

# Ocean Leaders Bridge Curriculum

## Table of Contents

<b>OCEAN LEADERS BRIDGE GOALS .....</b>	<b>4</b>
<b>OCEAN LEADER BRIDGE STORY .....</b>	<b>5</b>
<b>OCEAN LEADER BRIDGE PROGRAM PARENT FLYER .....</b>	<b>6</b>
<i>Overnight Packing List .....</i>	<i>8</i>
<b>SYLLABUS .....</b>	<b>9</b>
<i>Preparing a Syllabus Each Year .....</i>	<i>10</i>
<i>Program Team Roles.....</i>	<i>16</i>
<b>OCEAN LEADER BRIDGE PROGRAM OVERVIEW OF COMPONENTS.....</b>	<b>17</b>
<i>Timing Overview.....</i>	<i>17</i>
<i>Community Building Overview .....</i>	<i>18</i>
<i>Science Labs Overview.....</i>	<i>19</i>
<i>Science Discovery Process.....</i>	<i>20</i>
<i>Science Lab Concept Maps .....</i>	<i>21</i>
<i>Self-Reflection.....</i>	<i>23</i>
<b>CURRICULUM.....</b>	<b>24</b>
<b>DAY 1: PATHWAY OF AN OCEAN LEADER .....</b>	<b>25</b>
<i>Community Building .....</i>	<i>33</i>
<i>Science Lab.....</i>	<i>37</i>
<i>Lunch.....</i>	<i>44</i>
<i>Growth Mindset Tools: Process Reflection .....</i>	<i>45</i>
<i>Growth Mindset Tools: Self-Reflection .....</i>	<i>47</i>
<i>Growth Mindset Tools: Healthy Bodies .....</i>	<i>49</i>
<i>Servant Leadership &amp; Reminders.....</i>	<i>51</i>
<i>Program Materials.....</i>	<i>52</i>
<b>DAY 2: TEAM BUILDING.....</b>	<b>65</b>
<i>Community Building .....</i>	<i>68</i>
<i>Science Lab.....</i>	<i>70</i>
<i>Growth Mindset Tools: Process Reflection .....</i>	<i>71</i>
<i>Growth Mindset Tools: Self-Reflection .....</i>	<i>74</i>
<i>Growth Mindset Tools: Healthy Bodies .....</i>	<i>75</i>
<i>Servant Leadership &amp; Reminders.....</i>	<i>76</i>
<b>DAY 3: EXPLORE &amp; WONDER – INVERTEBRATES .....</b>	<b>77</b>
<i>Community Building .....</i>	<i>81</i>
<i>Science Lab.....</i>	<i>82</i>
<i>Growth Mindset Tools: Process Reflection .....</i>	<i>89</i>
<i>Growth Mindset Tools: Self-Reflection .....</i>	<i>91</i>
<i>Growth Mindset Tools: Healthy Bodies .....</i>	<i>92</i>
<i>Servant Leadership &amp; Reminders.....</i>	<i>93</i>
<b>DAY 4: INVESTIGATE – INVERTEBRATES .....</b>	<b>94</b>
<i>Community Building .....</i>	<i>97</i>
<i>Science Lab.....</i>	<i>98</i>
<i>Growth Mindset Tools: Process Reflection .....</i>	<i>107</i>
<i>Growth Mindset Tools: Self-Reflection .....</i>	<i>109</i>

<i>Growth Mindset Tools: Healthy Bodies</i> .....	110
<i>Servant Leadership &amp; Reminders</i> .....	111
<b>DAY 5: MAKE A DIFFERENCE – INVERTEBRATES</b> .....	112
<i>Community Building</i> .....	115
<i>Science Lab</i> .....	116
<i>Growth Mindset Tools: Process Reflection</i> .....	119
<i>Growth Mindset Tools: Self-Reflection</i> .....	121
<i>Growth Mindset Tools: Healthy Bodies</i> .....	123
<i>Servant Leadership &amp; Reminders</i> .....	124
<b>DAY 6: EXPLORE &amp; WONDER – FISH</b> .....	127
<i>Community Building</i> .....	131
<i>Science Lab</i> .....	132
<i>Growth Mindset Tools: Process Reflection</i> .....	138
<i>Growth Mindset Tools: Self-Reflection</i> .....	139
<i>Growth Mindset Tools: Healthy Bodies</i> .....	140
<i>Servant Leadership &amp; Reminders</i> .....	141
<b>DAY 7: INVESTIGATE – FISH</b> .....	142
<i>Community Building</i> .....	146
<i>Science Lab</i> .....	148
<i>Growth Mindset Tools: Process Reflection</i> .....	158
<i>Growth Mindset Tools: Self-Reflection</i> .....	159
<i>Growth Mindset Tools: Healthy Bodies</i> .....	162
<i>Servant Leadership &amp; Reminders</i> .....	163
<i>Program Materials</i> .....	165
<b>DAY 8: MAKE A DIFFERENCE – FISH/OVERNIGHT</b> .....	166
<i>Community Building</i> .....	169
<i>Science Lab</i> .....	170
<i>Growth Mindset Tools: Process Reflection</i> .....	173
<i>Growth Mindset Tools: Self Reflection</i> .....	174
<i>Growth Mindset Tools: Healthy Bodies</i> .....	177
<i>Overnight</i> .....	178
<b>DAY 9: EXPLORE AND WONDER – MARINE MAMMALS/RETURN FROM OVERNIGHT</b> .....	184
<i>Community Building</i> .....	187
<i>Science Lab</i> .....	188
<i>Growth Mindset Tools: Process Reflection</i> .....	195
<i>Growth Mindset Tools: Self-Reflection</i> .....	196
<i>Growth Mindset Tools: Healthy Bodies</i> .....	197
<i>Servant Leadership &amp; Reminders</i> .....	198
<b>DAY 10: INVESTIGATE – MARINE MAMMALS</b> .....	199
<i>Community Building</i> .....	202
<i>Science Lab</i> .....	203
<i>Growth Mindset Tools: Process Reflection</i> .....	211
<i>Growth Mindset Tools: Self-Reflection</i> .....	212
<i>Growth Mindset Tools: Healthy Bodies</i> .....	214
<i>Servant Leadership &amp; Reminders</i> .....	215
<b>DAY 11: MAKE A DIFFERENCE – MARINE MAMMALS</b> .....	216
<i>Community Building</i> .....	219
<i>Science Lab</i> .....	220
<i>Growth Mindset Tools: Process Reflection</i> .....	223
<i>Growth Mindset Tools: Healthy Bodies</i> .....	224
<i>Growth Mindset Tools: Self-Reflection</i> .....	226
<i>Servant Leadership &amp; Reminders</i> .....	227
<b>DAY 12: FINAL EXAM &amp; FAMILY CELEBRATION PREP</b> .....	228

<i>Community Building</i> .....	231
<i>Science Lab</i> .....	233
<i>Growth Mindset Tools: Self-Reflection</i> .....	240
<i>Servant Leadership &amp; Reminders</i> .....	242
<b>FINAL EXAM</b> .....	<b>243</b>
<b>INSTRUCTOR SUPPLEMENT</b> .....	<b>245</b>

## Ocean Leaders Bridge Goals

### **Students will BELIEVE that:**

- they can recognize science;
- science is important;
- science, in its many forms, has relevance for their lives;
- they can do science;
- challenges can be opportunities to learn and grow, rather than permanent obstacles
- a career in science is a possibility for them; and
- they can make a difference.

### **Students will ACHIEVE:**

- improved understanding of scientific concepts and the scientific process;  
and
- achievement of positive academic performance.

### **Students will LEAD:**

- taking the necessary steps to pursue and obtain a career in STEM;
- taking opportunities to use science to make a difference; and
- participating as servant leaders and mentors.

## Ocean Leader Bridge Story

*I am excited to continue my journey with Ocean Discovery Institute as an Ocean Leader! Over the years, Ocean Discovery has helped me believe that science is something I can do and a science leader is someone I can become.*

*Each day starts with getting to know my Ocean Discovery community of peers, staff, and mentors. We eat breakfast together, discuss a daily question, and do a team building activity. After breakfast we spend all morning in science lab. On the first day, we participate in an Ocean Leader Challenge to learn about our future pathway as an Ocean Leader. The challenge involves running through the canyon to find clues, take pictures, and solve puzzles. My team takes a lot of funny pictures! We also explore the Living Lab, our home away from home for the next two weeks. The Living Lab is a cool place, I could see myself returning here after the Bridge program!*

*We spend the next three days investigating invertebrates. We explore the rocky seashore and record observations and questions about the invertebrates we see. I see everything from a squishy sea anemone to a chiton that has “armored plates”—cool! We do an experiment to learn what kinds of adaptations invertebrates have to help them survive at the rocky seashore and we visit Scripps Institution of Oceanography to talk with scientists about the research they are doing to help protect invertebrates.*

*Next, we investigate fish. We visit the Birch Aquarium to make observations and ask questions about the fish we see – big and small, cold water and warm water, fast and slow – there are so many kinds of fish! The next day we dissect two types of fish – a bony fish and a cartilaginous fish – which you might know as a shark. I’ve never done a dissection before, but it was so cool! –and I learned so much about the anatomy of both kinds of fish. The next day we visit the University of San Diego to talk to with scientists about how their research is helping to conserve fish of all kinds.*

*Finally, we investigate marine mammals. We visit La Jolla to walk along the coast and observe marine mammals. We see lots and lots of seals and sea lions in the wild! We learn how scientists use drones in marine mammal research and get to try piloting a drone ourselves – so awesome! The next day we visit Southwest Fisheries Science Center to talk with scientists about how their research is helping to conserve different types of marine mammals. I really think I may want to be a scientist who studies these animals one day.*

*In the afternoons we focus on growth mindset. I learn what it means to have a growth mindset and why it’s important. We learn about different tools to help support a growth mindset – things like flash cards, networking, and the importance of asking for help when you get confused or have questions. It makes me realize that I should take advantage of talking to my teachers after class when I don’t understand something next year. We learn other tools to keep our bodies healthy and minds strong through nutrition and different types of physical activity! I also learn the importance of self-reflection. We spend time each day writing about our experiences and this reflection time makes me realize how much I have grown and changed from this experience.*

*At the end of the program, we celebrate the success of our hard work and prepare to share all that we have learned with our family and friends during a community celebration. It’s been an amazing two weeks and I can’t wait for next summer!*

## Ocean Leader Bridge Program Parent Flyer



### COURSE OBJECTIVES



Students will...

- **BELIEVE** that science is something they can do and a scientist is someone they can be.
- **ACHIEVE** in science and think critically.
- **LEAD** in science and conservation to make a difference

### COURSE OVERVIEW



We welcome students into the family of Ocean Leaders and introduce them to the Science Discovery Process through investigation of invertebrates, fish and marine mammals during hands-on labs and field trips. We teach the importance of a growth mindset and provide growth mindset tools to support learning, healthy bodies, and strong hearts and minds.

### COURSE LOCATION



Ocean Discovery Institute Living Lab, San Diego, CA

### IMPORTANT DATES



Launch Night: **xx**

Program Days in San Diego: **xx-xx**

Family Celebration at the Living Lab: **xx**

Overnight: **xx-xx**

### TYPICAL DAY



Start Time	End Time	Activity
8:45AM	9:00AM	Arrive
9:00AM	9:45AM	Community Building
9:45AM	12:15PM	Science Labs
12:15PM	12:45PM	Lunch
12:45PM	1:05PM	Process Reflection
1:05PM	1:55PM	Growth Mindset Tools #1
1:55PM	2:45PM	Growth Mindset Tools #2
2:45PM	3:00PM	Servant Leadership & Reminders

## Program Overview

Day	Topic
<b>Day 1</b> Monday, 6/19	<b><i>Pathway of an Ocean Leader</i></b> Ocean Leader Challenge
<b>Day 2</b> Tuesday, 6/20	<b><i>Team Building</i></b> Field Trip
<b>Day 3</b> Wednesday, 6/21	<b><i>Explore &amp; Wonder: Invertebrates</i></b> Field Trip: La Jolla Tidepools
<b>Day 4</b> Thursday, 6/22	<b><i>Investigate: Invertebrates</i></b> Life on the Rocks Experiment
<b>Day 5</b> Friday, 6/23	<b><i>Make a Difference: Invertebrates</i></b> Field Trip: Scripps Institution of Oceanography
<b>Day 6</b> Saturday, 6/24	<b><i>Explore &amp; Wonder: Fish</i></b> Field Trip: Birch Aquarium
<b>Day 7</b> Sunday, 6/25	<b><i>Investigate: Fish</i></b> Shark & Fish Dissection
<b>Day 8</b> Monday, 6/26	<b><i>Make a Difference: Fish</i></b> Field Trip: University of San Diego
<b>Day 9</b> Tuesday, 6/27	<b><i>Explore &amp; Wonder: Marine Mammals</i></b> Field Trip: La Jolla
<b>Day 10</b> Wednesday, 6/28	<b><i>Investigate: Marine Mammals</i></b> Research with Drones
<b>Day 11</b> Thursday, 6/29	<b><i>Make a Difference: Marine Mammals</i></b> Field Trip: Southwest Fisheries
<b>Day 12</b> Friday, 6/30	<b><i>Final Exam &amp; Family Celebration</i></b> Final Exam & Celebration Prep

## Overnight Packing List



**Students Depart:**      **Date xx**  
Time: 3:00PM  
Location: Living Lab

**Students Return:**      **Date xx**  
Time: 3:00PM  
Location: Living Lab

### Packing List:

- Ocean Leader Polo
- Sweatshirt and / or jacket
- Pants
- Hat for sun protection
- Sunglasses
- Water bottle
- Flashlight preferably a headlamp.
- Pajamas
- Pillow
- Walking shoes (that can get dirty) and socks
- Toiletries
  - Toothbrush
  - Toothpaste
  - Hairbrush/Comb
  - Small Towel

### Notes:

- Tents, sleeping bags, and sleeping pads will be provided.
- Be prepared for hot days and a cool night.
- All of your gear (except sleeping bag and pillow) should fit in a **bag small enough** to fit under a bus seat – no hard-sided luggage.
- **No electronics are permitted.**



## Syllabus

Day	Science Lab	Growth Mindset Tools
<b>Day 1</b> Mon. 6/19	<b><i>Pathway of an Ocean Leader</i></b> Ocean Leader Challenge	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Introduction
<b>Day 2</b> Tues. 6/20	<b><i>Team Building</i></b> Field Trip	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Writing
<b>Day 3</b> Wed. 6/21	<b><i>Explore &amp; Wonder: Invertebrates</i></b> Field Trip: La Jolla Tidepools	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Writing
<b>Day 4</b> Thurs. 6/22	<b><i>Investigate: Invertebrates</i></b> Life on the Rocks Experiment	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Writing
<b>Day 5</b> Fri. 6/23	<b><i>Make a Difference: Invertebrates</i></b> Field Trip: Scripps Institution of Oceanography	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Writing
<b>Day 6</b> Sat. 6/24	<b><i>Explore &amp; Wonder: Fish</i></b> Field Trip: Birch Aquarium	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Writing
<b>Day 7</b> Sun. 6/25	<b><i>Investigate: Fish</i></b> Shark & Fish Dissection	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Writing
<b>Day 8</b> Mon. 6/26	<b><i>Make a Difference: Fish</i></b> Field Trip: University of San Diego	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - I AM Poems & Choose Final Reflection Pieces
<b>Day 9</b> Tues. 6/27	<b><i>Explore &amp; Wonder: Marine Mammals</i></b> Field Trip: La Jolla	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Peer Review of Reflection
<b>Day 10</b> Wed. 6/28	<b><i>Investigate: Marine Mammals</i></b> Research with Drones	Healthy Bodies Activity Strong Hearts & Minds: Self-Reflection - Peer Review I Am Poems
<b>Day 11</b> Thurs. 6/29	<b><i>Make a Difference: Marine Mammals</i></b> Field Trip: Southwest Fisheries	I Am Poem Practice Strong Hearts & Minds: Self-Reflection - Epigraphs
<b>Day 12</b> Fri. 6/30	<b><i>Final Exam &amp; Family Celebration</i></b> Final Exam & Celebration Prep	Community Celebration Practice Strong Hearts & Minds: Self-Reflection - I AM Poem Practice

## Preparing a Syllabus Each Year

Create a Draft Syllabus using the below process:

1. Use “Syllabus” below and make adjustments accordingly.
2. Update dates/days of the week in left column.
3. Look at previous year’s “Enhancement Notes” for any schedule changes or new projects to be incorporated.
4. Confirm dates and times of Explore & Wonder field trips:
  - a. La Jolla (Invertebrates)
  - b. Birch Aquarium (Fish)
  - c. La Jolla (Marine Mammals)
5. Confirm dates and times of Make a Difference Day trips with partners (see database for contact details):
  - **Scripps Institution of Oceanography**
    - Contact: Anai Novoa
    - Update and attach “Make a Difference Day: Invertebrates” 1-pager
      - (See below.)
  - **University of San Diego**
    - Contact: Dr. Drew Talley
    - Update and attach “Make a Difference Day: Fish” 1-pager’
      - (See below.)
  - **Southwest Fisheries Science Center**
    - Contact: Eric Archer
    - Update and attach “Make a Difference Day: Marine Mammals” 1-pager
      - (See below.)
6. Check tides for **Explore and Wonder: Invertebrates** La Jolla Tidepools Field trip
  - Students will be tide pooling so a low tide is important.
  - Adjust schedule accordingly.
    - Change bus schedule to earlier or later.
    - Take breakfast on the road (optional).
7. Schedule Growth Mindset Activities
  - Confirm self-reflection schedule with Amy Wallen (Writer in Residence).
  - Ideally students experience 2-3 activities that focus on Healthy Bodies or Strong Hearts & Minds.
  - These activities will take place every afternoon with the acceptance of Day 12 when students are preparing for Community Event.
  - The person running the activity should be available from 1-3PM each day to teach two 55-minute classes.
    - ~15 student in each rotation.
  - Begin by reaching out to Ocean Discovery staff to see if anyone is available or interested to lead an activity.
    - i. Provide a brief description of what we are looking for but ask for activity suggestions from staff (i.e., someone might know how to juggle, someone might be a meditation teacher, etc.)

- Fill in additional activity spaces by reaching out to the City Heights community.
    - Existing contacts:
      - Coach John
      - Make Project (cooking)
        - Cynthia Quinonez
        - Andrew Gerdes
        - For invoice questions: Anchi Me
8. Update “Day 1: Growth Mindset Tools: Healthy Bodies & Strong Hearts and Minds Intro” based on the activities that the students will be participating in during this portion.



## Make a Difference – Invertebrates

Program Overview: The students visiting your facility are part of our Leadership Program, our most intensive program which offers young people, who want to do more, the opportunity to do more, as they progress on their pathway from ninth grade through college and beyond. By pairing rigorous science programming and experiences with college and career support services, we aim to develop young people into science and conservation leaders who make a difference in their community and our world.

These students are graduating 8<sup>th</sup> graders and are participating in their first intensive 12-day Leadership Program – Ocean Leader Bridge. During the Bridge program, students study three groups of organisms: invertebrates, fish, and marine mammals. They begin with simply asking questions and making observations about each group, move on to conducting a more in-depth investigation about each group, and wrap up by learning how science leaders are working to conserve these organisms.



Goal of Visit: Students visit Scripps Institution of Oceanography to learn about current research being done to help conserve invertebrates and to hear about the career pathways of science leaders.

Date & Time: **Friday, June 23<sup>rd</sup> from 10:00AM-11:40AM**

Location: Scripps Institution of Oceanography Campus – Invertebrate Lab

### Your Role:

- Give an overview of your lab (history, scope of work, etc.) (10 min)
- Set up three stations students will rotate through.
  - At each station a scientist or graduate student will:
    - Talk about their research with a focus on **invertebrates and conservation** (5 min)
    - **Be interviewed** by our students about their career pathway (10 min)
    - Allow students to practice using **scientific tools** related to your work (10 min)
      - Examples: use micropipette, titrate chemicals, analyze data using software, etc.
    - Groups of approximately 10 students and 3 adults will rotate to your station, for a total of three groups.
  - Provide a location for lunch (preferably outdoors) if possible.

### Our Role:

- Students will have basic knowledge of invertebrates. Students will come prepped with interview questions for science leader career pathways interview. We will provide name tags and lunch for our students.

### Program Schedule:

Time	Task	Role
10:00 – 10:10AM	Arrival	Ocean Discovery
10:10 – 10:20AM	Overview of Facility	Scripps Staff
10:20 – 10:45AM	Rotation 1	Scripps Staff
10:45 – 11:10AM	Rotation 2	Scripps Staff
11:10 – 11:35AM	Rotation 3	Scripps Staff
11:35 – 11:40AM	Thank You	Ocean Discovery
11:40 – 12:05PM	Lunch	Ocean Discovery
12:05PM	Depart	Ocean Discovery

We are so excited to have you interact with our students! Thank you so much for your participation. If you have questions, please contact **Joanna Vance** at **619-795-8365 ext. 123** or at **jvance@oceandi.org**.

### Optional Presentation Tips

#### Talking About Your Research:

- Job title
- What type of invertebrates do you study?
- Where can you find these types of invertebrates?
- What kind of research/experiments are you doing with invertebrates?
  - Mention/show any tools you use in your work.
- What types of threats from humans do invertebrates face?
- How can the work you are doing be used to help conserve invertebrates?

Visuals: Simple visuals can be really helpful for student understanding. Don't use PowerPoint.

Personal Experience: When providing background information please utilize your own personal experiences as much as possible. Students love to hear your stories!

Scale Your Language – Consider the types of words you would use for the age level you are speaking with – students are graduated 8<sup>th</sup> graders heading into 9<sup>th</sup> grade.

Use Student Names – Use student names whenever possible- students will have name tags to help.

Ask Questions - Questions are a great way to engage your audience. Students love to participate.



## Make a Difference Day – Fish

Program Overview: The students visiting your facility are part of our Leadership Program, our most intensive program which offers young people, who want to do more, the opportunity to do more, as they progress on their pathway from ninth grade through college and beyond. By pairing rigorous science programming and experiences with college and career support services, we aim to develop young people into science and conservation leaders who make a difference in their community and our world.



These students are graduating 8<sup>th</sup> graders and are participating in their first intensive 12-day Leadership Program – Ocean Leader Bridge. During the Bridge program, students study three groups of organisms: invertebrates, fish, and marine mammals. They begin with simply asking questions and making observations about each group, move on to conducting a more in-depth investigation about each group, and wrap up by learning how science leaders are working to conserve these organisms.

Goal of Visit: Students visit University of San Diego to learn about current research scientists are doing to help conserve fish and to hear about the career pathways of individual science leaders.

Date & Time: **Monday, June 26<sup>th</sup> from 10:00AM-11:40AM**

Location: University of San Diego Campus

### Your Role:

- Give an overview of your lab (history, scope of work, etc.) (10 min)
- Set up three stations students will rotate through.
  - At each station a scientist or graduate student will:
    - Talk about their research with a focus on **fish and conservation** (5 min)
    - **Be interviewed** by our students about their career pathway (10 min)
    - Allow students to practice using **scientific tools** related to your work (10 min)
      - Examples: use a micropipette, titrate chemicals, analyze data using software, look at drones, etc.
    - Groups of approximately 10 students and 3 adults will rotate to your station for a total of three groups.
  - Provide a location for lunch (preferably outdoors) if possible.

### Our Role:

- Students will have basic knowledge of fish and will have learned some fish adaptations through a shark and bony fish dissection. Students will come prepped with interview questions for science leader career pathways interview. We will provide name tags and lunch for our students.

### Program Schedule:

Time	Task	Role
10:00 – 10:10AM	Arrival	Ocean Discovery
10:10 – 10:20AM	Overview of Facility	USD Staff
10:20 – 10:45AM	Rotation 1	USD Staff
10:45 – 11:10AM	Rotation 2	USD Staff
11:10 – 11:35AM	Rotation 3	USD Staff
11:35 – 11:40AM	Thank You	Ocean Discovery
11:40 – 12:05PM	Lunch	Ocean Discovery
12:05PM	Depart	Ocean Discovery

We are so excited to have you interact with our students! Thank you so much for your participation. If you have questions, please contact **Joanna Vance** at **619-795-8365 ext. 123** or at **[jvance@oceandi.org](mailto:jvance@oceandi.org)**.

### Optional Presentation Tips

#### Talking About Your Research:

- Job title
- What type of fish do you study?
- Where can you find these types of fish?
- What kind of research/experiments are you doing with fish?
  - Mention/show any tools you use in your work.
- What types of threats from humans do fish face?
- How can the work you are doing be used to help conserve fish?

Visuals: Simple visuals can be really helpful for student understanding. Don't use PowerPoint.

Personal Experience: When providing background information please utilize your own personal experiences as much as possible. Students love to hear your stories!

Scale Your Language – Consider the types of words you would use for the age level you are speaking with – students are graduated 8<sup>th</sup> graders heading into 9<sup>th</sup> grade.

Use Student Names – Use student names whenever possible- students will have name tags to help.

Ask Questions - Questions are a great way to engage your audience. Students love to participate.

## Program Team Roles

### Floor Lead

- Prep all supplies.
- Checks students in each morning.
  - Responsible for updating rosters daily and providing updated rosters to Team Leads.
- First point of contact for parent questions.
- During field trips stays at Living Lab as point of contact.

### Intensive Program Manager

- Executes curriculum for:
  - Community Building
  - Mentor Thank-You's
- Accompanies staff and students on all field trips.
  - Executes Science Leader Thank You's on Make a Difference field trips.
- Greets and orients all mentors.

### Team Lead

- Executes set-up each morning for the full day.
- Executes all curriculum for:
  - Science labs
  - Growth Mindset: Process Reflection
  - Servant Leadership & Reminders
- Assists curriculum for:
  - Growth Mindset: Self-reflection (executed by Writer-In-Residence)
  - Growth Mindset: Healthy Bodies & Strong Hearts and Minds (Executed by outside volunteers)
- Incorporates Mentors into all activities.
- Classroom management & lesson timing.
- Use Belief and Science Discovery Process language throughout lessons.
- Encourage participation from all students to create an inclusive environment.
- Determining floor management with team BEFORE the start of all lessons.



## Ocean Leader Bridge Program Overview of Components

### Timing Overview

Daily Schedule		
Start Time	End Time	Activity
8:45AM	9:00AM	Arrive
9:00AM	9:45AM	Community Building
9:45AM	12:15PM	Science Lab
12:15PM	12:45PM	Lunch
12:45PM	1:05PM	Process Reflection
1:05PM	1:55PM	Growth Mindset Tools: Self-Reflection
1:55PM	2:45PM	Growth Mindset Tools: Healthy Bodies/Strong Hearts and Minds Activity
2:45PM	3:00PM	Servant Leadership & Reminders

Science Lab Schedule – Explore and Make a Difference Days			
Start Time	End Time	Activity	Notes
9:25AM	10:00AM	Drive to Location	(Food & Conversation and Announcements only)
10:00AM	12:00PM	Explore	
12:00PM	12:30PM	Return to Lab	

Science Lab Schedule – Investigate Days		
Start Time	End Time	Activity
9:45AM	10:15AM	Lecture & Concept Map
10:15AM	11:00AM	Know it! Own it!
11:00AM	12:15PM	Investigate Activity

## Community Building Overview

**Overview:** Students create a community of support that peers, program alumni, mentors, and staff who provide a safety-net for burgeoning science leaders to fall back on when challenges arise and a network to access to pursue further opportunities.

**Goals:** Community building is incorporated into all Ocean Leader programs through the below activities:

- **Food & Conversation:** An informal time to continue expanding their community of support through the shared experience of food and conversation. A daily question is provided.
- **Community Building Activity:** A structured activity designed to build students' belief that they are a unique individual and a member of the Ocean Discovery family and scientific community.
- **Announcements:** A time to introduce new members of the community, share the day's agenda, and upcoming opportunities.

**Timing:** 45 minutes

Time	Activity
9:00 – 9:30	Food & Conversation
9:30 – 9:40	Community Building Activity
9:40 – 9:45	Announcements

### **Food and Conversation Overview:**

This is a time for casual and informal connections. The question of the day is meant to open the line of communication between Ocean Leaders, staff, and mentors.

### **Community Building Overview:**

These are quick 10-minute activities to promote team building and skills for networking – formal introductions (handshakes, etc.) and personal thank-yous.

### **Announcements Overview:**

Announcements is a time to welcome and hype up new community members. Remind students that this is an opportunity to get to know new people and build their community and building their community is a Growth Mindset tool. Review the schedule for the day. Please see Community Building Schedule below for Morning Announcements specific to each day.

**Location:** Kitchen

## **Science Labs Overview**

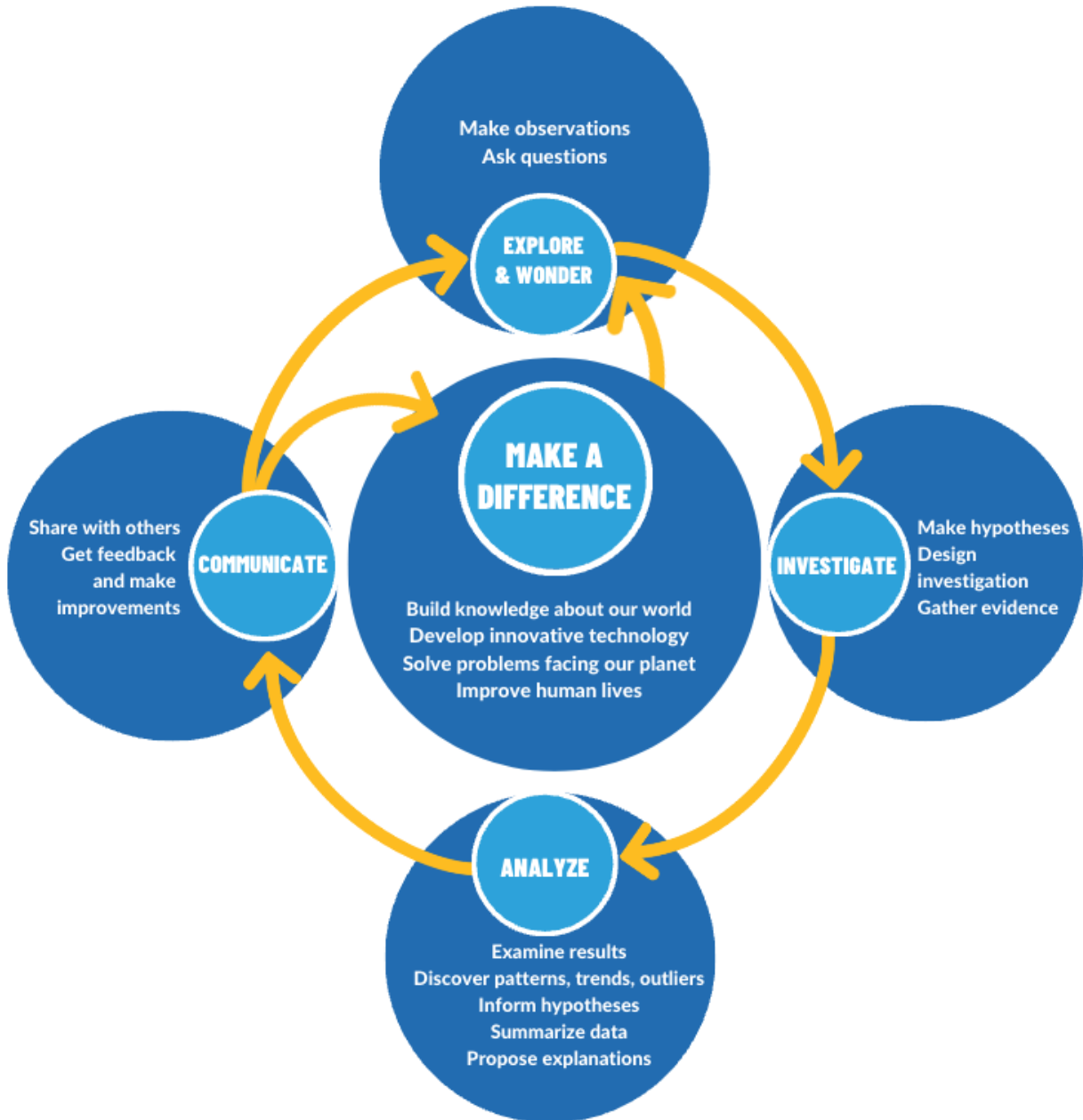
**Overview:** Students learn about the Science Discovery Process by investigating three types of organisms – Invertebrates, Fish, and Marine Mammals. For each group of organisms, the first day is spent exploring, with students making observations and asking questions, the second day is an investigation focusing on adaptations for the group, and day three is making a difference where students meet with science leaders and learn about the research they are doing to help conserve these organisms.

**Goals:** Student are exposed to the Science Discovery Process through a series of field experiences, investigations, and time with science leaders.

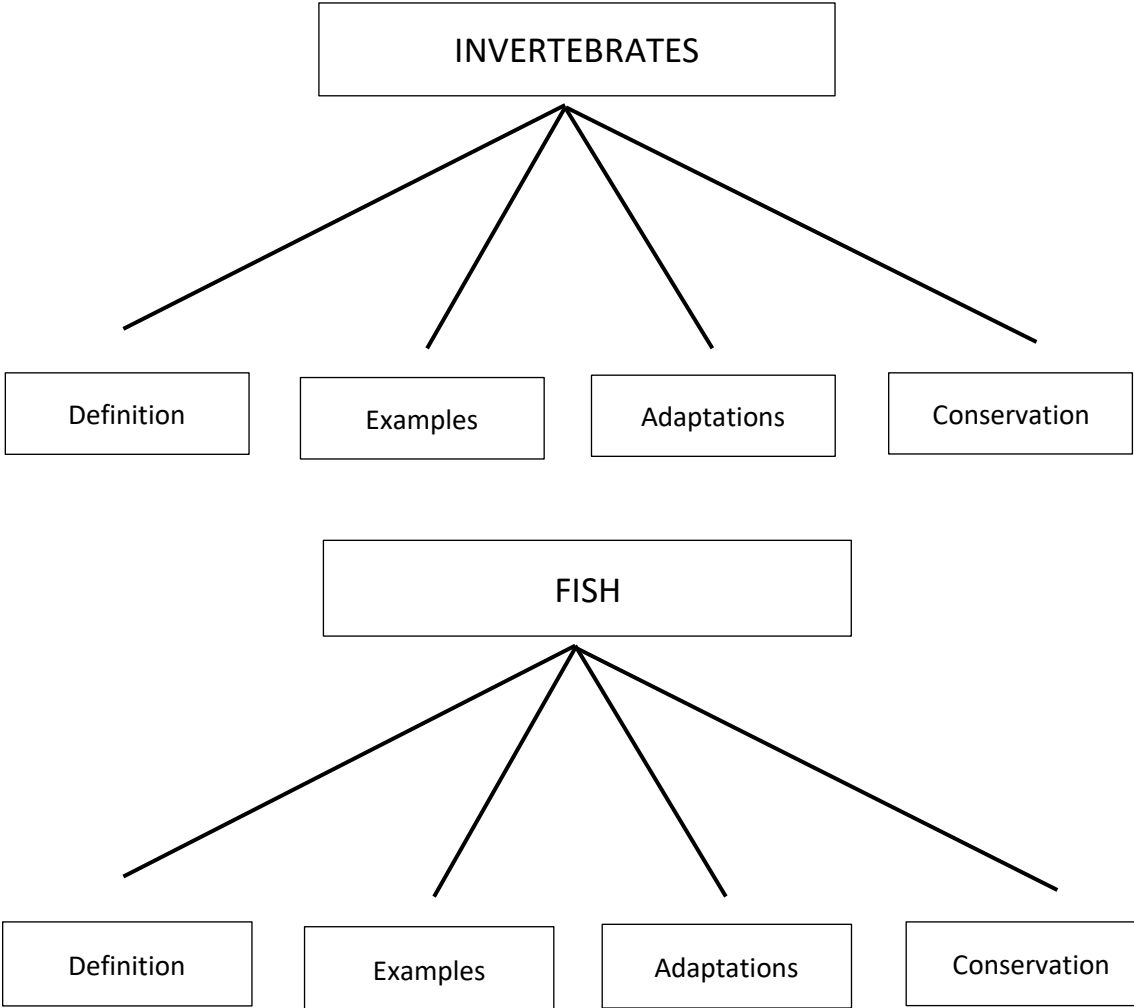
**Timing:** 150 minutes

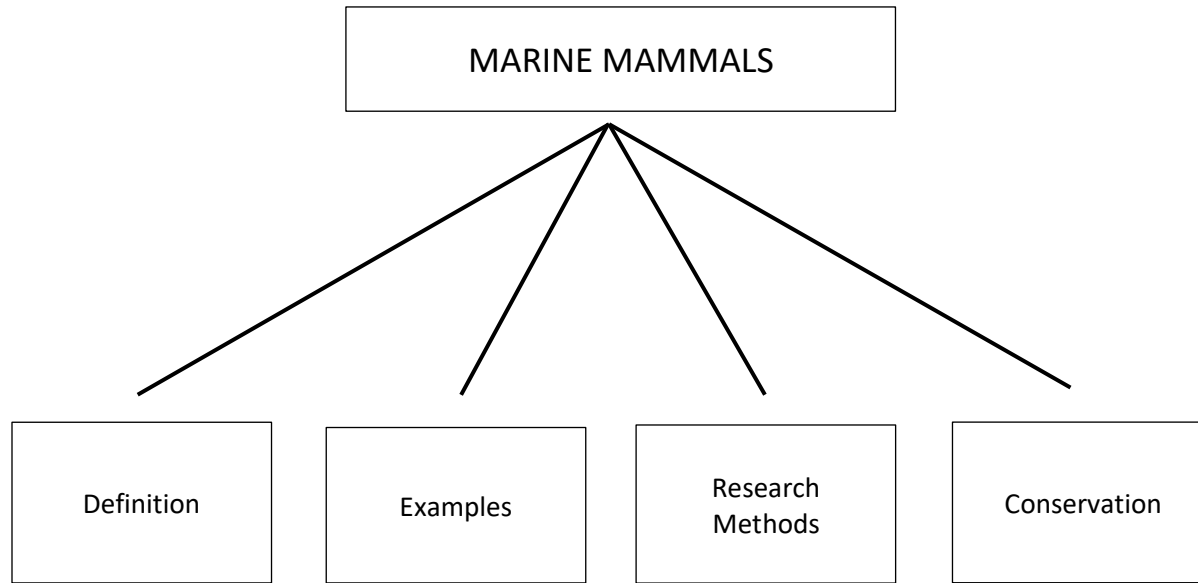
**Location:** Eco Lab, SciTech Lab

### Science Discovery Process



Science Lab Concept Maps





## **Self-Reflection**

**Overview:** Students respond to a series of prompts created by the Writer in Residence to explore their thoughts and feelings and understand the impact of their experiences on themselves as a person.

**Goal:** Students process the experiences they are having and learn to share their voice with the world.

**Timing:** 50 minutes

**Location:** TBD

# **CURRICULUM**



## Day 1: Pathway of an Ocean Leader

**Goals:** Students learn about the pathway of becoming an Ocean Leader and get to know their Ocean Discovery family.

**Timing:**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:45AM	Community Building	45 minutes
9:45 – 11:00AM	Ocean Discovery Leadership Challenge	75 minutes
11:00 – 11:20AM	Mentee Training	20 minutes
11:20 – 12:00PM	Living Lab Scavenger Hunt	40 minutes
12:00 – 12:15PM	Science Notebooks	15 minutes
12:15 – 12:45PM	Lunch	30 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

\*These stations are rotations.

