help students when they are writing their informational text at the end of the unit. The writing will also be used to keep teachers informed of students understanding and needs.
- Attached are several note catchers that may be used during the unit.

Part Three: Guided Reading Groups
The following books listed may be used in a number of ways to support students in a small group setting. Each title will be followed by a description of how this book could be used and why.

Coral Reefs, Gail Gibbons
This text has a Lexile of IG920L. Though this text is well above the suggested Lexile for second grade, it is well supported with detailed illustrations and content specific vocabulary that is defined in context and explicitly. The amount of text on each page is short and clear, while not lowering the expectation of the learner, which will promote engagement. There are labels with each of the many illustrations of the marine life found in coral reefs that could easily be used to extended learning into small research projects, for any level of student. There are sprinkles of new information that should lead to deep questioning and wondering (ex: symbiotic relationship) but will not interfere with main ideas trying to be understood through this supporting text.
- What is the difference between hard and soft coral?
- How is photosynthesis part of the coral reef food chain?
- What are some of the differing between night and day in the coral reef?
- What interesting things are you noticing about the relationships between the living things in the coral reef?

Pages 28-29 may be used for students that will struggle with the final close reading. The last two pages of this book clearly and simply address the need to protect coral reefs without giving too much information that might interfere with students having a productive struggle with the last close reading of the central text. While maintaining a healthy struggle, students that might need support will not reach frustration level if pages 28 & 29 are taught before requiring an independent look at similar ideas in the Coral Reef Food Chains piece.

Coral Reefs, Seymour Simon
This text is filled with wonderful photographs and written across many multi-paragraph pages. There is a glossary at the end of the text, but there are many words that may need to be defined for a second grader that are not identified in context. This book would be great as an additional resource that could be read to students or a piece that students could use as an extension when working independently.
- What are some of the different kinds of soft corals? What are the differences and similarities?
How do some fish in the coral reef protect themselves from predators?

What makes coral reefs unique from other ocean habitats?

Life in a Coral Reef, Wendy Pfeffer
This text is very engaging, but may be more accessible to a reader that struggles reading independently. The text is still demanding in concept, but the text is in smaller paragraphs and more specific to certain coral reef animals. If students were working towards decoding on-level text, they would still need practice before reading this text aloud independently, but will teacher support they should be able to develop fluency with multiple exposures. This text will also support several vocabulary words that are found in the central text that are used well throughout the book (ex: polyps, camouflage, enemies, larvae).

What are some special features of a coral reef?

How do the animals in coral reefs protect themselves from predators?

How are new coral polyps formed?

Who Eats What? Food Chains & Food Webs, Patricia Lauber
Pages 4-19 are great support for reteaching or pre-teaching the idea of a food chain. This section can also be used later to connect the food chain in a coral reef to other chains and webs in other ecosystems.

Pages 20-24 could also be added to make connections to coral reef food chains and the importance of plants. This section would be great for a group that needs a deeper explanation or a short, meaningful piece to focus on.

Pages 30-32 spend time on a much more complex analysis of how a specific food chain may be affected by over hunter and the reaction that may follow. This section also explains how balance can be restored and would be a great starting point to expand to food chains in other ecosystems.

Pre-write: Important Information
After students have been through the unit and are beginning to prepare for the final writing piece, teachers may use the attached pre-write to give students to organize and pick through all of their notes, texts, and writing in Knowledge Folders. The pre-write will be used to compile the most important information and ideas that they would like to have in their informational text. The pre-write provided also helps students stay focused on three main ideas from the reading. There is so much information students will read and talk about that it may be difficult for second graders to decide what is important and what can be left out. The main sections may be decided together as a class or given by the teacher. The organizer provided includes: coral reefs (intended to focus on formation and facts), coral reef food chains, and dangers to coral reefs.

Coral Reef Mural
Materials needed: large piece of butcher paper, tempera paint, acrylic paint, paint brushes (varying size), construction paper, scissors, glue, poster/chart paper
The mural should be an engaging, creative way for students to celebrate their learning and the beauty of a coral reef. Choice will be a large piece of the creation of the piece. Students will need to paint the background (ocean water) before painting the coral, plants or animals. The tempera is less expensive in easier to find in bulk, it would work best for the water. The corals should then be added using the acrylic paint. The acrylic will not chip and crack from the paper when being layered like the tempera, making it a better material for the coral paintings. Placing the mural on either a bulletin board or wall before stapling or gluing the fish and animals would be beneficial so the large strip of butcher paper is less likely to rip while being moved. The animals can then be created more easily during independent work time and placed in
Assessments

**Formative:** The teacher will have daily opportunities to listen to student conversations and read student notes and reflections. This will be done in whole group, small group, and individual conferences. Attached is a sheet for recording notes about students' reading strategies and content knowledge. There is also a sheet that may be used to plan small group instruction based on conference notes.

**Summative:** The last two sections of the central text (Coral Reef Food Chains) will be used to assess students' independence with reading closely. These sections are titled, “Coral Reefs in Danger” and “Caring for Coral Reefs”. These two sections were chosen because the information will be fairly new. They will need the learning and background knowledge they have developed throughout the unit, but the ideas of pollution and the role humans play in damaging or keeping reefs healthy will have new elements. The new information will help teachers get an accurate picture of how student deal will confusing information, new vocabulary, and connecting to other important themes or ideas. Also, they will show the understanding they have of the essential questions in a final informational writing piece. Attached are two additional options for assessment. Students can respond to the questions in essay form using their Knowledge Folders and texts to help support their thinking. There is also a portion of the essay questions that relates to reading closely. Students will have an opportunity articulate their process for comprehending new texts that may be difficult. The other assessment is more reflective for students. They will analyze their pre-assessment and essay answers and write about the changes they have made during this unit. This may not be an assessment they do independently; this may be done in a conference with the teacher.

Differentiation (based on principles of UDL): [http://www.udlcenter.org/aboutudl/whatisudl/3principles](http://www.udlcenter.org/aboutudl/whatisudl/3principles)

**Multiple Modes of Representation:**
- Video
- Variety of Texts
- Conversations about thinking with peers (listening)

**Multiple Modes of Expression**
- Writing
- Speaking/Listening
- Class mural- art project

**Multiple Means of Engagement**
I have found that most second graders are very engaged with new nonfiction informational, especially animals. The video is also being shown first to get students excited about the unique coral reef wildlife. They will also have choices about the animals & plants they will represent in the coral reef mural and a few choices about the text they will investigate. Documentation of their learning throughout the unit should not only help support and maintain the acquisition of new ideas, but give students confidence and hopefully increase engagement. There are also so many wonderful resources about coral reefs that students will likely begin to bring in texts they have come across in there own research.

Assessments
Rubrics & Student’s Checklist: Students will be given a checklist for informational writing from Lucy Calkin’s *Units of Study* writing curriculum. Attached is a rubric for teachers to use when formatively assessing students’ reading strategies and coral reef knowledge. A student rubric is included at the bottom of the self-assessment worksheet if teachers wish to use the assessment.