RDC Lesson Plan

Individual lesson that connects to the Unit Overview.
Each lesson in your unit should have a separate lesson plan.

Lesson 1	Lesson 2	Lesson 3	Lesson 4
Lesson 5	Lesson 6	Lesson 7	Lesson 8

Lesson 1

NGSS STANDARDS-BASED LESSON PLAN		
Teacher: Lewis	**Date:** 3/01/2022	**Lesson Length:** 45 minutes/ 2 Class periods
Class: Science/Art (Realistic drawing)	**Materials Needed:** Kolea Count Databook (1/student printed), computer with youtube access and projector	
Unit Topic: Kōlea Migration	**Lesson Title:** Identifying and Observing behaviors of kōlea	**Lesson** # 1out of 8 (total lessons)

NGSS STANDARDS

- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
  - Construct an argument with evidence, data, and/or a model
  - Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
  - A system can be described in terms of its components and their interactions.

Hawaiian Cultural Standards (HA or other)

- Sense of Hawai'i
- Sense of Belonging

OBJECTIVES (student level expectations)

Observe (kilo) kolea in the school yard and produce data on patterns of behaviors.
Identify kolea: explore images and develop a system model of the kolea labeling identifying features (external structures) (components)

Ideas we need for this lesson (Do discuss these!)

- Common bird behaviors
- Importance of kōlea in our place
- Seasons (western)

Ideas we are not yet developing (avoid these for now)

- Migration Navigation
- Internal structures

Lesson Instructions		
Lesson Phenomena Statement		
Kōlea is a Hawaiian Bird that also Seasonally Migrates to the Mainland. Kolea migrate from Alaska to Hawaii. We see them every year at the beginning of the school year.		
Lesson Sequence How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?		
Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Introduce the Anchor Phenomenon		
20 min	• Introduce Kōlea Phenomenon	Kolea Video
	• Turn and Talk: background knowledge about kōlea	
Main Activity 1: Draw and Label Kōlea		
25 min	• Pass out Kolea Count Data book: Students label	Kolea Count Data Book handout
	• Model drawing like a scientist the kōlea	Kolea Image
	• Students draw like a scientist the kōlea and label the physical external features	Pacific Golden Plover CornellLab of Ornithology Website
Main Activity 2(Day 2): Identify and Observe Kōlea in the School Yard		
30 min	• Explore the open spaces in the school yard	
	• Find a kōlea	
	• Kilo (observe) and record data of the date, time, location, climate, environment of the location	Kolea Count Data Book handout
	• Kilo behaviors and record in data book	
Conclusion Activity: Organize data into a table (could be exit slip or homework)		
15 min	• Communicate observed behavior data. Can either be, ○ organized data into a class table to compare similarities and differences ○ handout exit slip/homework	
ASSESSMENT (Performance Expectations) Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.		
Success Criteria: Observe (kilo) kolea in the school yard and produce data on patterns of behaviors.		

Identify kolea: explore images and develop a system model of the kolea labeling identifying features (external structures) (components)

Excelling	communicate similarities and differences in noticed patterns of behavior
Achieving	collect accurate data of kōlea in the school yard accurately label physical features draw like a scientist with strong details
Progressing	draw and label kōlea accurately
Beginning	draw kōlea

Teacher Background Information
Add any pertinent information that educators should know prior to teaching the lesson.

kōlea are named pacific golden plover in western science
kōlea migrate from Alaska to Hawaii in late August and back to Alaska in late May
Bird behaviors: feeding, flocking, movement, posture, fledgling

Advanced Preparation
Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.

ACCOMMODATIONS
How does your lesson accommodate the following?