- Group 1 will do Self-Reflection first and Healthy Bodies & Strong Hearts and Minds second.
- Group 2 will do Healthy Bodies & Strong Hearts and Minds first and Self-Reflection second.

**Supplies:**

Check-In:

- Name tags (1/person)
- Student roster (1)
- Student polos (2/student)

Community Building:

- iPod + speaker
  - iPod should be loaded with transition songs
- Large white board + stand (1)
- Dry erase marker (2)
- White board eraser (1)
- Laminated “My Plate” poster + easel (1)
- Dry erase marker (2)
- White board spray + rag (1)
- Hand sanitizer (4)
- Breakfast food (1/student)
- Spray bottles (1/table)
- Cleaning rags (1/table)
- Box of Krustez Banana Bread (enough to make one muffin/student)

- Eggs (amount based on box)
- Vegetable oil (amount based on box)
- Pam cooking spray (1)
- Napkins (1/student)
- Liquid measuring cup (1)
- Muffin pans (Enough so all muffins can be cooked simultaneously)

#### Science Labs

- Ocean Leader Bridge Program PowerPoint
- General Ocean Leader Supplies place in a small plastic bin (used daily) (1 bin/student)
  - Pen (1)
  - Pencil (1)
  - Set of colored pencils (1)
  - Science notebook (1)
  - Highlighter (1)
  - Scissors (1)
  - Index cards (20)
- General Teaching Supplies (used daily) (1/team lead):
  - Pens (3)
  - Whiteboard markers (3)
  - Whiteboard eraser (1)
  - Tape (1)
  - Scissors (1)
  - Extra Index Cards (50)
  - Highlighters (3)

#### Ocean Discovery Leadership Challenge (there will be six teams total – three from each group)

- Seed to Tree Ocean Discovery Alumni Video
  - Papi:/Curriculum/CI New
- Fabric for armbands in six different colors
  - Orange (8)
  - Yellow (8)
  - Green (8)
  - Blue (8)
  - Red (8)
  - Purple (8)
- Ocean Discovery Challenge: Clues and Challenges Overview (laminated) (6)
- Ocean Discovery Leadership Challenge: Clue Cards 1-4 (laminated) (6 sets)
- Ocean Discovery Leadership Challenge: Challenge Cards #1-3 (laminated) (6 sets)
- Ocean Discovery Leadership Challenge: Challenge Card #4 (laminated) (1)
- Challenge Supplies Backpack (1/team)
  - Transect tape (1/team)
  - Stopwatch (1/team)
  - Clue Card #1 (1/team)
  - Clue Card #2 (1/team)
  - Clue Card #3 (1/team)
  - Clue Card #4 (1/team)

- Leave No Trace Canvas Bag (1/team)
  - Ziplock bag for trash (1/team)
- Ocean Leader Leadership Challenge Datasheet (6)
- Water Balloon Toss Challenge:
  - Water balloons (1 per 2 students + 6 extra)
  - Buckets with handles (6)
    - For carrying water balloons
  - Roll of blue tape (1)
  - Scissor (1)
  - Sharpie (1)
  - Laminated “Challenge #3-Water Balloon Toss” card (6)
- Marshmallow Tower Challenge:
  - Ziplocs (6)
  - In each Ziploc bag place:
    - Pieces of uncooked spaghetti (20)
    - Piece of cardboard with five pieces of blue tape attached (1)
    - String – 1 yard (1)
    - Marshmallow (1)
    - Laminated “Challenge #1-Marshmallow Tower” card (1)
  - Label each Ziploc bag w/ a Team Name (Orange, Yellow, Green, Blue, Red, and Purple Team)
- Nothing in Common Challenge (6 sets)
  - Small plastic art bins – each labeled with a team name (6)
  - Inside each plastic bin:
    - Blue crayon
    - Penny
    - Piece of red yarn
    - Toy car (i.e. Matchbox Car or other)
    - Cotton ball
    - Rubber band
    - Small votive candle
    - Piece of chalk
    - Spoon
    - Screw
    - Balloon
    - Laminated “Challenge #2-Nothing In Common” card
- Prizes
  - Ocean Leader Bridge Program Sticker (1/student)
  - Stickers (~150)

#### Living Lab Scavenger Hunt

- Living Lab Scavenger Hunt (3/group)
- Clipboard (3/group)
- Large whiteboard + whiteboard stand (4)
  - 2 for Cox Innovation Alcove
  - 1 for Kitchen
  - 1 for Watershed Plaza

- Dry erase markers different colors (8)
- Printed copy of “*New de novo assembly of the Atlantic bottlenose dolphin (Tursiops truncatus) improves genome completeness and provides haplotype phasing*” contributing author- Marlem Rivera
- “Living Roof” card (laminated) (1)
- “Storage 2” card (laminated) (1)
- Living Lab Scavenger Hunt: Ocean Alcove Sign (1)
- Stopwatch (6)

Growth Mindset

- Growth Mindset article (1/student + 1/adult)

Self-Reflection

- Old copies of PEN Books
- Copies of the Rules (1/student)

### Set Up Team Leads

#### Community Building

- Set up tables in the kitchen.
  - Smaller tables rather than larger ones (4-8 people/table).
- Set up breakfast food.
  - Place My Plate poster on easel near food.
  - Place hand sanitizer near food.
- Set up whiteboard and easel where everyone can see it who is sitting in the kitchen.
  - Write Community Question at the top.
    - See curriculum below for question.
  - Write the Daily Schedule below (see below curriculum).
- Prep supplies for Community Building Activity.
  - See Community Building Activity below.
- Ipod + Speaker + Songs Prepped for Transitions:
  - Best Day of My Life – American Authors (Transition: Community Building to Science Labs)
  - Get up Offa That Thing – James Brown (Transition: Science Labs to Chores)
  - World is ours- Aloe Blacc (Transition: Lunch to Buses)
  - Playlist of music that student can move around to for Community Building Activity

#### Science Labs

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Load and check sound on “Seed to Tree Ocean Discovery Alumni” video.
- At Living Lab:
  - Fill water balloons.
  - Place blue tape with team color on each bucket.
    - Ex. one Home Depot bucket should say “Orange Team”, another Home Depot bucket should say “Blue Team”, etc.
  - Place water balloons in buckets for transport.
  - Place laminated “Challenge #3” card in each bucket.
- In each Science Lab meeting location put to the side:
  - Armband fabric (2 different colors/meeting space)
  - Prizes (~75/lab)
  - General Ocean Leader supply bins (2/desk)
- Set up Ocean Leader Challenge in the canyon:
  - At each Challenge #1 location:
    - Tie a team color ribbon around a plant.
      - Leave the Challenge #1 Card and the Ziploc with the matching team’s name under the ribbon.
  - At each Challenge #2 location:
    - Leave the Challenge #2 card and place the small plastic art bin with Nothing in Common supplies and Team Name on top.

### Set Up Team Leads (Continued)

- At each Challenge #3 location:
  - Leave the Challenge #3 card and place buckets of balloon (spread them out so there is plenty of space for each group).
- At Challenge #4 location (Odi statue in Watershed Plaza):
  - Leave the Challenge #4 card at base of Odi Statue.
  - This location will be the same for all groups.
- Set up for Orientation Scavenger Hunt:
  - In the Ocean Alcove:
    - Have the giant screen say “Welcome to the David C. Copley Ocean Alcove Ocean Leaders! This is a great place to hang out, do homework, and study during the school year!”
  - In the Cox Innovation Alcove:
    - Set up two large whiteboards outside the office.
    - Write on one board:
      - Welcome to the Cox Innovation Alcove.
      - Task 1: Look inside the office. This is Isabel! Say “Hi!”. If you are ever going to be late to a program you must call Isabel. Put her number in your phone now. (619)- 887- 4675
      - Task 2: Sign your name on the whiteboard using whatever color and whatever style of writing you would like.
    - Write on the other white board:
      - “We are Science Leaders!”
    - Place multiple different color dry erase markers on the white board that says We are
  - In the Walter J. and Betty C. Zable Discovery Gallery:
    - Set up the Community Agreements poster on a stand.
  - On the Living Roof:
    - Place the “Living Roof” card in the sink area and place a rock on top so card does not blow away.
  - In the Volunteer Alcove:
    - Place the laminated “Storage 2 Card”.
  - Along the hallway from the Walter J. and Betty C. Zable Discovery Gallery:
    - Open all the blinds so student quotes on glass windows can be seen.
  - In the Kitchen:
    - Hang a printed copy of Marlem’s article titled “New de novo assembly of the Atlantic bottlenose dolphin (*Tursiops truncatus*) improves genome completeness and provides haplotype phasing” on a whiteboard.

### Intensive Program Manager

#### Set-up

- Share background information about mentors with Team Leads before mentors arrive.
- Make sure IPM, Team Leads, and Floor Lead all have the following phone numbers:
  - Living Lab, IPM, Team Leads, Floor Lead, and all Mentors in their group.
- Greet arriving mentors.
  - Share the day's agenda.
  - Introduce them to their Team Lead.
  - Make sure all mentors have the following phone numbers:
    - Living Lab, IPM, Team Leads, and Floor Lead.
  - Ask mentors to take pictures and email or airdrop them to the IPM each day.
- Take mentors and go through the Ocean Leader Challenge together. Mentors will each be taking a group through the challenge.
  - Show and explain each challenge the students will do.
    - Student reads Clue #1 from the Supply backpack.
    - Using Clue #1, walk through the canyon to find Challenge #1 (color coded by team). Always stick to your color!
    - Students complete Challenge #1.
    - If the challenge asks you to take a photo do so on your phone and as quickly as possible text that photo to the Floor Lead.
    - When challenge is complete have students collect all the materials from the challenge and place in the Leave-No-Trace Canvas bag.
      - The goal is to bring all supplies back to the Living Lab.
    - Have a student read Clue #2 from the Supply backpack.
    - Repeat the above process until you have completed all four challenges and returned to your science lab space.
  - Encourage students to be competitive and have fun but ensure that they stay together as a group for collaboration.

#### Check-in

- Answer parent questions/concerns.

#### Community Building

- Lead Community Building.
  - See Curriculum below.

#### Lunch

- Check in with the groups.
  - Look to see that students are not on electronics.

#### Servant Leadership & Reminders:

- Meet with mentors and get feedback:
  - What went well today?
  - What did you find challenging?
  - Is there anything you need for tomorrow?
  - Review next day's agenda.

**Floor Lead**

Set-up/Check-in:

- Begin baking banana bread so that it will be ready by 9AM.
- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
  - Collect paperwork.
  - Hand out student polos.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Return uneaten breakfast and lunch food to refrigerator.
- As photos from the Ocean Discovery Leadership Challenge come in, put them in the “Ocean Discovery Leadership Challenge PowerPoint” based on the challenge (i.e., put all photos from Marshmallow Tower Challenge in the same section) so that the slideshow is ready for the debrief.
  - Make sure all team photos are before the “Winner” slide.
  - Students should see all the team photos before the “Winner” of each challenge is announced.
- Get the Challenge winners from the Team Lead and put the picture of the winning team on each slide. update the Ocean Discovery Leadership Challenge PowerPoint with the winners.

**Teaching Notes for Team Lead**

- Discuss daily schedule and floor management with Assistant Team Leader and mentors.



## Community Building

**Location:** Kitchen

**Community Building Question:** What are some of your favorite foods that your family makes?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	<b>Food &amp; Conversation</b>
9:05 – 9:25AM	Food and Conversation	
9:25 – 9:30AM	Clean up	
9:30 – 9:33AM	Purpose of Community Building Activity	<b>Community Building Activity</b>
9:33 – 9:38AM	Directions & Activity	
9:38 – 9:40AM	Debrief	
9:40 – 9:45AM	Announcements	<b>Announcements</b>

**Food and Conversation:**

### Introduction

- Purpose of Food and Conversation:
    - Goal: To build your community of support!
      - Each morning we will start with Food and Conversation.
      - Sharing food and conversation is a tradition across all cultures.
      - Conversation is a way to build relationships with other people who can become a part of your community.
      - Building a community of people who will support you on your journey to becoming a science leader is a Growth Mindset tool.
        - (Point to Growth Mindset poster.)
      - Growth Mindset is something we will be focusing on throughout Bridge.
        - We will spend time during the next few days learning what a growth mindset is and tools we can use to have a growth mindset.
      - Having a Growth Mindset means you believe you are capable of achieving any goal you set for yourself and when you come across an obstacle you can use some of your Growth Mindset tools to help you overcome that obstacle.
      - Having a community of support you can reach out to when you face an obstacle is a great tool to have.
      - New potential members of your community of support are all around you right now. New friends, new mentors, new Ocean Discovery staff. All of these people are here because they believe in you. Use this time to get to know someone new and broaden your community of support!
      - We encourage you to sit with new people during this time. You will have time during lunch to sit with close friends – try to find someone who is not already a friend to sit with for breakfast.
- Introduce Community Question:

- To help break the ice with new people, we will have a Community Question each day on this board.
  - (Show everyone where the Community Question is and read today's question out loud.)
- Since we are eating together as a family, we will do a group clean-up all together at the end of breakfast so please stay seated and keep your plates and any trash on the table until it is clean-up time.
- **Banana Bread:**
  - Today is an extra special day.
  - We have a tradition here at Ocean Discovery Institute to serve warm banana bread on the first day of a new program because the Living Lab will be like a home for us these next two weeks and we like to make something in the kitchen to create the feeling of home or family.
  - Be sure to get a piece of banana bread if you haven't.

#### Food and Conversation

- (Give everyone time to eat breakfast, answer the community question and converse.)

#### Clean up

- **Servant Leadership**
  - After any meal we are sure to contribute to the community by cleaning up our space and making it look as good as or even better than when we arrived.
- **Review Clean-up expectations:**
  - Everyone will take their own trash to the garbage.
  - Separate recyclables and compostable and place in the correct bin.
    - Review what is recyclable and compostable.
    - Be VERY careful about what is placed in recycle and compost bins if we contaminate it cannot be recycled.
    - Ask a staff member if you aren't sure.
  - One person per table will grab a rag and spray-bottle to clean table.
    - Wipe crumbs into your hands not onto the floor.
    - Return rag and spray bottles when table is clean.
  - Return to your table when you are finished getting rid of your trash for our first activity.
- (Have every table nominate someone to get rag and spray bottle for their table.)
- (Dismiss students to clean-up.)

### **Community Building Activity: Networking – Handshaking & Personal Introductions**

#### Purpose:

- **Networking is a Growth Mindset tool.**
  - Networking is another way to build a community of people who will support you on your journey to becoming a science leader.
  - Sometimes you can build community in an informal setting like we did at breakfast but sometimes we build community in a more formal setting and community building in a more formal setting might look slightly different.
- **Why Network?**

- Networking can provide new opportunities.
- Every time we meet a new person it's an opportunity to learn new things, gain new perspectives, ask questions, and make new acquaintances and friends.
- You never know who you might meet today that you will reach out to in the future when you have a question, or are looking for a job or internship, or need a helping hand.
- How to Network.
  - Networking starts with introductions.
  - You need to get comfortable approaching people you don't know and introducing yourself.
  - While meeting new people can feel intimidating, we will practice this skill so we can all become more comfortable with it, throughout our time in Bridge.
  - Remember it's okay to "Fake it till you are it!". Confidence can be built over time.
- Be proactive!
  - It's important that you approach the world rather than waiting for it to come to you.
- Review what makes a strong introduction:
  - Make eye contact.
  - Smile.
  - Shake hands with a firm but not overpowering grip.
  - Give a short introduction so people know who you are.
    - Ex: My name is \_\_\_\_\_. I'm an Ocean Leader. It's nice to meet you.

Directions & Activity:

- Directions:
  - When music plays walk around and mingle.
  - When the music stops, partner with the person closest to you.
    - Make eye contact, smile, shake hands, and introduce yourself.
  - When the music starts again, thank your partner, and begin mingling again.
  - The next time the music stops you must find a NEW partner. Remember this is an important skill to develop so try to meet new people who aren't in your field research group.
  - We will repeat this pattern a few times.
- Activity:
  - Have students introduce themselves to 3-5 people.

Debrief:

- Potential Questions:
  - How did you feel when you were introducing yourself? Did anyone else feel that way?
  - Did anyone feel a different way?
  - What was the most difficult part for you: speaking, making eye contact, shaking hands, or smiling?
- We will practice networking throughout the program. You will meet many new people each day-remember- be proactive! Try and approach them first rather than waiting from them to come to you.
- Tomorrow during breakfast try to introduce yourself to one adult you don't know.

**Announcements:**

- Purpose of Announcements:
  - Each morning we will introduce new mentors and any program visitors, and review the day's agenda, so you know what to expect throughout the day.
  
- Introductions:
  - (IPM to give powerful introduction for any adults joining the program.)
  - Give a brief 1-minute exciting introduction about each of the mentors.
    - Include fun facts.
  
- Agenda:
  - (Review the day's agenda from the whiteboard.)
  
- Introduce Science Lab Transition:
  - At Ocean Discovery we have a mantra "Go Awesome!". We will use this at the end of every morning's community building before moving into science labs.
    - We say, "Go Awesome!" because we are about to go forth and do amazing things as Ocean Leaders.
    - When using the "Go Awesome!" mantra, everyone forms a circle, puts their hands in the center and on the count of three shouts "Go Awesome!" while raising your hand above your head.
  - Introduce musical cues:
    - We use musical cues to signal transitions at Ocean Discovery.
    - Starting tomorrow you will need to be in our group's science lab meeting space by the end of the musical cue.
    - (Have students do "Go Awesome!" mantra.)
    - (Start musical cue and dismiss students.)

## Science Lab

### Ocean Discovery Leadership Challenge:

Goal: Students become familiar with the Seed to Tree pathway of an Ocean Leader and have fun solving puzzles and competing in challenges while getting to know other program participant and staff.

### Timing:

- 0:00 – 0:15: Overview & Getting to Know Our Ocean Discovery Family
- 0:15 – 0:20: Introduce Ocean Discovery Leadership Challenge
- 0:20 – 1:00: Ocean Discovery Leadership Challenge
- 1:00 – 1:05: Water & Bathroom break
- 1:05 – 1:15: Debrief

### Overview of the Day:

- Today we will:
  - Get to know our Ocean Discovery Family and about the Seed to Tree Pathway of an Ocean Leader through the Ocean Discovery Leadership Challenge
  - Learn about mentoring through our Mentee training
  - Learn about our Ocean Discovery Home through a Living Lab Scavenger Hunt
  - Learn about what to expect the next two weeks through the Bridge Program Story.

### Getting to Know our Ocean Discovery Family & the Seed to Tree Pathway:

Welcome students into the Ocean Discovery Family.

- Some are new and some of you are already part of the Ocean Discovery Family.
- Today everyone is a part of the Ocean Discovery Family.
- Over the next two weeks you will get to know other members of the Ocean Discovery family as you learn about becoming a science leader.
  - Define Science Leader (SLIDE)
    - Are people of any age who use science to make a difference in their community and our world.
    - Develop ideas to help solve problems facing our planet, improve human lives, and make our world a better place.
    - Study science or have careers in science and science-related fields.
  - There are hundreds of science-related careers in the world.
    - Biologists, physicists, chemists, environmental scientists, etc.
    - Computer programmers, software engineers, data scientists, etc.
    - Social scientists: Psychologists, Economists, Sociologists, etc.
    - Health care workers: Doctors, nurses, physical therapists, etc.
    - Teachers in science and science-related fields
    - Engineers
    - Pharmacists
    - Architects
    - Veterinarians

- Highlight that science leaders are “people of any age” who use science to make a difference in their community.
  - Anyone who has done an Ocean Discovery program in school has helped make a difference by picking up trash, creating a trail lined with rock art in the canyon, planted and ziplined seeds for restoration, etc.
  - You don’t have to wait to be a science leader – you can be one today!

Introduce Seed to Tree pathway of an Ocean Leader.

- The “Seed to Tree Pathway” created by Ocean Discovery Institute helps students who are interested in becoming science leaders. (SLIDE)
  - Students can join the pathway at any age.
  - Pathway provides science programs (like this one), mentoring opportunities, and growth mindset tools that can help you overcome challenges on this pathway.
- Introduce “Seed to Tree Ocean Discovery Alumni”. (SLIDE)
  - Let’s take a look at this video which shows Ocean Discovery students on different places along their the Seed to Tree pathway.
  - (Show Seed to Tree Ocean Discovery Alumni video.)
- Debrief “Seed to Tree Ocean Discovery Alumni” video. Potential questions include:
  - What do you have in common with some of the people you saw in the video?
  - What did you see in the video that gets you excited?
  - Why do you think it’s called a Seed to Tree pathway?
- Debrief where students are on their pathway.
  - Today you continue or start on your pathway by being an Ocean Leader by participating in this Bridge program.
  - You have been selected to be a part of a special group on this pathway – You have been selected to be an Ocean Leader because you have already shown important qualities that can make you a leader in the future.
- Importance of science leaders who come from City Heights.
  - Ocean Discovery believes that many of the science leaders of the future should come from City Heights.
  - City Heights is a diverse community, and we believe increasing diversity in science and conservation is incredibly important.
  - Increased diversity leads to diversity of ideas and innovation. New ideas are how science moves forward and you could be some of the people with those new ideas!
- Ways to be a leader in the future - make a difference in the world
  - Mentor others
  - Transform your community
  - Save lives – medical research, cancer research
  - Protect our planet
- Introduce ways to be a leader starting today.
  - Ask questions/be curious
  - Participate in all activities
    - Even when things feel slightly uncomfortable- when we feel uncomfortable often, we are growing as a person.

- Push yourself to meet new people- students and adults
- Share what you learn with others

### Introduce Ocean Discovery Leadership Challenge

#### Expectations: (SLIDE)

- Today we will embark on the Ocean Discovery Leadership Challenge!
- The Challenge requires your skills, leadership, speed, and teamwork.
- Review Expectations.
  - We will be given a clue card that will lead us to a place located in the canyon.
  - Once we have found the place, there will be a card describing a challenge we need to complete.
  - When we have completed the challenge, we can use another clue card from our supply backpack to find our next challenge location.
  - If we complete all the challenges, we will each receive a prize!
- We will split into 3 different groups.
  - Each group will have an instructor/mentor.

#### Prepare for the Challenge:

- Divide your team into three groups.
  - 1 group w/ Team Lead
  - 1 group w/ Scientist Mentor
  - 1 group w/Alumni Mentor
- Assigns roles for each group:
  - Supply Backpack Person: this person will carry the supply pack that has the items you need to complete challenges along the way.
  - Leave-No-Trace Person: this person will carry the leave-no-trace pack which is used to pick up the items after challenges are complete and any trash we find along the way.
  - Data collector: will collect results from each challenge and write them down on the data sheet to determine the winner of each challenge.
- Give colored fabric ribbons to each student to wear.
  - The ribbons signify we are a team!
- **Be sure all teams have completed the above actions BEFORE giving students the first clue.**

### Ocean Discovery Leadership Challenge

- (Student to read Clue #1 from Supply Backpack.)
- (Walk through the canyon until you find Challenge #1 with your team's color.)
- (Allow students to complete the challenge – they can use any materials in the Supply backpack.)
- (When a challenge is completed, facilitate Leave No Trace.)
  - (Place all challenge materials in Leave No Trace backpack – the goal is to prevent the staff from having to go back into the canyon to clean up supplies.)
- (Student with the Supply Backpack reads the next clue found in backpack.)
- (Continue this process until you are back at the lab.)
- (Immediately text any remaining photos to Floor Lead.)

Water and Bathroom Break

- **(Collect data sheets and Team Leads determine which team won each challenge.)**
  - Give this information ASAP to the Floor Lead so they can update the Ocean Discovery Leadership Challenge PowerPoint with the winners.
- (Allow students to rest and get water until all groups from your team return.)

Debrief

- Congratulations Ocean Leaders! You completed your first challenge.
  - Pass out an Ocean Leader sticker to each student.
- Show “Ocean Discovery Leadership Challenge Slideshow”
  - (If a group in your team wins a challenge – give them a prize.)
- Circle Share.
  - Have students sit in a circle.
  - Ask one of the below questions and ask each student in the circle to share their thoughts (switch up the direction and start from different students so the same person doesn’t start each time).
  - Questions:
    1. During the Marshmallow Challenge. Describe how you contribute to a team.
    2. When you completed the Nothing in Common Challenge, you were all given the same items, but each group found a different way to categorize the items into groups. This is called diversity of thinking (different ways of thinking about a similar problem). Do you think it is important for science leaders to be diverse (look different, come from different places, have different backgrounds, etc.)? Why or why not?
    3. What is one quality or characteristic you think is important in a leader?
    4. When you participated in the Water Balloon Toss Challenge you needed to work with a partner to be successful. All leaders need people to support them. Share about someone who has supported you in your life. Who is that person and how have they helped you?

**Mentee Training**

*Goal: Students learn what a mentor-mentee relationship is and learn how to make the most of this relationship with Ocean Leader Bridge Mentors.*

Intro:

- Now we will learn about mentoring through our Mentee training
- What is a mentor? (SLIDE)
  - Have students brainstorm ideas about what a mentor is and what they do.
  - (Write some responses on the board.)
- Mentors (SLIDE):
  - A key part of being an **Ocean Leader** includes having mentors –older Ocean Leaders, Ocean Discovery staff, or scientists who can offer advice, share their experiences, and help you understand things that are confusing to you.



- Mentors are amazing people who volunteer their time and BELIEVE in you and your ability to become a future science leader!
- During Ocean Leader Bridge our group will always have a scientist mentor – a person who currently works in a science field and an alumni mentor – a person who is an Ocean Leader and participated in Ocean Leader programs.
- (Remind students who the mentors in their group are, calling out which type of mentor they are.)
- How do I utilize my mentor? (SLIDE)
  - Easy! Ask them questions!
    - Have students brainstorm questions for science mentors. Examples:
      - Ask them about how they go to the place they are today?
      - What do you like about your job?
      - What was one challenge you faced on your pathway to becoming a scientist?
    - Have students brainstorm questions for alumni mentors. Examples:
      - What is your favorite part about being an Ocean Leader?
      - Which program was your favorite? Why?
      - What is BAHIA like?
- Ocean Leader Bridge Mentors. (SLIDE)
  - Can also help you with any material you don't understand during the program. If you don't understand something – ask them! They want to help you!
  - Remember each Bridge Mentor will only be here for three mornings- so take advantage! Ask lots of questions. Get to know them!
- Mentor-Mentee Relationships. (SLIDE)
  - You should always feel safe and be safe.
  - Discuss boundaries:
    - It is important to remember that any mentor-mentee relationship should be comfortable.
      - You should feel comfortable around any mentor.
      - Mentor-mentee relationships should not cross sexual or romantic boundaries.
      - Mentors should not touch you in any way that makes you feel uncomfortable.
      - Report any issues you have to an adult (parent, other Ocean Discovery staff, etc.)
    - If you are ever not comfortable with the way you are being talked to or the situation you are in with a mentor you should remove yourself immediately and report what occurred to a trusted adult (family member, other Ocean Discovery staff member, etc.)
- Equity and inclusion. (SLIDE)
  - Be aware of assumptions you might make based on differences.
    - Mentors and mentees come in all shapes and sizes.
    - Seek out opportunities to interact with others from different backgrounds – that is how you learn new things.
    - Treat everyone—regardless of race, sex, or status—with respect, consideration and politeness.

## Living Lab Scavenger Hunt

*Goal: Students become more familiar with the Living Lab and the cultural norms of the program they will be expected to adhere to.*

### Timing:

- 0:00 – 0:05: Intro
- 0:05 – 0:30: Scavenger Hunt
- 0:30 – 0:40: Debrief

### Intro

- Learn about our Ocean Discovery Home through a Living Lab Scavenger Hunt
- Scavenger Hunt is to orient you to your Ocean Discovery home- the Living Lab.
- The Living Lab is your space. We want you to get to know it and all the places and spaces you can utilize!
- There are many people and items in the Living Lab who will support you on your journey to becoming a science leader.
- Review Expectations of Scavenger Hunt. (SLIDE)
  - We will break into three teams – one with Team Lead, and one with each mentor.
  - Each team will be given a Living Lab Scavenger Hunt Card and a marker.
  - Complete as many tasks as possible in whatever order you choose.
  - Everything you need to complete your tasks can be found inside of the grounds of the Living Lab.
  - Make sure you are walking from place to place.
  - When you finish all your tasks return here.
  - You will have xx minutes to work.
- Questions?
- (Divide students into three groups.)
- (Assign a data keeper in each group and give them the Living Lab Scavenger Hunt card and a vis a vis marker.)
- (Assign a timekeeper in each group and give them the stopwatch.)
- (Have timekeepers start stopwatch- remind them to return after 20 minutes).

### Scavenger Hunt

- Give students 25 minutes to complete the scavenger hunt.

### Debrief

- Review each question of the scavenger hunt calling on different students to contribute.
- Be sure to cover:
  - Community Agreements
  - Cell phone policy

## **Science Notebooks:**

### Timing:

- 0:00 – 0:05: Intro
- 0:05 – 0:10: Explore Your Week
- 0:10 – 0:15: Pair-Share

### Intro

- Learn about what to expect the next two weeks through the Bridge Program Story in our Science Notebooks.
- (Have all students write their names on: Who this Notebook belongs to page before they start.)
- Introduce science notebooks. Be sure to cover:
  - Scientists need a place to take notes, write down observations/questions and make sketches and drawings about the things they see in the natural world.
  - Let students know that while they will be using several of these pages as a group, here are many blank pages for them to write or sketch thoughts, observations, ideas, or questions about anything they are thinking about.
    - (Show students these pages.)
  - Provide you with a science notebook that you will use every day of the program.
  - Will stay at the Living Lab during the program but it will be yours to take home at the end of the program.
- This notebook also contains a syllabus and the story of what you will be experiencing during this program.

### Explore Your Week

- Have students turn to Ocean Leader Bridge Story.
- Ask students to read the story and circle what they are excited about.
- If they finish early, have students look through the rest of their science notebook.

### Pair-Share

- What are you excited about?
- You can always look at this story to remind you what you have experienced and what is coming up.

### Make Your Notebook Your Own (If time allows)

- Have all students write their names on: Who this Notebook belongs to page.)
- Decorate your notebook and make it your own.
- Use any art supplies in your bin + stickers you have received today.

## **Lunch**

### Timing

- 0:00 – 0:05 Overview
- 0:05 – 0:25 Lunch
- 0:25 – 0:30 Clean-up

### Overview

- As science leaders it is important that we keep our bodies healthy in order to be at our best.
  - Use Mantra: Healthy bodies! Higher goals!
  - One way we do this is by taking time to eat a healthy lunch to recharge our bodies for the rest of the day.
- Review the expectation for lunch.
  - No electronics or air buds.
  - If you need some individual time to recharge, feel free to read or journal etc.

### Lunch

- This is a good time to check in with any students who are struggling.
- Be sure adults use some of this time to interact with students one-on-one.

### Clean-up

- As science leaders we want to practice leaving a place better than we found it.
- To do so we will do the following things each day:
  1. Throw away and recycle our own trash.
  2. Place unopened food in a bin.
    - Demonstrate this.
  3. Each collect a minimum of five pieces of trash.
    - This should include any trash we created but can also include trash that was here before us – this is the practice of leaving a place better than we found it.

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:10 Overview & Read Article on Growth Mindset
- 0:10 – 0:20 Discuss Article on Growth Mindset

### Overview

- One of the things we want you to focus on as an Ocean Leader is having a Growth Mindset.
- Define Growth Mindset (SLIDE)
  - Growth Mindset: means you believe your intelligence, abilities, and skills can be developed over time through dedication and hard work and challenges are an opportunity to grow.
  - Having a growth mindset is important because science research tells us that people with a growth mindset (**SLIDE**):
    - Learn more things – better and faster
    - take on more challenge and persist through more challenges
    - see failures as an opportunity to learn and try something new

### Read article on Growth Mindset

- We are going to read a short article about the science behind growth mindset and why it is important.
- When reading (SLIDE):
  - Students should underline two things they think are interesting.
  - Students should put one “?” next to something they don’t understand.

### Discuss article on Growth Mindset

- Think-Pair-Share (SLIDE):
  - One thing I found interesting in the article was...
  - I think having a growth mindset (would/would not) be an asset because...
  - I think I have a (growth/fixed) mindset because...

### Growth Mindset Overview

- Review Fixed vs. Growth Mindset (SLIDE)
  - Growth Mindset:
    - You can change.
    - You can get better at things with hard work.
    - Challenges are opportunities.
  - Fixed Mindset:
    - You are born with a certain intelligence.
    - You can’t change how “smart” you are.
    - When you aren’t good at something you can’t get better.
    - Give an example: I’m bad at Math.
- Growth Mindset Continuum (SLIDE):
  - Most people aren’t completely on one side or the other of the continuum.

- Many people may have a fixed mindset about certain subjects – reading, fixing cars, etc. while having a growth mindset about something else – ability to cook, play soccer, etc. This is normal.
- It's good to check in with yourself about where your mindset is on different things so you can begin to identify areas where you have a more fixed mindset.
- Science behind a Growth Mindset:
  - Your ability to learn new things, improve your skills, get better at things that are challenging is absolutely true and real – and proven by science!
    - Science has shown our brains are plastic – meaning they can change and grow over time. (SLIDE)
    - We have trillions of neural pathways in our brain.
    - These neural pathways are things we have learned (from walking to riding bikes to reading to learning to paint, etc.).
    - When we learn something new or connect something new to something we already know we are laying down new neural pathways = we are learning.
    - People with a growth mindset believe they can create more neural pathways and learn more by challenging themselves and working hard when things are difficult. And they are right! (SLIDE)
  - The amazing thing about a growth mindset is that anyone can develop a growth mindset even if you've had a fixed one in the past. (SLIDE)
    - All of us can add more neural pathways in our brain, we just need to realize that sometimes it is easier for put these pathways down than others.
    - When things are difficult or challenging to learn we shouldn't give up because everyone is capable of creating more neural pathways with hard work.
  - Having a growth mindset can help in all aspects of our lives, not just school. (SLIDE)
    - You can have a growth mindset about, your ability to play sports, cook, read, be artistic, etc.
    - It's possible to have a growth mindset about all these things and many others.
- Introduce Growth Mindset Tools
  - To have a growth mindset you will need tools that can help you meet some of the obstacles and challenges you will face.
  - As Ocean Leaders moving into high school this coming year, you may find there are new obstacles you will face and we want to help you be as prepared as possible.
  - Therefore, the growth mindset tools we will teach you fall into three groups.
  - Tools to support (SLIDE):
    - Learning (Mantra: Know it! Own it!) – tools to help you be successful in a more formal classroom setting like high school and college
    - Mental Health (Manta: Full Hearts! Powerful Minds!) – tools to help you deal with the stresses of life and maintain a state of well being
    - Physical Health (Mantra: Healthy Bodies! Higher Goals!) – tools to help you keep your body healthy throughout your life
- Throughout the coming days we will share more about how you can practice a growth mindset and teach you tools that will support having a growth mindset.

## Growth Mindset Tools: Self-Reflection

*Written & executed by Amy Wallen, Writer-In-Residence*

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Link to Growth Mindset

- Reflection is a tool for having a Growth Mindset – to support having a Strong Heart & Mind. (SLIDE)
  - Use Manta: Full Hearts! Powerful Minds!
- Reflection is a tool that can help us build strong hearts and powerful minds to deal with the stresses that life throws at us.
  - Reflection allows you time to think about, process, and share thoughts and feelings about how an experience is impacting you – like your time here in Bridge.
  - It allows you time to find your voice and speak your mind.
  - An opportunity to exercise your imagination, create your dreams, discover new ideas, and wonder about the future.
- We will practice using the tool of self-reflection every day of Bridge, but taking time to reflect is a powerful tool that can be used throughout your life.

### Description of Reflection

- A time to find your voice, a time to speak your mind, a moment to reflect on your day, your life, your dreams. It's also an opportunity to exercise your imagination, to create your dreams, to discover new ideas, to wonder about what you've experienced and what does it mean?

### Why story is important

- Our **personal stories** are where we understand each other. It's through our stories that we learn **empathy**, how we learn to relate to one another. Even when it comes to telling us about your science projects—we need to understand what the dissection or research revealed to you because it may not be the same as what your classmates realized or experienced. Maybe they thought the sea cucumber was gross, but maybe you found the fact that it can spill their guts to save themselves fascinating and inspiring. Both of these reactions are fair and also help to provide insight into what your interests or disinterests are.
- First, let's look at how we can take nature and look at it through an artist's eyes. You'll be going into the outdoors tomorrow and to the tidepools the next day. In this video you'll see someone who goes out into the national parks and then comes back to document what she saw through her own creative eye.

### Pulse Video (5 mins)

- [https://vimeo.com/498493354?fbclid=IwAR38WRQ8DMQlqr4JoEcFjm\\_vZc55gt7iZPXFxBtGHL0FuToSvw8lv7hbZSs](https://vimeo.com/498493354?fbclid=IwAR38WRQ8DMQlqr4JoEcFjm_vZc55gt7iZPXFxBtGHL0FuToSvw8lv7hbZSs)
- Carla Bueno in the video shows the world through visual art her feelings of how we are all connected in nature and science. She shares her experience in the national parks.

- We will do the same in the writing practice here with your experiences, your impressions of the world, of science, of humanity. Of yourself. And, feel free to draw too, if you are inspired by pictures instead of words.

### Discuss Goals

- For this 2-weeks camp (Family Celebration with Presentation), and for long-term (book).
  - Share the book with students.
- The writing we do in this workshop is called **Writing Practice**. Just practice. No grading or critique. Nothing is perfect yet. So don't worry about what you put down on the page. Just keep writing and let your thoughts flow.

No grading

No critiquing

No right or wrong way to do this

- **Prompts**—Suggestions, how they work and how the students can use them, ignore them, write the opposite, turn it around, it's just a jumping off point.

### Read the Rules for Writing

- Hand out copies to students.
- Let students take turns reading each of the rules. [This helps to settle and center them in their space, after so much excitement from the day.]

### How it works:

- **Timed Writing.** I will give you a prompt and you will begin writing whatever comes to your mind with various time deadlines. Sometimes it will be 2-3 minutes, sometime 10-15 minutes You'll get a warning when you have about 30 seconds left.
- Let's practice not picking up our pens for the entire time. Who will be the last person with their pen still on the page?

**Prompt 1:** If you could write a book, a movie, a play, or a poem, what story would you want to tell? [5 mins]

**Prompt 2:** Cooking class. Were you reminded of some of your favorite foods that your family makes? Write about them. Are some just for special occasions? Some for every day? [5 mins]

**Prompt 3:** What does Family mean to you? Tell one of your favorite stories about your family around a mealtime gathering. Maybe a holiday or a birthday. Why do you like this story? [5 mins]

**Prompt 4** [if needed]: Write about your name.



## Growth Mindset Tools: Healthy Bodies

### Growth Mindset

- Exercise and Nutrition are two tools for having a Growth Mindset – to support Healthy Bodies!
  - Use Mantra: Healthy Bodies! Higher Goals! (SLIDE)
- Why is maintaining a Healthy Body important?
  - Science tells us that having a healthy body: (SLIDE)
    - Can prevent disease
    - Save money on health care
    - Lead to a longer life
    - Helps the environment
      - The creation of processed foods (sweetened breakfast cereals, fast food, packaged snack cakes, cheese puffs, etc.) contribute to greenhouse gas emission, deforestation, increased plastic waste, etc.
    - Can lead to better mental health
  - Having a healthy body is important to becoming a science leader.
- Two ways we can maintain a healthy body is through exercise and nutrition.
  - When we encounter a challenge – perhaps around our body image, our mental health, our physical health (high cholesterol, unhealthy body weight,), etc. we can use tools like exercise and nutrition to overcome those obstacles.
  - *Instructor note: this section may need to be modified based on what the Healthy Bodies Activities are each year.*
- Exercise
  - Exercise can help: (SLIDE)
    - Strengthen muscles
    - Create a positive body image
    - Trigger the growth of brain cells
    - Maintain a healthy weight
    - Slow the aging process in your body
    - Create a sense of accomplishment
- Nutrition
  - People with healthy eating patterns: (SLIDE)
    - Reduce the risk of serious health problems like type 2 diabetes, heart disease, high blood pressure, and obesity.
    - Think more clearly.
    - Improve their ability to fight off sickness
    - Increase their energy levels
    - Improve their ability to recover from an injury
- During the program we will do a few different activities to that focus on exercise and nutrition to give you some ideas of how different ways of cooking and or exercising you may find useful.
- Remember there are many different kinds of exercise so you may have something you already enjoy doing, or you may learn about a different type of exercise in the future – all of these are great!

- No matter what, when you leave the Bridge Program we want you to at least have a few choices when it comes to nutrition and exercise that you can use in your day to day life.

Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

## Servant Leadership & Reminders

### Overview of Servant Leadership

- Review Reminders for the next day. (SLIDE)
  - For Reminders: See today's PowerPoint slide.
- As Ocean Leaders we want to not only be science leaders but also servant leaders.
  - Servant leaders are focused on being of service to others.
  - Servant leaders look for ways to include other people and give back to the community at large.
  - As servant leaders we want to be looking around for opportunities each day to help others and create a better community here at the Living Lab.
    - Opportunities to help the community are everywhere around us:
      - Picking up a piece of trash you see on the floor or on a table.
      - Talking to someone who looks like they are alone or having a tough day.
      - Helping a staff member to carry supplies or items which are used during science labs or afternoon activities.
  - Each day we will take time to do tasks to help our community.
    - We will help clean up the spaces we used throughout the day.
    - We will return the space in the way it looked when we arrived this morning.
    - As servant leaders we always strive to leave things looking better than when we came.
- Review and Assign Chores. (SLIDE)
  - Return room into opening format (tables, chairs, etc.)
  - Take cups up to dishwasher and load dishwasher
  - Wipe down tables and chairs
  - Place chairs on top of tables
  - Sweep floor
  - Help carry supplies back to storage (MUST BE ACCOMPANIED BY TEAM LEAD or MENTOR)
- Have all students:
  - Put away science notebooks and any materials they used inside their bins.
  - Pick up and throw away any trash on their table, in their personal bins, and on the floor.

## Program Materials

Ocean Discovery Leadership Challenge: Clues & Challenges Overview

	<b>Clue</b> (You will read these out loud)	<b>Challenge</b> (These are just FYI)
1	<p><u>Clue #1:</u> Travel down the canyon in the direction water will flow. When you find a ribbon you'll be good to go.</p>	<p><b>Marshmallow Tower Challenge</b> <u>Goal:</u> Build the tallest tower!</p> <p>Build the tallest free-standing structure in just 10 minutes using no more than 20 sticks of spaghetti, 5 pieces of tape, one yard of string, and one marshmallow. The structure has to stand firmly on its own; it cannot be propped up, held, or suspended from anything.</p> <p>The winner of this challenge is the team with the tallest structure. When 10 minutes is up – you must figure out a way to prove how tall your tower is and take a picture.</p> <p>Data collector should record the height of their marshmallow tower on the data sheet.</p> <p><b>(Winning team will be determined back at the Living Lab.)</b></p>
2	<p><u>Clue #2</u> Continue the same way, Give it all you've got! When you find a box with your team color, you've found the spot.</p>	<p>Nothing in Common Challenge:</p> <p><u>Goal:</u> Assign all items to a category!</p> <p>Work as a group to organize the objects in your bag into a minimum of three categories. Rules: Each category must have at least two items. All items must be assigned to a category.</p> <p>Your <u>instructor must time you using a stopwatch!</u></p> <p>Data collector will record the time on the data sheet. The team to do this the fastest wins.</p>

	<p style="text-align: center;"><u>Clue #3</u></p> <p>Keep walking down the canyon, do not stop. Until you've found something, you played with as a tot.</p>	<p><b>Water Balloon Toss Challenge</b></p> <p><u>Goal:</u> Be able to toss your water balloon <u>the furthest</u> without it breaking!</p> <p><b><i>IMPORTANT: Use leave not trace practices – as soon as your water balloon breaks pick up ALL the pieces and place them in the Leave No Trace backpack!</i></b></p> <p><u>Directions:</u> Find a partner. Stand directly across from your partner with three feet of distance between you. One partner will toss the water balloon to the other partner. If you water balloon breaks, raise your hand and get a transect tape to measure the distance between you and your partner then immediately pick up the pieces of your balloon. If you catch your water balloon without breaking it, you advance to the next round, and each partner should take a step back from each other and then toss the water balloon again. Continue until your water balloon breaks and then measure the distance between you and your partner. <b>(Winning team will be determined back at the Living Lab.)</b></p>
4	<p style="text-align: center;"><u>Clue #4</u></p> <p>Find the tree in the entrance to Ocean Discovery. High-five the golden Odi. This fish is excited about the science leader you will be!</p>	<p><b>Leadership Challenge</b></p> <p><u>Goal:</u> Be the fastest to spell Leadership!</p> <p>Just like the Ocean Leaders you saw in the video about the "Seed to Tree" pathway, you are on your way to being a tree and a leader in your community!</p> <p>Using only your bodies you must spell out the word "LEADERSHIP". Your <u>instructor must time you using a stopwatch</u> and take a picture.</p>

### Ocean Discovery Leadership Challenge – Map of Challenges

(Distances are approximate – use your best judgement when setting up the course.)



**Clue #1**

*Travel down the canyon in  
the direction water will  
flow.  
When you find a ribbon  
you'll be good to go.*

**Clue #2**

*Continue the same way,  
Give it all you've got!  
When you find a box with  
your team color,  
you've found the spot.*

**Clue #3**

*Keep walking down the  
canyon, do not stop.  
Until you've found  
something,  
you played with as a tot.*

**Clue #4**

*Find the tree in the entrance  
to Ocean Discovery.  
High-five the golden Odi.  
This fish is excited about the  
science leader  
you will be!*

## Challenge #1 – Marshmallow Tower

Goal: Build the tallest tower!

Work as a team to build the tallest free-standing structure in 10 minutes using no more than 20 sticks of spaghetti, 5 pieces of tape, one yard of string, and one marshmallow.

The structure has to stand firmly on its own; it cannot be propped up, held, or suspended from anything. When 10 minutes is up – you must figure out a way to prove how tall your tower is and take a picture.

**Data collector will record the height of the tower.**  
(Winning team will be determined back at the Living Lab.)

## Challenge #2 – Nothing In Common

Goal: Assign all items to a category!

Work as a group to organize the objects in your bag into a minimum of three categories.

Each category must have at least two items.

All items must fit into a category.

Your instructor must time you using a stopwatch!

**Data collector will record the time on the data sheet.**  
The team to do this the fastest wins.



### Challenge #3 – Water Balloon Toss

Goal: Be able to toss your water balloon the furthest without it breaking!

***IMPORTANT: Use leave not trace practices – as soon as your water balloon breaks pick up ALL the pieces and place them in the Leave No Trace backpack!***

Directions: Find a partner. Stand directly across from your partner with three feet of distance between you. One partner will toss the water balloon to the other partner. If your water balloon breaks, raise your hand and get a transect tape to measure the distance between you and your partner then immediately pick up the pieces of your balloon.

If you catch your water balloon without breaking it, you advance to the next round, and each partner should take a step back from each other and then toss the water balloon again. Continue until your water balloon breaks and then measure the distance between you and your partner.

**Data collector will record the partner pair who was furthest apart when their balloon broke.**

(Winning team will be determined back at the Living Lab.)

### Challenge #4 – Leadership

Goal: Be the fastest to spell Leadership!

Just like the Ocean Leaders you saw in the video about the “Seed to Tree” pathway, you are on your way to being a tree and a leader in your community!

Using only your bodies you must spell out the word “LEADERSHIP”.

Your instructor must time you using a stopwatch and take a picture.

**Data collector will record the time on the data sheet.**

The team to do this the fastest wins.

## Ocean Discovery Leadership Challenge Datasheet

### Challenge #1: Marshmallow Tower

Furthest Distance (in feet) \_\_\_\_\_

### Challenge #2: Nothing in Common

Height of tower (in feet) \_\_\_\_\_

### Challenge #3: Water Balloon Toss

Time to Complete Challenge (in minutes and seconds) \_\_\_\_\_

### Challenge #4: Leadership

Time to Complete Challenge (in minutes and seconds) \_\_\_\_\_

Living Lab Scavenger Hunt**Answer Key**

Task	Complete (x)
<p>Locate the <b>Grimes Family Achievement Alcove</b> – look around at all the pennants from the many different colleges Ocean Leaders have attended. Someday you will follow in their footsteps! Write down three college pennants you see.</p> <ul style="list-style-type: none"> <li>• _____ <b>Answers will vary</b> _____</li> <li>• _____ <b>Answers will vary</b> _____</li> <li>• _____ <b>Answers will vary</b> _____</li> </ul>	
<p>Find the <b>David C. Copely Ocean Alcove</b></p> <ul style="list-style-type: none"> <li>• What's one thing you can do in the Ocean Alcove during the school year? <b>Welcome to the David C. Copley Ocean Alcove Ocean Leaders! This is a great place to hang out, do homework, and study during the school year!</b></li> </ul>	
<p>Find the <b>Cox Innovation Alcove</b>. Locate the whiteboard outside of this space.</p> <ul style="list-style-type: none"> <li>• Complete the TWO tasks on the whiteboards – <b>Put Isabel's' phone number in your phone AND write your name on the board of Science Leaders.</b></li> </ul>	
<p>Find the <b>Living Roof</b> and then find the card with a picture of Odi the Ocean Discovery mascot.</p> <ul style="list-style-type: none"> <li>• What is Odi's one request when you arrive for Bridge program? <b>_____ Phones are on silent and put away when you enter the building _____</b></li> </ul>	
<p>Locate the <b>Scientist in Residence</b>. This is a place where scientists from around the world stay when they come here to work with science leaders like yourself.</p> <ul style="list-style-type: none"> <li>• What kind of scientist would you most like to meet (you can have more than one answer). <b>_____ Answers will vary _____</b></li> </ul>	
<p>Find the room called <b>Storage 2</b>. Inside look for a laminated card on the bench. What does this card tell you?</p> <p><b>There will be a final exam on the last day. You will be asked questions about what you have learned over the two weeks. Questions will be short answer and multiple choice. You will have time to prepare for this exam during study halls we have built into the program.</b></p>	

<p>Locate a <b>photograph of Shara Fisler</b> and a former <b>President of the United States</b>.</p> <ul style="list-style-type: none"> <li>• What President is Shara shaking hands with? ___<b>President Barack Obama</b>___</li> </ul>	
<p>Locate the <b>Walter J. and Betty C. Zable Discovery Gallery</b>. Somewhere in this space is a poster titled "<u>Community Agreements</u>." As science leaders working together, this is a list of norms we all agree to adhere to. Read each one and discuss with your group what each agreement means to you.</p> <ul style="list-style-type: none"> <li>• <b>No answer here</b></li> </ul>	
<p>From the <b>Walter J. and Betty C. Zable Discovery Gallery</b> walk down the hallway toward the main part of the lab - this is called the Leadership Pathway. Along the walls are quotes written by Ocean Leaders like yourself. Write down your group's favorite quote.</p> <ul style="list-style-type: none"> <li>• <b>Answers will vary</b></li> </ul>	
<p>Find the <b>Supporter Wall in the Atrium</b> which lists the hundreds of people who are here to support you on your journey to becoming science leaders. Write down the names of two supporters on the wall.</p> <ul style="list-style-type: none"> <li>• <b>Answers will vary</b></li> </ul>	
<p>Locate the <b>The Gorguze/Peters Family and Sweeney Family Kitchen</b>. Find a whiteboard where you will find a scientific publication. Find "Marlem Rivera's" name on the publication. Marlem is an Ocean Leader and you will have a chance to talk with her later this week.</p> <ul style="list-style-type: none"> <li>• What type of animal did Marlem do her research on?  _____ <b>Bottlenose Dolphin</b> _____</li> </ul>	

### Living Lab Scavenger Hunt

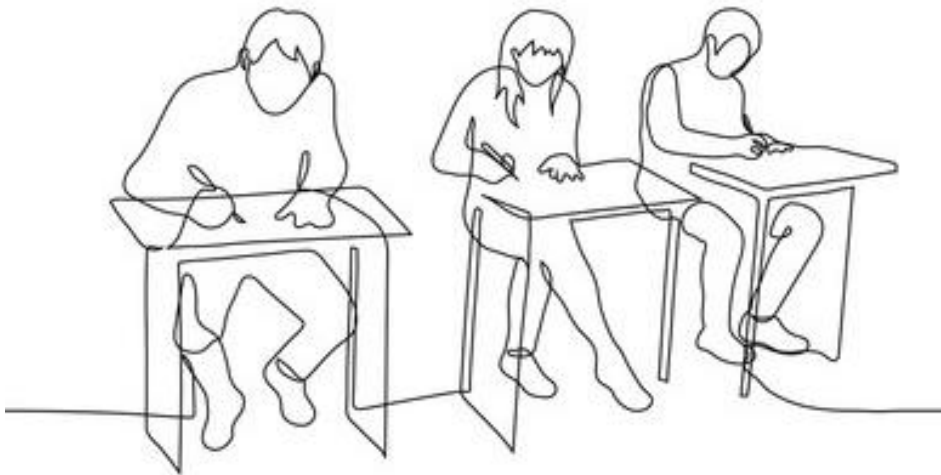
Task	Complete (x)
<p>Locate the <b>Grimes Family Achievement Alcove</b> – look around at all the pennants from the many different colleges Ocean Leaders have attended. Someday you will follow in their footsteps! Write down three college pennants you see.</p>	
<p>Find the <b>David C. Copley Ocean Alcove</b>.</p> <ul style="list-style-type: none"> <li>• What's one thing you can do in the Ocean Alcove during the school year?</li> </ul>	
<p>Find the <b>Cox Innovation Alcove</b>. Locate the whiteboard outside of this space.</p> <ul style="list-style-type: none"> <li>• Complete the TWO tasks on the whiteboard.</li> </ul>	
<p>Find the <b>Living Roof</b> and find the card with a picture of Odi the Ocean Discovery mascot.</p> <ul style="list-style-type: none"> <li>• What is Odi's one request when you arrive for Bridge program?</li> </ul>	
<p>Locate the <b>Scientist in Residence</b>. This is a place where scientists from around the world stay when they come here to work with science leaders like yourself.</p> <ul style="list-style-type: none"> <li>• What kind of scientist would you most like to meet (you can have more than one answer).</li> </ul>	
<p>Find the room called <b>Storage 2</b>. Inside look for a laminated card on the bench. What does this card tell you?</p>	

<p>Locate a <b>photograph of Shara Fislser</b> and a former <b>President of the United States</b>.</p> <ul style="list-style-type: none"> <li>• What President is Shara shaking hands with?</li> </ul>	
<p>Locate the <b>Walter J. and Betty C. Zable Discovery Gallery</b>. Somewhere in this space is a poster titled "<u>Community Agreements</u>." As science leaders working together, this is a list of norms we all agree to adhere to. Read each one and discuss with your group what each agreement means to you.</p>	
<p>From the <b>Walter J. and Betty C. Zable Discovery Gallery</b> walk down the hallway toward the main part of the lab - this is called the Leadership Pathway. Along the walls are quotes written by Ocean Leaders like yourself. Write down your group's favorite quote.</p> <ul style="list-style-type: none"> <li>•</li> </ul>	
<p>Find the <b>Supporter Wall in the Atrium</b> which lists some of the hundreds of people who are here to support you on your journey to becoming science leaders. Write down the names of two supporters on the wall.</p>	
<p>Locate the <b>The Gorguze/Peters Family and Sweeney Family Kitchen</b>. Find a whiteboard where you will find a scientific publication. Find "Marlem Rivera's" name on the publication. Marlem is an Ocean Leader and you will have a chance to talk with her later this week.</p> <ul style="list-style-type: none"> <li>• What type of animal did Marlem do her research on?</li> </ul>	

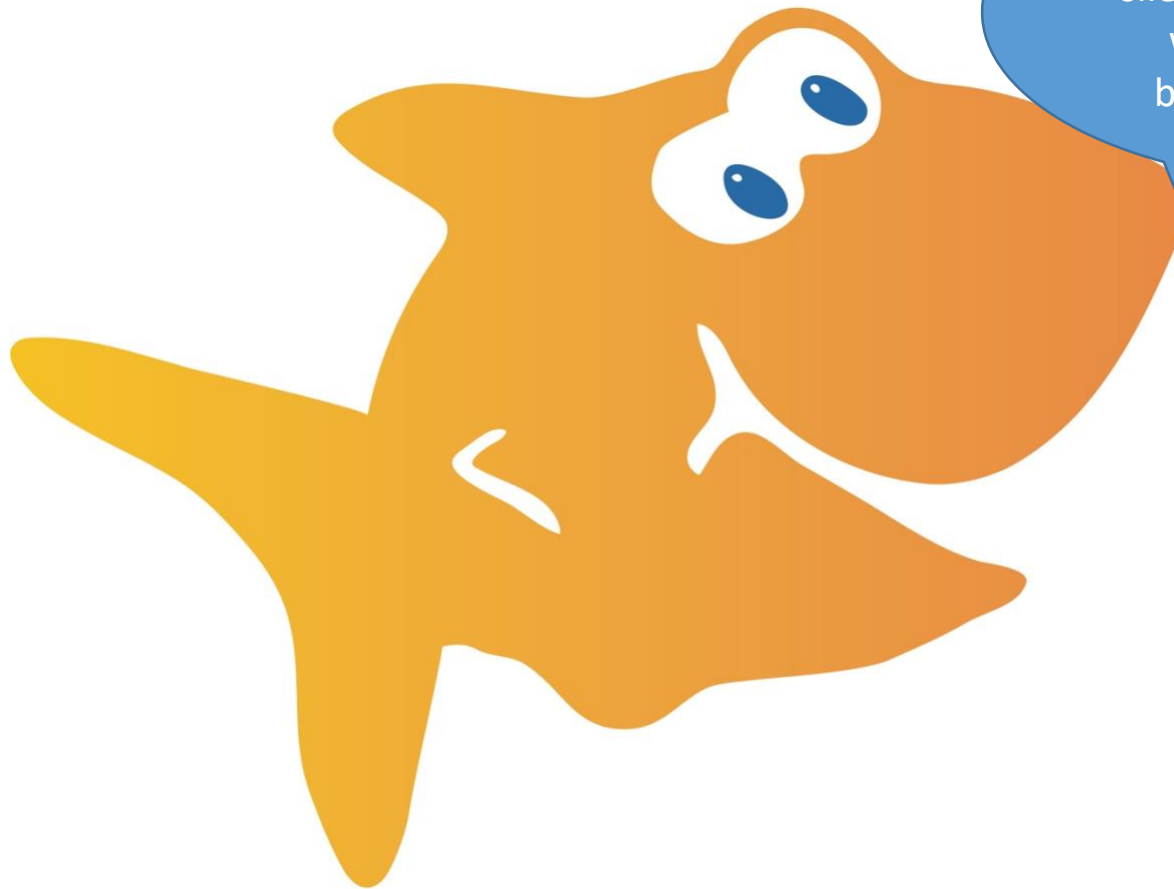
### Storage 2 Card

There will be a final exam on the last day.

- You will be asked questions about what you have learned over the two weeks.
- Questions will be short answer and multiple choice.
- You will have time to prepare for this exam during study halls we have built into the program.



**Living Roof Card**



Please put phones on silent and put them away when you enter the building for program!



**Day 2: Team Building**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:25AM	Community Building	25 minutes
9:25 – 10:10AM	Drive to Team Building	45 minutes
10:10 – 11:40AM	Team Building	90 minutes
11:40 – 12:00PM	Lunch	20 minutes
12:00 – 12:45PM	Return to Living Lab	45 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

**Supplies:**Check-In:

- Name tags (1/person)
- Student roster (1)

Community Building:

- Getting to know you cards (1/student + 1/adult joining the bus ride)

Team Building

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small white board
  - White board erasers/rag
  - Binoculars
  - Dry erase markers (3)
  - Extra pens (10)
  - Portable 1st Aid Kits (1/instructor)

Self-Reflection

- Copies of the Rules (1/student)
- Dice (1/group)

**Set Up**Community Building

- See “Day 1 Set-up”

Science Labs

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.

Team Building:

- Grab an instructor backpack (1/group)
- Grab Bus sick bag (1/bus)
- Pack student lunches and water cooler in staff car.
  - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

**Intensive Program Manager**Check-in

- Answer parent questions/concerns.
- Talk to mentors and encourage them to participate in Team Building activities – this will help create connections with students.

Community Building

- Lead Community Building.
  - Determine the number of adults joining the bus ride and select the appropriate number of Getting to Know You Card sets (1/pair of people).
  - See Curriculum below.

Science Lab

- Make sure all drivers have directions to drop-off location/parking area.
- Coordinate drop off/pick-up location with bus drivers.
- Figure out a location for students to eat lunch and communicate this to Team Leads.
- Attend field trip with staff and take pictures.
- Bring thank you gifts for Team Building staff.

Servant Leadership & Reminders:

- Meet with mentors and get feedback:
  - What went well today?
  - What did you find challenging?
  - Is there anything you need for tomorrow?
  - Review next day’s agenda.

**Floor Lead**

Set-up/Check-in:

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.

**Teaching Notes for Team Lead**

- Discuss daily schedule and floor management with mentors and Assistant Team Leads.

## Community Building

**Location:** Kitchen

**Community Building Question:** What is something about you that is unique?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	<b>Food &amp; Conversation</b>
9:05 – 9:20AM	Food and Conversation	
9:20 – 9:25AM	Clean-up & Announcements	

**Food and Conversation:**

Introduction

- Review Purpose of Food and Conversation and Community Question.
  - See “Community Building Day 1” curriculum.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Announcements:**

- Introductions:
  - Introduce any new adults.
- Agenda:
  - Review the day’s agenda from the whiteboard.
- Prepare for Field Trip departure.
  - Introduce Getting to Know You Bus Ride:
    - Remember one of the goals of this program is for you to build your community which means getting to know new people.
    - We will use the bus ride to do this.
    - Each person will choose a card with a number on it.
    - You will find the person with the same number as you.
    - The two of you will sit together for the bus ride to our destination and spend some time getting to know each other.
    - To help, the back side of the card with the number has a list of questions you can ask each other but feel free to discuss whatever comes to mind.
    - The cards will be collected at the end of the bus ride.
    - On the way home you may choose to sit with whomever you would like.

- (Have each student take a laminated card and find the other person with the same number.)
- Use bathroom.
- Fill water bottles.

## **Science Lab**

Goal: Students, staff, and mentors participate in team building activities, prepared and executed by an outside organization, to create strong bonds and a sense of togetherness.

### Overview of the Day:

- All staff, mentors, and students will be divided into small groups.
  - All staff must participate.
  - Mentors are highly encouraged to participate as this day will help create connections with students.
- San Diego State University's ARC staff will lead a series of team building activities.
  - <https://arc.sdsu.edu/teambuilding#:~:text=A%20team%20building%20session%20usually,get%20to%20know%20your%20group>.

## Growth Mindset Tools: Process Reflection

### Timing:

- 0:00 – 0:10: Growth Mindset Overview
- 0:10 – 0:20: Building a Growth Mindset

### Growth Mindset Overview

#### Review Growth Mindset (SLIDE)

- Yesterday we introduced the idea of Growth Mindset and read an article on growth mindset.
- Ask students to define Growth Mindset
  - Growth Mindset: means you believe your intelligence, abilities, and skills can be developed over time through dedication and hard work and challenges are an opportunity to grow.
- Mindset is on a continuum (SLIDE)
  - Most people aren't completely on one side or the other but are on different parts of the continuum depending on the activity.
    - Example: I can have a strong growth mindset as it relates to my ability to play soccer but have a fixed mindset on my ability to do art.
- Today we will talk a bit more about what having a growth mindset can look like.
- We are going to watch a short video about several athletes – while watching think about the question:
  - What do these athletes believe is important about being successful?
- Show Mindset of Champions video. (SLIDE)
  - <https://www.youtube.com/watch?v=EhMxLC4COH0>

#### Debrief Mindset of Champions

- Pair-Share
  - What do these athletes believe is important about being successful?
- Be sure to cover
  - These athletes all believe that hard work, determination, and grit are part of what made them successful – not just talent.
    - Connection to growth mindset: They believe their abilities and skills can be developed overtime through dedication and hard work.
  - Successful athletes fail sometimes but they get up and do it again and are always trying to be better.
    - Connection to growth mindset: They believe challenges are opportunities to grow.
  - Athletes aren't the only people to whom this idea applies!

### Building a Growth Mindset

#### Introduce Growth Mindset Practice

- How can you have a Growth Mindset?
  - At Ocean Discovery we use a Growth Mindset practice.

- Review the Growth Mindset Practice. (SLIDE)
  - Identifying the challenge.
    - Recognizing when something feels difficult/challenging or you have a fixed mindset about something.
    - Realizing that you CAN overcome a challenge or fixed mindset and that this is an opportunity to grow and learn.
  - Determining Tools to Use
    - Knowing the Growth Mindset Tools that you have in our toolbox.
    - Determine which one(s) to use.
  - Using the tools.
    - Apply the tool or tools you choose.
    - This is where the hard work comes in.
    - You need to have grit and know that this won't always be easy but if you keep working at it you will overcome the challenge.
  - Reflecting.
    - After applying the tools and working hard – what happened?
      - You were successful. Reflect:
        - How do you feel?
        - What worked well to overcome that challenge.
      - You were not successful. Reflect:
        - What didn't work? Why do you think it wasn't working?
        - Do you need a new tool or more time with the same tool?
        - If necessary, determine new tools to address the challenge.

#### Identifying the Challenge.

- Not all of us have a growth mindset about everything, and that's okay because everyone of us can have a growth mindset about anything we want to!
- Having a growth mindset takes practice. It will not always be easy, but with more and more practice we will get better it until we are viewing all opportunities as a chance to learn and grow.
- Step one of the Growth Mindset Practice is: Identifying the Challenge (SLIDE)
  - It is important to be able to recognize when you have a fixed mindset about something.
  - When you are having a fixed mindset about something it can often sound negative.
 

Examples:

    - I'm not good at science.
    - I don't have good ideas.
    - I've been bad at soccer my whole life.
    - I'm not smart enough to do that.
    - I'm going to fail that test.
    - I'm not very strong.
    - I'm a terrible cook.
- These statements make it sound like you are born in a certain way and you can never change it.



- These are the types of statements we want to look out for and recognize as a fixed mindset.
- Once you recognize you have a fixed mindset about something it's important to start by reframing your thoughts and words.
  - The first step to a growth mindset is changing how we talk about ourselves.
  - It is important to verbalize to ourselves and to others our ability to do something if we put our mind to it.
  - The first step to a growth mindset is taking a fixed mindset statement and turning it into a growth mindset statement.
    - Fixed mindset: I'm not good at science.
    - Growth mindset: I can be good at science.
- Pair-Share
  - Let's practice taking some of these fixed mindset statements and turning them into growth mindset statements.
  - Have students pair up and attempt to turn each fixed mindset statement into a growth mindset statement.
  - If time allows have students think about something they think they have a fixed mindset about.
    - Have students reframe their own fixed mindset into a growth mindset statement.

## Growth Mindset Tools: Self-Reflection

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Teambuilding

- Storytelling as Tool for Success.
  - **Storytelling** (review of first day of why we write) is how we communicate. It's how we get to know one another. We all need to be able to tell a good story. The best stories are the ones people remember. So even if you plan on being a soccer star or a Rockstar, you need to be able to tell a good story for the media, to be on YouTube, for TikTok. If you want to be a politician or an environmentalist, you'll need to be to be heard, to be understood so that others will see your point of view. If you are a Scientist you want to be able to explain your research and discovery in a way that excites people.
- Show Pelé movie trailer. Point out the part where they say he is now the spokesman for their country. <https://www.youtube.com/watch?v=gcN8ZmYyJVY>
- A movie is a story. A documentary about fish conservation, or a biopic about your hero, or a fantasy, or a cartoon, or story of any kind. These are all important.
- Write about your hero. They can be anyone. Your Mom, a soccer star, someone at ODI, someone you imagine but you don't know yet. Anyone, a mentor. Why are they your hero? What do they inspire you to do, to be?
- **Prompt #1:** My hero is....[describe in detail] (ask them to write sentence stem on page) [12 mins]
  - Ask them to share.
- **Prompt #2:** The call for help came, and I ....

## **Growth Mindset Tools: Healthy Bodies**

### Growth Mindset

- Remind students that exercise and nutrition are two tools for having a Growth Mindset – to support Healthy Bodies!
  - Use Mantra: Healthy Bodies! Higher Goals!
- Remind students that each day we will use this time to learn about exercise options and nutrition so we can support having Healthy Bodies.

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

### **Servant Leadership & Reminders**

- For Reminders: See today's PowerPoint slide.
- For Servant Leadership: see *"Day 2 Servant Leadership and Reminders"*.

## Day 3: Explore & Wonder – Invertebrates

**Goals:** Students visit the rocky seashore to ask questions and make observations about invertebrates.

**Timing:**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:25AM	Community Building	25 minutes
9:25 – 10:10AM	Drive to Rocky Seashore	45 minutes
10:10 – 11:40AM	Explore & Wonder - Invertebrates	90 minutes
11:40 – 12:00PM	Lunch	20 minutes
12:00 – 12:45PM	Return to Living Lab	45 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

**Supplies:**

Check-In:

- Name tags (1/person)
- Student roster (1)

Community Building:

- See supply list on Day 1

Science Lab

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small white board
  - White board erasers/rag
  - Binoculars
  - Dry erase markers (3)
  - Extra pens (10)
  - Portable 1<sup>st</sup> Aid Kits (1/instructor)
  - Small aquaria (3)
  - Small Science Discovery Process Poster (1)
- Mentor backpacks (3)
  - Pack all materials for student backpacks (below) in Mentor Backpacks.
  - Mentors will distribute all student backpack supplies on the bus on the way to the field trip and collect them on the way home.

- To be added to Student Backpacks (1/ student)
  - Binoculars (1/student)
  - Hand lens (1/student)
  - Pens
  - Rocky Seashore Animal ID Card (laminated) (1/student)
  - Map to La Jolla (1/2 page laminated) (1/student)
  - Tide chart – La Jolla (1/student)
    - Printed each week from:  
<https://tidesandcurrents.noaa.gov/noaatidepredictions.html?id=9410230>

Lunch

- Water cooler filled with water (1)
- Coolers to pack lunches (3)

**Set Up**Community Building

- See “Day 1 Set-up”

Science Lab

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Grab supply backpack (1/group)
- Grab an instructor backpack.
- Pack student lunches and water cooler in staff car.
  - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

**Intensive Program Manager**Community Building

- Lead Community Building.
  - Determine the number of adults joining the bus ride and select the appropriate number of Getting to Know You Card sets (1/pair of people)
  - See Curriculum below.

Science Lab

- Attend field trip with staff.
- Make sure all drivers have directions to drop-off location/parking area.
- Upon arrival at the Rocky Seashore coordinate with Team Leader about which part of the tidepools each group will explore.
- Coordinate drop off/pick-up location with bus drivers.

**Floor Lead**Set-up/Check-in:

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.

**Teaching Notes for Team Lead**

- During bus ride to the Rocky Seashore que mentors to hand out supplies to students to place in their backpacks.
  - See list above in supplies
- During Rocky Seashore Exploration
  - Make sure students stay within the physical boundaries when exploring the rocky seashore.
  - Watch out for students too close to the waves.
  - Count students often.
- During bus ride back to Living Lab – que mentors to collect exploration supplies from students.



## Community Building

**Location:** Kitchen

**Supplies:**

- Getting to know you cards (1/student + 1/adult joining the bus ride)

**Community Building Question:** If you won a million dollars, what is the first thing you would buy for YOURSELF?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	<b>Food &amp; Conversation</b>
9:05 – 9:20AM	Food and Conversation	
9:20 – 9:25AM	Clean-up & Announcements	

**Food and Conversation:**

Introduction

- Introduce the Community Question.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Announcements:**

- Introductions:
  - (IPM to introduce any new adults.)
- Agenda:
  - (Review the day’s agenda from the whiteboard.)
- Prepare for Field Trip departure.
  - Review Getting to Know You Bus Ride Activity
    - See “Curriculum Day 2: Community Building” for directions.
    - Have students and adults joining for the bus ride all choose a card.
  - Use bathroom.
  - Fill water bottles.

## Science Lab

### Drive to Rocky Seashore at La Jolla.

#### Leaving Living Lab:

- Have each student grab their science notebook and utilize the bathroom.

#### Directions:

- Take Fairmount Avenue to **805 N**
- Take the exit for **La Jolla Parkway** (CA-52 W)
- La Jolla Parkway will become **Torrey Pines Rd.**
- Make right onto **Prospect Place.**
- Make a right onto **Jenner Street.**
- Make a quick left onto **Coast Blvd S.**
- Coast Blvd S. becomes **Coast Blvd.**
- Continue heading south on **Coast Blvd.** while looking for parking.

#### Parking & Gathering:

- When you are on **Coast Blvd.** immediately start looking for parking along the coast.
- Park at the first opportunity.
- Gather at the Introduction location (see map).
- Each Team Lead should find a location to begin their Introduction.

Map of La Jolla Tidepool Area



## Rocky Seashore Exploration

Goal: Students explore the rocky seashore to ask questions and make observations about invertebrates.

### Timing:

- 0:00 – 0:10: Intro
- 0:10 – 0:15: Walk Down to Tidepools
- 0:15 – 0:55: Explore
- 0:55 – 1:10: Science Notebook Sketch
- 1:10 – 1:20: Walk up to Debrief Area
- 1:20 – 1:30: Debrief

### Intro

- La Jolla Coast.
  - Welcome students to La Jolla.
    - (Orient students to their location in relation to City Heights using laminated map.)
    - Has anyone ever visited here before?
    - What did you do while you were here?
- Rocky Seashore
  - There are many ecosystems here in La Jolla including: the ocean, sandy beach, rocky seashore, etc. – today we will focus on the rocky seashore.
    - Ask students what they already know about the rocky seashore.
    - Ask students to try to define rocky seashore.
      - Rocky seashore: a coastal seashore made of solid rock.
- Tidepools
  - A defining feature of the rocky seashore is tidepools.
    - Ask students to try and define tidepool.
      - Tidepool: Pools of saltwater that are left behind when the tide goes out.
- Tides
  - Two high and two low tides in San Diego each day.
  - Have students make a hypothesis: Is it high or low tide right now?
    - Ask students to back up their hypothesis with evidence.
      - Students may use tide charts or observations about the level of water, seaweed lines, etc.
    - Have students confirm their answer using tide charts.
      - If time allows ask some follow up questions: When will the next high tide be? Next low tide? What day will we have the lowest low tide? Etc.
- Introduce Explore & Wonder:
  - Today we will be using the Science Discovery Process and we will focus on Explore and Wonder.

- (Show Science Discovery Process Poster.)
    - One way science leaders explore and wonder is by “Making Observations”.
      - Define observation: using the senses to gather information from the natural world.
      - Examples:
        - You can use your sense of touch and observe that a shell has ridges that are too small to see with your eyes.
        - You can use your sense of smell to observe that certain plants give off a very stinky smell and some give off a very pleasant smell.
        - You can use your sense of hearing to observe that humming birds create a loud thrumming sound with their wings when they fly.
      - Science leaders make observations about the world around them all the time.
      - Ask students to make an observation about the space around them.
        - Challenge students to make observations not related to sight.
    - Another way science leaders Explore and Wonder is by “Asking Questions”
      - Define question: something that may help us to answer or figure out the reason for some observation.
        - Questions often come from something we are curious about. Curiosity is simply the desire to know or learn about something.
      - Examples:
        - Observation: You can use your sense of smell to observe that certain plants give off a very stinky smell and some give off a very pleasant smell.
        - Questions:
          - Why do some plants give off a bad smell and some a good smell?
          - Does the smell help them to attract certain animals?
          - Why would they want to attract animals?
          - Does the bad smell keep some animals away?
      - Science leaders are asking questions about things they see all the time. Often their observations lead to many different questions.
  - Today we will explore and wonder about invertebrates at the rocky seashore.
- Introduce Invertebrates:
  - Many animals make their home at the rocky seashore and for the next three days we will be focusing on a special type of animal- Invertebrates!
    - Define Invertebrate: an animal without a backbone.

- Explore & Wonder at the Rocky Seashore
  - Your job today is to Explore & Wonder about Invertebrates.
    - You will want to make observations and ask questions about invertebrates as you walk around the rocky seashore.
    - After we have had time to explore freely, we will all gather together to write down some observations and questions.
    - For now, we will keep our notebooks in our backpacks so they don't get wet.
  
- Exploration tools:
  - When exploring it can be good to have tools. Review tools:
    - Binoculars
    - Hand lens
    - Small aquaria (instructor pack)
    - Rocky Seashore Animal ID Card
  
- Review Community Agreements:
  - Be curious:
    - Use any tools you have to explore organisms you find up close.
    - Ask questions! Make observations.
    - Share questions and observations with other people!
  - Be safe:
    - Stay within the set boundaries. The boundaries will be defined when we walk down to the rocky seashore.
    - Move slowly- the rocky seashore is slippery. Walking only.
    - Stay back from the waves.
  - Be respectful.
    - Use one VERY gentle finger to touch animals.
    - Do not "poke" or push forcefully on animals.
    - If you want to pick an animal up and it doesn't come up easily – leave it there and study it where it is. Don't try to pry things off of rocks.

### Walk down to Tidepools

#### Explore

- (Once you reach your area for exploration gather students around in a circle and show them the physical boundaries they may explore.)
  - *(Include a distinct boundary that keeps students back from the waves).*
- (As students find invertebrates place some of them in the small aquaria so students can look more closely at them.)
- (Share fun facts about the invertebrates students find.)

### Science Notebook Sketch

- (Gather all students together down at tidepools.)
  - Have students turn to the **Explore & Wonder – Invertebrates** page in their science notebook.
  - Have students write “Invertebrates: Animals without a backbone” at the top of their page then divide their page into four boxes.
  