SPECIAL NEEDS (includes Gifted & Talented)

Graphic organizer such as venn diagram provided
Pre-drawn image or provide a actual picture of kōlea to label with boxes

ENGLISH AS A SECOND LANGUAGE (ESL)

Support lesson vocabulary with drawings images, examples, non examples

CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)

Lesson 2

NGSS STANDARDS-BASED LESSON PLAN		
Teacher: Lewis	**Date:** 03/07/2022	**Lesson Length:** 45 minutes/2 Class periods

Class: Science/Math (Measurement & Data)	**Materials Needed:** **FAT CYCLICITY, PREDICTED MIGRATORY FLIGHT RANGES, and features of …** Post-its a couple for each student Computer with projector and youtube access	
Unit Topic: Fat reserves for Kōlea Migration	**Lesson Title:** Food for Energy	**Lesson # 2 out of 8** (total lessons)

NGSS STANDARDS

- 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
  - Construct an argument with evidence, data, and/or a model
  - Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
  - A system can be described in terms of its components and their interactions.

Hawaiian Cultural Connections and Standards (HA or other)

- Sense of Excellence

OBJECTIVES (performance expectations)

Internal structures / scale / proportion: analyze and interpret data of weight gain and reason through prior knowledge or experience knowledge of weight gain and loss for energy (function)

Ideas we need for this lesson (Do discuss these!)

- Migration, distance, time and flying method
- Energy necessary for migration
- Eating behaviors

Ideas we are not yet developing (avoid these for now)

- Energy transfer
- Senses for Navigation

Lesson Instructions

Phenomena

How will you introduce the phenomena? Attach videos, models, examples with links.

Kōlea fly non-stop from Alaska to Hawai'i for 3 days and from Hawai'i to Alaska non-stop for 4 days. Kōlea can not soar, so they continuously flap their wings during their migration.

Kolea Beating Wings

Lesson Sequence
How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?

Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Introduce the Phenomenon		
20 minutes	• Share ‘Olelo No’eau The plover eats until fat then returns to the land in which it came	#86 Kolea Beating Wings
	• Big Questions/ Ideas Activity ○ Discuss the attributes of the olelo and identify the cross-cutting concepts within it: Patterns ○ How do you think the kanaka maoli would have known that the birds were getting fat? ○ Kilo Post-Migration Image and Pre-Migration image to make predictions	Pictures of Kolea post migration and pre migration Big Idea or Big Question Board
Main Activity 1: Explore Data to Check Predictions		
25 minutes	• Explore Data from resources	FAT CYCLICITY, PREDIC…
Main Activity 2 (Day 2): Create a Graph		
15 minutes	• Create a graph that represents the patterns	
Main Activity 3: Gallery Walk		
15 minutes	• Share Graphs and Conclusions	Post it notes for written feedback
Conclusion Activity: Refine and Reflect		
15 minutes	• Refine your graph	
	• Add or edit your conclusions based on Gallery Walk Feedback	

ASSESSMENT (Performance Expectations)
Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Success Criteria: Internal structures / scale / proportion: analyze and interpret data of weight gain and reason through prior knowledge or experience knowledge of weight gain and loss for energy (function)

Excelling	A clear and concise graph that represents the patterns An accurate conclusions is developed Communication with peers is strong and clear understanding is shown

Achieving	Data is used to create a graph An explanation of the data and graph is provided
Progressing	Data is used to create a graph
Beginning	Identification of patterns in the data is found

Teacher Background Information
Add any pertinent information that educators should know prior to teaching the lesson.

- weight right before migration (heavy) 7 ounces
- weight right after migration (light) 3.7 -4 ounces
- weight average over the winter (medium)
- weight leading up to spring migration starting in March (increasing)
- weight right before migration (heavy) 7 ounces
- weight upon arrival in Alaska (light) 3.7 ounces

This is a reliable pattern across all individuals who migrate. Individuals who don‘t migrate do not store extra weight or enough extra weight as a comparison.

Fat is stored all over the body, but once the bird has a significant % of fat stored, a fat bump under the tail can be seen (although that is not the only place fat is stored)

Advanced Preparation
Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.

ACCOMMODATIONS
How does your lesson accommodate the following?