- Each of us will sit here and take the next 10 minutes to:
  - Make a sketch of four invertebrates.
  - For each invertebrate:
    - Record the name.
    - Record an observation.
    - Record a question.
  - Do an example organism to show students.

### Walk up to Debrief Area

*Teaching Note: You can choose to do the debrief down at the tidepools or up on the grassy area.*

### Debrief

- Was anyone able to identify/name an animal they saw?
  - (Write the name of the organism on the whiteboard.)
    - What was an observation you made about that organism?
    - What was a question you had about it?
  - Ask other students if they saw the same animal?
    - Ask those students if they had any additional observations/questions?
  - Repeat until you get a list of 6-7 organisms.
  
- We found lots of invertebrates here in La Jolla.
  - Do you think there are any invertebrates back in City Heights? Why or why not?
  - Do you think some invertebrates live on land?
    - What might be some examples?
  
- As science leaders it is important to understand that observations and questions are part of the Science Discovery Process.
  - (Show Science Discovery Process poster.)
  - When science leaders explore their environment, they make observations which can lead to questions, that can lead to experiments, analysis, communication of what they learned and making a difference in the world, but it all starts with exploring and wondering!
  - Great job science leaders!
  
- (Make sure each student returns all tools to backpacks.)

- (Make sure each student has their backpack.)

**Lunch:**

- (Lunch will be eaten on the grass.)
- Review expectations of eating outside.
  - All trash in trash cans.
  - Leave things better than you found them.
  - If you don't want it, offer it to someone else.
  - All food eaten here- no food in vans.



## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:05 Intro to Concept Maps
- 0:05 – 0:20 Fill in Concept Map

### Intro to Concept Maps

- Each day after lunch we will spend some time learning and using a Growth Mindset tool to supporting learning. (SLIDE)
  - Know it! Own it! tools will be used during Bridge to help prepare you for your final exam but can also be used in high school and college.
- The first Know it! Own it! tool we will learn is concept maps.
  - Concept maps are a way of taking new knowledge and organizing it in a way that helps you understand it, remember it, and link it to other already existing knowledge you have.
- Review how concept maps work. (SLIDE)
  - Concept maps help us identify relationships between ideas and link them together.
    - Review example Reptile concept map.
  - Science tells us that understanding these relationships and making a visual representation of those connections can help you understand things at a much deep level and make it easier for you to remember and recall the knowledge later. (SLIDE)
  - Concept maps should make sense to you! (SLIDE)
    - There isn't a right or wrong way to create concept map.
    - Everyone's will look a little different.
    - Lines between bubbles means ideas are connected.
- Each day we will take time to think about what we learned during the morning's science labs and create a concept map to organize our knowledge and link new information with old information.

### Fill In Concept Map

- Demonstrate how to build a concept map using mental modeling. (SLIDE)
  - Today, I will show you an example of how to create a concept map.
  - Through the program you will be adding to this concept map and building concept maps of your own.
  - Right now I am going to explain how my thinking when I create a concept map.
  - There will be time when I am done for you to copy the concept map I create but for now just listen to my thought process.
  - (Build a concept map on whiteboard while modeling your thinking – SEE BELOW EXAMPLE.)
    - (Students need to understand what goes on inside your mind as you build a concept map.)

**Mental Modeling**

- *I want to start my concept map by thinking about what I was learning about today.*
  - *(Have students open their science notebooks and look over their notes.)*
  - *Ask students – “What do you think the main topic of today was?”*
    - *Invertebrates! Invertebrates was the big topic today – everything I learned about was centered around invertebrates, therefore, I am going to draw a large box and place it at the top of my concept map and write “Invertebrates” inside*
    - *(Walk over to white board and draw a large box and write the word “Invertebrates” inside).*
  - *I will make this box the largest because it is the main idea of this concept map.*
    - *Any other boxes I draw will be smaller because they are ideas related to the main concept.*
- *Okay, so now I want to ask myself “What are some important things I have learned about invertebrates?”*
  - *Ask students “What are some important things I learned about invertebrates today?”*
    - *(Remind students to look through their science notebook.)*
    - *The definition of invertebrates feels important.*
    - *I will add the definition of invertebrates to a smaller box and I will connect the two with a line to show that the definition is of invertebrates.*
    - *(Draw a smaller box below and to the left of Invertebrates and write: Definition: an animal without a backbone.)*
- *Okay now what are some other things I learned about invertebrates?*
  - *We saw a bunch of examples of invertebrates today.*
  - *That will probably help me remember things later, so I am going to another box to my concept map and call it “Examples”. I will also add a line between this one and the “Invertebrates” box to show that these would be examples of invertebrates.*
  - *Ask students if they remember any examples of invertebrates.*
    - *As they mention one – add another smaller box under the “Examples”, write the name of the invertebrate they mention and draw a line connecting them.*
    - *Do this for several examples.*

- Copy concept map.
  - (Have students take out their science notebooks and turn to **Concept Map – Invertebrates** page.)
  - Explain to students that we will be adding to this concept map so they should leave some space but not make the concept map too small.

## Growth Mindset Tools: Self-Reflection

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Explore & Wonder – Invertebrates

#### Field Trip to the Tidepools

- Introduce Past Ocean Leader Alumni:
  - Talk about their experience with self-reflection.
  - Why reflection is important.
  - Share a piece they wrote to model vulnerability.
- Read the Rules for Writing
- Can you describe your day at the tide pools?
  - Write at the top of your page:
  - Today at the tidepools,
- Instructions: Close your eyes for a moment and remember when you first arrived at the tidepools. Keep them closed and go back over your time there. Open them and write...
  - This is what I saw....[1 mins]
  - This is what I heard...
  - This is what I smelled...
  - This is the weirdest thing I touched...
  
  - When we arrived at the tidepools, this is what I felt...
  
  - When we left the tidepools, this is what I was thinking....
  
  - What I will remember about the tidepools is...

## **Growth Mindset Tools: Healthy Bodies**

### Growth Mindset

- Remind students that exercise and nutrition are two tools for having a Growth Mindset – to support Healthy Bodies!
  - Use Mantra: Healthy Bodies! Higher Goals!
- Remind students that each day we will use this time to learn about exercise options and nutrition so we can support having Healthy Bodies.

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

### **Servant Leadership & Reminders**

- For Reminders: See today's PowerPoint slide.
- For Servant Leadership: see *"Day 3 Servant Leadership and Reminders"*.

## Day 4: Investigate – Invertebrates

### Timing:

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:45AM	Community Building	45 minutes
9:45 – 11:00AM	Investigate – Invertebrates: Life on the Rocks Experiment	Science Lab 75 minutes
11:00 – 12:15PM	Know it! Own it! - Invertebrates	
12:15 – 12:45PM	Lunch	30 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	Growth Mindset Tools 20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

### Supplies:

#### Check-In:

- Name tags (1/person)
- Student roster (1)

#### Community Building:

- Blindfolds (3)
- Object (3)
  - Anything will work (stuffed animal, toy car, etc.)
- Prizes (10)
- See supply list on Day 1

#### Life on the Rocks:

- Science Discovery Process poster (1/group)
- Live Invertebrates (1 per 2 students)
  - Each student should have the chance to interact with two animals.  
There can be multiples of a species, no one species should make up more than 50% of the organisms and greater diversity overall is optimal.
  - Best invertebrates for this lesson: Giant Keyhole Limpets, Ochre Sea Star, Chiton, Snails (the larger the better)
  - Invertebrates not to use for this lesson: Hermit crabs
- Small aquaria w/ lids (1 per 2 students)
- Bubblers for small aquaria (1 per 2 students)
- Dry rags (2/group)
- Dry towels (2/group)
- Large plastic supply bin (1/group)
- Bucket of clay (1/group)
- Laminated “Survivor” and “Non-survivor” signs (laminated) (1 set/group)

- Acrylic panel made to look like the rocky seashore(1/group)
- Home Depot bucket (2/group)
- Yellow scraper to remove clay animals from acrylic panels (1/group)

Know it! Own it!:

- Large pieces of chart paper (3/group)
- Sharpies (3/group)
- Laptops (3/group)

Mentor Thank You:

- Mentor thank you gifts (1/mentor)
- Speakers + iPod with Thank You song (1)

**Set Up**

Community Building:

- See “Day 1 Set-up”
- Prep supplies for Community Building Activity.
  - See Community Building Activity below.

Science Labs

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Set-up a whiteboard to function as a word wall.
- For Invertebrate Adaptations Lab:
  - Ensure there are diverse invertebrates and enough for each pair to have one.
    - Place each invertebrate in a small aquarium and place a lid on top.
  - Place all aquaria back in the tank so that they stay chilled and aerated until they are needed for the lab.
  - Place “rocky seashore” panel at an angle inside the large plastic tub (to create a “rocky seashore”).
  - Fill Home Depot buckets with water about 2/3 full.
  - Divide clay into equal pieces (about 1in balls) one per student + 2 additional/adult and place back in the clay bucket.
  - Wet two wash clothes and place off to the side with dry towels (for students to clean clay off hands).
  - Set up a spot where you can lay out both the “Survivor” and “Non-Survivor” laminated cards with enough space to lay survivor and non-survivor clay invertebrates out after experiment.

**Intensive Program Manager**Community Building

- Lead Community Building.
  - See Curriculum below.

Science Labs

- Review the concept of “Ask an Expert” with mentors:
  - They will have a group of 3-4 students they will be working with individually.
    - Invite students to sit with you in a circle.
    - Students will come to you with questions they have.
    - Have each student share a question.
      - When a student shares a question – do you best to answer it or have other students help to answer the question.
  - You will be provided a laptop to research answers to questions you aren’t familiar with.
  - Share ideas on how redirect students if they start to ask off topic questions.
    - Answer their question a then redirect them.
    - Ex. I’m excited to tell you more about my own journey but let’s make sure you understand all the concepts first. What was one of the questions you wanted to ask?
- Assign all Mentors to “Ask and Expert” locations.

**Floor Lead**Set-up/Check-in

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
  - Collect paperwork.
  - Hand out student polos.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Return uneaten breakfast and lunch food to refrigerator.
- Deliver living invertebrates to each Team Lead at the start of Investigate – Invertebrates: Life on the Rocks.
- Return living invertebrates to large tank and the end of Investigate – Invertebrates: Life on the Rocks.
- Collect, wash, dry, fold, and put away dirty towels from Science Lab.
- Prep supplies for the next day.



## Community Building

**Location:** Kitchen

**Community Building Question:** Yesterday we had the opportunity to explore a natural environment. What is something you enjoy doing with your family or friends outdoors?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	Food & Conversation
9:05 – 9:25AM	Food and Conversation	
9:25 – 9:30AM	Clean up	
9:30 – 9:40AM	Community Building Activity	Community Building Activity
9:40 – 9:45AM	Announcements	Announcements

**Food and Conversation:**

Introduction

- Introduce the Community Question.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Community Building Activity: Pirates Treasure**

Directions & Activity:

- Divide the group into three smaller groups.
- For each small group:
  - Form a circle with a chair in the center.
  - Select one person to sit in the chair – this is the pirate.
  - Under the pirate’s chair place an object (i.e. stuffed animal, ball, toy car, etc.).
    - This is the pirate’s treasure.
  - Blindfold the pirate.
  - The people in the circle have to try to take the pirate’s treasure with the pirate noticing.
  - If the pirate points in the person’s direction or tags them they are “out” and have to sit down in the circle.
  - If someone is able to take the object and return to the circle without the pirate noticing they get a prize.
  - If the pirate is able to catch everyone before they steal the treasure the pirate gets a prize.
  - If time remains, play again.

## Science Lab

Goal: Students learn how invertebrates are adapted to their environment by doing an experiment and learn skills to take new knowledge and organize it.

### Invertebrate Adaptation Lab

#### Timing:

- 0:00 – 0:15: Introduction
- 0:15 – 0:35: Living Invertebrates
- 0:35 – 0:45: Hypothesis
- 0:45 – 0:50: Investigate & Gather Evidence
- 0:50 – 1:05: Analyze
- 1:05 – 1:15: Debrief

#### Introduction

- Review previous day with students.
  - Focus: Invertebrates:
    - Definition: an animal without a backbone or bony skeleton.
    - Examples: have student list examples they have seen
    - What habitat did we observe these invertebrates in: rocky seashore.
- Review the physical environment at the rocky seashore.
  - (Play 1-2 minutes of a rocky seashore video.) (SLIDE)
  - Ask students to describe the physical environment they see or remember from their field trip.
  - Focus on the physical environment:
    - Rocks
    - Waves
    - Sun
    - Lack of water at times
  - The rocky seashore is a harsh environment and the invertebrates that live there must be adapted to survive among the waves, rocks, hot sun, etc.
    - Define adaptation: something that helps an organism survive in its environment.
      - Ex: Polar bear– ask students where polar bears live? The arctic. What is the Arctic like? How are polar bears adapted to survive there?
- Investigate
  - Yesterday we Explored & Wondered about invertebrates.
  - Today we will **Investigate** invertebrates and how invertebrates are adapted to life at the rocky seashore.

- Specifically, we will look at how invertebrates are adapted to dealing with waves.
    - Invertebrates do not want to get knocked off the rocks and washed out to the open ocean by the waves, therefore they must have some adaptations that help them to deal with waves and stay put on the rocks.
  - Let's look closer inside the "Investigate" bubble:
    - (Show Science Discovery Process poster.)
      - Make a hypothesis
      - Design Investigation
      - Gather Evidence
- Hypothesis:
  - Define hypothesis: an educated guess based on information you know.
    - (Add "Hypothesis" to word wall.)
  - Each person will get to create an invertebrate that you think would be adapted to survive the waves at the rocky seashore (your hypothesis).
    - Since a hypothesis is based on an educated guess, you will have time to study living rocky seashore invertebrates and think about how they are adapted to deal with waves at the rocky seashore.
    - You will then be given a piece of clay to design an invertebrate that you think could survive waves at the rocky seashore – this will be your hypothesis.
- Design Investigation:
  - Define Investigation: a plan for testing a hypothesis.
    - (Add "Investigation" to the word wall.)
  - To test your "hypothesis", you will place your clay invertebrate on our "rocky seashore".
    - (Show the "rocky seashore" angled in the plastic tub.)
  - I will then create a "wave" using this bucket of water.
    - (Hold up an orange Home Depot bucket.)
- Gather Evidence:
  - Define Evidence: data that either supports or doesn't support a hypothesis.
    - (Add "Evidence" to word wall.)
  - As a group we will gather evidence and determine what types of adaptations could help invertebrates deal with waves at the rocky seashore.

### Living Invertebrates

- You will have time to see 3-4 different invertebrates before building your own.
- Focus on thinking about how the invertebrate you are looking might be adapted to deal with waves.
  - While you are observing your invertebrate you can write or sketch any ideas, observations or thoughts you have about an invertebrate you might like to build.
  - (Have students open to the "**Investigate - Invertebrates**" page in their science notebook.)

- Review expectations for viewing invertebrates:
  - Be respectful: You may touch it gently with two fingers, do not pull, squeeze or poke.
  - Be curious: Ask questions of your fellow Ocean Leaders and yourself.
- (Place an invertebrate in a small aquarium in front of each group of students.)
  - Let students observe the invertebrate in front of them for 3 minutes while staff walk around and talk to students.
  - Remind to make notes and draw pictures in their science notebook.
- (Rotate invertebrates every 4-5 minutes so students get to observe 3-4 inverts.)
- (Floor Lead will take invertebrates back to tank.)

### Hypothesis:

- Review investigation. (SLIDE)
  - You have had a chance to study living invertebrates.
- Now you will build an invertebrate out of clay that will be able to survive the waves at the rocky seashore.
  - This is your hypothesis – an invertebrate you believe could survive the waves at the rocky seashore.
- You will place your hypothesis invertebrate on the rocky seashore and we will use the bucket to create a wave.
- You will have approximately five minutes to build.
  - Use your notes/drawings in your science notebook to help.
    - (Give each student a piece of clay and set a timer for five minutes.)

### Investigate & Gather Evidence

- Have students bring up their clay invertebrates and attach them to the acrylic panel.
- Have students step backwards out of the “splash zone”.
- Take the bucket and create a “wave” by dumping the water over the entire panel. BE CAREFUL not to create too strong of a wave that knocks everything off!
- Take the clay invertebrates that fell off and place next to the “non-survivor” laminated card.
- Take the clay invertebrates that stayed attached and place next to the “survivor” laminated card.

### Analyze

- Let’s look at the “Analyze” bubble more closely.
  - (Show Science Discovery Process poster.)
  - Examine results
  - Discover patterns and trends.
- Examine Results and Discover patterns and trends:
  - Pair-share: Look at the evidence we gathered, what similarities do you notice among the survivors and what similarities do you notice among the non-survivors?
    - Ask students how each characteristic they notice could be helpful/not helpful to surviving the waves at the rocky seashore.

- Be sure to cover:
  - Low profile (students may use words such as: short, low, etc.)
    - Less surface area to be impacted by a wave versus a tall organism which would absorb more of the force of a wave.
    - (Kinesthetic Body Movement: Stand up straight with legs together and arms at sides.)
  - Large sticking area (clarify that size of the sticking part is most important not simply a large size animal.)
    - Larger surface area to stick to rocks.
    - (Kinesthetic Body Movement: Have students hold all their fingers up and spread out like tube feet.)
  - Round body shape (hydrodynamic) – versus a blocky or more square shape.
    - Reduces the pressure of water which flows around this body shape.
    - (Kinesthetic Body Movement: Make a circle with both hands and move it them in a circle.)

### Debrief

- Have student record the adaptations to waves in their science notebook. (SLIDE)
  - (Investigate – Invertebrates page.)
    - Low profile: Less surface area to be hit and knocked over by a wave.
      - Examples: chiton, limpet, etc.
    - Large sticking area: large surface area to stick to rocks
      - Examples: giant keyhole limpet (large muscular foot), starfish (hundreds of tube feet), etc.
    - Round body shape: water flows around the body of the animal rather than catching on corners and pushing it off of a rock.
      - Examples: chiton, anemone, etc.
- Ask students to think about adaptations that invertebrates have to other harsh physical factors of the rocky seashore:
  - Sun, lack of water, predators, etc.

### **Know it! Own it! – Invertebrates**

#### Timing:

- 0:00 – 0:25: Flash Cards
- 0:25 – 0:50: Study Hall
- 0:50 – 1:15: Ask an Expert

#### Flash Cards

- Growth Mindset
  - You have already learned quite a bit about invertebrates in the last two days.

- Throughout our lives, in high school, college, and beyond we will need to take new information and make it our own – that is why we are learning growth mindset tools to support our learning.
  - Use Manta: Know it! Own it! (SLIDE)
- We have already learned about and are practicing using concept maps as a tool that can support our learning, today we will learn another tool - flash cards.
- Science of Flash Cards.
  - One of the most basic ways to take new knowledge and make it your own is to memorize it.
    - Memorizing knowledge allows us to recall it and apply it to future learning. (SLIDE)
  - One of the best ways to memorize knowledge is by using flash cards.
  - How do flash cards work? (SLIDE)
    - Science tells us flash cards are used to encourage active recall.
    - The format of a flash card, usually a question on one side of the card and the answer on the other, requires students to look at one side and recall the information from the other side.
    - Using flash cards creates stronger neural connections in the brain.
    - If you struggle with certain flash cards, you can repeat those questions more frequently than the other cards to establish a better neural connection.
    - Science has shown using flash cards to be an extremely effective way to improve memory.
- Flash Cards
  - Flash cards are simply cards that have a question on one side and an answer on the other.
    - When creating flash cards it is important to write neatly so that you and other people can read your flash cards later.
    - It is also important that each flash card have only ONE question.
  - What are some types of questions you could write on a flash card: (SLIDE)
    - Definitions: a word on one side and a definition on the other.
      - Side 1: “Q: What is the definition of Biology”
      - Side 2: “A: The study of living things.”
    - Examples of things
      - Side 1: “Q: What are three examples of mammals?”
      - Side 2: “A: fox, whale, human”
    - Questions you think you would be asked on a test.
      - Side 1: “Q: Who was the first person to walk on the moon?”
      - Side 2: “A: Neil Armstrong”
- Example Flash Card
  - Ask students where they think they could look for words and definitions that are important to memorize for their final?

- Science notebook.
- Ask students to come up with two words and definitions they have learned in the last two days that they think would be important to memorize.
  - Give students 2-3 minutes to look through their science notebook to come up with ideas.
  - Write ideas on the board and then discuss as a group which should be turning into flash cards.
    - Invertebrate
    - Adaptation
- Example Flash Card
  - As a group demonstrate how to create the first flash card step by step.
    - Invertebrate: an animal without a backbone.
  - (Hand out four index cards and a binder clip to each student.)
  - (Have students copy the example flash card you created.)
- Create Flash Card
  - Ask students to create the second definition flash card themselves.
    - Adaptation: something that helps an animal to survive.
- More Flash Cards
  - Ask students to look over their science notebook and come up with 1-2 ideas of other things they think might be important to know about invertebrates for their final exam.
    - Give students 2-3 minutes to look through their science notebook to come up with ideas.
    - Write ideas on the board and then discuss as a group which should be turning into flash cards.
      - Examples of Invertebrates
      - Example of Adaptations
  - As a group create 3-4 more example flash cards together (*the goal is a minimum of 5 total flash cards students can use during study hall*).
    - Give students time to copy these flash cards.

### Study Hall

- Introduce Final Exam:
  - On the last day of the Bridge program, you will take a final exam to test the knowledge you have learned throughout the two weeks.
  - The final will include both short answer and multiple-choice questions.
  - You will be tested on all three subjects that we will study: invertebrates, fish, and marine mammals.

- To prepare for the final exam, we have set aside several study halls for you before the exam.
- Study Time (SLIDE)
  - Just like flash cards, time in your day to study is another tool to that can help support your learning.
- Science of Studying. (SLIDE)
  - A lot of research has been done looking at how people study. Here's what science tells us about studying:
    - Short study sessions are better than long study sessions.
    - Several study sessions before a test are better than cramming for one day before an exam.
    - Studying using several short study sessions over a period of several days will increase your ability to retain the knowledge (remember it).
    - Therefore, we will have several short study hall sessions before your final.
  - How you use your study time is much more important that how long you study for.
    - Some of the best things you can do during study time are: (SLIDE)
      - Utilize study tools such as flash cards and reviewing concept maps.
      - Stay focused – don't multi-task (no phones or off topic conversations).
  - Studying with Flash Cards. (SLIDE)
    - When you look at flash cards you are trying to memorize what is on them.
    - Read them to yourself.
      - If you can remember what is on both sides correctly, put that card in one pile and if you can't put it in another.
      - Spend more time reading and rereading the cards from the pile you don't know.
      - Every now and then mix up the order of your flash cards.
- Independent Study Time:
  - (Give students ~5-7 minutes to study their flash cards independently.)
- Pair Study Time
  - In a moment you will pair up to study with someone else for the last few minutes of study hall.
    - Remember: How you use your study time is much more important that how long you study for so be sure to stay focused when working with a partner.
  - How to use a flashcards to study with a partner.
    - Have your partner test you by taking their flash cards and asking you the questions.
    - If you hear a flash card that you don't have but you like – copy that flash card and add it to your pile!
    - If you have extra time have your partner test you using your own flash cards.



- (Give students time to study in pairs.)
- Organize Flash Cards
  - Have students' binder clip their flashcards together & write their name on the top one.
  - Students can leave them in their bin to be used again later.

### Ask an Expert

- Ask an Expert (SLIDE)
  - Just like flash cards and study time, asking an expert is another tool to that can help support your learning.
- Overview of Ask an Expert. (SLIDE)
  - When we think about things we have learned, especially when we are preparing for an exam, sometimes we realize there are gaps in our knowledge or something we don't understand.
  - When that happens there are a few things that you can do – one of them is “Ask an Expert”.
- Who are Experts? (SLIDE)
  - When you “Ask an Expert”, you seek out a person who has more knowledge than you about what you don't understand or you want to know more about.
  - Who are experts?
    - Many people can be experts:
      - High school teachers, college professors, mentors, friends, other people in the same class as you, etc.
- When to Ask an Expert (SLIDE)
  - During Bridge:
    - Not being able to answer some flash card questions.
    - Struggling to create flash cards.
    - Having a question about something.
  - School:
    - Low score on test or quiz.
    - Struggling to apply knowledge when doing homework.
    - That general “feeling” that you don't understand or feeling “lost” during a lecture.
- Comfort level.
  - It is important to have a growth mindset when seeking help from an expert.
  - Sometimes we might have feelings that prevent us from asking for help.

- Embarrassment, fear, feeling intimidated, etc.
    - Try not to let these feelings get in the way. When you feel them – acknowledge them, but remind yourself that people WANT to help you learn – especially teachers, friends, family, and mentors!
  - We will practice “Asking an Expert” during Bridge, so that you can get practice and build comfort with it and with asking experts, like teachers, for help in school and college.
    - When you to seek help from an expert it can be helpful, but not necessary, to have questions written ahead of time to ask.
    - Today we will have our first opportunity to ask an expert any questions we might have. You will choose an “expert” to go to and work with that person to answer any questions you have about what you learned over that last several days.
- How to Ask an Expert (SLIDE)
  - In order to make the best use of your time with the “experts” we are going to have each person write 1-2 questions they want to ask in their science notebooks.
    - One the board are some sentence starters to help you think of a question. You don’t have to use the sentence starters given if you have a different question.
      - I want to know more about...
      - Something I don’t understand is....
      - I wonder....
  - (Give students 2-3 minutes to write down a question.)
    - (Check that each student has at least one question.
    - ***During this time send mentors to their “ask an expert” spaces.***
- Ask an Expert Sign-up
  - Just like in high school and college you will get to choose which “experts” you want to ask questions.
  - In order to make sure we don’t have too many people with one “expert” everyone will sign-up to talk with an “expert” using the chart paper.
  - No expert can have more than four people so if four people have already signed up you will need to choose another expert.
  - Once you have selected an expert to talk with simply write your name under theirs on that chart paper.
- Ask an Expert Transition
  - (Dismiss students to walk their “expert’s” locations.)
  - (During last minute walk around and let students know it’s time to return back to science lab.)

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:05 Review Concept Maps
- 0:05 – 0:15 Fill in Concept Map
- 0:15 – 0:20 Prep for Science Leader Interviews

### Review Concept Maps

- Each day we will take time to think about what we learned during the morning's science labs and create a concept map to organize our knowledge and link new information with old information.
  - Remember concept maps are a tool in our growth mindset toolbox that we can use to help support our learning.
  - Concept maps are a way of taking new knowledge and organizing it in a way that helps you understand it, remember it, and link it to other already existing knowledge you have.
  - Science tells us that understanding these relationships and making a visual representation of those connections can help you understand things at a much deep level and make it easier for you to remember and recall the knowledge later.
  - Concept maps should make sense to you!
    - Lines between bubbles means ideas are connected.
    - There isn't a right or wrong way to create concept map.
    - Everyone's will look a little different.

### Expand on Existing Concept Map

- Today we will build off the concept map that we started yesterday.
- We will work together today and when we are done you will have time to copy what we added to your concept map.
- Potential question to ask students:
  - Should I start another concept map or am I still learning about invertebrates?
  - What was the focus of today?
  - What feels important to remember?
  - How are those ideas linked?
- Be sure to cover:
  - Definition of adaptation.
  - Types of adaptations
    - Low profile (Waves)
    - Large sticking surface (Waves)
    - Round body shape (Waves)
    - Any other adaptation students mention (add what the adaptation is for in parenthesis.)

Copy Expanded Concept Map

- (Have students take out their science notebooks and turn to **Concept Map – Invertebrates** page.)
- (Have students add what you added to their concept map.)

Prep for Science Leader Interview

- Tomorrow we will be taking a trip to Scripps Institution of Oceanography to meet scientists who do research to help protect invertebrates.
  - We will learn about their job and their research with invertebrates.
  - You will also have the opportunity to ask the scientist questions about their pathway to becoming a science leader
  - We are going to take a moment to brainstorm questions we might want to ask the scientists and write them down in our science notebooks for tomorrow.
- Have students brainstorm questions they would like to ask.
  - Record these on the whiteboard.
- Have students open up to **Science Leader Interview Page** in their science notebook.
  - Have students record all the brainstormed questions.

## Growth Mindset Tools: Self-Reflection

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Investigate – Invertebrates

#### Life on the Rocks Experiment

- Review what they learned about the experiment.
  - Adaptations.
- Read the Rules
- **Prompt #1: 5 Things Lists**
  - Put your pen down when you have 5 things.
  - Don't give them too much time, maybe 30 seconds.
    - 5 things that make you happy (ask them to write "5 Things that..." .
      - Examples: Cookies, being with family, going to grandmas, getting an A,
    - 5 things that... interest you the most.
      - Ex: games, math, being with your mom,
    - 5 things that scare you.
      - Ex: Bugs, fast cars, math tests, dreams,
    - 5 things that make you angry.
      - Ex: Losing at soccer, when my little sister annoys me, when I'm not allowed to do something, having to do chores at home
    - 5 things that you are really good at
      - Ex: Multiplication tables, or baking a cake, or dancing,
    - 5 things you want to work at being better at.
      - Ex: English class, being nicer to my brother, listening to my mom, Math tests, cleaning my room,
- **Prompt #2:**
  - We all have things about us that make us unique individuals. These are often our strengths when we think about them. You learned about animals in the water and on land who have unique qualities in order to survive. They have adaptations.
  - What makes you unique? Can you see how this is a strength, or how you can turn it into a strength? Write about what makes you unique? [5 mins]
- **Prompt #3:**
  - Use your imagination. Scientists use their imaginations to see beyond the impossible. They believe anything is possible. Time travel, cloning, face transplants, mind melds.
  - What is something about you that you *wish* to have that will make you special? It can be anything. Maybe you can become invisible, or swim underwater for miles, or can fly. Maybe it's something about you that you already have, but want more of, or to be better at. THIS is your **superpower**. Write about this superpower and how you use it. [5-10 mins]
- Anyone want to share what they wrote?

## **Growth Mindset Tools: Healthy Bodies**

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

### **Servant Leadership & Reminders**

- For Servant Leadership: see *“Day 4 Servant Leadership and Reminders”*.
- For Reminders: See today’s PowerPoint slide.

**Day 5: Make a Difference – Invertebrates**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:25AM	Community Building	25 minutes
9:25 – 10:10AM	Drive to Scripps Institution of Oceanography	45 minutes
10:10 – 11:40AM	Make a Difference - Invertebrates	90 minutes
11:40 – 12:00PM	Lunch	20 minutes
12:00 – 12:45PM	Return to Living Lab	45 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

**Supplies:**Check-In:

- Name tags (1/person)
- Student roster (1)

Community Building:

- See supply list on Day 1

Science Lab

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small white board
  - White board erasers/rag
  - Binoculars
  - Dry erase markers (3)
  - Extra pens (10)
  - Portable 1<sup>st</sup> Aid Kits (1/instructor)
  - Small Science Discovery Process Poster (1)
- Water cooler filled with water (1)
- Coolers to pack lunches (3)
- Thank you gifts for SIO staff (4-5)



Self-Reflection

- Thank you cards (1/mentor)
- Thank You Speech cards (1/mentor)

Servant Leadership & Reminders

- Speakers + iPod with Thank You song (1)
- Mentor thank you gifts (6)
  - Refer to Program Manager for gift ideas
- Thank you cards (1/mentor)
  - Already filled out by students
- Thank You Speech cards (1/mentor)
  - Already filled out by students

**Set Up**

Community Building

- See “Day 1 Set-up”

Science Lab

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Grab an instructor backpack (1/group)
- Grab Bus sick bag (1/bus)
- Pack student lunches and water cooler in staff car.
  - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

### **Intensive Program Manager**

#### Set-up

- Print & Distribute Mentor Thank You Cards to each Team Lead
- Make sure all drivers have directions to drop-off location/parking area.
- Secure thank-you gifts for SIO Science Leaders.

#### Community Building

- Lead Community Building.
  - See Curriculum below.

#### Science Lab

- Coordinate drop off/pick-up location with bus drivers.
- Attend field trip with staff and take pictures.
- Once at SIO determine an appropriate place to eat lunch outside.
- Executes SIO Science Leader Thanks-You's.

#### Growth Mindset Tools: Self Reflection

- Take Mentors aside for debrief.

#### Servant Leadership & Reminders

- Lead Mentor Thanks-Yous
  - See Curriculum Below

### **Floor Lead**

#### Set-up/Check-in:

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

#### Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.

## Community Building

**Location:** Kitchen

**Community Building Question:** How could having a mentor help you to succeed?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	<b>Food &amp; Conversation</b>
9:05 – 9:20AM	Food and Conversation	
9:20 – 9:25AM	Clean-up & Announcements	

**Food and Conversation:**

Introduction

- Introduce the Community Question.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

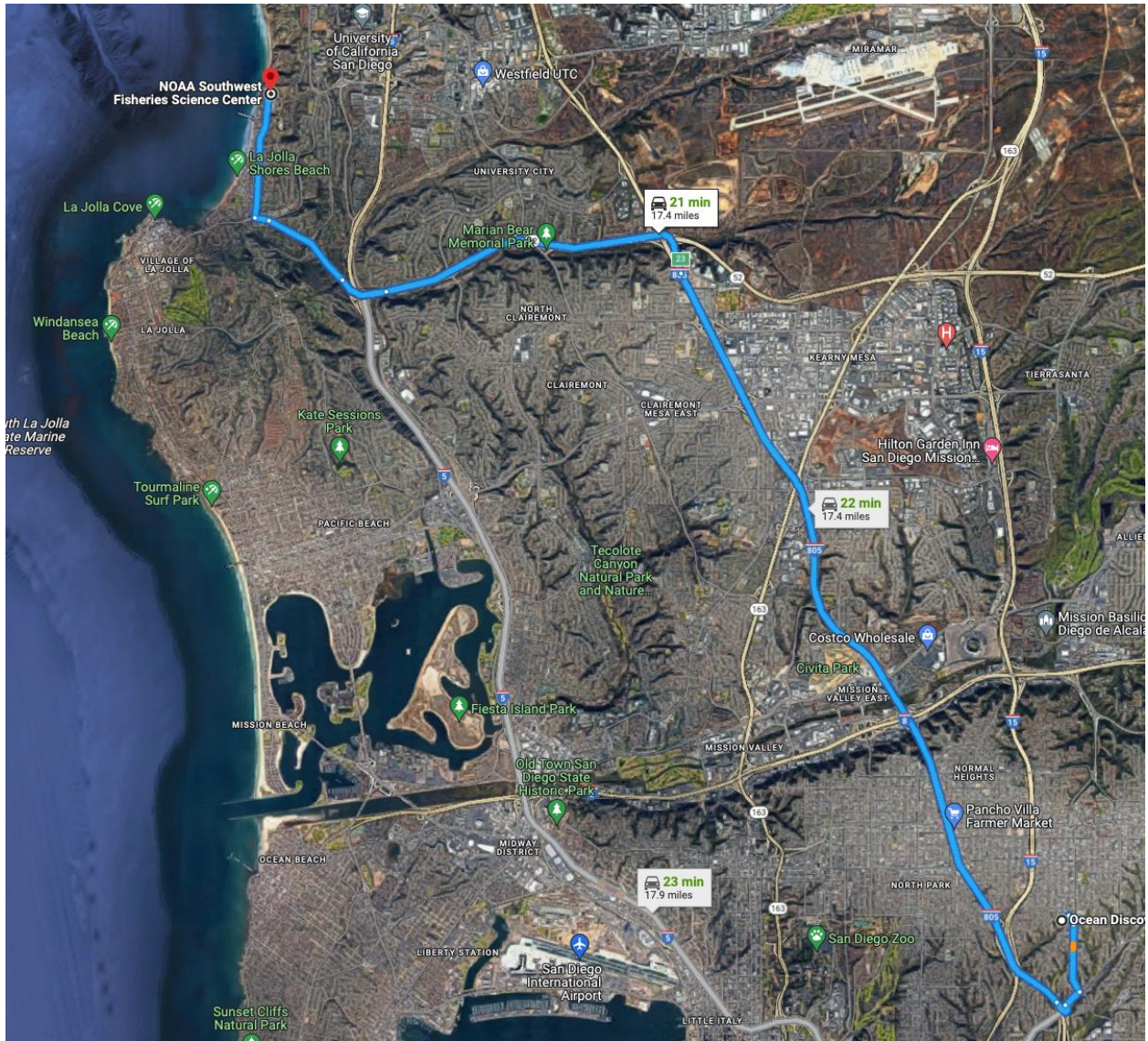
- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Announcements:**

- Introductions:
  - (IPM to introduce any new adults.)
  - Remind students that this is their last day with these mentors. New mentors will arrive tomorrow.
- Agenda:
  - (Review the day’s agenda from the whiteboard.)
  - During visit to SIO:
    - Encourage students to use their networking skills with new adults.
- Prepare for Field Trip departure.
  - Use bathroom.
  - Fill water bottles.

## Science Lab

## Drive to Scripps Institution of Oceanography

Directions:

- Take Fairmount Avenue to **805 N**
- Take the exit 23 for **CA-52 W**
- Take the **La Jolla Parkway** exit (left lanes)
- Make a right onto **La Jolla Shores Drive**.
- Follow La Jolla Shores Drive to Scripps Institution of Oceanography

## Make a Difference – Invertebrates

**Goal:** Students visit Scripps Institution of Oceanography to learn about current research science leaders are doing to help conserve invertebrates and to hear about the career pathways of individual science leaders.

### Timing:

- 0:00 – 0:10: Unload students
- 0:10 – 0:20: Scripps Institution of Oceanography Overview
- 0:20 – 0:45: Rotation 1
- 0:45 – 1:10: Rotation 2
- 1:10 – 1:35: Rotation 3
- 1:35 – 1:40: Thank You's

### Unload students

### Scripps Institution of Oceanography Overview:

- Welcome students to Scripps Institution of Oceanography (SIO).
- Today we will focus on **Communicate** and **Make a Difference** in the Science Discovery Process.
  - (Show Small Science Discovery Process poster.)
  - We will meet several science leaders who will talk about how their research helps to Make a Difference when it comes to invertebrates.
  - I want to start by introducing \_\_\_\_\_, who will give you a brief history and overview of Scripps and then you will rotate through three different stations learn about three research projects more in depth.
- Remind students that they can use their science notebooks to record any questions or observations they have throughout the day.
- (Introduce \_\_\_\_\_ for overview of Scripps Institution of Oceanography.)

### Rotations 1, 2, and 3

- Each group will rotate between the three stations.
- Be sure to leave time to allow transition between stations.
- At each station a scientist/graduate student/etc. will:
  - Talk about their research with a focus on **invertebrates and conservation** (5 min)
  - **Be interviewed** by our students about their career pathway (10 min)
    - If students struggle to come up with questions remind them to look at the questions on Science Leader Interview Page in their science notebook.
  - Allow students to practice using **scientific tools** related to your work (10 min)
    - Examples: use a micropipette, titrate chemicals, analyze data using software, look at drones, etc.

SIO Science Leader Thank You's

*(Executed by IPM.)*

- Gather all students together.
- Personal thank you– presents gifts to scientists, graduate students, etc.
- Invite all students to shake hands with science leaders and say thank you.

**Lunch:**

- (IPM will confirm where to eat.)
- Review expectations of eating outside.
  - All trash in trash cans.
  - Leave things better than you found them.
  - If you don't want it, offer it to someone else.
  - All food eaten here- no food in vans.

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:10 Pairs Expand on Concept Map
- 0:10 – 0:15 Share out on Concept Map
- 0:15 – 0:20 Edit your Concept Map

### Pairs Expand on Concept Map

- Today, you and a partner will work together on your concept maps.
- There will be questions on the board to help guide your thinking.
- We will get together as a group at the end to share our ideas and give you time to edit your concept maps if you would like.
- Concept Map Questions (**SLIDE**):
  - Should I start another concept map or am I still learning about invertebrates?
  - What was the focus of today?
  - What feels important to remember?
  - How are those ideas linked?
- Be sure to cover:
  - Definition of adaptation.
  - Types of adaptations
    - Low profile (Waves)
    - Large sticking surface (Waves)
    - Round body shape (Waves)
    - Any other adaptation students mention

### Share out on concept map

- Go through the questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)

### Edit Your Concept Map

- When working to learn new knowledge it can be helpful to talk with others about what they also learned.
- That is why we take time to share our ideas as a group.
- Based on what you just heard, you will have the next 3-4 minutes to edit your concept map.
  - You may have heard someone mention something you want to add to your concept map, realized there was something that could be linked together, or you liked the way another person organized their concept map and that resonates with you.
- (Give students time to make edits to their concept map.)

**Servant Leadership & Reminders**

- For Servant Leadership: see *“Day 5 Servant Leadership and Reminders”*.
- For Reminders: See today’s PowerPoint slide.



## Growth Mindset Tools: Self-Reflection

### Timing:

- 0:00 – 0:20 Networking- Personal Thank You
- 0:20 – 0:55 Make a Difference – Invertebrates

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Networking – Personal Thank You

\*All mentors should be with the IPM debriefing the program.

#### Purpose of Personal Thank You's:

- Networking is a tool for **Full hearts! Powerful minds!**
- Networking not only includes introducing yourself but making sure you say thank you after meeting or working with another person.
- Each of your mentors chosen to be a part of this program because they believe in you and your ability be a science leader.
- Recognizing that someone else has gone out of their way to help or work with you is meaningful. Time is often considered one of our greatest commodities, so when a person has given up their time and energy to work with you, mentor you, help you, etc. it is important to say "Thank You."
- It's important to make any thank you personal. Think about the experience you have shared and ways your mentor has impacted you personally, helping you to understand something, sharing their journey to becoming a science leader, taking time to explore the aquarium or rocky seashore with you, talking with you about things you find challenging, etc. Try to be specific about your experiences with your mentors. It is more meaningful and shows that you are genuinely grateful when you take the time to give a personal thank you.
- Taking time to reflect on your experiences with others and how they have impacted you personally is another form of self-reflection.
- As human beings sharing how we impact one another in positive ways is how we create **Full Hearts!** and **Powerful Minds!**

#### Directions: (SLIDE)

- Each of you will have a chance to write a short personal thank you to each of your mentors in a card.
- There are some sentence starters on the board to help, but feel free to write whatever is meaningful to you.
  - One memory I have of our time together is....
  - Something I enjoyed experiencing with you was...
  - You taught me...
  - You really helped me by....
  - Thank you for....
- We will give these cards to your mentors at the end of the day today.
- When we present the cards to your mentors, two of you will also give a short thank you speech to each mentor. We will work together as a group to prepare the speech and then select people to give the speeches.

### Writing Thank You Messages

- (Give students ten-minutes to brainstorm and write their messages for the card in their science notebook.)
- As students finish give them the thank you cards to copy their messages into.

### Thank You Speeches

- Work on “Thank You Speeches” as a group.
  - (Continue passing the thank you cards around for students to copy their messages into.)
  - Create the speech using the “Thank You Speech” outline on the whiteboard for each mentor.
  - Feel free to modify this speech.
- Once speeches are complete have one student copy the speech onto the “Thank You Speech” card.
  - Select two students to share the speeches with the mentors when they depart today.
- If time allows have the two students practice the speech with the group.
  - Remind students giving speeches to use a “strong voice”.
  - Remind all students who are listening to be their best self.
- (Collect and hold onto signed cards and thank you speech cards.)

### **Make a Difference – Invertebrates**

SIO Invert Lab

Review the Rules.

Yesterday you wrote about your superpower. I’d love it if you could each come up and introduce yourself and tell me what your superpower is. Pretend we are at a SuperHeroes convention. ComicCon—do you know what that is? Explain (world’s largest event here in San Diego where all the comic book characters and superheroes and characters from Star Trek and Star War and other movies gather).

My superpower is writing. Have you heard the saying, “The pen is mightier than the sword?”

**Prompt #1:** With your superpower, write about not just WHAT you would change in the world, but HOW you would change it? Name your SuperPower. Shakur the Respectable. Amy the Mighty Pen

**Prompt 2:** When you go home and explain to your family and other friends about the important work you did today, how will you explain it? [7 mins]

## **Growth Mindset Tools: Healthy Bodies**

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

## Servant Leadership & Reminders

### Timing:

- 0:00 – 0:10 Mentor Thank Yous
- 0:10 – 0:15 Clean-up

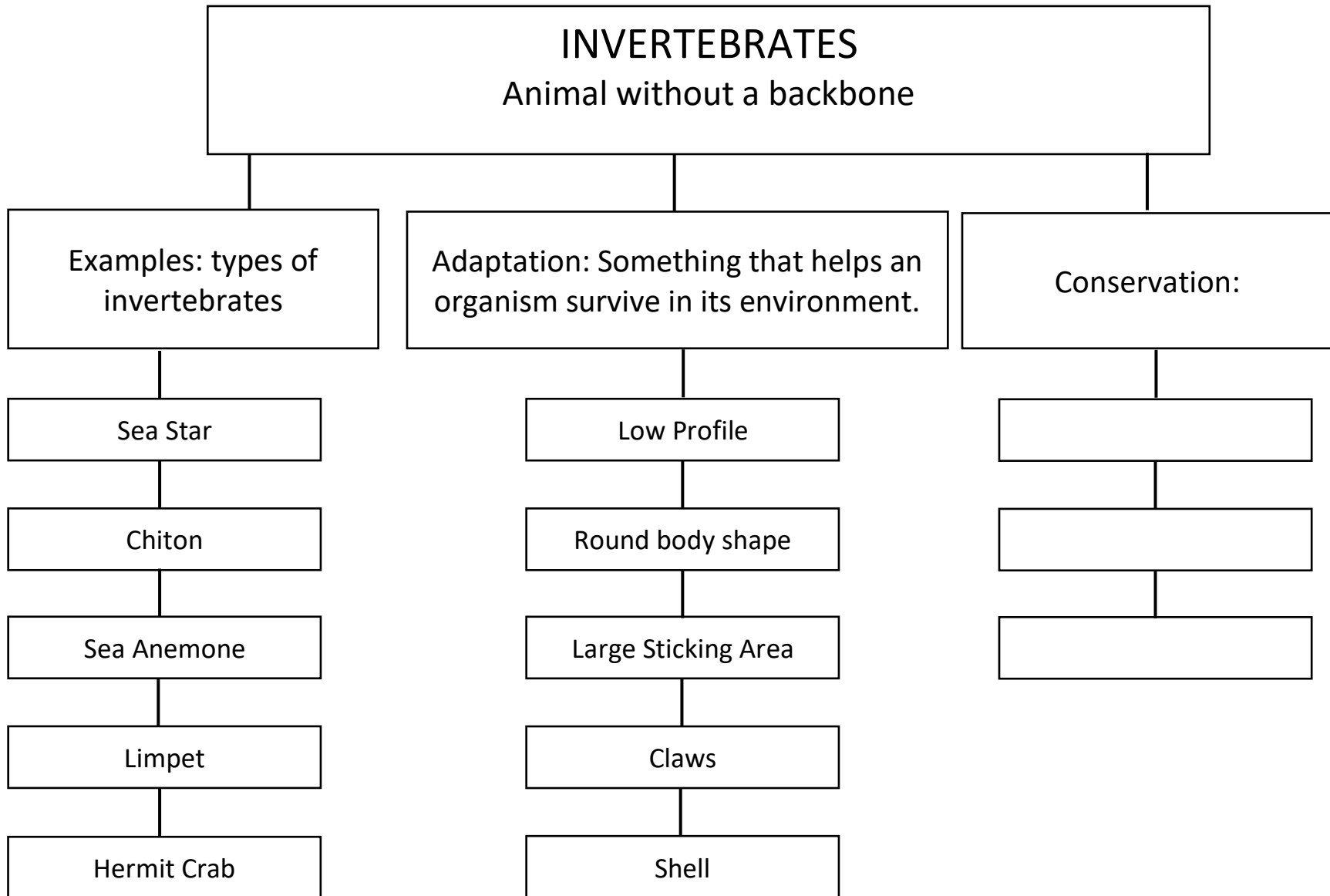
### Mentor Thank Yous

*(Done by the IPM)*

- (Bring all groups together in the same space.)
- Have students and adults sit audience style so there is an area where students can do their “Thank You Speech” with their mentors in front of the whole group.
- Welcome everyone to the space.
  - Review Reminders for the next day. (SLIDE)
    - Laundry Day
      - Bring your polos in for washing.
      - Casual day at the lab tomorrow.
      - Still need to dress appropriately for being an Ocean Leader but you do not have to wear your polo.
    - New Mentors
      - Remind students that new mentors will be arrive tomorrow.
      - Please greet them with a handshake and introduction and make them feel welcome!
  - Individual Thank You’s
    - Let everyone know it is time to say farewell by not goodbye to their mentors.
      - Their mentors are special people who gave their time to this program and to all of you because they believe in you.
      - It is only farewell because these mentors are part of your community now.
      - They are people you can reach out to when you have questions or run into a challenge on your road to becoming a science leader.
      - They will support you having Strong Hearts and Minds!
    - Now let’s take a moment to thank each of them individually.
      - (Invite individual students up to give their “Thank You Speech”.)
      - Create a warm and supportive environment for students giving speeches.
  - High-five Tunnel
    - Explain to students that we will all create a high-five tunnel for our mentors to depart.
    - Organize students into the high-five tunnel.
      - (Start high-five tunnel music.)
      - Encourage students to clap to the music and high-five each mentor.

Clean-up

- For Servant Leadership: see *“Day 1 Servant Leadership and Reminders”*.



**Day 6: Explore & Wonder – Fish****Timing:**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:25AM	Community Building	25 minutes
9:25 – 10:10AM	Drive to Birch Aquarium	45 minutes
10:10 – 11:40AM	Explore & Wonder - Fish	90 minutes
11:40 – 12:00PM	Lunch	20 minutes
12:00 – 12:45PM	Return to Living Lab	45 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

**Supplies:**Check-In:

- Name tags (1/person)
- Student roster (1)

Community Building:

- Getting to know you cards (1/student + 1/adult joining the bus ride)

Science Lab:

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small white board
  - White board erasers/rag
  - Binoculars
  - Dry erase markers (3)
  - Extra pens (10)
  - Portable 1<sup>st</sup> Aid Kits (1/instructor)
  - Small Science Discovery Process Poster (1)
- Mentor backpacks (3)
  - Pack all materials for student backpacks (below) in Mentor Backpacks.
    - Mentors will distribute all student backpack supplies on the bus on the way to the field trip and collect them on the way home.
- To be added to Student Backpacks (1/ student)
  - Binoculars (1/backpack)
  - Hand lens (1/ backpack)

- Pens
- Birch Aquarium Map (1/backpack)
- Coolers to pack lunches (3)

### **Set Up**

#### Community Building

- See “Day 1 Set-up”

#### Science Lab

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Grab supply backpack (1/group)
- Grab an instructor backpack.
- Pack student lunches and water cooler in staff car.
  - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

### **Floor Lead**

#### Set-up

- Set up laundry collection bin and sharpie markers next to check-in.
- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.

#### Check-in

- Make sure students label their polos before adding to laundry bin.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

#### Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Wash, dry, and fold polos.
- Prep supplies for the next day.

#### Servant Leadership & Reminders

- Return clean polos to students.
- Help clean up supplies from the day and prep supplies for the next day.



### Intensive Program Manager

#### Set-up

- Share background information about mentors with Team Leads before mentors arrive.
- Make sure IPM, Team Leads, and Floor Lead all have the following phone numbers:
  - Living Lab, IPM, Team Leads, Floor Lead, and all Mentors in their group.
- Greet arriving mentors.
  - Share the day's agenda.
  - Introduce them to their Team Lead.
  - Make sure all mentors have the following phone numbers:
    - Living Lab, IPM, Team Leads, and Floor Lead.
  - Make sure all drivers have directions to drop-off location/parking area.
- Review with mentors their role for the day – take a group to explore the aquarium and write down observations and questions in their science notebooks.
  - You will have a group of 2-3 students for approximately 75 minutes.
  - Review the rotation schedule within the curriculum below.
  - **Stop often** to encourage students to record questions and observations. Potential questions include:
    - What observations are you making?
    - What questions do you have?
    - Do you think that is a fish?
      - (Have them look at the definition in their notebook.)
      - Fish: a vertebrate, that lives in the water, and has fins, gills, and scales.
      - Ex:
        - You: What are you looking at?
        - Student: A parrotfish. I wonder why it's blue?
        - You: Let's look at our definition of a fish and double check that it is truly a fish. Does it have a backbone?
        - Student: Yes!
        - You: Was it living in water?
        - Student: yes!
        - You: Does it have fins and gills?
        - Student: Yes!
        - You: Does it have scales?
        - Student: ...
        - You: Scales are the hard plates that grow on the outside of the fish. Let's take a closer look at the parrotfish.
        - Student: I see them!
        - You: So the parrot fish is a fish! Great! You can write down parrotfish record your question in your science notebook.
- Ask mentors to take pictures and email or airdrop them to the IPM each day.

### **Intensive Program Manager (con't)**

#### Community Building

- Remind student to shake hands and introduce themselves to new mentors.
- Lead Community Building.
  - Determine the number of adults joining the bus ride and select the appropriate number of Getting to Know You Card sets (1/pair of people).
  - See Curriculum below.

#### Science Lab

- Coordinate drop off/pick-up location with bus drivers.
- Attend field trip with staff and take pictures.
- Check group into Birch Aquarium and find out where to keep lunches.
- Once at the Birch Aquarium determine an appropriate place to eat lunch outside and communicate this location to Team Leads and mentors.

#### **Teaching Notes for Team Lead**

- During bus ride to the Birch Aquarium:
  - Divide students into small groups:
    - Discuss amongst staff members if groups should be mixed.
    - Do not reveal student groups until after the introduction.
  - Cue mentors to hand out supplies to students to place in their backpacks.
    - See list above in supplies
- During bus ride back to Living Lab – cue mentors to collect exploration supplies.

## Community Building

**Location:** Kitchen

**Community Building Question:** Ten years from now, how will your life be different?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	<b>Food &amp; Conversation</b>
9:05 – 9:20AM	Food and Conversation	
9:20 – 9:25AM	Clean-up & Announcements	

**Food and Conversation:**

Introduction

- Review Purpose of Food and Conversation and Community Question with new mentors present.
  - See “Community Building Day 1” curriculum.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures with new mentors present.
  - See “Community Building Day 1” curriculum.

**Clean-up & Announcements**

- Introductions:
  - Give a brief but exciting 1-minute introduction about each of the mentors.
    - Include fun facts.
- Agenda:
  - (Review the day’s agenda from the whiteboard.)
- Prepare for Field Trip departure.
  - Review Getting to Know You Bus Ride Activity
    - See “Curriculum Day 2: Community Building” for directions.
    - Have students and adults joining for the bus ride all choose a card.
  - Use bathroom.
  - Fill water bottles.

## Science Lab

**Drive to the Birch Aquarium.**Directions:

- Take Fairmount Avenue to **805 N**
- Take the exit 23 for **CA-52 W**
- Take the **La Jolla Parkway** exit (left lanes)
- Make a right onto **La Jolla Shores Drive**.
- Make a right onto **Downwind Way**.
- Buses: Follow Downwind Way and make a right on **Expedition Way**.
  - Cars continue over Expedition Way into the Birch Aquarium's visitor parking lot.

Parking & Gathering:

- Buses park in the traffic circle and unload students.
- Gather at large grey whale statue/fountain.

**BIRCH AQUARIUM**

We connect understanding to protecting our ocean planet.

Key:

- Restrooms
- Information
- Gift Shop
- Cal Coast ATM
- Scan & Watch
- First Aid
- Photo Op
- Designated Eating Area
- Food
- Handwash or Sanitation Station

**YOU WONT WANT TO MISS:**

- 8 Observe + Wonder
- 2 Sunflower Stars
- 5 Giant Pacific Octopus
- 8 9 Jellies
- 11 Pacific Seahorses
- 13 Moray Eels
- 16 Scythe Butterflyfish
- 19 Giant Kelp Forest
- 20 Loggerhead Sea Turtle
- 22 Research in Action Coral Reefs
- 23 Nursery
- 26 Live Coral Blue Tangs
- 27 Live Coral
- 28 Mangroves Clownfish
- C Marine Protected Area Touch Experience
- D South Tide Pool Touch Experience
- E Kelp Cam
- F Tropical Corals
- G Shark Poetry by Davi Kocov
- 29 Shark Shores
- H Whale Fall
- 30 Seahorses
- 31 Shrimpfish
- 32 Weedy Seadragons
- 33 Potbelly Seahorse
- 34 Pipefish

Map Annotations:

- Sharks & Seahorses:** Points to the 'SEADRAGONS & SEAHORSES' exhibit (30) and 'SHARK SHORES' (29).
- Warm Water Side:** Points to the 'TIDE POOL PLAZA' and 'GALLERY' areas.
- Cold Water Side:** Points to the 'HALL OF FISHES' and 'SPLASH CAFE' area.

Map Labels:

- SMARCON EXHIBIT COLLECT
- EXPEDITION AT SEA
- ODDITIES
- TIDE POOL PLAZA
- SEADRAGONS & SEAHORSES
- SHARK SHORES
- GALLERY
- UNDER CONSTRUCTION
- FUTURE HOME OF BEVSTER FAMILY LITTLE BLUE PENGUINS
- RESTROOMS
- GIFT SHOP
- SPLASH CAFE
- VISITOR SERVICES & MEMBERSHIP
- HALL OF FISHES
- SOUTH CLASSROOM
- MASSERINI & FRENCH CLASSROOMS
- YOUTH LOOP

Health and Safety: We have made updates to our layout and activities to keep everyone safe and healthy.

Take this map with you! Scan this code and click the URL.

UC San Diego | SCRIPPS INSTITUTION OF OCEANOGRAPHY

## Explore and Wonder – Fish

Goal: Students visit the Birch Aquarium to ask questions and make observations about fish.

### Timing:

- 0:00 – 0:15 Introduction @ Gray Whale Statue/Fountain
- 0:15 – 1:30 Explore Aquarium
- 1:30 – 1:40 Debrief @ Gray Whale Statue/Fountain

### Introduction

- Welcome to the Birch Aquarium.
  - 30 minutes by car from City Heights
  - Part of Scripps Institution of Oceanography which we visited yesterday.
  - Features over 60 exhibits with fish from cold water of the Pacific Northwest to the warm tropical waters of Mexico and beyond.
- Introduce topic for the day.
  - We have spent the last three days studying invertebrates – today we will switch our focus to – fish!
  - Connect to prior knowledge.
    - What do you know about fish?
    - Can you name any types of fish?
- Introduce Fish.
  - Ask students: What do you think the definition of a fish is?
  - Define: A vertebrate, that lives in the water, and has fins, gills, and scales.
    - Vertebrate: an animal with a backbone.
    - Gills: respiratory organ of fish – takes oxygen from the water for the fish
    - Scales: small rigid plates that grow out of the skin
- Introduce Explore & Wonder:
  - Today we will spend the day Exploring and Wondering about fish.
  - (Show Science Discovery Process Poster.)
    - Review “making observations” and “asking questions”.
      - Observation: using the senses to gather information from the natural world.
      - Question: something that may help us to answer or figure out the reason for some observation.
      - Science leaders make observations and ask questions about the world around them all the time.
- Explore & Wonder at the Aquarium.

- Your job today is to Explore & Wonder about Fish.
  - You will need to make observations and ask questions about fish as you walk around the aquarium.
  - Your goal is to observe a minimum of FOUR fish. For each fish record:
    - The name.
    - At least one observation.
    - At least one question.
  - Today is a little different then when we went to the rocky seashore, there we waited until the end to write down our observations and questions, today you will record your observations and questions as you move through the aquarium therefore you will want to have your notebook out at all times.
- Let's set up our science notebook so we are ready.
  - (Have students turn to the **Explore & Wonder – Fish** page in their science notebook.)
  - Have students record the definition of a fish at the top of their page:
    - Fish: A vertebrate, that lives in the water, and has fins, gills, and scales.
  - Have students create four boxes on their notebook page.
    - In the first box have students write:
      - Name
      - Observation
      - Question
- Introduce exploration tools:
  - When exploring it can be good to have tools. Review tools:
    - Binoculars
    - Hand lens
    - Fish ID Card
- Review Community Agreements:
  - Be curious:
    - Use any tools you have and ask questions and make observations.
    - Share questions and observations with other people.
    - Look closely at fish – occasionally stay and observe a fish for a few minutes before moving on.
  - Be safe:
    - Stay with your group while touring the museum.
  - Be respectful.
    - Help other see what you see.
    - Make space for other people who want to look at the exhibits.
    - Don't tap on the glass of exhibits – it can disturb the animals in the exhibit.

Explore the Aquarium

- (Divide groups up into three smaller groups.)
  - Team Lead + students
  - Science Mentor + students
  - Alumni Mentor + students
- Groups rotate through the aquarium using the below schedule.
- Stop often to have students record questions and observations. Potential questions include:
  - What observations are you making?
  - What questions do you have?
  - Do you think that is a fish?
    - If students reply yes or no – ask them based on their definition of a fish.
      - (Have them look at the definition in their notebook.)
      - Ex:
        - Team Lead: What are you looking at?
        - Student: A parrotfish. I wonder why it's blue?
        - Team Lead: Let's look at our definition of a fish and double check that it is truly a fish. Does it have a backbone?
        - Student: Yes!
        - Team Lead: Was Is it living in water?
        - Student: yes!
        - Team Lead: Does it have fins and gills?
        - Student: Yes!
        - Team Lead: Does it have scales?
        - Student: ...
        - Team Lead: Scales are the hard plates that grow on the outside of the fish. Let's take a closer look at the parrotfish.
        - Student: I see them!
        - Team Lead: So the parrot fish is a fish! Great! You can write down parrotfish record your question in your science notebook.
- If you finish early feel free to explore a different exhibit or return to one the students enjoyed.

Time	Group 1	Group 2	Group 3
<b>0:15 – 0:35</b>	Cold Water Side	Warm Water Side	Sharks & Seahorses
<b>0:35 – 0:55</b>	Warm Water Side	Sharks & Seahorses	Cold Water Side
<b>0:55 – 1:15</b>	Sharks & Seahorses	Cold Water Side	Warm Water Side
<b>1:15 – 1:30</b>	Your Choice	Your Choice	Your Choice



Debrief

- Was anyone able to identify a fish they saw?
  - (Write the name of the fish on the whiteboard.)
    - What was an observation you made about that fish?
    - What was a question you had about it?
  - Ask other students if they saw the same fish?
    - Ask those students if they had any additional observations/questions?
  - Repeat until you get a good list of fish.
  
- There are thousands of different fish in the ocean.
  - Do you think any of the fish you saw at the aquarium could be found in the waters off San Diego? Why or why not?
  
- Remember, science leaders that exploring and wondering is part of the Science Discovery Process.
  - (Show Science Discovery Process poster.)
  - Great job science leaders!
- (Make sure each student returns all tools to backpacks.)
- (Make sure each student has their backpack.)

**Lunch**

- Review expectations of eating outside.
  - All trash in trash cans.
  - Leave things better than you found them.
  - If you don't want it, offer it to someone else.
  - All food eaten here- no food in vans.

### **Growth Mindset Tools: Process Reflection**

#### Timing

- 0:00 – 0:10 Pairs Expand on Concept Map
- 0:10 – 0:15 Share out on Concept Map
- 0:15 – 0:20 Edit your Concept Map

#### Pairs Expand on Concept Map

- Just like yesterday, you and a partner will work together on your concept maps.
- There will be questions on the board to help guide your thinking.
  - Should we start another concept map or are still learning about invertebrates?
  - (Have students take out their science notebooks and turn to **Concept Map – Fish** page.)
- We will get together as a group at the end to share our ideas and give you time to edit your concept maps if you would like.
- Concept Map Questions (**SLIDE**):
  - What was the focus of today?
  - What feels important to remember?
  - How are those ideas linked?
  - Are the specific examples I want to include?
- Be sure to cover:
  - Definition of fish.
  - Examples of fish.

#### Share out on concept map

- Go through the questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)

#### Edit Your Concept Map

- While we were working today, it is important to realize that you might think differently from other people, your concept map might look different, you might be making different connections than the ones on the board – that’s okay.
- Based on what you just heard, you might want to add or adjust your concept map but remember concept maps need to make sense to you!
- (Give students time to make edits to their concept map.)

## Growth Mindset Tools: Self-Reflection

### Supplies:

- Dice (1/group)
- Copies of the Rules (1/student)
- Thank You Speech card (6)
- Mentor Thank You Card (1/mentor)
- Pens

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Self-Reflection Writing: Explore & Wonder – Fish

Field Trip to Birch Aquarium

Fish feel safe in water. Fish can't survive out of water. Just as you can't survive in water for very long, and must have oxygen to breathe, clean air, clean water to drink, food to eat, and a shelter, a home.

#### Prompt #1:

1. Draw a floor plan of your house. Something very simple. Just a layout of where all the rooms are, not precise. [time 1-2 min] [*Instructor*: if you have a board, draw a simple sample of house with a kitchen, LR, bedrooms, bathroom]
2. Put an X on your favorite place to be in the house.
3. Write about why that is your favorite place. [2 mins]
4. When you feel sad or angry or worried, do you go to this same place, or do you go to a different place? It doesn't have to be in the house. Write about that place where you go to feel safe. Why do you feel safe there? [3-4 mins.]

#### Prompt #2

- Remind students that they are at the half-way point of the Bridge Program.
- Next year they will be part of the Intro to Research program in Baja Mexico.
- Ask students to imagine the Intro to Research program.
  - What do you think it will be like? The good, the bad, the happy, and sad. What will you learn? Why do you want to go? Write to this...
- When I go to Bahia, I will... [remaining time]

## **Growth Mindset Tools: Healthy Bodies**

### Growth Mindset

- Review the purpose of this time with new mentors present.
  - Ask student to share why we learn about exercise and nutrition.

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

### **Servant Leadership & Reminders**

- For Reminders: See today's PowerPoint slide.
- For Servant Leadership: see *"Day 6 Servant Leadership and Reminders"*.

## Day 7: Investigate – Fish

### Timing:

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:45AM	Community Building	45 minutes
9:45 – 11:00AM	Investigate – Fish: Shark & Bony Fish Dissection	Science Lab 75 minutes
11:00 – 12:15PM	Know it! Own it! – Fish	
12:15 – 12:45PM	Lunch	30 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	Growth Mindset Tools 50 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

### Supplies:

#### Check-In:

- Name tags (1/person)
- Student roster (1)
- Laundry Detergent (1)
- Clear bin labeled “Ocean Leader Laundry” (1)
- Sharpies (2)

#### Community Building:

- People Bingo cards (3 sets)
- Prizes (20)
- iPod + speaker
  - iPod should be loaded with transition songs
  - Random playlist for “People Bingo”
- See supply list on Day 1

#### Science Labs

- Science Discovery Process poster (1/group)
- Butcher paper or other to cover tables
- Blue tape (2)
- Internal & External Anatomy of a Shark (laminated) (1/pair of students)
- Internal & External Anatomy of a Fish (laminated) (1/pair of students)
- Dry erase markers (thin-tip) (1/pair of students)
- Trash bags for shark and fish disposal (2/group)
- Bony fish for dissection (1/pair of students)
- Dogfish sharks for dissection (1/pair of students)
  - Smaller sizes when possible, ideally some that are male and some female
- Boxes of gloves

- Size medium (1)
- Size large for (1)
- Dissection tools:
  - Dissection tray (1/pair of students)
  - Pointers (1/pair of students)
  - Scissors (1/pair of students)
  - Scalpel (2/group)
- Jarred fish (mix of cartilaginous and bony) (1/student)
- Hand Sanitizer (1/group)

Self-Reflection

- Thank you cards (1/mentor)
- Thank You Speech cards (1/mentor)
- Hard copy of Meat Story (1/student)
- Dice (1/group)

Servant Leadership & Reminders

- Speakers + iPod with Thank You song (1)
- Mentor thank you gifts (6)
  - Refer to Program Manager for gift ideas
- Thank you cards (1/mentor)
  - Already filled out by students
- Thank You Speech cards (1/mentor)
  - Already filled out by students

## Set Up

### Community Building:

- See “Day 1 Set-up”
- Prep supplies for Community Building Activity.
  - See Community Building Activity below.

### Science Labs

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- For Shark and Bony Fish Dissection:
  - Cover tables with butcher paper
  - Open and rinse the sharks. Try to have some males and females.
  - Set dissection tools off to the side.
  - Thaw and rinse bony fish.
  - Set a jarred fish at each student’s seat.

## Floor Lead

### Set-up/Check-in

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
  - Collect paperwork.
  - Hand out student polos.
- Call missing students.
- Provide updated daily roster to Team Leads.

### Science Lab

- Return uneaten breakfast and lunch food to refrigerator.
- Prep supplies for the next day.



## **Intensive Program Manager**

### Set-up

- Print & Distribute Mentor Thank You Cards to each Team Lead

### Community Building

- Lead Community Building.
  - See Curriculum below.

### Science Labs

- Review the concept of “Ask an Expert” with mentors:
  - They will have a group of 3-4 students they will be working with individually.
    - Invite students to sit with you in a circle.
    - Students will come to you with questions they have.
    - Have each student share a question.
      - When a student shares a question – do you best to answer it or have other students help to answer the question.
  - You will be provided a laptop to research answers to questions you aren’t familiar with.
  - Share ideas on how redirect students if they start to ask off topic questions.
    - Answer their question a then redirect them.
    - Ex. I’m excited to tell you more about my own journey but let’s make sure you understand all the concepts first. What was one of the questions you wanted to ask?
- Assign all Mentors to “Ask and Expert” locations

### Growth Mindset Tools: Self Reflection

- Take Mentors aside for debrief.

### Servant Leadership & Reminders

- Lead Mentor Thanks-Yous
  - See Curriculum Below

## Community Building

**Location:** Kitchen

**Community Building Question:** What is one thing you are excited about for tomorrow's overnight field trip? Nervous?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	Food & Conversation
9:05 – 9:25AM	Food and Conversation	
9:25 – 9:30AM	Clean up	
9:30 – 9:40AM	Community Building Activity	Community Building Activity
9:40 – 9:45AM	Announcements	Announcements

**Food and Conversation:**

Introduction

- Review Purpose of Food and Conversation and Community Question.
  - See “Community Building Day 1” curriculum.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Community Building Activity: People Bingo**

Directions:

- Turn on music. Walk around. When music stops pair up with the person closest to you.
- Talk to that person and see which of the bingo squares applies to them.
- Have them sign that square for you, then see which square you can sign for them.
- When the music turns on move around again until it turns off and find a new partner.
- First person to get four across, down, or diagonal yells out Bingo and wins a prize.

Rules:

- You can only sign one square per person's card – meaning you can't sign someone's card more than once- even if there are multiple square that apply to you.
- You can only sign the square if it actually applies to you.
  - Ex. You may not sign the square that says “I have a pet.” if you don't actually have a pet.
- If you can't sign someone's card that's okay- just use the time to get to know them.

Activity

- If more than one person gets a Bingo give them all prizes.
- If you still have time after the first Bingo – continue play with people who won trying to create a second Bingo.

**Announcements:**

- Introductions:
  - Remind students that this is their last day with these mentors. New mentors will arrive tomorrow.
  - (IPM to introduce any new adults.)
- Agenda:
  - (Review the day's agenda from the whiteboard.)

## Science Lab

**Goals:** Students compare and contrast the internal and external anatomy of cartilaginous and bony fish.

### Investigate – Fish: Shark and Bony Fish Dissection

#### Timing:

- 0:00 – 0:10: Introduction
  - 0:10 – 0:25: External Anatomy (Shark)
  - 0:25 – 0:40: Internal Anatomy (Shark)
  - 0:40 – 0:50: External Anatomy (Bony Fish)
  - 0:50 – 1:05: Internal Anatomy (Bony Fish)
  - 1:05 – 1:15: Comparison of Cartilaginous and Bony Fish & Clean-up
- Introduction:
    - Review previous day with students.
      - Define Fish: A vertebrate, that lives in the water, and has fins, gills, and scales.
        - Vertebrate: an animal with a backbone.
        - Gills: respiratory organ of fish – takes oxygen from the water for the fish
        - Scales: small rigid plates that grow out of the skin
      - Types of Fish. (SLIDE)
        - There are a crazy variety of fish in the world.
          - Fish come in many sizes, shapes, and colors.
        - Examples: have student list examples they have seen.
          - Remind them of their trip to the aquarium.
    - Introduce Bony vs. Cartilaginous Fish (SLIDE)
      - Often scientists like to group fish with similar characteristics together.
      - One grouping that scientists use is bony fish (Osteichthyes) vs. cartilaginous fish (Chondrichthyes).
        - One difference is that bony fish have a skeleton made of bones and cartilaginous fish have a skeleton made up of cartilage.
          - Describe cartilage (the flexible material that makes up your ears and tip of your nose) and bones (like the bones in your arms and legs).
          - Explain which fish are cartilaginous and which are bony.
          - Explain that most people do not realize that sharks are a type of fish (cartilaginous).
      - (Have students look at jarred fish on their table.)
        - Do you think this is a bony or a cartilaginous fish? Why?
        - (Go around the room and have students share about the fish on their table.)
      - Today we will Investigate both Cartilaginous and Bony fish through dissection.

- Dissection Overview
  - Ask students to try to define dissection.
    - Dissection: to cut open a plant or animal to study its internal body parts.
  - Remind students during the dissection to be their best self:
    - Be curious: ask question, make observations, and share these with others.
    - Be safe: take care with dissection tools which can be sharp or pointy
    - Be respectful: the shark and fish you are dissecting are helping us to learn more about how the world works and to become better scientists, so tread it respectfully.
  - Review potential reactions to dissection: Excited, nervous, etc.
    - Whatever you feel is appropriate.
    - You can take a quick break if you need to but try to hurry back so you don't miss too much exploring.
  - (Explain how to use dissection tools.)
    - Pointers
    - Scissors
    - Scalpel (only to be given to/used by students when an adult is at their table)
- Prep for Dissection
  - (Pass out Laminated internal & external anatomy of a shark and a dry erase maker to each student.)
  - (Have student put on gloves from their box.)
    - Only one pair of gloves so don't take them off until we are done.
    - Do not touch yourself or others after you have touched the shark even with gloves on.
- External Anatomy: Cartilaginous Fish
  - Overview
    - Explain external exploration – outside of shark. (SLIDE)
    - Explain that students should look at the shark, touch it, and make some observations.
      - What do you think each of the different parts are and what do they do?
      - Direct student's attention to the list of body parts and diagram on the SMART board. Explain that students will have their own laminated version of the diagram and they should try to match up the body parts with where they are on the shark and write it on their diagram.
  - Explore External Anatomy: Cartilaginous Fish
    - (Pass out sharks.)
    - (Give students five minutes to explore the shark.)

- Debrief External Anatomy: Cartilaginous Fish (SLIDE)
  - Share stories and/or interesting facts about some of the external anatomy features (*See Instructor Supplement for information*):
    - Senses for sensing predators and prey
      - Eyes/Ojos – for seeing
      - Nostrils/Fosa Nasal – for smell
      - Ampullae of Lorenzini – sense electromagnetic fields
      - Lateral Line -
    - Mouth/Boca
    - Gill slits/Hendiduras branquiales
    - Dermal denticles/Dentículos dérmicos
    - Tail fin/Aleta de la cola
    - Fin spine
    - Claspers
- Internal Anatomy: Cartilaginous Fish
  - Overview
    - Explain internal exploration – inside of shark. (SLIDE)
    - Explain that students that after they open the shark, they should look at the internal anatomy, touch it, and make some observations. (SLIDE)
      - What do you think each of the different parts are and what do they do?
      - Direct student’s attention to the list of body parts and diagram on the SMART board explain that students can flip over their external anatomy diagram and try to match up the body parts on the list like they did with the external anatomy.
  - Dissection of Shark
    - (Demo how to cut open shark using scalpel and scissors.)
      - (Pass out dissection tools.)
      - (Use the scalpel to cut a horizontal line from pelvic fin to pelvic fin (horizontal) and pectoral fin to pectoral fin (horizontal), then use the scissor to cut vertically up from one cut to the other.)
  - Explore Internal Anatomy: Cartilaginous Fish
    - (Give students 5 minutes to explore the inside of the shark.)
  - Debrief Internal Anatomy: Cartilaginous Fish
    - (Have students help you fill in the internal diagram on the SMART board.)
    - Share stories and/or interesting facts about some of the external anatomy features (*See Instructor Supplement for information*):
      - Heart/Corazón

- Liver/Hígado
  - Stomach/Estómago
    - Cut open the stomach and see if there is undigested food.
  - Intestines/ intestinos
  - Cloaca
  - Gonads
    - Try to identify any pregnant females and cut open the egg to see the babies attached to their yolk sac.
  - (Place all sharks to the side – do not throw away.)
- External Anatomy: Bony Fish
  - Overview (SLIDE)
    - Explain to students that now we will be looking at another type of fish – a bony fish.
    - Explain to students that just like with the shark we will look at the external anatomy first.
      - Direct student’s attention to the list of body parts and diagram on the SMART board. Tell students they can try to match the body parts to the diagram as they work.
  - Explore External Anatomy: Bony Fish
    - (Pass out Laminated internal & external anatomy of bony fish to each student.)
    - (Pass out bony fish.)
    - (Give students 5 minutes to explore the outside of the fish.)
  - Debrief External Anatomy: Bony Fish
    - (Have students help you fill in the external diagram on the SMART board.)
    - Share stories and/or interesting facts about the external anatomy features:
      - Scales
      - Fins
      - Lateral Line
      - Operculum
      - Eye
      - Mouth
- Internal Anatomy: Bony Fish
  - Overview (SLIDE)
    - Explain that just like the shark we will now open the fish up to look at it’s internal anatomy.