SPECIAL NEEDS (includes Gifted & Talented)

Pre-labeled graph is provided

ENGLISH AS A SECOND LANGUAGE (ESL)

Images are provided with academic language

CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)

Lesson 3

NGSS STANDARDS-BASED LESSON PLAN

Teacher: Lewis	**Date:** 3/14/2022	**Lesson Length:** 45 min / 2 Class Period
Class: Science/SS (Geography)	**Materials Needed:** Computer, Google Maps and Google Earth Whiteboard, poster paper or google slides for the class to share	
Unit Topic: Migration Patterns	**Lesson Title:** Where do Kōlea Go?	**Lesson #** 3 out of 8 (total lessons)

NGSS STANDARDS

Building Towards:

4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

- Use a model to test interactions concerning the functioning of a natural system
- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.
- A system can be described in terms of its components and their interactions

Hawaiian Cultural Standards (HA or other)

- Sense of Belonging

OBJECTIVES (performance expectations)

Model the pattern of migration: Develop a model using Google Earth or My Maps of the pattern of kolea migration

Ideas we need for this lesson (Do discuss these!)

- Location data
- Environmental Elements (Climate, etc)
- Modeling

Ideas we are not yet developing (avoid these for now)

- Senses for navigation

Lesson Instructions

Phenomena

How will you introduce the phenomena? Attach videos, models, examples with links.

Kolea migrate to Hawai'i every Fall and return to Alaska every Spring

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Lesson Sequence How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?		
Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Phenomenon & Driving Questions		
20 min	● **Introduce the two olelo no'eau:** ○ **Kōlea** kau āhua, a uliuli ka umauma hoʻi i Kahiki. *(The egg of the plover is laid in a foreign land.)* ○ **Kōlea** kau āhua, a uliuli ka umauma hoʻi i Kahiki. *(Plover that perches on the mound, waits till its breast darkens, then departs for Kahiki.)*	
	● Discuss the Phenomenon: ○ Kolea migrate to Hawai'i every Fall and return to Alaska every Spring	Koleacount.org
	● Develop Driving questions board	Whiteboard, poster paper or google slides
Main Activity 1: Developing a Model		
25 min	● Record Kolea Count Data and identify patterns of migration	Kolea count data
	● Sketch a draft of a map	
	● Label map with data from Kolea Count	
Main Activity 2 (Day 2): Modeling Map Making		
15 min	● Model developing a map on google maps or google Earth	Google My Maps or Google Earth Application
Main Activity 3: Developing a Model in Google My Maps/ Google Earth		
30 min	● In groups, pairs or independent, students develop their Kolea Migration maps in google earth or google my maps	
Conclusion Activity:		
15 min	● Map Presentations	

ASSESSMENT (Performance Expectations)
Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Success Criteria: Model the pattern of migration: Develop a model using Google Earth or My Maps of the pattern of kolea migration

Excelling	Create an annotated map of kolea migrational patterns with images and data in google maps or google earth
Achieving	Draw a map of kolea migration Label map with seasons or months of migration Detail with migration data
Progressing	Draw a map of kolea migration to and from Alaska Label map with times of migration
Beginning	Draw a map of kolea migration

Teacher Background Information
Add any pertinent information that educators should know prior to teaching the lesson.

Google My Maps Tutorial
Google Earth Annotation Tutorials

Advanced Preparation
Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.
- Read and review the data and blog from KoleaCount.org

ACCOMMODATIONS
How does your lesson accommodate the following?

SPECIAL NEEDS (includes Gifted & Talented)

G/T: Record a video of annotated map or record voice with annotated map
Needs: Develop a pre-drawn map with label boxes
Share google my maps with pins in place for student to label

ENGLISH AS A SECOND LANGUAGE (ESL)

Explicit modeling
Academic language accompanied with images

CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)

Lesson 4

NGSS STANDARDS-BASED LESSON PLAN

Teacher: Lewis	**Date: 3/21/22**	**Lesson Length: 45 min/1 Class Period**
Class: Science/ELA (Comprehension and Writing skills)	**Materials Needed:** A Scouting Voyaging Search for Islands Flight of the Navigators	
Unit Topic:	**Lesson Title:** Kolea Migration meets Human Navigation	**Lesson # 4 out of 8** (total lessons)

NGSS STANDARDS

Building Towards:

4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

- Use a model to test interactions concerning the functioning of a natural system
- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.
- A system can be described in terms of its components and their interactions

Hawaiian Cultural Standards (HA or other)

- Sense of Hawai'i

OBJECTIVES (Performance Expectations)

Read and comprehend article: Flight of the Navigators to obtain evidence for how (cause and effect reasoning) kolea can migrate.

Ideas we need for this lesson (Do discuss these!)

- History of Polynesian Migration and Navigation
- Fossil evidence as proof of history

Ideas we are not yet developing (avoid these for now)

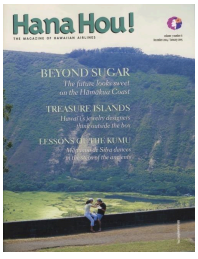
- Fossils in rock formations as connected to 4-ESS1-1 standards

Lesson Instructions

Phenomena

How will you introduce the phenomena? Attach videos, models, examples with links.

Kōlea have been migrating to Hawai'i thousands of years before pre-contact polynesians



Lesson Sequence
How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?

Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
	Introduction Activity: Introducing the Phenomenon	
5 min	● Read together the highlighted passage in: ○ *A Scouting Voyage insearch for Islands*	A Scouting Voyaging Search for Islands
	Main Activity 1: Reading Comprehension	
15 min	● Use any reading comprehension skill students are working on to read the article *Flight of the Navigators*	Flight of the Navigators
	Main Activity 2: Communicate-Writing Response	
15 min	● Write a response containing evidence from the text that answers the questions: *How do scientists know that kōlea can and do migrate to Hawai'i from Alaska?*	
	Main Activity 3: Communicate-Peer Share Out	
5 min	● Read writing response to peers	
	Conclusion Activity: Reflection	
5 min	● Reflect and Edit writing response	

ASSESSMENT (Performance Expectations)
Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Success Criteria: Read and comprehend article: Flight of the Navigators to obtain evidence for how (cause and effect reasoning) kolea can migrate.

Excelling	Shares writing response and edits after peer share out
Achieving	Writing response contains evidence from the text Read and find cause and effect reasoning to explain that kōlea can migrate
Progressing	Read and write a response Identify cause and effect to explain that kōlea can migrate
Beginning	Read the article and write a response

Teacher Background Information Add any pertinent information that educators should know prior to teaching the lesson.
Preread the articles
Advanced Preparation Add activities that the teacher will need to complete prior to teaching the lesson.
• Review the materials and Teacher background information. • Decide on reading comprehension skills to focus on
ACCOMMODATIONS How does your lesson accommodate the following?
SPECIAL NEEDS (includes Gifted & Talented)
Prepare a cause and effect graphic organizer Annotate the article
ENGLISH AS A SECOND LANGUAGE (ESL)
Preview academic language and key vocabulary
CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)
Use trauma sensitive language and approaches

Lesson 5

NGSS STANDARDS-BASED LESSON PLAN		
Teacher: Lewis	**Date:** 3/28/2022	**Lesson Length:**
Class: Science/ELA writing	**Materials Needed:** Computer, Projector, Handouts, Pencils	
Unit Topic: Territorial Examination	**Lesson Title:** Faithful Kōlea	**Lesson # _ out of _** (total lessons)
NGSS STANDARDS		
Building Towards: 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. ○ Use a model to test interactions concerning the functioning of a natural system ○ Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.		

- A system can be described in terms of its components and their interactions

Hawaiian Cultural Standards (HA or other)

- Sense of Belonging

OBJECTIVES (Performance Expectations)

Analyze and interpret location data to identify patterns in territorial choices of kolea (behavior)

Ideas we need for this lesson (Do discuss these!)