- Direct student's attention to the list of body parts and diagram on the SMART board. Tell students they can try to match the body parts to the diagram as they work.
- Dissection of Bony Fish
  - (Demo how to cut open the fish using scalpel and scissors.)
  - (Cut open the fish with an incision from the anus to the pectoral fins, two additional incisions both perpendicular to the ends of the original incision may be necessary to provide a better view of the internal organs.)
  - (Give students 5 minutes to explore the inside of the fish.)
- Debrief Internal Anatomy: Bony Fish
  - (Have students help you fill in the internal diagram on the SMART board.)
  - Share stories and/or interesting facts about the internal anatomy features:
    - Gills
    - Intestines
    - Gonads-sex the fish
      - female will have a large pink ovary-this can be cut to expose thousands of eggs
      - male will have white testes, which provide sperm
    - Stomach
      - (You may need to remove the gonads to be able to see the stomach and swim bladder)
      - Cut open the stomach and see if there is undigested food.
    - Swim bladder
- Comparison of Bony Fish & Cartilaginous Fish & Clean-up
  - Comparison
    - (Have students place both fish side by side.)
      - Remind students that shark is a cartilaginous fish and the other is bony fish.
    - Ask students to explain why bony fish are called bony fish.
    - Ask students to explain why cartilaginous fish are called cartilaginous.
  - Think-Pair-Share
    - (Have students open up to **Investigate – Fish** page in their science notebook.)
    - What are the differences between cartilaginous and bony fish?
      - Be sure to cover and have students record:
        - Cartilage vs. Bone
        - Gill slits vs. Operculum
        - Oily Liver vs. Swim bladder



- Clean-up
  - (Remove all sharks from tables)
  - (Place the sharks in a trash bag and then add a second bag for disposal.)
  - (Have all students remove and dispose of gloves.)
  - (Have students wash hands.)

**Know it! Own it! – Fish**

Timing:

- 0:00 – 0:25: Flash Cards
- 0:25 – 0:50: Study Hall
- 0:50 – 1:15: Ask an Expert

Flash Cards

- Review Growth Mindset (SLIDE)
  - You have already learned quite a bit about fish in the last two days.
  - Throughout our lives, in high school, college, and beyond we will need to take new information and make it our own – that is why we are learning growth mindset tools to support our learning.
    - Use Manta: Know it! Own it!
  - We have already learned about and are practicing using concept maps as a tool that can support our learning, today we will learn another tool - flash cards.
- Review the Science of Flash Cards
  - One of the most basic ways to take new knowledge and make it your own is to memorize it.
    - Memorizing knowledge allows us to recall it and apply it to future learning.
  - One of the best ways to memorize knowledge is by using flash cards.
  - How do flash cards work?
    - Flash cards encourage active recall – which is a way to create neural connections in your brain to pieces of information.
    - Science has shown using flash cards to actively recall information be an extremely effective way to improve memory.
- Review Flash Cards format (SLIDE)
  - Flash cards are simply cards that have related information on both sides.
  - Review some types of flash cards:
    - Definitions
    - Short Answer
    - Examples
  - Other considerations for flash cards:
    - Flash cards should only have one question per card.

- Write neatly because one way to study is to ask another person to quiz you using your flash cards. It helps if they can read your flashcards.
  - Flash cards can also have sketches/drawings on them if that is helpful to you.
- Review places to look for information to make flash cards:
  - Science notebook
- Brainstorm Ideas for Flashcards.
  - Pair-Share: Ask students to brainstorm ideas for flashcards based on what they have learned so far.
    - Students should look through their science notebook and put a star next to anything they think could be important to remember about invertebrate conservation and about fish.
    - Students should not create flash cards yet.
  - Share out with the group ideas that could be flash cards.
    - Ask students to be specific about what they would write on each side of the flash card.
    - As students respond – draw flash cards on the board.

Create Flash Cards:

- Have students make a copy of each of the flash cards on the board.

Study Hall

- Review Final Exam
  - On the last day of the Bridge program, you will take a final exam to test the knowledge you have learned throughout the two weeks.
  - The final will include both short answer and multiple-choice questions.
  - You will be tested on all three subjects that we will study: invertebrates, fish, and marine mammals.
- Review the Science of Studying:
  - When to study: (SLIDE)
    - Short study sessions are better than long study sessions.
    - Several study sessions before a test are better than cramming for one day.
    - Studying for short periods over several days will increase your ability to remember the knowledge.
    - Therefore, we will have several short study hall sessions before your final.
  - How you use your study time is much more important than how long you study for. (SLIDE)
    - Some of the best things you can do during study time are:
      - Utilize strong study skills such as flash cards and reviewing concept maps which we will talk about today.

- Stay focused – don't multi-task (no phones or off topic conversations).
- Studying with Flash Cards.
  - When you look at flash cards you are trying to memorize what is on them.
  - Read them to yourself.
    - If you can remember what is on both sides correctly, put that card in one pile and if you can't put it in another.
    - Spend more time reading and rereading the cards from the pile you don't know.
    - Be sure to study both your invertebrate and fish flash cards.
    - Every now and then mix up the order of your flash cards.
- Independent Study Time:
  - (Give students ~5-7 minutes to study their flash cards independently.)
- Pair Study Time
  - In a moment you will pair up to study with someone else for the last few minutes of study hall.
    - Remember: How you use your study time is much more important than how long you study for so be sure to stay focused when working with a partner.
  - How to use flashcards to study with a partner.
    - Have your partner test you by taking their flash cards and asking you the questions.
    - If you hear a flash card that you don't have but you like – copy that flash card and add it to your pile!
    - If you have extra time have your partner test you using your own flash cards.
  - (Give students time to study in pairs.)
- Organize Flash Cards
  - Have students binder clip their flashcards together & write their name on the top one.
  - Students can leave them in their bin to be used again later.

### Ask an Expert

- Review the Purpose of Ask an Expert!
  - Part of Know it! Own it! is finding gaps in our knowledge (things we don't understand) and working to fill those gaps.
  - That's when "Asking an Expert" comes into play.
  - An "Expert" is someone who can help you fill in those gaps.
- How do I know if I need to Ask an Expert. (SLIDE)
  - There are many signs that it might be helpful to talk to an expert.
    - During the Bridge Program:

- Not being able to answer some flash card questions.
- Having a question about something – check your science notebook.
- That general “feeling” that you don’t understand or you feel lost during a lecture.
- School:
  - Low score on quiz or test.
  - Looking at your notes and not understanding something in them.
  - Struggling to apply knowledge when doing homework.
    - Ex. I have notes on how to solve this math problem, but I can’t seem to do it on my own.
- Review Who are experts?
  - People who have knowledge about the field you have a question about.
    - High school teachers, college professors, mentors, etc.
  - Being able to ask for help is one of the most important tools to supporting a growth mindset.
- Prep for Ask an Expert
  - We will practice “Asking an Expert” during Bridge, so that you can get practice and build comfort with it and with asking experts, like teachers, for help in school and college.
    - When you to seek help from an expert it can be helpful, but not necessary, to have questions written ahead of time to ask.
    - Today we will have our first opportunity to ask an expert any questions we might have. You will choose an “expert” to go to and work with that person to answer any questions you have about what you learned over that last several days.
  - In order to make the best use of your time with the “experts” we are going to have each person write 1-2 questions they want to ask in their science notebooks.
    - One the board are some sentence starters to help you think of a question. You don’t have to use the sentence starters given if you have a different question.
      - I want to know more about...
      - Something I don’t understand is....
      - I wonder....
  - (Give students 2-3 minutes to write down a question.)
    - (Check that each student has at least one question.
    - ***During this time send mentors to their “ask an expert” spaces.***
- Ask an Expert Sign-up
  - Just like in high school and college you will get to choose which “experts” you want to ask questions.
  - In order to make sure we don’t have too many people with one “expert” everyone will sign-up to talk with an “expert” using the chart paper.

- No expert can have more than four people so if four people have already signed up you will need to choose another expert.
- Once you have selected an expert to talk with simply write your name under theirs on that chart paper.
  
- Ask an Expert Transition
  - (Dismiss students to walk their “expert’s” locations.)
  - (During last minute walk around and let students know it’s time to return back to science lab.)

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:07 Pairs Expand on Concept Map
- 0:07 – 0:15 Share/Edit Concept Map
- 0:15 – 0:20 Prep for Science Leader Interviews

### Pairs Expand on Concept Map

- Just like yesterday, you and a partner will work together on your concept maps.
- There will be questions on the board to help guide your thinking.
  - Should we start another concept map or are still learning about invertebrates?
  - (Have students take out their science notebooks and turn to **Concept Map – Fish** page.)
- We will get together as a group at the end to share our ideas and give you time to edit your concept maps if you would like.
- Concept Map Questions (SLIDE):
  - What is the main topic? Can I expand on an existing concept map or should I start a new one?
  - What feels important to remember?
  - How are those ideas linked?
  - Are the specific examples I want to include?

### Share/Edit Concept map

- Go through the questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)
- (Give students time to make edits to their concept map.)

### Science Leader Interview

- Tomorrow we will be taking a trip to University of San Diego to meet scientists who do research to help protect fish.
- This field trip will be similar to the one we took to Scripps Institution of Oceanography.
  - We will meet science leaders and learn about their job and their research with fish.
  - We will also have the opportunity to ask questions about their pathway to becoming a science leader.
  - Let's take a moment to think about some questions we might want to ask these science leaders.
- Brainstorm questions with students.
- Give students time to copy new questions into their science notebook.
  - (Have students open to **Science Leader Interview** page in their science notebook.)

## Growth Mindset Tools: Self-Reflection

### Timing:

- 0:00 – 0:20 Networking- Personal Thank You
- 0:20 – 0:55 Self-Reflection Writing: Investigate: Fish

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Networking – Personal Thank You

\*All mentors should be with the IPM debriefing the program.

#### Review Purpose of Personal Thank You's:

- Networking is a tool for **Full hearts! Powerful minds!**
- Networking not only includes introducing yourself but making sure you say thank you after meeting or working with another person.
- Each of your mentors chosen to be a part of this program because they believe in you and your ability be a science leader.
- Recognizing that someone else has gone out of their way to help or work with you is meaningful. Time is often considered one of our greatest commodities, so when a person has given up their time and energy to work with you, mentor you, help you, etc. it is important to say "Thank You."
- It's important to make any thank you personal. Think about the experience you have shared and ways your mentor has impacted you personally, helping you to understand something, sharing their journey to becoming a science leader, taking time to explore the aquarium or rocky seashore with you, talking with you about things you find challenging, etc. Try to be specific about your experiences with your mentors. It is more meaningful and shows that you are genuinely grateful when you take the time to give a personal thank you.
- Taking time to reflect on your experiences with others and how they have impacted you personally is another form of self-reflection.
- As human beings sharing how we impact one another in positive ways is how we create **Full Hearts!** and **Powerful Minds!**

#### Review Directions:

- Each of you will have a chance to write a short personal thank you to each of your mentors in a card.
- There are some sentence starters on the board to help, but feel free to write whatever is meaningful to you.
  - One memory I have of our time together is....
  - Something I enjoyed experiencing with you was...
  - You taught me...
  - You really helped me by....
  - Thank you for....
- We will give these cards to your mentors at the end of the day today.
- When we present the cards to your mentors, two of you will also give a short thank you speech to each mentor. We will work together as a group to prepare the speech and then select people to give the speeches.

Writing Thank You Messages

- (Give students ten-minutes to brainstorm and write their messages for the card in their science notebook.)
- As students finish give them the thank you cards to copy their messages into.

Thank You Speeches

- Work on “Thank You Speeches” as a group.
  - (Continue passing the thank you cards around for students to copy their messages into.)
  - Create the speech using the “Thank You Speech” outline on the whiteboard for each mentor.
  - Feel free to modify this speech.
- Once speeches are complete have one student copy the speech onto the “Thank You Speech” card.
  - Select two students to share the speeches with the mentors when they depart today.
- If time allows have the two students practice the speech with the group.
  - Remind students giving speeches to use a “strong voice”.
  - Remind all students who are listening to be their best self.
- (Collect and hold onto signed cards and thank you speech cards.)

**Investigate – Fish**

## Fish &amp; Shark Dissection

Review the Rules.

## Science Fiction

Today you dissected sharks and bony fish. You were science leaders looking inside another creature to see how it works. Do you know about Science Fiction? Stories that aren't true but are based on science. They explore the impossible and make it possible. Like creatures in outer space, or humans becoming other creatures, or maybe time travel.

Listen to radio show. “They’re Made Out of Meat” by Terry Bisson (use this radio show) famous sci-fi story from point of view of aliens.

<https://www.youtube.com/watch?v=GggK9SjJpuQ>

Point out specific made-up words, and other vocabulary:

Recon—reconnaissance abbreviation, vehicle used to collect specimens.

Probe—dissection

Sentient—something that feels

Orfolei—made-up word, something from their planet that goes through a meat-phase, like caterpillars go through a larva stage.

Weddilei—made-up word, a creature from their planet that are partial meat.

Infinitesimal—so small it's almost zero.

Pass out script. Have two students play the parts.



Discuss: What's going on?

Write from the point of view of Aliens coming to study our group at ODI. What would they think? What would they find strange?

**Prompt:** They do what??

Write about space creatures coming to City Heights to visit your family or our group at ODI. What would they find?

Prompt #1: "They gather in groups called "Families." This is what families do... [10 mins]

## **Growth Mindset Tools: Healthy Bodies**

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

## Servant Leadership & Reminders

### Timing:

- 0:00 – 0:10 Mentor Thank Yous
- 0:10 – 0:15 Clean-up

### Mentor Thank Yous & Reminders

*(Done by the IPM)*

(Bring all groups together in the same space.)

- Have students and adults sit audience style so there is an area where students can do their “Thank You Speech” with their mentors in front of the whole group.
- Welcome everyone to the space.
- Review Reminders for the next day. **(SLIDE)**
  - For Reminders: See today’s PowerPoint slide.
  - New Mentors
    - Remind students that new mentors will be arrive tomorrow.
    - Please greet them with a handshake and introduction and make them feel welcome!
  - Review Overnight Details:
    - Review Overnight Packing List
    - Review what not to bring (these will be provided):
      - Tent
      - Sleeping bag
      - Sleeping pad
      - Food
- Individual Thank You’s
  - Let everyone know it is time to say farewell by not goodbye to their mentors.
    - Their mentors are special people who gave their time to this program and to all of you because they believe in you.
    - It is only farewell because these mentors are part of your community now.
    - They are people you can reach out to when you have questions or run into a challenge on your road to becoming a science leader.
    - They will support you having Strong Hearts and Minds!
  - Now let’s take a moment to thank each of them individually.
    - (Invite individual students up to give their “Thank You Speech”.)
    - Create a warm and supportive environment for students giving speeches.
- High-five Tunnel
  - Explain to students that we will all create a high-five tunnel for our mentors to depart.
    - Organize students into the high-five tunnel.
    - (Start high-five tunnel music.)

- Encourage students to clap to the music and high-five each mentor.

Clean-up

- For Servant Leadership: see *“Day 7 Servant Leadership and Reminders”*.

## Program Materials

## People Bingo

Has a pet	Loves pizza	Doesn't like roller coasters	Was born in another country
Has created and published content on TikTok	Plays a musical instrument	Has a younger sibling	Has never broken a bone
Has traveled outside the country	Enjoys drawing or painting	Makes their bed every morning	Is born in the same month as you
Is left-handed	Has an older sibling	Speaks a second language	Enjoys singing

**Day 8: Make a Difference – Fish/Overnight**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:25AM	Community Building	25 minutes
9:25 – 10:10AM	Drive to University of San Diego	Science
10:10 – 11:40AM	Make a Difference - Fish	Lab
11:40 – 12:00PM	Lunch	20 minutes
12:00 – 12:45PM	Return to Living Lab	45 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	Growth Mindset Tools
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	20 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	50 minutes
3:00 – 3:30PM	Load Buses for Overnight	15 minutes
3:30 – 5:00PM	Drive to Cuyamaca Rancho State Park	30 minutes
5:00 – 5:30PM	Set-up Camp	90 minutes
5:30 – 7:30PM	Hike up Stonewall Peak	30 minutes
7:30 – 8:30PM	Dinner	120 minutes
8:30 – 9:00PM	Campfire	30 minutes
9:00 – 9:30PM	Bedtime prep	30 minutes
9:30PM	Lights out!	

**Supplies:****Check-In:**

- Name tags (1/person)
- Student roster (1)

**Community Building:**

- See supply list on Day 1
- Getting to know you cards (1/student + 1/adult joining the bus ride)

**Science Lab:**

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small white board
  - White board erasers/rag
  - Binoculars

- Dry erase markers (3)
- Extra pens (10)
- Portable 1<sup>st</sup> Aid Kits (1/instructor)
- Small Science Discovery Process Poster (1)
- Water cooler filled with water (1)
- Coolers to pack lunches (3)
- Thank you gifts for USD staff (4-5)

Self-Reflection

- Post-it notes (1 pack/group)
- Copies of the Rules (1/student)
- Dice (1/group)

Overnight:

- See “Ocean Leader Bridge Overnight Supply List”
  - Numbers of supplies in the above list will need to be adapted based on the number of students and staff attending.

**Set Up**

Set-up

- Set-up an area for luggage storage.
- Set out masking tape and sharpies in luggage area for labeling luggage.

Community Building

- See “Day 1 Set-up”

Science Lab

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Grab an instructor backpack (1/group)
- Grab Bus sick bag (1/bus)
  - Pack student lunches and water cooler in staff car.
    - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

**Intensive Program Manager**Set-up

- Share background information about mentors with Team Leads before mentors arrive.
- Make sure IPM, Team Leads, and Floor Lead all have the following phone numbers:
  - Living Lab, IPM, Team Leads, Floor Lead, and all Mentors in their group.
- Greet arriving mentors.
  - Share the day's agenda.
  - Introduce them to their Team Lead.
  - Make sure all mentors have the following phone numbers:
    - Living Lab, IPM, Team Leads, and Floor Lead.
  - Make sure all drivers have directions to drop-off location/parking area.
- Secure gifts for USD Science Leaders.

Community Building

- Remind student to shake hands and introduce themselves to new mentors.
- Lead Community Building.
  - Determine the number of adults joining the bus ride and select the appropriate number of Getting to Know You Card sets (1/pair of people).
  - See Curriculum below.

Science Lab

- Coordinate drop off/pick-up location with bus drivers.
- Attend field trip with staff and take pictures.
- Once at USD determine an appropriate place to eat lunch outside.
- Execute USD Science Leader Thanks-You's.

Growth Mindset Tools: Self-Reflection

- Collect I AM Poems at the end of Self-Reflection.
  - Each Poem must be typed up and ready for the next day's self-reflection
  - A copy of each students poem must be scanned and saved on Papi for 11<sup>th</sup> grade intensive summer program.

**Floor Lead**Set-up/Check-in:

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.



## Community Building

**Location:** Kitchen

**Community Building Question:** What are some life skills you think everyone should learn?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	Food & Conversation
9:05 – 9:20AM	Food and Conversation	
9:20 – 9:25AM	Clean-up & Announcements	

### Food and Conversation

#### Introduction

- Review Purpose of Food and Conversation and Community Question with new mentors present.
  - See “Community Building Day 1” curriculum.

#### Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

#### Clean-up:

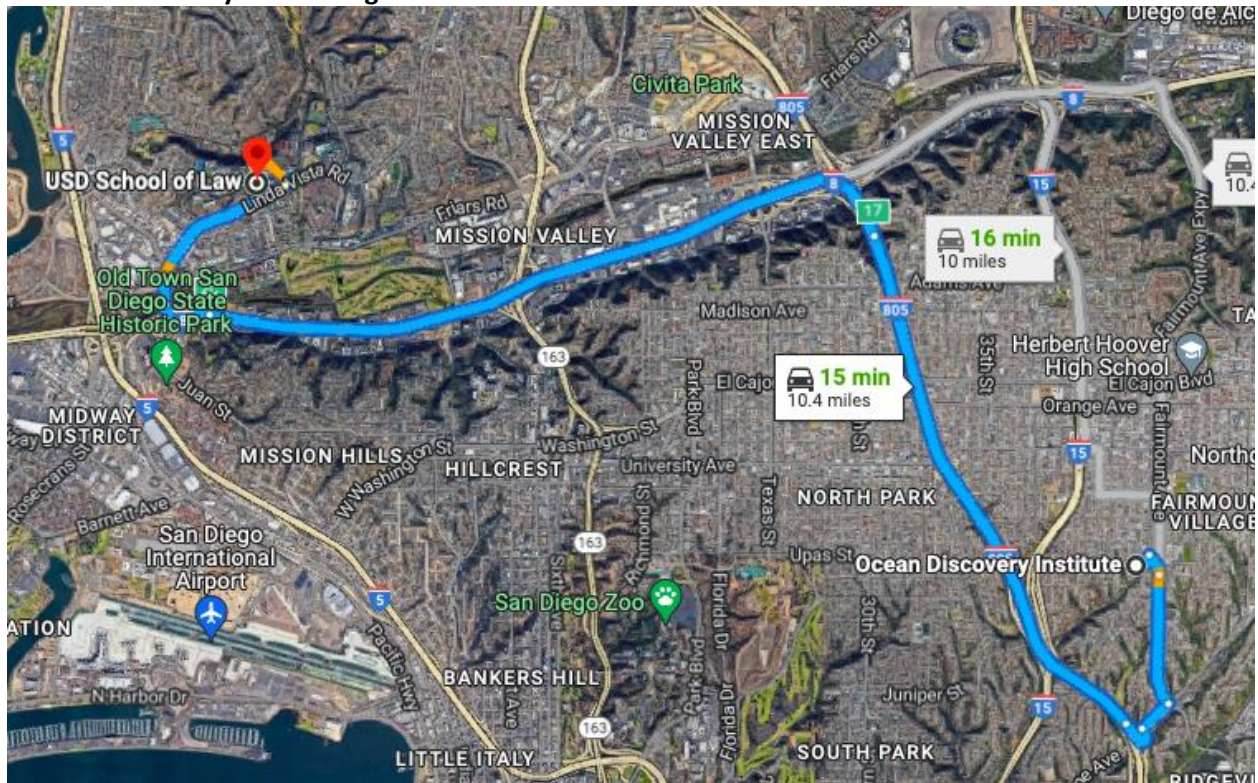
- Review Servant Leadership & Clean-up procedures with new mentors present.
  - See “Community Building Day 1” curriculum.

### Clean-up & Announcements

- Introductions:
  - Give a brief but exciting 1-minute introduction about each of the mentors.
    - Include fun facts.
- Agenda:
  - (Review the day’s agenda from the whiteboard.)
  - During visit to USD:
    - Encourage students to use their networking skills with new adults.
- Prepare for Field Trip departure.
  - Review Getting to Know You Bus Ride Activity
    - See “Curriculum Day 2: Community Building” for directions.
    - Have students and adults joining for the bus ride all choose a card.
  - Use bathroom.
  - Fill water bottles.

## Science Lab

### Drive to University of San Diego



### Directions:

- Take Fairmount Avenue to **805 N**
- Take the **I-8 West**
- Take exit **2C – Morena Blvd.**
- Take the right fork onto **Linda Vista Road.**

## Make a Difference – Fish

Goal: Students visit University of San Diego to learn about current research science leaders are doing to help conserve fish and to hear about the career pathways of individual science leaders.

### Timing:

- 0:00 – 0:10: Unload students
- 0:10 – 0:20: University of San Diego Overview
- 0:20 – 0:45: Rotation 1
- 0:45 – 1:10: Rotation 2
- 1:10 – 1:35: Rotation 3
- 1:35 – 1:40: Thank You's

### Unload students

#### University of San Diego Overview:

- Welcome students to University of San Diego (USD).
- Today we will focus on **Communicate** and **Make a Difference** in the Science Discovery Process.
  - (Show Small Science Discovery Process poster.)
  - We will meet several science leaders who will talk about how their research helps to Make a Difference when it comes to fish.
  - I want to start by introducing \_\_\_\_\_, who will give you a brief history and overview of the University of San Diego and then you will rotate through three different stations learn about three research projects more in depth.
- Remind students that they can use their science notebooks to record any questions or observations they have throughout the day.
- (Introduce \_\_\_\_\_ for overview of USD.)

#### Rotations 1, 2, and 3

- Each group will rotate between the three stations.
- Be sure to leave time to allow transition between stations.
- At each station a scientist/graduate student/etc. will:
  - Talk about their research with a focus on **fish and conservation** (5 min)
  - **Be interviewed** by our students about their career pathway (10 min)
    - If students struggle to come up with questions remind them to look at the questions on Science Leader Interview Page in their science notebook.
  - Allow students to practice using **scientific tools** related to your work (10 min)
    - Examples: use a micropipette, titrate chemicals, analyze data using software, look at drones, etc.

#### USD Science Leader Thank You's

*(Executed by IPM.)*

- Gather all students together.

- Personal thank you– presents gifts to scientists, graduate students, etc.
- Invite all students to shake hands with science leaders and say thank you.

**Lunch:**

- (IPM will confirm where to eat.)
- Review expectations of eating outside.
  - All trash in trash cans.
  - Leave things better than you found them.
  - If you don't want it, offer it to someone else.
  - All food eaten here- no food in vans.

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:10 Expand on Concept Map
- 0:10 – 0:15 Pair Share Concept Maps
- 0:15 – 0:20 Group Share/Edit Concept Map

### Expand on Concept Map

- Today we will expand on our concept maps on our own.
- There will be questions on the board to help guide your thinking.
- After having some time to work on your concept map alone we will pair up to share ideas then come together as a whole group.
- Concept Map Questions (**SLIDE**):
  - What is the main topic? Can I expand on an existing concept map or should I start a new one?
  - What feels important to remember?
  - How are those ideas linked?
  - Are the specific examples I want to include?

### Pair Share Concept Maps

- In a moment you will get with a partner and each of you will share your concept maps with the other.
- When you are sharing your concept map, don't just point at your concept map, but tell them what you were thinking when you added each box.
  - Example: "I added a box about the definition of fish because we have been learning a lot about fish so it seems important to know the definition and I think we might be asked what the definition is on the final exam."
- (Pair up students to student to share their concept maps.)

### Group Share/Edit Concept Map

- Go through the questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)
- (Give students time to make edits to their concept map.)

## Growth Mindset Tools: Self Reflection

### Timing:

- 0:00 – 0:30 I AM Poems
- 0:30 – 0:50 Choose Final Reflection Pieces

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### I AM Poems

*Goal: Students take time to reflect and express their beliefs and who they are as a person through a poem.*

### Overview:

- Students have had many experiences in the last few days which complement the thousands of experiences they have had in their lives.
- Experiences help make them the person they are.
- It is important to take time out every now and then to reflect and think about who they are as a person.
- They will be writing an I Am... Poem. This poem focuses on them and who they are.
- They will be sharing this poem with the group and with their families tomorrow night.

### Directions:

- The only rule about writing this poem is that every line must be filled in.
- The rest is up to their interpretation, but you are welcome to include statements about where you're from regionally, ethnically, religiously, etc., memories from different points in your life, interests and hobbies, mottos or credos, favorite phrases, family traditions and customs, and whatever else defines who you are.
- (Go through the first 2-3 lines using yourself as an example.)
  - Remind students that this is just a suggestion.
- The focus is on creating a poem that expresses who they are right now.

### Writing:

- (Have students open to I Am poem in their science notebook)
- (Let student have 15-20 minutes of uninterrupted time to write.)
- (Play soft music.)
- (Staff can circulate and quietly check in with any students who are struggling.)

### Debrief

- Have students pair up to share their I Am Poems.
  - Remind students that they are being vulnerable, and it is important to be respectful and supportive.
  - Ask students to share something that they liked about their partners poem when they are done.

- Ask students to share their poems with the group.

**Choose Final Reflection Pieces**

- Ask students to review what they have written.
- Using stickies, mark two or three pieces that they enjoy/like/think are most meaningful that will be typed up for review the next day.

**I Am... Poem**

<b>I am</b>	Your name
<b>I am</b>	Name an identifying characteristic about yourself... <i>(could be your nationality, ethnicity, gender, physical attribute, etc.)</i>
<b>I care about</b>	List something you care about...
<b>I want you to know</b>	Something you want people to know about you...
<b>I believe</b>	Identify something you believe to be true... <i>(could be a tradition, a religion, something cultural, something about people or the world, etc.)</i>
<b>I dream</b>	Name something you wish...
<b>I make a difference</b>	Name a way you are making a difference...
<b>I am</b>	Your name
<b>We are</b>	Name something you believe to be true about your group.



## **Growth Mindset Tools: Healthy Bodies**

### Growth Mindset

- Review the purpose of this time with new mentors present.
  - Ask student to share why we learn about exercise and nutrition.

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

## Overnight

### Set Up

#### Hiking Stone Wall Peak:

- While Team Leads, Mentors, and students are on Stonewall Peak hike, IPM, and AIPM will:
  - Choose an area to create the kitchen and set up tables.
  - Prep food for dinner.
  - Build a fire (but do not light) for roasting hotdogs.
    - Choose the largest firepit (campfire circle is best) because after dinner this will transition to the campfire area.
- When you hear the Team Leads and students returning IPM will greet and give directions to get ready for dinner and AIPM will light the fire.

### Set-up Camp

#### Timing:

0:00 – 0:10 Overview & Tent Set-up Demo

0:10 – 0:30 Set up Camp

#### Overview & Tent Set-up Demo

- (Have all students gather in campfire area.)
- Welcome students to campsite.
  - Review layout of campsite.
    - Tent & sleeping area.
    - Bathrooms.
    - Mess area (food & eating).
  - Remind students that there should be NO FOOD in their tents – will attract animals large and small.
    - If you have any snacks in your bag – put them in the van for the return drive home.
  - Demonstrate how to set up a tent.
    - Show students how to unroll and set up sleeping pads and sleeping bags.
    - Point out boundaries for setting up tents.
    - Review tent buddy groups.
- Give each group a tent.
  - Find a location in tent & sleeping area to set up your tent.
  - Meet back at campfire area in 20 minutes.

#### Set-up Camp

- Allow students to work together to set-up tents.

**Hike up Stonewall Peak**Supplies:

- Snacks
- First Aid Kit (1)

Timing:

- 0:00 – 0:05 Hike Intro & Hiking Etiquette
- 0:05 – 1:00 Hike up Stonewall Peak
- 1:00 – 1:15 Snacks & Photos at the top
- 1:15 – 2:00 Hike Back to Campsite

Hike Intro & Hiking Etiquette

- Hiking Intro
  - Hiking up Stonewall Peak.
    - The peak's original Kumeyaay name was Cushi-Pi, meaning "Sharp Peak".
    - Stonewall Peak was re-named after Stonewall Mine which is located between Stonewall Peak and Lake Cuyamaca.
    - The mine was founded in 1870 and named after Stonewall Jackson the Confederate General.
    - The mine was one of the richest in all of San Diego.
- Hiking Etiquette
  - Let students know that the start of the hike is the most difficult – it flattens out (which a much more gradual uphill) after the first half mile.
  - Make room on the trail for people trying to pass (faster hikers) or coming back down the mountain.
  - Students must hike between adults.
  - Always stay on the marked trail- even if you see an area where someone went off trail.
    - Those types of trails damage the environment by creating erosion and harming plants.
  - A growth mindset is important when hiking.
    - Hiking can feel challenging for some people.
    - If you get tired, stop, take a short rest then keep on going!
    - If you see someone struggling, give them an encouraging word.
  - Stop often to drink water.
  - We will all meet at the top for snacks and photos.

Hike up Stonewall Peak

- Have one Team Lead at the front and one at the end.
- Spread mentors out among the students.
- At the one-hour mark – assess how close you are.
  - You may have to turn around before reaching the top if you aren't close.

Snacks & Photos at the Top

- Have students gather at the top for snacks.
- Take a group photo with students and mentors.

### Hike Back to Campsite

- Remind students of hiking etiquette.
- Students must remain between Team Leads.
- Don't run. Stay in control of your body as you descend, especially on the steeper parts.

### **Dinner**

#### Expectations

- We practice Leave No Trace as a group of Ocean Leaders.
  - Leave No Trace means we are respectful of nature and leave an area better than we found it and without a trace of ourselves.
  - Show students where trash and recycling are located.
  - When you finish dinner throw away all your trash.
- Review dinner expectations.
  - Show students where plates, utensil, and napkins are.
  - Take some salad.
  - Cook your hotdog over the fire.
    - Students will need to take turns with skewers.
  - Apples are available if you are still hungry.
  - IPM will announce if there are seconds available after everyone has eaten.

#### Dinner

- Buffet style.
- Be sure of a minimum of one adult supervising hotdog roasting.

#### Clean-up

- Clean-up
  - IPM and AIPM will choose four students to help clean up and store left-over food from dinner.
  - Team Leads will have all other students walk around the campsite and find at least 5 pieces of trash to throw away.
- Hand Sanitizer for everyone.
  - Everyone to grab their flashlights and return to the campfire.

### **Campfire**

*Led by the IPM.*

#### Supplies:

- Skewers
- S'mores

- Chocolate Bars
- Graham Crackers
- A single stick that can be burned

#### Timing:

- 0:00 – 0:25 Campfire Welcome
- 0:05 – 0:15 Roasting S'mores
- 0:15 – 0:25 Campfire Activities
- 0:25 – 0:30 Bedtime Overview

#### Campfire Welcome

- (Have all students settle into a seat if possible.)
- Campfires have been a part of human existence for over a million years.
- Campfires have always been a place where humans have gathered after their day is complete and find time for rest, reflection, storytelling, and celebration.

#### Roasting S'mores

- First we will celebrate everyone hiking to StoneWall Peak!
  - That's not an easy hike and everyone showed a growth mindset even when it felt difficult.
  - Let's celebrate this great accomplishment with s'mores!
- Explain to students how to construct a s'more.
- Expectations
  - Be careful with skewers and burning marshmallows.
  - If your marshmallow is on fire simply blow it out – don't wave it around.
  - Once you have roasted your marshmallow hand your skewer to someone who needs it.
  - Grab a seat and enjoy your s'more.

#### Campfire Activities

*Teaching Note: Choose any set of activities you feel comfortable leading. Recommended to leave the "Wish Stick" and or "Star gazing" for the end of the campfire because they are quiet and more calming activities before the bed time transition.*

- Wish Stick (~5 min)
  - Explain to students that we will pass a single stick around the campfire circle. When you get the stick take a moment and think of a wish you would like to make. You can make your wish silently or out loud. Once you have made your wish pass the stick to the person next to you. When everyone has had a chance to make a wish we will burn the stick to release the wishes into the world.
    - Ask students to take a moment to think of a wish they would like to make.
    - Give stick to a student.
    - Once everyone (students and adults) have had a chance to make a wish, toss the wish stick into the fire.

- Stargazing & Stories
  - If you know your constellations point out a couple and tell the accompanying story.
  - Cassiopeia
    - With its distinctive “W” shape formed by five bright stars, Cassiopeia is one of the most easily recognizable constellations in the northern night sky.
    - The constellation is named after the vain queen Cassiopeia in Greek Mythology, wife of the King Cepheus of Aethiopia. As the legend goes, Cassiopeia boasted that she was more beautiful than the sea nymphs called the Nereids. Her claim angered Poseidon, god of the sea, who sent a sea monster called Cetus to destroy the kingdom. Cassiopeia’s daughter, Princess Andromeda, was left bound to a rock as prey for the monster, but she was rescued by Perseus the Hero whom she later married.
    - Cassiopeia, Cepheus, and Princess Andromeda were all elevated to the sky as stars. Only Cassiopeia suffered humiliation; she was forced to wheel around the North Celestial Pole on her throne, spending half of her time upside-down, clinging to it so she doesn’t fall off.
  - Gemini
    - Gemini is one of the constellations of the zodiac and is located in the Northern Sky. Gemini is the 30th largest constellation in the sky, occupying an area of 514 square degrees.
    - Gemini means “the twins” in Latin. The constellation represents the twins Castor and Polydeuces (or Pollux) in Greek Mythology. The twins’ mother, Spartan Queen Leda, was seduced by Zeus, who visited the queen in the form of a swan. She became pregnant with the immortal Polydeuces and Helen (who later became the legendary Helen of Troy). Leda later also became pregnant with Castor and Clytemnestra. These siblings were fathered by Tyndareus and, unlike Zeus’ children, they were mortal.
    - Despite having different fathers, Castor and Polydeuces grew up together and were very close. One day, the brothers clashed with another set of twins, Idas and Lynceus, when they fought over two women, Phoebe and Hilaira. Lynceus killed Castor by stabbing him with a sword. Devastated Polydeuces asked Zeus to share his immortality with his murdered brother and the god placed them both in the sky, where they remain inseparable as the constellation Gemini.
  - Pegasus
    - Pegasus is one of the most prominent constellations in the northern sky. It was listed by the astronomer Ptolemy during the 2nd century and was named after a winged horse in Greek mythology. The brightest star in the constellation is Epsilon Pegasi, which forms the creature's nose.
    - Pegasus belonged to Poseidon, the god of the sea, earthquakes, and storms. In a battle between Perseus and Medusa, Perseus decapitated her and the winged horse “sprang” from her blood.
    - Pegasus was stolen by the Greek hero Bellerophon with the help of Athena and Poseidon. Pegasus allowed Bellerophon to ride him in order to defeat the monstrous Chimera. However, Bellerophon later fell from the creature’s back

while trying to reach Mount Olympus. After some time, the riderless Pegasus reached Olympus and Zeus transformed him into the famous constellation. Pegasus was also known for bringing thunder and lightning to Zeus whenever he needed it.

- Campfire songs

*Note: many of the linked songs are sung in a way to appeal to very young children – however these songs translate well to young adults – just use a less sing-song voice.*

- [Going on a Bear Hunt](#)
- [Boom Chica a Boom](#)
- [Baby bumble bee](#)
- [The Rattlin Bog](#)

#### Bedtime Overview

- Remain in tents until you are given the signal.
  - If you wake up early – relax and listen to the sounds of nature.
- If you need to use the bathroom in the middle of the night – wake up a tent buddy and use your flash lights.
- Place flashlights somewhere close to your sleeping bag so you can find them.
- You have xx minutes to get ready for bed – brush your teeth, wash your face, change into your pj's, use the bathroom, etc.

**Day 9: Explore and Wonder – Marine Mammals/Return from Overnight****Timing:**

Schedule	Activity	Time	
6:30AM	Rise and Shine!		
6:30 – 7:00AM	Get ready for the day	30 minutes	
7:00 – 7:30AM	Break down camp	30 minutes	
7:30 – 8:00AM	Community Building (Breakfast)	30 minutes	
8:00 – 8:30AM	Pack buses	30 minutes	
8:30 – 10:00AM	Drive to La Jolla	90 minutes	
10:00 – 11:40AM	Explore & Wonder – Marine Mammals	Science Lab 100 minutes	
11:40 – 12:00PM	Lunch	20 minutes	
12:00 – 12:45PM	Return to Living Lab	45 minutes	
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	Growth Mindset Tools 20 minutes	
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection		50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong		50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes	

**Supplies:****Check-In:**

- Name tags (1/person)
- Student roster (1)

**Community Building:**

- See supply list on Day 1

**Science Lab:**

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small Science Discovery Process Poster (1)
  - Small white board (1)
  - White board eraser (1)
  - Dry erase markers (3)
  - Binoculars (1)
  - Portable 1<sup>st</sup> Aid Kits (1/instructor)
  - Science Discovery Process 1-pager (1)
  - Marine Mammal ID Card (laminated) (1)
  - Marine Mammal Walk Map – Instructor Version (laminated) (1)
  - Pictures of Drones (laminated) (3)



- Drone Photo of Sea Lions (laminated) (1/pair of students)
- Dry erase markers (thin tip) (1/pair of students)
- Mentor backpacks (3)
  - Pack all materials for student backpacks (below) in Mentor Backpacks to be distributed to students on the bus on the way to the field trip and collected on the way home.
- To be added to Student Backpacks (1/ student)
  - Binoculars (1)
  - Pen (1)
  - Marine Mammal ID Card (laminated) (1)
  - Map of Marine Mammal Walk– Student Version (laminated) (1/student)
- Water cooler filled with water (1)
- Coolers to pack lunches (3)

### **Set Up**

#### Community Building

- See “Day 1 Set-up”

#### Science Lab

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Grab a Mentor backpack. (1/group)
- Grab an Instructor backpack. (1/group)
- Determine which group will travel in which direction along the Marine Mammals walk.
  - The goal is to spread the groups out.
- Pack student lunches and water cooler in staff car.
  - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

### **Intensive Program Manager**

#### Community Building

- Make sure all drivers have directions to drop-off location/parking area.
- Lead Community Building.
  - See Curriculum below.