- Migration
- Location data

Ideas we are not yet developing (avoid these for now)

- Senses for navigation

Lesson Instructions

Phenomena
How will you introduce the phenomena? Attach videos, models, examples with links.

Kōlea return to the same location year after year.

Lesson Sequence
How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?

Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Introduce the Phenomenon and Develop Driving questions		
10 min	• Kanaka maoli, modern scientist and Kōlea observers blogs and videos	Mo'olelo of kōlea returning Video Blog posts of named kōlea
	• Develop Driving Question board	

	• Make predictions: How do we know that the same kolea return to the same spot year after year?	
Main Activity 1: Read for understanding		
	• Read Report from Susan Scott on Kolea Count website: Scroll to September 9th, 2021	https://www.koleacount.org/author/koleacount/
Main Activity 2: Check the Data and your predictions		
	• Explore identification and territorial data	Territorial data
	• Identify patterns in the data	Identifying Patterns Handout
Conclusion Activity: Write a story		
	• Write a compare and contrast text about how kanaka maoli and modern scientist	

ASSESSMENT (Performance Expectations)
Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Success Criteria: Analyze and interpret location data to identify patterns in territorial choices of kolea (behavior)

Excelling	Clearly and effectively explains using evidence from data and writings to answer the questions: How do kanaka maoli and modern scientist know that kōlea birds return to the same spot year after year.
Achieving	Answers the question: How do kanaka maoli and modern scientist know that kōlea birds return to the same spot year after year. Uses data or evidence from text in answer
Progressing	Identifies patterns in data and evidence from text
Beginning	Makes predictions of how we know that the kolea return to the same spot year after year.

Teacher Background Information
Add any pertinent information that educators should know prior to teaching the lesson.

Advanced Preparation
Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.
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ACCOMMODATIONS

How does your lesson accommodate the following?
SPECIAL NEEDS (includes Gifted & Talented)
Provide scaffolding with identifying patterns and writing conclusions based on data with a graphic organizer, sentence stems and pre-filled information in hand-out.
ENGLISH AS A SECOND LANGUAGE (ESL)
Preview or review academic language essential for understanding with images and compatible 1st language terms wherever possible
CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)
Use trauma sensitive language and approaches

Lesson 6

NGSS STANDARDS-BASED LESSON PLAN		
Teacher: Lewis	**Date:** 3/28/2022	**Lesson Length:** 2/45 minute periods
Class: Science/ELA Research	**Materials Needed:** Computers	
Unit Topic: Internal Structures for Migration	**Lesson Title:** Baby Kōlea migrate later than their parents.	**Lesson #** 5 **out of** 8 (total lessons)

NGSS STANDARDS

4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

- Use a model to test interactions concerning the functioning of a natural system
- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.
- A system can be described in terms of its components and their interactions

Hawaiian Cultural Standards (HA or other)

- Sense of Excellence

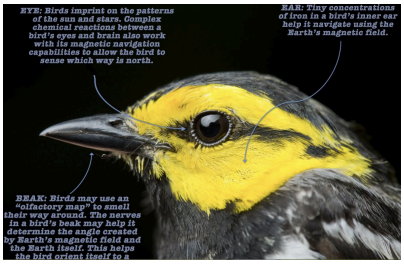
OBJECTIVES (Student-level Explanation)

Internal structures and systems: investigate internal structures that support senses used for navigation.

Birds like kōlea use many different navigational systems. There are many different theories for how birds navigate. Birds use their nose and eyes to send messages to their brain which tells them where to go. They also have ancestral instinct of where to migrate

Ideas we need for this lesson (Do discuss these!)
• Structures and functions used for migration • Senses send messages to the brain • Ancestral instinct develops memory recep
Ideas we are not yet developing (avoid these for now)

• Scientific Arguing:
  ○ Claim
  ○ Reasoning
  ○ Evidence

Lesson Instructions
Phenomena How will you introduce the phenomena? Attach videos, models, examples with links.
Kōlea juveniles migrate to Hawai'i after their parents at the end of fall. 
Lesson Sequence How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?

Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Introduce Phenomenon		
20 minutes	• Kōlea juveniles migrate to Hawai'i after their parents at the end of fall. • Develop driving questions: How do they know where to go?	Driving Questions Board
	• Share out Student's Navigational Theories	
Main Activity 1: Researching in groups		
45 minutes	• Separate students into groups	

	• Assign a Theory to Each group	
	• Groups research each theory and record evidence	Kolea Navigation Website
Conclusion Activity:		
25 minutes	• Group members share their notes with each other	
	• Write a summary of findings	

ASSESSMENT (Performance Expectations)

Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Internal structures and systems: investigate internal structures that support senses used for navigation.

Excelling	• Summary has clear reasons and evidence for the explanation of the theory researched
Achieving	• Write a summary of evidence of theories of navigation • Research using Print and Digital resources evidence of navigation theories • Share a theory of how birds know where they are going
Progressing	• Research an assigned Theory • Share a Theory
Beginning	• Begin researching an assigned theory • Share a theory

Teacher Background Information

Add any pertinent information that educators should know prior to teaching the lesson.

There are many migrational theories and they all can be used to explain how birds migrate. They use their sense of smell, they also use devices in their ears and eyes that can detect earth's magnetic field. They also use ancestral instinct.

Advanced Preparation

Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.
- Pre Research websites for students to access

ACCOMMODATIONS

How does your lesson accommodate the following?

SPECIAL NEEDS (includes Gifted & Talented)

Provide graphic organizers to support research and collection of evidence.

ENGLISH AS A SECOND LANGUAGE (ESL)

CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)
Use trauma sensitive language and approaches

Lesson 7

NGSS STANDARDS-BASED LESSON PLAN		
Teacher: Lewis	**Date:** 3/28/2022	**Lesson Length:** 1/45 minute periods
Class: Science/ELA Debate	**Materials Needed:** Research from previous lesson	
Unit Topic:	**Lesson Title:** Argue Like a Scientist, I know how kōlea juveniles navigate to Hawai'i	**Lesson # 7out of** 8 (total lessons)

NGSS STANDARDS

4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

- Use a model to test interactions concerning the functioning of a natural system
- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.
- A system can be described in terms of its components and their interactions

Hawaiian Cultural Standards (HA or other)

- Sense of Aloha

OBJECTIVES (Student-level Explanation)

All theories of migration could be true. Birds' senses are complex and they use all of them to map their travel to and from their migration locations.

Ideas we need for this lesson (Do discuss these!)

- Writing scientific arguments use CRE
- All theories are possible

Ideas we are not yet developing (avoid these for now)

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Lesson Instructions

Phenomena

How will you introduce the phenomena? Attach videos, models, examples with links.

Migrating birds like kōlea use many different senses to migrate.

Lesson Sequence
How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?

Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Introduce the Arguing Structure CRE		
20 minutes	• Explain each element of debating: Claim, Reason, Evidence	
	• Model identifying evidence and explain using reasoning	
	• Use a few different examples of evidence and reasoning in a matching game to build capacity of the difference of each	Sets of examples cards of evidence vs. reason
Main Activity 1: Work in Research Group to Develop an Argument		
10 minutes	• Work in previous research group to build scientific argument	Scientific Argument Doc
Conclusion Activity: Argue Like a Scientist		
15 Minutes	• Groups share their arguments	

ASSESSMENT (Performance Expectations)
Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Teacher Background Information
Add any pertinent information that educators should know prior to teaching the lesson.

Advanced Preparation
Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.

ACCOMMODATIONS
How does your lesson accommodate the following?