#### Science Lab

- Attend field trip with staff.
- Coordinate drop off/pick-up location with bus drivers.

#### Growth Mindset: Process Reflection

- Return typed Final Reflection pieces to each Team Lead.

**Floor Lead**

Set-up/Check-in:

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.

**Teaching Notes for Team Lead**

- During bus ride to La Jolla cue mentors to hand out supplies to students to place in their backpacks.
  - See list above in supplies
- During bus ride back to Living Lab – cue mentors to collect exploration supplies from students.

## **Community Building**

**Location:** Campground

**Community Building Question:** What is something you have always wanted to do, but haven't done yet?

**Food and Conversation:**

Introduction

- Introduce the Community Question.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review clean-up procedures for campground.

**Announcements:**

- Agenda:
  - (Review the day's agenda.)
- Prepare for Field Trip departure.
  - Use bathroom.
  - Fill water bottles.

## Science Lab

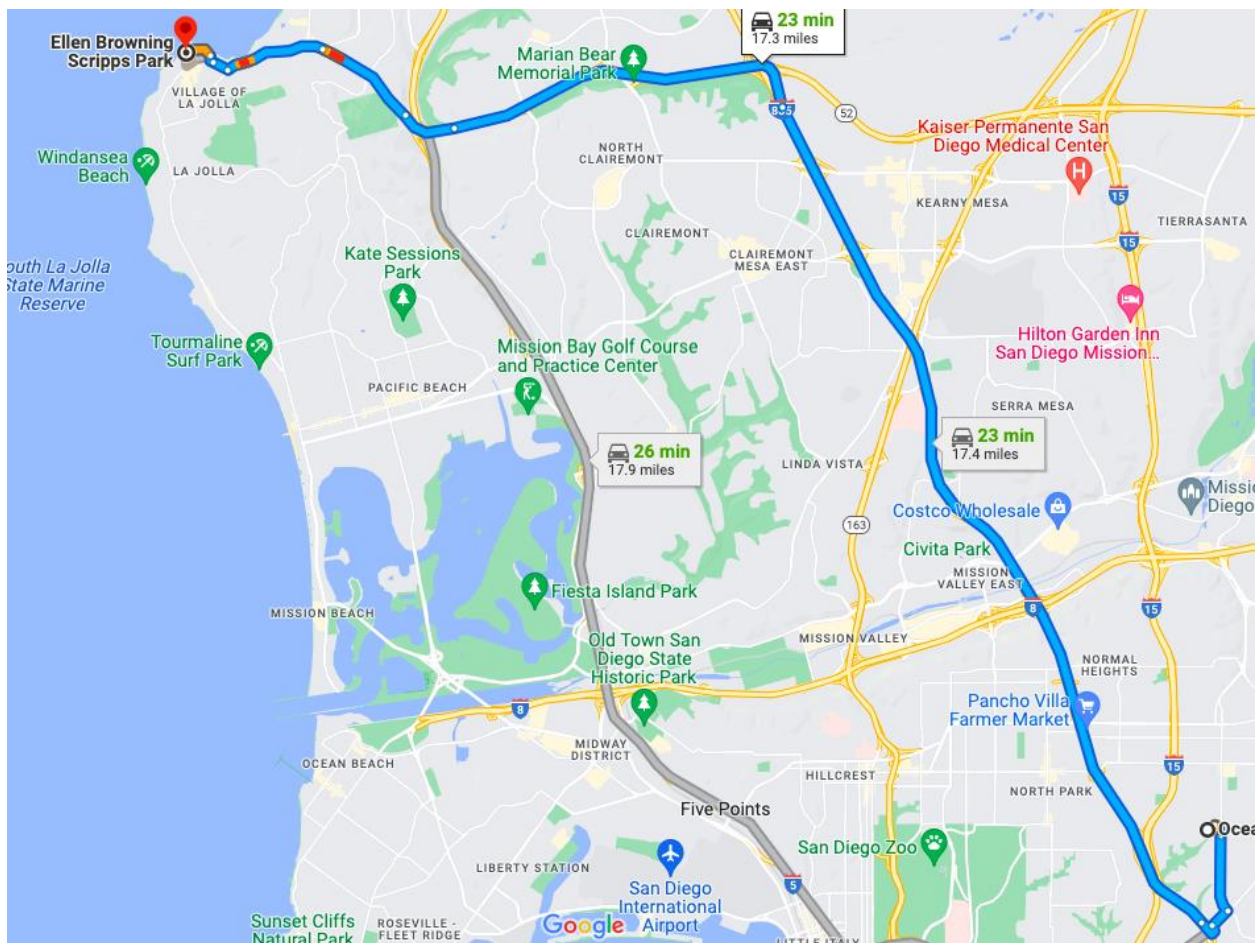
### Drive to La Jolla for Explore and Wonder – Marine Mammals.

#### Directions:

- Take Fairmount Avenue to **805 N**
- Take the exit for **La Jolla Parkway (CA-52 W)**
- La Jolla Parkway will become **Torrey Pines Rd.**
- Make right onto **Prospect Place.**
- At fork stay right to get onto **Cave Street.** (one-way).
- Cave Street will become **Coast Blvd.**
- Follow Coast Blvd. around until you see **Ellen Browning Scripps Park** on your right (green space).

#### Parking & Gathering:

- When you are on **Coast Blvd.** immediately start looking for parking along the park.
- Park at the first opportunity.
- Look for Ocean Discovery Staff & Student gathered in the park.



# Marine Mammal Walk Map

Potential Locations to see Marine Mammals:

- Seals: Children’s Pool & Seal Rock
- Sea Lions: Boomer Beach & La Jolla Cove



## Explore and Wonder – Marine Mammals

Goal: Students visit La Jolla to ask questions and make observations about marine mammals and compare different ways of making marine mammal population estimates.

### Timing:

- 0:00 – 0:20 Introduction
- 0:20 – 1:10 Marine Mammal Walk
- 1:10 – 1:20 Debrief
- 1:20 – 1:40 Drone Intro

### Introduction

- Welcome students back to La Jolla.
  - We 30 minutes from City Heights by car.
  - We are only approximately  $\frac{1}{4}$  of a mile from where we visited the tidepools.
- Introduce topic for the day.
  - We have spent the last three days studying fish – today we will switch our focus to – marine mammals!
  - Connect to prior knowledge.
    - What do you know about marine mammals?
    - Can you name any types of marine mammals?
- Introduce Marine Mammals.
  - Ask students: What do you think the definition of a marine mammal is?
  - Define.
    - Marine = related to ocean/sea
    - Mammal =
      - warm blooded
      - breathe air through lungs
      - have hair (at some point during their life)
      - babies are born alive
      - they produce milk to feed their young
    - Marine Mammal = a mammal (with all the above characteristics) that lives most or all of its life in or near the ocean.
- Introduce groups of Marine Mammals.
  - (Have students take out Marine Mammal ID Card from their backpack.)
  - Cetaceans: dolphins, whales, and porpoises
    - Marine mammals that cannot survive on land.
  - Pinnipeds: seals, sea lions, and walruses
    - “Flipper-footed” animals.

- Marine fissipeds: polar bears and sea otters
  - Unique group that can survive on land but depend on the sea for survival – hunting and eating.
- Introduce Explore & Wonder:
  - Today we will spend the day Exploring and Wondering about marine mammals.
  - (Show Science Discovery Process Poster.)
    - Review “making observations” and “asking questions”.
      - Observation: using the senses to gather information from the natural world.
        - (Share an example with students.)
      - Question: something that may help us to answer or figure out the reason for some observation.
        - (Share an example with students.)
      - Science leaders make observations and ask questions about the world around them all the time.
- Explore & Wonder at La Jolla Shores.
  - Today your goal will be to Explore & Wonder about marine mammals.
  - Your goal is to observe a minimum of TWO different kinds of marine mammals. For each type record:
    - The name.
    - A minimum of TWO observations.
    - A minimum of TWO questions.
  - Let’s set up our science notebook so we are ready.
    - (Have students turn to the **Explore & Wonder – Marine Mammals** page in their science notebook.)
    - Have students record the definition of a marine mammal at the top of their page:
      - a mammal (warm blooded, breathes air with lungs, has hair, babies born alive, and make milk to feed young) that lives most or all of its life in or near the ocean.
    - Have students create a t-chart in their notebook. One side of t-chart = “Marine Mammal #1”, other side of t-chart = “Marine Mammal #2”.
      - On both sides of t-chart have students write:
        - Name
        - Observations (2)
        - Questions (2)
- Introduce exploration tools:
  - When exploring it can be good to have tools. Review tools:

- Binoculars
  - Marine Mammal ID Card
- Review Community Agreements:
    - Be curious:
      - Use any tools you have and ask questions and make observations.
      - Share questions and observations with other people.
    - Be safe:
      - Stay on the sidewalk. Don't walk between parked cars.
      - Only cross streets when the Team Lead gives the okay.
    - Be respectful.
      - Help other see what you see.
      - Make space for other people walking on the sidewalk.

### Marine Mammal Walk

- Walk along the shoreline looking for marine mammals.
  - Utilize Map of Marine Mammal Walk – Instructor Version for locations where marine mammals are often found.
- During a Marine Mammal Sighting:
  - Give students time to have a “wow” moment and simply observe. (~5 min)
  - Have students take out their science notebooks and continue to observe marine mammals while writing down observations and questions. (~5 min)
  - Continue walking and repeat above for any more marine mammal sightings.
- **\*\*Be sure** to give yourself enough time to walk back to **Ellen Browning Scripps Park near Boomer Beach** (you will need to be able to see some marine mammals) for Debrief and Drones Intro.

### Debrief

- Was anyone able to name saw a type of marine mammal they saw?
  - (Write the name of the organism on the whiteboard.)
    - What was an observation you made about that marine mammal?
    - What was a question you had about it?
  - Ask other students if they saw the same animal?
    - Ask those students if they had any additional observations/questions?

### Drone Intro

- There are many things that science leaders want to understand about marine mammals, including simply – how many are there in each place they gather?



- We are going to try counting marine mammals in two ways – the first way is simply using our eyes.
  - (Walk students over to where you can see a good number of one type of marine mammal.)
  - Ask students to count the number of marine mammals they see.
    - Have students silently count the number of marine mammals.
      - (Ask for students to share the number of marine mammals they counted.)
      - (Student numbers are likely to vary widely.)
  
- (Return to lawn area to debrief.)
  - Potential questions:
    - Do you think our counts were accurate? Why or why not?
    - What makes counting marine mammals simply using our eyes from land challenging?
  
- Introduce drones as science research tools.
  - Science researchers have been collecting data on populations of marine mammals for decades in basically the same way you just did – counting from a distance.
  - Over time scientists who do this become more accurate but it is still not easy.
    - Marine mammals can be far away, move around, be in clumps, etc.
  - More recently a new tool to help count populations has been introduced into science research – drones.
  
- Connect to prior knowledge.
  - What is a drone?
  
- Drones.
  - (Pass out laminated “Pictures of Drones”.)
  - Drones are known as Unmanned Aerial Systems.
  - They are aerial crafts which are piloted remotely, meaning the person flying them can be standing on land while they fly the drone over a pod of whales or over a group of seals.
  - Many drones can take photographs of the areas they are flying over – such as an area where marine mammals are gathered.
  
- Counting Sea Lions using Drones.
  - (Show “Drone Photo of Sea Lions”.)
    - This is a photo taken by a drone of sea lions gathered on a beach.
    - Your job is to count the number of sea lions.
    - Be as accurate as possible.

- Pass out a laminated “Drone Photo of Sea Lions” and a thin tip dry erase marker to each pair of students.
  - (Give students time to count.)
  - (Encourage students who finish early to count a second time to be more accurate.)
  
- Debrief Counting Seas Lions
  - Have each pair of students share the number of sea lions they counted and write these on a dry erase board.
    - How could we get the most accurate population count here?
      - Average all our counts together.
  
  - Discuss pros and cons of doing population counts using drones. Potential questions include:
    - Do you think your population counts using the photograph were more or less accurate than when you were counting animals from the shore? Why?
    - What makes counting animals from the photo easier/more difficult?
    - What are some of the challenges to doing population counts using drone photos? How could we overcome those?
  
- Drones in Marine Mammal Research
  - Drones are now being used in a lot of marine mammal research.
  - Drones can be especially helpful in studying marine mammals because:
    - Marine mammals often live in less easy to access areas (open ocean, arctic, antarctica, etc.)
    - Drones are often less impactful to the behaviors of marine mammals than humans trying to enter their space and observe.
  
- Tomorrow we will learn more about how drones work and how they can be used in marine mammal research.
- (Make sure each student returns all tools to backpacks.)
- (Make sure each student has their backpack.)

## **Growth Mindset Tools: Process Reflection**

### Timing

- 0:00 – 0:10 Expand on Concept Map
- 0:10 – 0:15 Pair Share Concept Maps
- 0:15 – 0:20 Group Share/Edit Concept Map

### Expand on Concept Map

- Today we will expand on our concept maps on our own.
- There will be questions on the board to help guide your thinking.
- After having some time to work on your concept map alone we will pair up to share ideas then come together as a whole group.
- Concept Map Questions (**SLIDE**):
  - What is the main topic? Can I expand on an existing concept map or should I start a new one?
  - What feels important to remember?
  - How are those ideas linked?
  - Are the specific examples I want to include?

### Pair Share Concept Maps

- In a moment you will get with a partner and each of you will share your concept maps with the other.
- When you are sharing your concept map, don't just point at your concept map, but tell them what you were thinking when you added each box.
- (Pair up students to student to share their concept maps.)

### Group Share/Edit Concept Map

- Go through the questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)
- (Give students time to make edits to their concept map.)

## Growth Mindset Tools: Self-Reflection

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Peer Review of Final Reflection

Editing – As professional writers

Gather in groups of 3 or 4. (more than two). Assign the groups.

Instructions:

- Take turns reading your chosen writings aloud.
- Be sure to listen very closely, the same way you want to be listened to.
- Don't forget to applaud when they are done!
- When one person has finished reading the others in the group will "critique" your work.
- Provide "Impressions" for your classmate.
- The writer will take notes on what each person in the group mentions.

Write on the board:

Critique Guidelines (explain that critique is looking at someone else's work and giving feedback that is gentle criticism, helpful input to improve the writing). These are the "Impressions" mentioned above.

1. Believe in the possibility of every piece of writing
2. Begin by saying what you liked
3. Where were you confused or had questions?
4. Tell us what you'd be interested in hearing more about.

After everyone has read aloud their pieces, and received critique, return to your seats and reread your piece and see where you'd like to make changes, improvements, or add to it. Revise how you'd like on the paper.

These will be collected and typed up a final time.

## **Growth Mindset Tools: Healthy Bodies**

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

### **Servant Leadership & Reminders**

- For Reminders: See today's PowerPoint slide.
- For Servant Leadership: see *"Day 9 Servant Leadership and Reminders"*.

## Day 10: Investigate – Marine Mammals

### Timing:

Schedule	Activity	Time	
8:45 – 9:00AM	Check-in	15 minutes	
9:00 – 9:45AM	Community Building	45 minutes	
9:45 – 11:15AM	Investigate – Marine Mammals: Drones	Science Lab 90 minutes	
11:15 – 12:15PM	Know it! Own it! – Marine Mammals		60 minutes
12:15 – 12:45PM	Lunch	30 minutes	
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	Growth Mindset Tools 20 minutes	
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection		50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts		50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes	

### Supplies:

#### Check-In:

- Name tags (1/person)
- Student roster (1)

#### Community Building:

- Blankets (4)
- Prizes (20)
- See supply list on Day 1

#### Marine Mammals - Investigate

- Science Discovery Process poster (1/group)
- Drone w/ camera function + remote (1)
- Smaller drones + remote (1/group + 2 back-ups)
- Stick exactly 24-inches long (1/group)
  - Pre-taken “Whale Pod” photo + recorded “whale” heights (1/pair of students)
- See curriculum below for information.
- Painters tape (1)
- Tape measure (1/group)
- Rulers (1/pair of students)
- Simple calculators (1/pair of students)

#### Pre-taken “Whale Pod” photo\*\*

- \*\*During training take a photo of as many staff members laying on the pavement as a “pod” of whales with the 24-inch stick in the center.
- For each person in the photo record their height.
- This is a backup photo to be used in case the day of the Team Lead is not able to get a clear photo of their students from the drone.

## **Set Up**

### Community Building:

- See “Day 1 Set-up”
- Prep supplies for Community Building Activity.
  - See Community Building Activity below.

### Science Labs

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- In Plaza Del Sol parking lot and The Commons – create two large “x” approximately 10 feet apart.
  - This will be the drone take-off and landing areas.
- Make sure all drones are charged and ready to be flown.
- Have Papi “Drone Photos” folder open so it is ready for drone photo to be copied into.

## **Floor Lead**

### Set-up/Check-in:

- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

### Science Lab

- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.



## **Intensive Program Manager**

### Set-up

- Return typed I AM Poems to each Team Lead.

### Community Building

- Lead Community Building.
  - See Curriculum below.

### Science Labs

- Review the concept of “Ask an Expert” with mentors:
  - They will have a group of 3-4 students they will be working with individually.
    - Invite students to sit with you in a circle.
    - Students will come to you with questions they have.
    - Have each student share a question.
      - When a student shares a question – do your best to answer it or have other students help to answer the question.
  - You will be provided a laptop to research answers to questions you aren’t familiar with.
  - Share ideas on how redirect students if they start to ask off topic questions.
    - Answer their question and then redirect them.
    - Ex. I’m excited to tell you more about my own journey but let’s make sure you understand all the concepts first. What was one of the questions you wanted to ask?
- Assign all Mentors to “Ask and Expert” locations

## Community Building

**Location:** Kitchen

**Community Building Question:** What are you most excited about starting high school? Nervous about?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	Food & Conversation
9:05 – 9:25AM	Food and Conversation	
9:25 – 9:30AM	Clean up	
9:30 – 9:40AM	Community Building Activity	Community Building Activity
9:40 – 9:45AM	Announcements	Announcements

**Food and Conversation:**

Introduction

- Review Purpose of Food and Conversation and Community Question.
  - See “Community Building Day 1” curriculum.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Community Building Activity: Blanket Switch**

Directions:

- Divide students and adults into groups of 10-12 people.
- Each team must stand entirely on one blanket.
- Object of the game is to turn your blanket over without anyone leaving it.

**Rules:**

- If someone leaves the blanket you must start over.

**Activity**

- Give the 1<sup>st</sup> team to complete the challenge a prize.

**Announcements**

- Agenda:
  - (Review the day's agenda from the whiteboard.)

**Science Lab**

**Investigate – Marine Mammals: Drones**

**Goals:** Students investigate how drones are used to study marine mammals.

**Objectives:**

Students will:

- Practice flying and landing a drone.
- Analyze a drone photo of a “whale pod” to find lengths of individual “animals”.
- Describe two ways drones can be used to study marine mammals.

**Timing:**

- 0:00 – 0:15 Introduction
- 0:15 – 0:45 Flying Drones
- 0:45 – 1:20 Drone Research
- 1:20 – 1:30 Debrief

**Introduction:**

- Review what students have learned.
  - Definition of marine mammal. (SLIDE)
    - Mammal =
      - warm blooded
      - breathe air through lungs
      - have hair (at some point during their life)
      - babies are born alive
      - they produce milk to feed their young
  - Different groups of marine mammals.

- Examples of marine mammals.
- Observations and questions they made about marine mammals.
- Why studying marine mammals is important.
  - Marine mammals are important members of the ecosystem.
    - They play important roles in food chains as both predators and prey.
    - They are often at the top of many food webs and changes in their populations can have a large impact on the rest of the food web.
    - Many communities around the world rely on marine mammal tourism to support their economy.
  - Ask students: Why do you think science leaders want to count marine mammals?
    - Can show trends in populations over time:
      - Quick/drastic changes -- can signal that an acute event has occurred, i.e. oil spill, harmful algal bloom, disease, etc.
      - Slow changes – results of climate change, fisheries impacts, etc.
    - Allows scientists to understand if current laws/protections are effective at helping to protect threatened or endangered populations.
  - For all these reasons, it is important for science leaders to study and count marine mammals.
- Use of drones in marine mammal research.
  - Using drones can help scientists:
    - Collect data about marine mammals that are difficult to see or live in in distant locations.
    - Take photographs that can be used to count populations of marine mammals more easily and accurately.
  - There are many different types of drones. (SLIDE)
- Science Discovery Process:
  - Today we will look more closely at using drones to Investigate marine mammals.
    - (Show Science Discovery Process poster.)
  - We will collect data using drones and analyze that data in the lab.
- Drones to measure individual whales.
  - Yesterday, we learned that by taking overhead photographs of marine mammals using drones we can get more accurate population counts, those photographs can also be used in another way – to take measurements of individual animals.
  - Just like when you go to the doctor’s office – they take your height each year, scientists are interested in how the length of marine mammals can change over time.
    - Why do doctors track your height over time? To make sure you stay healthy.

- Science leaders want to do the same thing with marine mammals. They can track their length over time to see if they are staying healthy and continuing to grow
- Today each of you will experience flying and landing a drone.
- We will also take a picture of a “whale” to see how scientists can use photos from drones to learn the size of individual whales.

### Flying Drones

- Regulations on drones.
  - In California, flying drones is subject to the Federal Aviation Administration’s rules.
  - There are many places where drones are not allowed to fly: some state and national parks, certain towns, etc.
  - It is illegal to fly drones near people to take pictures of them without their consent.
  - Always check local rules before flying drones.
  - Today we will be flying the drone in the Ocean Discovery parking lot.
- Flying drones.
  - Show students the drone they will be flying.
    - Demonstrate how to use controls.
  - Expectations
    - Explain that everyone will get a chance to fly and land a drone.
    - Your goal when flying to lift off from one of the blue “X” on the ground and then fly over and land on the other blue “X”.
    - Be respectful when your turn is over.
    - Land the drone gently before handing the controls off to another person.
  - Have a growth mindset.
    - Flying a drone can be challenging.
    - Just because you don’t get it into the air right away – don’t give up!
- Students fly drones.
  - Break students into groups and send each group to a drone take-off and landing area to start piloting drones.
  - \*Make sure that you leave enough time to Analyze the data.

### Drone Research

- Photograph a “Whale Pod”.
  - We are going to collect some evidence using a drone.
  - Explain that 4-5 people are going to mimic a “pod” of whales so that we can take a photo of the “pod” using a drone and learn how scientists can use these types of photos to measure the length of marine mammals.

- Demonstrate how students should lay down on their backs (so you can identify them later) and you will fly a drone above them and take a photo.
- Show student the 24-inch stick and lay it somewhere in the middle of the “pod”.
- (Take a photo of the “whale pod”.)
- Have students head back to their science lab space and take the drones with you.
  - Download photo from Drone to SMART Board
    - Name your photo: “**Team Name – Whale Pod Photo**”
  - Put photo to Papi.
    - Papi://Curriculum/LI New/Ocean Leader Bridge Program/Bridge 2022/Drone Photos
    - (Text Floor Lead that photo is ready.)
- Analyze Whale Pod Photo.
  - Rough estimates of whale sizes.
    - (Project image of “whale pod”.)
    - Ask students how they could measure the length of any of the “whales” in the photo.
      - If necessary, remind students of the stick which is a known length.
    - Ask students to roughly estimate the lengths of a few “whales” using the known length.
      - i.e.: a “whale” is approximately two sticks long, two sticks = approximately 48 inches or 4 feet tall, etc.
  - More exact estimates of whale sizes.
    - Explain to students that there is a way to get much more exact lengths using some simple math.
    - This is possible to do because we have something of a known length in the photo – the 24-inch stick.
    - Show students how to create ratios to solve for an unknown. (SLIDE)
      - Measure the length of the 24-inch stick in inches as it is projected on your screen 8 inches. (Top of first ratio = 8 inches)
      - The bottom of that ratio is the true length of the stick = 24 inches. The top and bottom unit must be the same. (Bottom of first ratio = 24 inches)
      - Then we will set up another ratio that is similar to our first ratio and uses the same units. We will measure the length of one “whale” in the photo using inches = 20 inches (Top of second ratio = 20 inches).
      - Our unknown is the true length of the “whale” so we will call that x. (Bottom of second ratio = x).

- $\frac{8 \text{ in}}{24 \text{ in}} = \frac{20 \text{ in}}{x}$
- Now we can cross multiple.
  - $8x = 480$
- Now divide both sides by 8 to get x
  - $\frac{8x}{8} = \frac{480}{8}$
  - $x = 60$
- Our “whale” is 60 inches which can be converted to 5 feet.
  - Invite that “whale” up the front and measure them with a tape measure to confirm.
    - Demonstrate using another “whale” as an example.
- Measure length of unknown “whale”.
  - Pair up students.
  - Ask students to work together to calculate the length of the final whales in the photo.
    - (Have students open up to the **Investigate** page in their science notebook.)
    - Ask students what measurements they need.
      - Find these measurements together.
      - When they figure out how long they think a particular whale is they should write it directly on top of the “whale” in the photo.
    - (Walk around and help students with math.)
- Share out.
  - Pick a “whale” on the screen.
    - Ask those students to share their calculated lengths.
    - If lengths are similar discuss how they could be the most accurate about the length of that particular whale – take an average.
    - If one length is dissimilar to the rest talk about outliers and reasons why the discrepancy could have occurred.
      - Mistakes in math, mistakes in reading ruler measurements, etc.
  - Have the “whale” come up to the front to be measured using a tape measure.
    - Compare the true measurement (the person) to the calculated measurement.

### Debrief

- Do a Pair-Share with students using the following questions:
  - What could scientists do with information like this?
    - Overall population health/Individual whale health.
      - Are whales growing over time?
        - Yes = could mean a healthy population/individual that is eating and growing

- No = could mean a population/individual that is not growing because they are not eating for some reason.
  - Scientists can tell if females are pregnant by comparing length to weight ratios.
    - Just like human beings who are pregnant, whales who are pregnant gain weight in certain areas.
- What if you were a researcher and you didn't have a stick of known length in the middle of a pod of whales, what could you do?
  - (Let students brainstorm ideas.)
  - Share with students there is another math equation utilizing information about the camera lens and height of the drone that would allow them to calculate the length of a marine mammal without having an object of known length in the picture.
- Are there other ways drones could be useful? Other animals? Other areas?
  - (Let students brainstorm ideas.)
  - Share with students that this type of research could be used to assess measurements of any marine mammal, for land animals, to measure things in agriculture, mining, surveying, construction, etc.
- Drones are an extremely important tool for scientists and marine mammal research using drones is a whole field of science.
- Tomorrow we will go get to talk to science leaders who Make a Difference using drones to study marine mammals at Southwest Fisheries Science Center here in San Diego.

### **Know it! Own it! – Marine Mammals**

#### Timing:

- 0:00 – 0:25      Flash Cards
- 0:25 – 0:60      Study Hall & Ask an Expert

#### Flash Cards

- Review Growth Mindset (SLIDE)
  - You have learned quite a bit about marine mammals in the last two days.
  - Just like we did with invertebrates and fish we need to take new information and make it our own.
    - Use Manta: Know it! Own it!
- Review the Science of Flash Cards (SLIDE)
  - We will continue to use flash cards to do this.
    - One of the best ways to memorize knowledge is by using flash cards.
    - Memorizing knowledge allows us to recall it and apply it to future learning.



- Review Flash Cards format (SLIDE)
  - Flash cards are simply cards that have related information on both sides.
  - Review some types of flash cards:
    - Definitions
    - Short Answer
    - Examples
  - Other considerations for flash cards:
    - Flash cards should only have one question per card.
    - Write neatly because one way to study is to ask another person to quiz you using your flash cards. It helps if they can read your flashcards.
    - Flash cards can also have sketches/drawings on them if that is helpful to you.
  - Review places to look for information to make flash cards:
    - Science notebook
  
- Brainstorm Ideas for Flashcards.
  - Pair-Share: Ask students to brainstorm ideas for flashcards based on what they have learned so far.
    - Students should look through their science notebook and put a star next to anything they think could be important to remember about fish conservation and marine mammals.
    - Students should not create flash cards yet.
  - Share out with the group ideas that could be flash cards.
    - Ask students to be specific about what they would write on each side of the flash card.
    - As students respond – draw flash cards on the board. (SLIDE)
  
- Create Flash Cards:
  - Have students make a copy of each of the flash cards on the board.

### Study Hall & Ask An Expert

- Review Final Exam. (SLIDE)
  - Our final exam is two days from now.
  - The final will include both short answer and multiple-choice questions.
  - You will be tested on all three subjects that we have studied: invertebrates, fish, and marine mammals.
  - In order to prepare for this exam, we will have some independent study time.
  
- Review the Science of Studying. (SLIDE)
  - Studying using several short study sessions over a period of several days will increase your ability to retain the knowledge (remember it).
  - Utilize strong study tools such as flash cards.

- Stay focused – don't multi-task (no phones or off topic conversations).
- Independent Study Time:
  - (Give students ~10 minutes to study independently.)
- Pair Study Time/Ask an Expert (SLIDE)
  - During the last 15-20 minutes of study hall today you will have the following options:
    - Continue to study flash cards independently.
    - Study flash cards with a partner.
    - Ask an Expert questions.
  - Rather than have specific time to meet with Experts, today you can choose to ask any Expert a question during this study hall time.
    - If there is a question you have about any topic we have studied, fish, invertebrates, or marine mammals – please walk over to any of our “experts” at any point and ask you question.
      - You do not need to sign up to talk with an expert today.
    - Experts who aren't actively engaged in answering questions will be walking around the room to quiz you with your flash cards.
  - (Give students 1 minute to pair up with a partner.)
  - (Give students the last 15-20 minutes to study or talk to an “expert”.)

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:07 Pairs Expand on Concept Map
- 0:07 – 0:15 Share/Edit Concept Map
- 0:15 – 0:20 Prep for Science Leader Interviews

### Pairs Expand on Concept Map

- Just like yesterday, you and a partner will work together on your concept maps.
- There will be questions on the board to help guide your thinking.
  - Should we start another concept map or are still learning about invertebrates?
  - (Have students take out their science notebooks and turn to **Concept Map – Marine Mammals** page.)
- We will get together as a group at the end to share our ideas and give you time to edit your concept maps if you would like.
- Concept Map Questions (**SLIDE**):
  - What is the main topic? Can I expand on an existing concept map or start a new one?
  - What feels important to remember?
  - How are those ideas linked?
  - Are the specific examples I want to include?

### Share/Edit Concept map

- Review questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)
- (Give students time to make edits to their concept map.)

### Science Leader Interview

- Tomorrow we will be taking a trip to NOAA's Southwest Fisheries Science Center to meet scientists who do research to help protect marine mammals.
- This field trip will be similar to the one we took to Scripps Institution of Oceanography and the University of San Diego.
  - We will meet science leaders and learn about their job and their research with marine mammals.
  - We will also have the opportunity to ask questions about their pathway to becoming a science leader.
  - Let's take a moment to think about some questions we might want to ask these science leaders.
- Brainstorm questions with students.
- Give students time to copy new questions into their science notebook.
  - (Have students open to **Science Leader Interview** page in their science notebook.)

## Growth Mindset Tools: Self-Reflection

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Timing:

- 0:00 – 0:20 Self Reflection: Investigate – Marine Mammals
- 0:30 – 0:50 Peer Review of I Am Poems

### Investigate – Marine Mammals

#### Drones

- Letter to Self and Reflection Selection
  - Review the Rules.
  - Prompt: Write a letter to your younger self.
    - Dear \_\_\_\_\_,
    - I wish I could have written sooner, but this is what you need to know....
    - [Put this on board for them to write on their page to start from.]
  - Give them 10 mins.

### Peer Review of I Am Poems

- Review what it means/importance of editing as professional writers
- Gather in groups of 3 or 4. (more than two). Assign the groups.
- Review Instructions:
  - Take turns reading your chosen writings aloud.
  - Be sure to listen very closely, the same way you want to be listened to.
  - Don't forget to applaud when they are done!
  - When one person has finished reading the others in the group will "critique" your work.
  - Provide "Impressions" for your classmate.
  - The writer will take notes on what each person in the group mentions.
- Write on the board:
  - Critique Guidelines (explain that critique is looking at someone else's work and giving feedback that is gentle criticism, helpful input to improve the writing). These are the "Impressions" mentioned above.
    - Believe in the possibility of every piece of writing
    - Begin by saying what you liked
    - Where were you confused or had questions?
    - Tell us what you'd be interested in hearing more about.
- After everyone has read aloud their pieces, and received critique, return to your seats and reread your piece and see where you'd like to make changes, improvements, or add to it. Revise how you'd like on the paper.

- These will be collected and typed up for the Family Celebration Practice.

## **Growth Mindset Tools: Healthy Bodies**

### Introduce Today's Class

- Do an introduction for the staff member or volunteer who will be leading the class.
- Reminds students that Community Agreements apply and that they are representing Ocean Discovery Institute today.

### **Servant Leadership & Reminders**

- For Reminders: See today's PowerPoint slide.
  - Laundry Day
    - Bring your polos in for washing.
    - Casual day at the lab tomorrow.
    - Still need to dress appropriately for being an Ocean Leader but you do not have to wear your polo.
- For Servant Leadership: see *"Day 10 Servant Leadership and Reminders"*.

**Day 11: Make a Difference – Marine Mammals**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:25AM	Community Building	25 minutes
9:25 – 10:10AM	Drive to NOAA Southwest Fisheries Science Center	45 minutes
10:10 – 11:40AM	Explore & Wonder - Invertebrates	90 minutes
11:40 – 12:00PM	Lunch	20 minutes
12:00 – 12:45PM	Return to Living Lab	45 minutes
12:45 – 1:05PM	Growth Mindset Tools: Process Reflection	20 minutes
1:05 – 1:55PM	*Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	*Growth Mindset Tools: Healthy Bodies & Strong Hearts	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes

**Supplies:****Check-In:**

- Name tags (1/person)
- Student roster (1)
- Laundry Detergent (1)
- Clear bin labeled “Ocean Leader Laundry” (1)
- Sharpies (2)

**Community Building:**

- See supply list on Day 1
- Getting to know you cards (1/student + 1/adult joining the bus ride)

**Science Lab:**

- Bus sick bag (1)
  - Trash bag
  - Paper towels
  - Wet Ones
  - Mints
- Instructor Backpack (1/instructor)
  - Small white board
  - White board erasers/rag
  - Binoculars
  - Dry erase markers (3)
  - Extra pens (10)
  - Portable 1st Aid Kits (1/instructor)
  - Small Science Discovery Process Poster (1)

**Lunch:**

- Water cooler filled with water (1)



- Coolers to pack lunches (3)
- Thank you gifts for SWFSC staff (4-5)

Growth Mindset Tools: Healthy Bodies or Strong Hearts & Minds

- Portable speaker + power cord (1)
- Wireless microphones (2)
- I Am Poems printed out (1/student)
- Student Reflections printed out (for selected students)
- Canopies (to shade students during practice (4)

**Set Up**

Community Building

- See “Day 1 Set-up”
- Prep supplies for Community Building Activity.
  - See Community Building Activity below.

Science Lab

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.
- Grab an instructor backpack (1/group)
- Grab Bus sick bag (1/bus)
- Pack student lunches and water cooler in staff car.
  - Double check that utensils have been provided.
- Make sure you have an updated student roster before departing on field trip.

Growth Mindset Tools: Healthy Bodies or Strong Hearts and Minds

- Tape a large “V” on the ground to represent where the students will stand on stage to present their I Am Poems.

**Intensive Program Manager**Set-up

- Secure gifts for USD Science Leaders.

Community Building

- Lead Community Building.
  - Determine the number of adults joining the bus ride and select the appropriate number of Getting to Know You Card sets (1/pair of people).
  - See Curriculum below.

Science Lab

- Make sure all drivers have directions to drop-off location/parking area.
- Coordinate drop off/pick-up location with bus drivers.
- Attend field trip with staff and take pictures.
- Bring thank you gifts.
- Once at SWFSC determine an appropriate place to eat lunch outside.
- Execute SWFSC Science Leader thank you's.

Growth Mindset Tools: Self-Reflection:

- Talk to the students who have been chosen to read their reflections during the Family Celebration and make sure they are comfortable with the idea.

**Floor Lead**Set-up

- Set up laundry collection bin and sharpie markers next to check-in.
- Check in with Team Leads and make sure they have everything they need for the day.
- Prepare Student Check- In Area.
  - Print out name tags and rosters.

Check-in

- Make sure students label their polos before adding to laundry bin.
- Check students in.
- Call missing students.
- Provide updated daily roster to Team Leads.

Science Lab

- Wash, dry, and fold polos.
- Return uneaten breakfast food to refrigerator.
- Stay at the Living Lab as a contact point.
- Prep supplies for the next day.
- Begin putting together the PowerPoint for the Family Celebration.

Servant Leadership & Reminders

- Return clean polos to students.
- Help clean up supplies from the day and prep supplies for the next day.

## Community Building

**Location:** Kitchen

**Community Building Question:** What is something in your life that you are grateful for? Why are you grateful for it?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	<b>Food &amp; Conversation</b>
9:05 – 9:20AM	Food and Conversation	
9:20 – 9:25AM	Clean-up & Announcements	

**Food and Conversation:**

Introduction

- Review Purpose of Food and Conversation and Community Question.
  - See “Community Building Day 1” curriculum.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

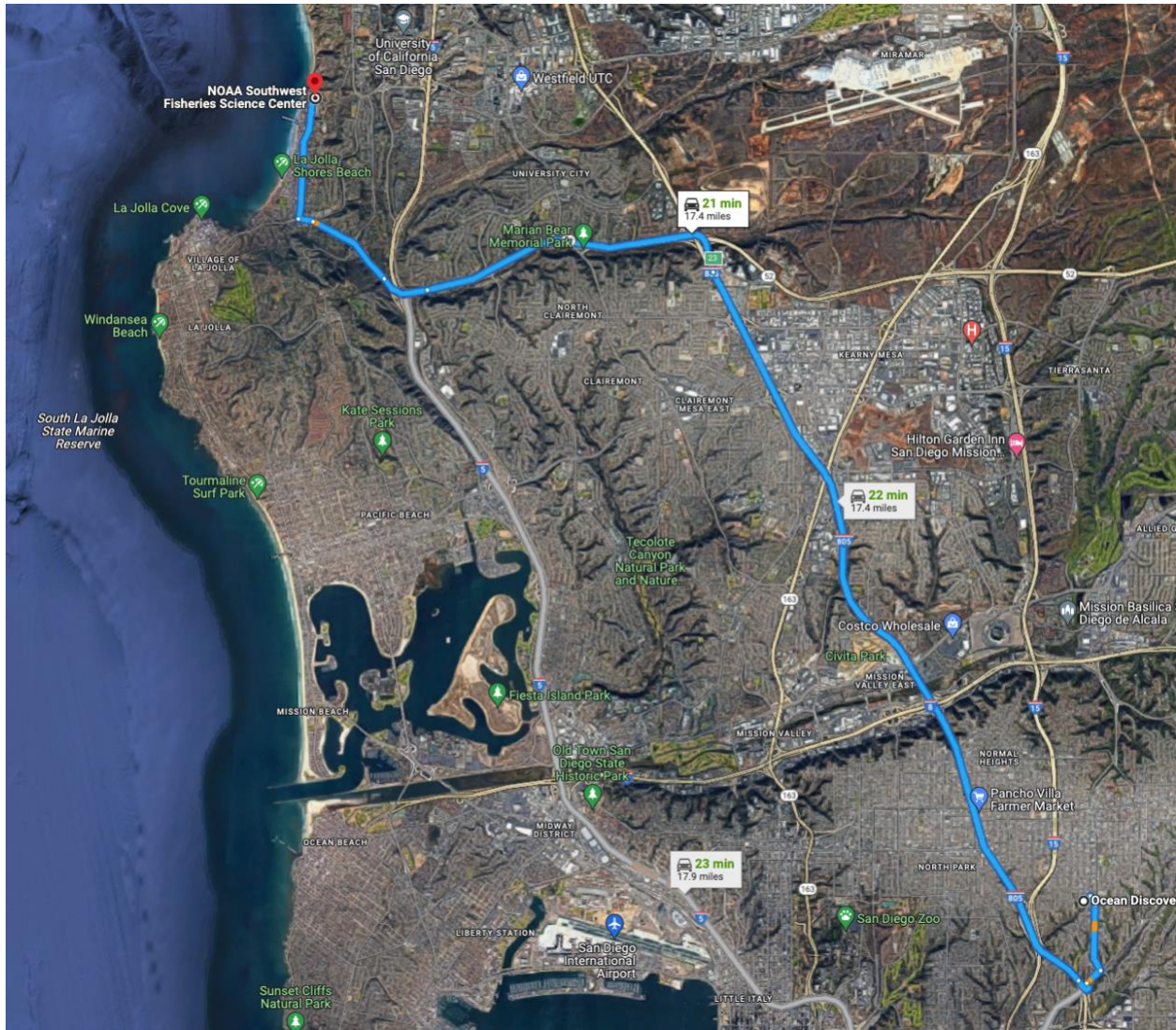
- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Announcements**

- Agenda:
  - (Review the day’s agenda from the whiteboard.)
  - During visit to SWFSC:
    - Encourage students to use their networking skills with new adults.
- Prepare for Field Trip departure.
  - Review Getting to Know You Bus Ride Activity
    - See “Curriculum Day 2: Community Building” for directions.
    - Have students and adults joining for the bus ride all choose a card.
  - Use bathroom.
  - Fill water bottles.

## Science Lab

## Drive to NOAA Southwest Fisheries Science Center

Directions:

- Take Fairmount Avenue to **805 N**
- Take the exit 23 for **CA-52 W**
- Take the **La Jolla Parkway** exit (left lanes)
- Make a right onto **La Jolla Shores Drive**.
- Follow La Jolla Shores Drive to NOAA Southwest Fisheries Science Center.
  - Just past Scripps Institution of Oceanography.

## Make a Difference – Marine Mammals

**Goals:** Students visit NOAA Southwest Fisheries Science Center to learn about current research science leaders are doing to help conserve marine mammals and to hear about the career pathways of individual science leaders.

### Timing:

- 0:00 – 0:10: Unload students
- 0:10 – 0:20: NOAA Southwest Fisheries Science Center Overview
- 0:20 – 0:45: Rotation 1
- 0:45 – 1:10: Rotation 2
- 1:10 – 1:35: Rotation 3
- 1:35 – 1:40: Thank You's

### Unload students

#### NOAA Southwest Fisheries Science Center Overview:

- Welcome students to NOAA's Southwest Fisheries Science Center (SWFSC).
- Today we will focus on **Communicate** and **Make a Difference** in the Science Discovery Process.
  - (Show Small Science Discovery Process poster.)
  - We will meet several science leaders who will talk about how their research helps to Make a Difference when it comes to marine mammals.
  - I want to start by introducing \_\_\_\_\_, who will give you a brief history and overview of the Southwest Fisheries Science Center and then you will rotate through three different stations learn about three research projects more in depth.
- Remind students that they can use their science notebooks to record any questions or observations they have throughout the day.
- (Introduce \_\_\_\_\_ for overview of SWFSC.)

#### Rotations 1, 2, and 3

- Each group will rotate between the three stations.
- Be sure to leave time to allow transition between stations.
- At each station a scientist/graduate student/etc. will:
  - Talk about their research with a focus on **marine mammals and conservation** (5 min)
  - **Be interviewed** by our students about their career pathway (10 min)
    - If students struggle to come up with questions remind them to look at the questions on Science Leader Interview Page in their science notebook.
  - Allow students to practice using **scientific tools** related to your work (10 min)
    - Examples: use a micropipette, titrate chemicals, analyze data using software, look at drones, etc.

#### SWFSC Science Leader Thank You's

*(Executed by IPM.)*

- Gather all students together.
- Personal thank you– presents gifts to scientists, graduate students, etc.
- Invite all students to shake hands with science leaders and say thank you.

**Lunch:**

- (IPM will confirm where to eat.)
- Review expectations of eating outside.
  - All trash in trash cans.
  - Leave things better than you found them.
  - If you don't want it, offer it to someone else.
  - All food eaten here- no food in vans.

## Growth Mindset Tools: Process Reflection

### Timing

- 0:00 – 0:10 Expand on Concept Map
- 0:10 – 0:15 Pair Share Concept Maps
- 0:15 – 0:20 Group Share/Edit Concept Map

### Expand on Concept Map

- Today we will expand on our concept maps on our own.
- There will be questions on the board to help guide your thinking.
- After having some time to work on your concept map alone we will pair up to share ideas then come together as a whole group.
- Concept Map Questions (**SLIDE**):
  - What is the main topic? Can I expand on an existing concept map or should I start a new one?
  - What feels important to remember?
  - How are those ideas linked?
  - Are the specific examples I want to include?

### Pair Share Concept Maps

- In a moment you will get with a partner and each of you will share your concept maps with the other.
- When you are sharing your concept map, don't just point at your concept map, but tell them what you were thinking when you added each box.
- (Pair up students to student to share their concept maps.)

### Group Share/Edit Concept Map

- Go through the questions on the slide and ask students to share what they added to their concept map.
  - (As students share what they added, add it to your concept map on the board.)
- (Give students time to make edits to their concept map.)

## Growth Mindset Tools: Healthy Bodies

### Timing:

- 0:00 – 0:10: Intro
- 0:10 – 0:50: Practice I AM Poems

### Intro

- The Community Celebration is a time to share your experiences from the last two weeks with your family and friends.
- We will do this in two ways: (SLIDE)
  - Touring your families through what you have learned these weeks.
    - Invertebrates: Live inverts – talk about what invertebrates are, adaptations they have, and ways science leaders are trying to help protect them.
    - Fish: Jarred fish and shark – talk to your families about bony and cartilaginous fish and their external anatomy, adaptations they have, and ways science leaders are trying to protect these animals.
    - Marine Mammals: Drones – talk to your family about what marine mammals are, how science leaders use drones to collect data about them, and how science leaders are trying to conserve them.
    - Program slide show: show your family all the photos from the last twelve days.
  - Presentations
    - I AM Poem (All) & PEN Reflection (Share who will be doing this).
    - Acknowledge all feelings about presenting in public. (Excited, nervous, etc.)
      - Share the fact that more people are afraid of public speaking than death.
      - Share why it is important for these students to share their work.
        - Your voice needs to be heard.
        - What you have to say is powerful and meaningful.
      - All of you have been working on presenting – from formal introductions to presenting in class, now we will take the next step and prepare for a formal presentation.
  - Share tips on presenting (SLIDE)
    - Breathe – take a deep breath.
      - Science shows us that taking a deep breath calms our nervous system.
    - Power Position – take up space. Spread your feet apart a few inches and stand up straight.
      - This will help you project your voice better.
    - Speak clearly and slowly – What you have to say is important.
      - Keep the microphone in front of your mouth the entire time you are speaking.

### Practice I AM Poems

- We will present line by line using one microphone and passing it down the line to each person and then back.
- (Have students stand on the “taped V” on stage.)



- Example:
  - I am Shara. I am Matt. I am Isabel.
  - I am Latina. I am shy but courageous. I am a strong woman.
- Practice!
  - Watch out for students who struggle to stand near each other because they are distracted.
    - Tell them that it's okay if you can't stand near a friend right now and move them to a different position.
  - Have mentors stand in the back of the seating area and give a "good volume" or a "more volume" hand signal for each student.
  - Don't let students pass the mic until they have gotten a "good volume" signal. This may take several tries.
    - Be encouraging. – I got this, You got this, We got this!, I know you can do it., etc.

## Growth Mindset Tools: Self-Reflection

### Set Up

- Each day before self-reflection starts move tables and place chairs in a large circle

### Self-Reflection: Make a Difference – Marine Mammals

Southwest Fisheries Science Center

- Review the Rules
- Prompt #1: Summer Camp
  - Word Pool – 3 rounds at least
    - What do you remember from this whole two weeks? Nouns and verbs
    - Remind them of each of the prompts we've written from, each of the subjects over the past weeks
  - **Prompt: I'm going to tell you a story about Summer Camp...**
- Prompt #2: Epigraphs
  - Show epigraph examples. Talk about how the books are developed and edited for final production.
  - Ask them to write their own epigraph.
    - **Prompt: I want future generations to know....**
  - Share their epigraphs with the group.

### **Servant Leadership & Reminders**

- For Reminders: See today's PowerPoint slide.
- For Servant Leadership: see *"Day 11 Servant Leadership and Reminders"*.

**Day 12: Final Exam & Family Celebration Prep****Timing:**

Schedule	Activity	Time
8:45 – 9:00AM	Check-in	15 minutes
9:00 – 9:45AM	Community Building	45 minutes
9:45 – 10:30AM	Know it! Own it! – Final Exam	45 minutes
10:30 – 11:00M	Final Exam	30 minutes
11:00 – 11:30AM	Practice I AM Poems/Grade Final Exams	30 minutes
11:30 – 11:55AM	Introduction to Intro to Research	25 minutes
11:55 – 12:15PM	Reflection on Learning & BELIEVE Survey	20 minutes
12:15 – 12:45PM	Lunch	30 minutes
12:45 – 1:05PM	Mentor Thank You Prep	20 minutes
1:05 – 1:55PM	Growth Mindset Tools: Self Reflection	50 minutes
1:55 – 2:45PM	Community Celebration Practice	50 minutes
2:45 – 3:00PM	Servant Leadership & Reminders	15 minutes
3:00 – 5:00PM	Students Dismissed	120 minutes
5:00 – 7:00PM	Family Celebration	120 minutes

**Supplies:****Check-In:**

- Name tags (1/person)
- Student roster (1)

**Community Building:**

- See supply list on Day 1
- Piece of chalk

**Know it! Own it! - Final Exam**

- Bubble water (1/student)
- Large pieces of chart paper (3/group)
- Sharpies (3/group)
- Laptops (3/group)
- 11 x 17" paper (1/student)

**Final exam**

- Final exam (1/student)

**BAHIA Introduction**

- Day in the Life of an Ocean Leader video

Growth Mindset Tools: Self-Reflection

- Portable speaker + power cord (1)
- Wireless microphones (2)
- I Am Poems printed out (1/student)
- Student Reflections printed out (for selected students)
- Canopies (to shade students during practice (4)

Reflection on Learning and BELIEVE Survey

- Believe Survey (1/student)

Servant Leadership & Reminders

- Speakers + iPod with Thank You song (1)
- Mentor thank you gifts (6)
  - Refer to Program Manager for gift ideas
- Thank you cards (1/mentor)
  - Already filled out by students
- Thank You Speech cards (1/mentor)
  - Already filled out by students

**Set Up**

Community Building:

- See “Day 1 Set-up”
- Prep supplies for Community Building Activity.
  - See Community Building Activity below.
- Use the chalk to draw a line for all students to step over.

Science Labs

- Turn on SMART Board
- Load “Ocean Leader Bridge Program PowerPoint” and advance slide deck to the day’s slides.
  - If a video will be shown - connect the speaker.

Growth Mindset Tools: Self-Reflection:

- Tape a large “V” on the ground to represent where the students will stand on stage to present their I Am Poems.

Practice for Community Celebration:

- Set up the Plaza Del Sol for the event.
- If stage isn’t present – tape our stage for students to practice.
- Place “Family Celebration Prep Cards- What to share with my family” on the appropriate table

**Intensive Program Manager**

Set-up

- Print & Distribute Mentor Thank You Cards to each Team Lead
- Remind Chris that all cars need to be removed from the Plaza Del Sol for tomorrow's Science Labs and Family Celebration.

Community Building

- Lead Community Building.
  - See Curriculum below.

Mentor Thank You Prep

- Take Mentors aside for debrief.

Servant Leadership & Reminders

- Lead Mentor Thanks-Yous
  - See Curriculum Below

**Floor Lead**

- Begin supervising Family Celebration set-up around 11AM.
- Finalize PowerPoint for the Family Celebration.

## Community Building

**Location:** Kitchen

**Community Building Question:** What was something you enjoyed about this program?

**Timing:**

Time	Activity	Component
9:00 – 9:05AM	Introduction	Food & Conversation
9:05 – 9:25AM	Food and Conversation	
9:25 – 9:30AM	Clean up	
9:30 – 9:40AM	Community Building Activity	Community Building Activity
9:40 – 9:45AM	Announcements	Announcements

**Food and Conversation:**

Introduction

- Review Purpose of Food and Conversation and Community Question.
  - See “Community Building Day 1” curriculum.

Food and Conversation:

- (Give everyone time to eat breakfast, answer the community question and converse.)

Clean-up:

- Review Servant Leadership & Clean-up procedures.
  - See “Community Building Day 1” curriculum.

**Community Building Activity: Photo Finish**

Directions:

- Show students the straight line on the ground.
- Have everyone line up behind the line on the ground.
- The objective is for everyone to cross the line at the same time.
- When you say go, they can then plan and execute their effort.

Activity

- You will need to judge. Make sure all students cross at the same exact moment – be precise.
- If students finish early – play the game again this time with eyes closed.

Debrief:

- Did this task seem simple at first?
- What made it challenging?
- What did you do to overcome the challenge?

**Announcements:**

- Introductions:
  - Remind students that this is their last day with these mentors. New mentors will arrive tomorrow.
  
- Agenda:
  - (Review the day's agenda from the whiteboard.)



## Science Lab

### Know it! Own it! – Final Exam

#### Timing:

- 0:00 – 0:15: Flash Cards
- 0:15 – 0:45 Study Hall & Ask an Expert

#### Flash Cards

- Brainstorm Ideas for Flashcards.
  - You will have one last time to create any additional flash cards you think are important to have for preparing for your final exam.
  - Pair-Share: Ask students to brainstorm ideas for flashcards based on what they have learned since preparing their last set.
    - Students should look through their science notebook and put a star next to anything they think could be important to remember.
    - Students should not create flash cards yet.
  - Share out with the group ideas that could be flash cards.
    - Ask students to be specific about what they would write on each side of the flash card.
    - As students respond – draw flash cards on the board. (SLIDE)
- Create Flash Cards:
  - Have students make a copy of each of the flash cards on the board.

#### Study Hall & Ask An Expert

- Final Exam
  - Today is our final exam – a chance to see what we have learned over the last two weeks.
    - Before our final exam we will have a final combined study hall and “Ask an Expert”.
    - The final will include both short answer and multiple-choice questions and will include questions related to invertebrates, fish, and marine mammals.
    - Be sure to spend some time learning your new flash cards.
- Independent Study Time
  - (Give students ~10 minutes to study independently.)
- Pair Study Time/Ask an Expert
  - During the last 15-20 minutes of study hall today you will have the following options: (SLIDE)
    - Continue to study flash cards independently.
    - Study flash cards with a partner.

- Ask an Expert questions.
- Rather than have specific time to meet with Experts, today you can choose to ask any Expert a question during this study hall time.
  - If there is a question you have about any topic we have studied, fish, invertebrates, or marine mammals – please walk over to any of our “experts” at any point and ask your question.
    - You do not need to sign up to talk with an expert today.
  - Experts who aren’t actively engaged in answering questions will be walking around the room to quiz you with your flash cards.
- When studying with a partner:
  - Stay focused.
  - Consider who you would work best with during this final study hall.
    - Choose to work with someone who won’t distract you – this could mean making a growth mindset decision not to partner with a good friend with whom you might get off-task.
- (Give students 1 minute to pair up with a partner.)
- (Give students the last 15-20 minutes to study or talk to an “expert”.)

## Final Exam

### Timing:

- 0:00 – 0:05: Intro
- 0:05 – 0:30 Final Exam

### Intro

- We are about to take our final exam.
  - All feelings are valid (anxious, excited, nervous, calm, etc.).
  - You have done a lot to prepare for this, lectures, concept maps, flash cards, study hall, asking experts, etc.
  - This is how you want to show up for tests in high school and in college – prepared!
- Explain the format of the midterm. (SLIDE)
  - Short answer and multiple-choice questions.
  - Read questions carefully! Some may want you to choose more than one answer.
  - If you don’t understand the directions to something – raise your hand.
  - Take your time – there is no need to rush.
  - If you finish early – check your work.
  - If you forget something or feel like you don’t know it, try skipping it and returning to it at the end.

- When you finish – stay seated and turn your exam face down on your desk, sit quietly until the exam is finished.

### Final Exam

- (Pass out exams.)
  - (Set the digital timer for 25 minutes.)
  - Tell students to begin.
  - (Project the digital timer on the board.)
- When time is up, collect all exams.

### **I AM Poem Practice/Grading of Final Exams**

*Team Leads will grade final exams while students practice I AM Poems with other staff. Students have practiced their I AM Poems the previous day.*

- Overview:
  - We will present line by line using one microphone and passing it down the line to each person and then back.
  - (Have students stand on the “taped V” on stage.)
    - Example:
      - I am Shara. I am Matt. I am Isabel.
      - I am Latina. I am shy but courageous. I am a strong woman.
- Practice!
  - Have mentors stand in the back of the seating area and give a “good volume” or a “more volume” hand signal for each student.
  - Don’t let students pass the mic until they have gotten a “good volume” signal. This may take several tries.
  - Focus on:
    - Students taking up space.
      - Standing up straight and not fidgeting.
      - Speaking the whole time into the microphone before passing it to the next person.
    - Be encouraging. – I got this, You got this, We got this!, I know you can do it., etc.

## Introduction to Intro to Research

### Timing:

- 0:00 – 0:05: Intro
- 0:05 – 0:20: Q & A

### Intro

- After completing the Ocean Leader Bridge Program today, you will continue your journey as an Ocean Leader.
- Throughout the upcoming school year we will continue to provide Growth Mindset tools to support your learning around Math and there will be opportunities throughout the year to participate in field trips!
- Each summer you will participate in an intensive summer program like Bridge.
  - Outline Summer Intensive Programs Schedule (SLIDE)
    - 8<sup>th</sup> Grade: Bridge
    - 9<sup>th</sup> Grade: Introduction to Research in Bahia de los Angeles
    - 10<sup>th</sup> Grade: Field Research Program at University of San Diego
    - 11<sup>th</sup> Grade: CAMP 1 Kick-Off in San Diego
- Next summer in the Introduction to Research Program you will delve deeper into the Science Discovery Process but traveling to Bahia de los Angeles to participate in several science research projects.
  - You will live at a field station and learn about research projects that focus on birds, sea-level rise, whale sharks, and sea turtles, just to name a few.
  - We wanted to take the next few minutes to show you what a day in the life of an Ocean Leader in the Intro to Research program looks like and give you an opportunity to ask questions about it from students who have experienced it themselves.
  - Play a Day in the Life of an Ocean Leader video.

### Q & A

- Introduce the Ocean Leaders who have come to share their experiences in the Intro to Research Program.
- Ask each of the Ocean Leaders a series of questions (panel style).
  - Be sure to leave at least 10 minutes for student questions.
  - Potential questions to ask older Ocean Leaders:
    - What was your favorite part of the Intro to Research experience?
    - What was the most challenging part of the program?
    - What did you learn about yourself during the program?
    - What piece of advice would you offer these Ocean Leaders who will be going next summer?
- Allow students to ask questions about Introduction to Research program.
  - Allow older Ocean Leaders to answer first and clarify any details necessary.

## Reflection on Learning & BELIEVE Survey

### Timing:

- 0:00 – 0:05 Reflection on Learning
- 0:05 – 0:10 Students reflect independently
- 0:10 – 0:20 BELIEVE Survey

### Reflection on Learning

- Reflection
  - In a moment we are going to return your graded final exam to you.
  - Remember to look at how you did without judgement.
    - The data simply tells you what you know and what you don't know.
    - Now is an important time to reflect about what you have learned about yourself as a learner over this time.
  - I am going to project a set of questions on the board please answer them in your science notebook. (SLIDE)
    - What is something you are proud of accomplishing during this program?
    - What is a study skill that you learned during this program that you want to continue to use this year in high school?
  - (Hand back final exams.)

### Students Reflect Independently

- Give students time to write their responses to the posted questions.
- If time allows, ask students to share their responses to one of the question with the group or with a partner.

### BELIEVE Survey

- On the board, write today's date.
- Explain to students that they will be taking a brief survey. Use the following talking points:
  - This survey allows us to learn what you think and helps us build the best science experiences possible for you in the future. There are no right or wrong answers, we just want to know what you think. Your answers on this survey stay private, in fact your teacher never sees it, and this won't be graded.
  - It is 12 multiple choice statements. I'll read each one out loud and you'll color in the circle of the statement that best describes how you feel about it. Please stay with me, don't work ahead, and only answer the question I am currently reading out loud.
- Pass out BELIEVE surveys and pencils and have students fill in their information at the top.
- When students are ready, read each question and the answers out loud.
- After reading each question, give students approx. 30 seconds to choose their answer before moving on to the next question.
- When finished, collect all surveys.

- Give completed surveys to IPM.

### **Mentor Thank You Prep**

\*All mentors should be with the IPM debriefing the program.

#### Review Purpose of Personal Thank You's:

- Networking is a tool for **Full hearts! Powerful minds!**
- Networking not only includes introducing yourself but making sure you say thank you after meeting or working with another person.
- Each of your mentors chosen to be a part of this program because they believe in you and your ability be a science leader.
- Recognizing that someone else has gone out of their way to help or work with you is meaningful. Time is often considered one of our greatest commodities, so when a person has given up their time and energy to work with you, mentor you, help you, etc. it is important to say "Thank You."
- It's important to make any thank you personal. Think about the experience you have shared and ways your mentor has impacted you personally, helping you to understand something, sharing their journey to becoming a science leader, taking time to explore the aquarium or rocky seashore with you, talking with you about things you find challenging, etc. Try to be specific about your experiences with your mentors. It is more meaningful and shows that you are genuinely grateful when you take the time to give a personal thank you.
- Taking time to reflect on your experiences with others and how they have impacted you personally is another form of self-reflection.
- As human beings sharing how we impact one another in positive ways is how we create **Full Hearts!** and **Powerful Minds!**

#### Review Directions:

- Each of you will have a chance to write a short personal thank you to each of your mentors in a card.
- There are some sentence starters on the board to help, but feel free to write whatever is meaningful to you. (SLIDE)
  - One memory I have of our time together is....
  - Something I enjoyed experiencing with you was...
  - You taught me...
  - You really helped me by....
  - Thank you for....
- We will give these cards to your mentors at the end of the day today.
- When we present the cards to your mentors, two of you will also give a short thank you speech to each mentor. We will work together as a group to prepare the speech and then select people to give the speeches.

#### Writing Thank You Messages

- (Give students ten-minutes to brainstorm and write their messages for the card in their science notebook.)
- As students finish give them the thank you cards to copy their messages into.

### Thank You Speeches

- Work on “Thank You Speeches” as a group.
  - (Continue passing the thank you cards around for students to copy their messages into.)
  - Create the speech using the “Thank You Speech” outline on the whiteboard for each mentor.
  - Feel free to modify this speech.
- Once speeches are complete have one student copy the speech onto the “Thank You Speech” card.
  - Select two students to share the speeches with the mentors when they depart today.
- If time allows have the two students practice the speech with the group.
  - Remind students giving speeches to use a “strong voice”.
  - Remind all students who are listening to be their best self.
- (Collect and hold onto signed cards and thank you speech cards.)

## Growth Mindset Tools: Self-Reflection

### Supplies:

Location: Stage for Family Celebration

### Timing:

0:00 – 0:25 I Am Poem practice: Team 1/Family Tour Practice: Team 2

0:25 – 0:50 I Am Poem practice: Team 2/Family Tour Practice: Team 1

### Family Tour Practice: (25 min)

- Take students to each station.
  - Invertebrates: Live Invertebrates
  - Fish: Jarred fish & Sharks + Shark for dissection
  - Marine Mammals: Drone + picture of “whale pod”
- Show them what props are available at teach station.
  - Ask students what they want to talk about/show their families and friends at each station.
- Practice:
  - Divide students up so there is an adult with each group.
  - Have students take their adult on a “tour”.
  - Have students practice what they could say to their families.

### I AM Poem Practice:

- Have student line up on stage and practice their I Am Poem with a microphone.
  - Have mentors/other staff stand at the back of the celebration area and give up a thumbs up or down for each student as a volume check.
- Panel should provide feedback with a focus on:
  - Taking up space.
  - Standing up straight and not fidgeting.
  - Speaking slowly and clearly.
  - Speaking with volume.
  - Not passing microphone until you are finished speaking.



### **Community Celebration Practice**

#### Full Run Through:

- Practice the entire program (I AM Poems and Reflections) from top to bottom at least twice.

## Servant Leadership & Reminders

### Timing:

- 0:00 – 0:10 Mentor Thank Yous
- 0:10 – 0:15 Clean-up

### Mentor Thank Yous

*(Done by the IPM)*

- (Bring all groups together in the same space.)
- Have students and adults sit audience style so there is an area where students can do their “Thank You Speech” with their mentors in front of the whole group.
- Welcome everyone to the space.
  - Review Reminders for the next day. **(SLIDE)**
    - For Reminders: See today’s PowerPoint slide.
    - Remind students what time to return for Community Celebration and what they should be wearing.
  - Individual Thank You’s
    - Let everyone know it is time to say farewell by not goodbye to their mentors.
      - Their mentors are special people who gave their time to this program and to all of you because they believe in you.
      - It is only farewell because these mentors are part of your community now.
      - They are people you can reach out to when you have questions or run into a challenge on your road to becoming a science leader.
      - They will support you having Strong Hearts and Minds!
    - Now let’s take a moment to thank each of them individually.
      - (Invite individual students up to give their “Thank You Speech”.)
      - Create a warm and supportive environment for students giving speeches.
  - High-five Tunnel
    - Explain to students that we will all create a high-five tunnel for our mentors to depart.
    - Organize students into the high-five tunnel.
      - (Start high-five tunnel music.)
      - Encourage students to clap to the music and high-five each mentor.

### Clean-up

- For Servant Leadership: see “Day 1 Servant Leadership and Reminders”.

Name: \_\_\_\_\_

## Final Exam

1. Define Invertebrate:

2. Define Adaptation:

3. Look at this picture of a rocky seashore invertebrate. Name one adaptation this animal has and describe how that adaptation helps this animal survive at the rocky seashore.



4. Look at the picture of the right. Name one adaptation this animal has and describe how that adaptation helps this animal to survive.



5. Provide an example of each of the below

a. Invertebrate

b. Fish

c. Marine Mammal

6. Which of the below incorrectly matches the animal to its adaptation?

a. Limpet: Large sticking area



c) Great White Shark: Swim bladder



b. Garibaldi: Operculum



d) Butterfly: Wings



7. Describe one-way science leaders are working to help protect fish.

8. Name one adaptation of cartilaginous fish.

9. Define Marine Mammal.

10. Describe one way researchers use drones to study marine mammals:

## Instructor Supplement

Information about Effective Study Practices:

<https://journals.sagepub.com/stoken/rbtfl/Z10jaVH/60XQM/full>

Information about Sand Crabs (For Science Lab: Day 3):

[http://www.sdnews.com/view/full\\_story/10511157/article-Tidelines--Sand-crabs-really-dig-La-Jolla-Shores-beach](http://www.sdnews.com/view/full_story/10511157/article-Tidelines--Sand-crabs-really-dig-La-Jolla-Shores-beach)

### Shark and Bony Fish Dissection Materials

Shark Anatomy: [https://89681458-8600-48ca-99c5-](https://89681458-8600-48ca-99c5-510cb9d2a8e0.filesusr.com/ugd/5ed219_a67c680b1a6840269ac291f8d5165cde.pdf)

[510cb9d2a8e0.filesusr.com/ugd/5ed219\\_a67c680b1a6840269ac291f8d5165cde.pdf](https://89681458-8600-48ca-99c5-510cb9d2a8e0.filesusr.com/ugd/5ed219_a67c680b1a6840269ac291f8d5165cde.pdf)

### External structures in sharks

- **Integument (skin/protective covering)**- hold sharks together, site for muscle attachment, protection against abrasion/infection, aids in hydrodynamic efficiency (aids in swimming), it does not allow water and ions to flow through, but does allow gases such as oxygen to flow through.
- **Color** is usually grays, browns, and blues, **countershading** is important since it can be used to camouflage to “hide” from their prey. Since the top of their body is darker it looks like the bottom or the water from above and from below their light bellies makes it hard to differentiate between them and the surface of the sun.
- **Dermal denticles**, very similar to teeth they (evolved from teeth) placoid scales do not increase in size as the shark grows, rather new scales are added in between older scales. It feels like sandpaper.
- **Fins**-used for stability, propulsion, communication, reproduction
  - caudal (tail): used for propulsion-it moves side to side.
  - dorsal: used to keep shark from tipping side to side (may have 1 or 2).
  - pectoral: paired fins used for turning, changing direction.
  - pelvic: paired fins used for stability (like a rudder).
  - anal: used to keep shark from tipping from side to side.
- **Claspers**-male sharks only, used for internal fertilization. These transfer sperm into the reproductive tract of the female.
- **Jaws**: entry point for food and water, open and shut, clumsy, usually subterminal (interior) mouths, replaceable teeth used for gripping and tearing prey, some sharks and rays are filter feeders which take water or sediment into their mouths and pass it over their gills where the food gets trapped, these species have terminal mouths.
- **Eyes** are used to detect movement, color changes, predators, prey, companions, design of eye is different than those in terrestrial organisms due to air/water interface, sharks are often nocturnal predators and have developed guanine

platelets behind their retinas to aid in reflecting light for increased night vision, this is why shark eyes often seem to “shine”.

- **Nostrils:** olfactory sense strong in sharks, smell more accurate than taste, detects negative stimuli, they are closed off at the end because they are only used for smelling, not breathing.
- **Taste:** sensors may be located inside and outside of mouth (barbels, fin tips, body), used to detect food, noxious substances.
- **Ampullae of Lorenzi:** cells used in electroreception located on the head, snout, and mouth, similar to the hair cells found in the lateral line these nerve cells fire in pit organs: scattered throughout the body these cells are used for detecting water displacement similar to the function of the lateral line in fishes.
- **Lateral line:** row of microscopic organs sensitive to changes in the surrounding water pressure, enabling the shark to detect minor vibrations.

### Internal Structures in Sharks

- **Heart:** pumps blood throughout circulatory system (heart to gills to become oxygenated to body to heart), heart size in sharks is small compared to other vertebrates.
- **Muscles:** red (aerobic (with oxygen)/sustained (for normal activity)), white (anaerobic (without oxygen) /burst (when there is high activity and less oxygen present)), usually distinctly separate.
- **Gills:** respiratory organs, most sharks have five gill slits.
- **Kidneys:** ion concentration in sharks is slightly greater than that of seawater, and therefore they do not need to excrete large amounts of salts like marine fish, they achieve this concentration by increasing the amount of organic compounds (urea and TMAO) in their tissues, kidneys are still important for removing waste.
- **Liver:** sharks have exceptionally large livers that hold large amounts of light oil, these oil stores act much as the swim bladder in fish does and helps sharks to maintain neutral buoyancy in water. This oil is lighter (less dense) than water.
- **Digestive system:** stomach, intestines, used for digestion, food absorption.
- **Nervous system:** sharks have small brains compared to other vertebrates, but similar design.
- **Gonads:** ovaries (female)/testes (male), used for reproduction, claspers used for internal reproduction.
- There are three types of reproduction: oviparous, ovoviviparous, viviparous.
  - oviparous: lay eggs that hatch outside the mother’s body.
  - ovoviviparous: retain the fertilized eggs in the oviduct where they develop and are born after they hatch .
  - viviparous: the young develop within the uterus.

- **External Structures in Fish (bony)**

- **Integument (skin):** holds fish together, site for muscle attachment, protection against abrasion/infection, allows gases such as oxygen to pass through.
- **Scales:** modern fish have cycloid/ctenoid scales, lightweight, overlapping for increased flexibility, evolved from plate-like armor in ancient fish, scales can

- **regenerate** (grow back), provide protection from abrasion/infection/predators.
- **Fins:** used for stability, propulsion, communication, reproduction.
  - caudal (tail): used for propulsion, many different types of caudal morphologies.
  - dorsal: used to keep fish from tipping from side to side (have 1 or 2).
  - pectoral: paired fins used for turning, changing direction.
  - anal: used to keep fish tipping from side to side, sometimes have reproductive uses.
- **Color:** important in social roles, communication, mimicry, disguise, camouflage, physiological importance.
- **Jaws:** entry point for food and water, different morphologies evolved for different life histories, different teeth also for different feeding strategies (canine/rockfish, villiform/mackerel, molariform/bat ray), filter feeders consume very small prey whereas hinged jaws like sharks consume very big prey.
- **Eyes:** used to detect movement, color changes, predators, prey, companions, design of eye is different than those found in terrestrial organisms due to the air/water interface, focusing is done by changing the distance between the lens and the retina.
- **Nostrils:** smell more accurate than taste, detects negative stimuli.
- **Taste:** sensors may be located inside and outside of mouth (barbels, fin tips, body), used to detect food, noxious substances.
- **Lateral Line:** used to detect vibrations in the water that may originate from predators, prey, schoolmates, or inanimate objects, this is how fish school, find prey, etc.

### Internal structures in fish

- **Heart:** pumps blood throughout the circulatory system (heart to gills to body to heart), heart size in fish is small compared to other vertebrates.
- **Muscles:** red (aerobic/sustained), white (anaerobic/burst), usually distinctly separate.
- **Gills:** respiratory organs, counter current system allows for maximum oxygen loading, gills also function in osmoregulation (chloride cells) remove salt.
- **Kidneys:** osmoregulatory centers, in marine environment fish are hyposmotic therefore they must drink seawater to prevent dehydration however salts must be excreted through urine, small salts are excreted by chloride cells.
- **Swim Bladder:** present in most fish, provides buoyancy without monopolizing internal space, it is filled with gas and is attached to the gills to get the gas .
- **Digestive system:** stomach, intestines, used for digestion, food absorption.
- **Nervous system:** fish have small brains compared to other vertebrates, but similar design.
- **Gonads:** ovaries (makes the eggs)/testes (make the sperm), used for reproduction most species have external fertilization (spawners), which the female sheds a large number of eggs, the most common is oviparous.

### Background Information for the Teacher - FISH

Fish species have evolved different adaptations to best suit the requirements of their environments and lifestyles.

#### Different body shapes:

- **fusiform:** streamlined and cylindrical, fish with this body type are fast and can swim continuously for long distances.
- **depressed:** flattened body from back to belly like a pancake, enables these fish to ambush prey items with short bursts of speed as well as bury in the sand to hide from other predators.
- **compressed:** flattened side to side, allows for sharp, quick turns, very maneuverable.
- **ribbon:** snake-like, slow swimmers, but easily move through crevices, hide under rocks or in cracks and ambush prey that come to close to their hideout.

#### Different caudal fin (tail) shapes:

- **lunate:** fastest swimmers, max speed with a minimum effort over long distances.
- **forked:** moderately fast, continuous swimmers.
- **squared:** very maneuverable, capable of short bursts of speed for short distances.
- **rounded:** very maneuverable, capable of short bursts of speed for short distances.
- **tapered:** slow swimmers use body instead of tail for propulsion.

#### Different mouth positions:

- **terminal:** body ends at the mouth (most fish have variations on this position).
- **superior:** mouth points upward from the underside, feeds on prey from below.
- **inferior:** mouth parts downward from the underside, feeds on prey from above.

#### Different dorsal fin shapes:

- **single: more primitive form**
- **double: more advanced form**

#### Examples:

- Leopard Sharks: These sharks are a brownish color with dark spots over their body. Young leopard sharks feed mainly on small crabs that move along the surface of the sediment and as they grow larger they feast on larger crabs, worms, fishes, and even other sharks. Enjoy hiding out in the kelp forest.
- Shovelnose guitarfish: It is named this because of its pointed snout and guitar-shaped body. Although it resembles a shark, it is actually a ray. This species is very primitive and can be traced back 100 million years. They spend most of their time cruising on the bottom and burrowing in the sand. They have small blunt teeth and eat hard-shelled invertebrates such as clams and crabs.
- Stingray: These are closely related to the sharks and like sharks have a body made out of cartilage. Rays have rounded bodies. These are small and



swimming along the bottom and burrow in the sand. A stingray's spine isn't at the tip of the tail as most think but it lies on top a third of the way down the tail. A way to avoid a sting is to do the "stingray shuffle".

- **Smoothhound:** These sharks move into shallow water from November to December. These sharks use their flat, pavementlike molars for grinding up hard-shelled crabs.
- **Horn Sharks:** These are timid animals and spend most of the day holed up in dark crevices or caves and coming out at night to feed on clams and shellfish. These are true bottom-dwellers and swim very poorly and sometimes crawl along the rocks on their pectoral fins. High bony arches above their eyes give them their nicknames "bullhead shark." The name horn shark comes from the sharp hornlike spine located in front of the dorsal fin.
- **Angel Shark:** These creatures spend their lives on the ocean floor. They nestle in sandy channels along fringes of the forest. These are often confused with rays. They have fins that are shaped like angel shape wings.

### Marine Mammals

- Pinnipeds
  - Today we saw mainly seals and sea lions – these are classified as pinnipeds.
  - Define: Pinna – feather ped – foot. "Feather-foot"
  - Habitat: land (shore) and ocean.
- Seals vs. Sea Lions

	Seals	Sea Lion
<b>Body shape</b>	Smaller and sleeker Better for water	Larger and bulkier
<b>Front flippers</b>	Short	Long – better for walking on land
<b>Hind flippers</b>	Do not rotate under body, scoots on land	Can rotate under body so "walks" on land
<b>Vocalizations</b>	Finding mates/babies Less social - less time in groups	Finding mates/babies Very social – more time on land in large groups