SPECIAL NEEDS (includes Gifted & Talented)
Provide Scaffolding and thoughtful groupings
ENGLISH AS A SECOND LANGUAGE (ESL)
Provide scaffolding and thoughtful groupings
CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)
Use trauma sensitive language and approaches

Lesson 8

NGSS STANDARDS-BASED LESSON PLAN		
Teacher: Lewis	**Date:** 3/28/2022	**Lesson Length:** 1/45 minute periods
Class: Science/Drawing	**Materials Needed:** Paper, pencil and notes from research and debate	
Unit Topic: Draw a Model	**Lesson Title:** Model the ways Kōlea Navigate	**Lesson #** 8 **out of** 8(total lessons)

NGSS STANDARDS

4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

- Use a model to test interactions concerning the functioning of a natural system
- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.
- A system can be described in terms of its components and their interactions

Hawaiian Cultural Standards (HA or other)

- Sense of Excellence

OBJECTIVES (Student-level Explanation)

The internal structures of eyes and ears used to send messages to the brain that tells birds where to go in their migration. Each one used in navigation in each scientific theory.

Ideas we need for this lesson (Do discuss these!)

- Internal structures and functions for senses and memory

Ideas we are not yet developing (avoid these for now)
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Lesson Instructions

Phenomena

How will you introduce the phenomena? Attach videos, models, examples with links.

There are many different theories of how birds use senses and instinct to migrate.

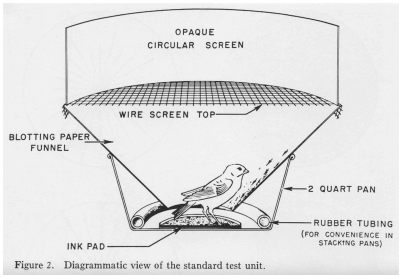

Figure 2. Diagrammatic view of the standard test unit.

Lesson Sequence

How will you provide meaningful, engaging and instructional opportunities for your students to DEMONSTRATE the lesson objective(s)?

Time* (The amount of time that each activity will take in the classroom)	**Activity and key teacher moves** (Activity name, sequence, and instructions) (Examples: Introduce, Discuss, Examine, Observe, Investigate, Describe, Identify, Define, Process, Design, Develop, Construct, Compare, Analyze, Model, Represent, Optimize, Engage, Predict, Communicate)	**Materials** (Add links to handouts, online resources, slides, etc)
Introduction Activity: Introduce the Phenomenon and Review		
5 minutes	• There are many different theories of how birds use senses and instinct to migrate.	
	• Review: Do kōlea use different senses to navigate their migration?	
Main Activity 1: Drawing a Model		
30 minutes	• Student will draw a model of how kōlea use their senses to navigate	Poster paper or just blank sheets of paper
Conclusion Activity: Gallery Walk		
10 minutes	• Student Gallery Walk and provide feedback on posti notes	post it notes

ASSESSMENT (Performance Expectations)

Identify assessments to measure lesson objectives. Match lesson assessment to each lesson objective.

Develop a model to explain how (cause and effect: mechanism) kōlea migrate

Excelling	• Clearly written explanation of model
Achieving	• Model clearly depicts cause and effect relationships of how kolea use their senses to navigate • Model is clearly labeled and organized • Model is drawn scientifically
Progressing	• Model is drawn scientifically • Model is labeled and organized
Beginning	• Model is drawn and labeled

Teacher Background Information
Add any pertinent information that educators should know prior to teaching the lesson.

Advanced Preparation
Add activities that the teacher will need to complete prior to teaching the lesson.

- Review the materials and Teacher background information.
-

ACCOMMODATIONS
How does your lesson accommodate the following?

SPECIAL NEEDS (includes Gifted & Talented)

Graphic organizer provided to support model development
Pre-created images or icons are provided to support model development

ENGLISH AS A SECOND LANGUAGE (ESL)

Precreated images or icons are provided
Word bank is provided

CULTURE & DIVERSITY (Socioeconomic Status, Race/ethnicity, LGBT)

Use trauma sensitive language and approaches

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