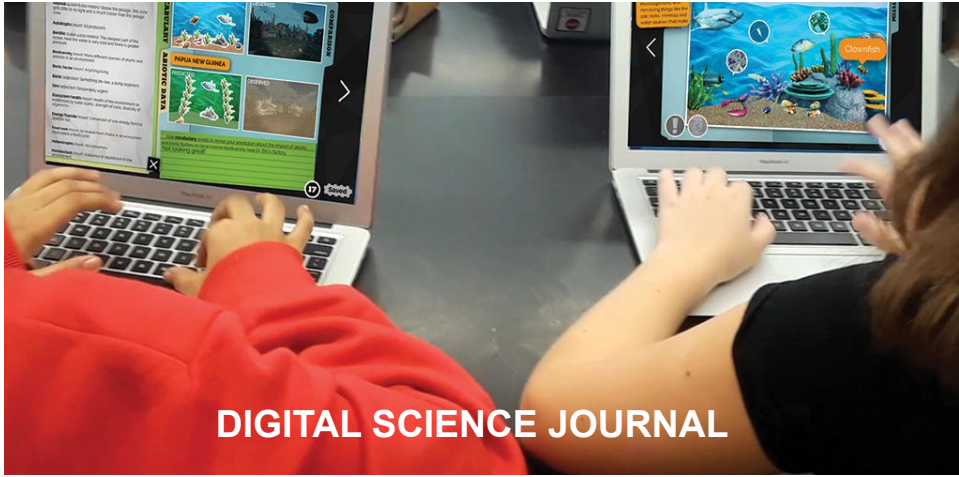
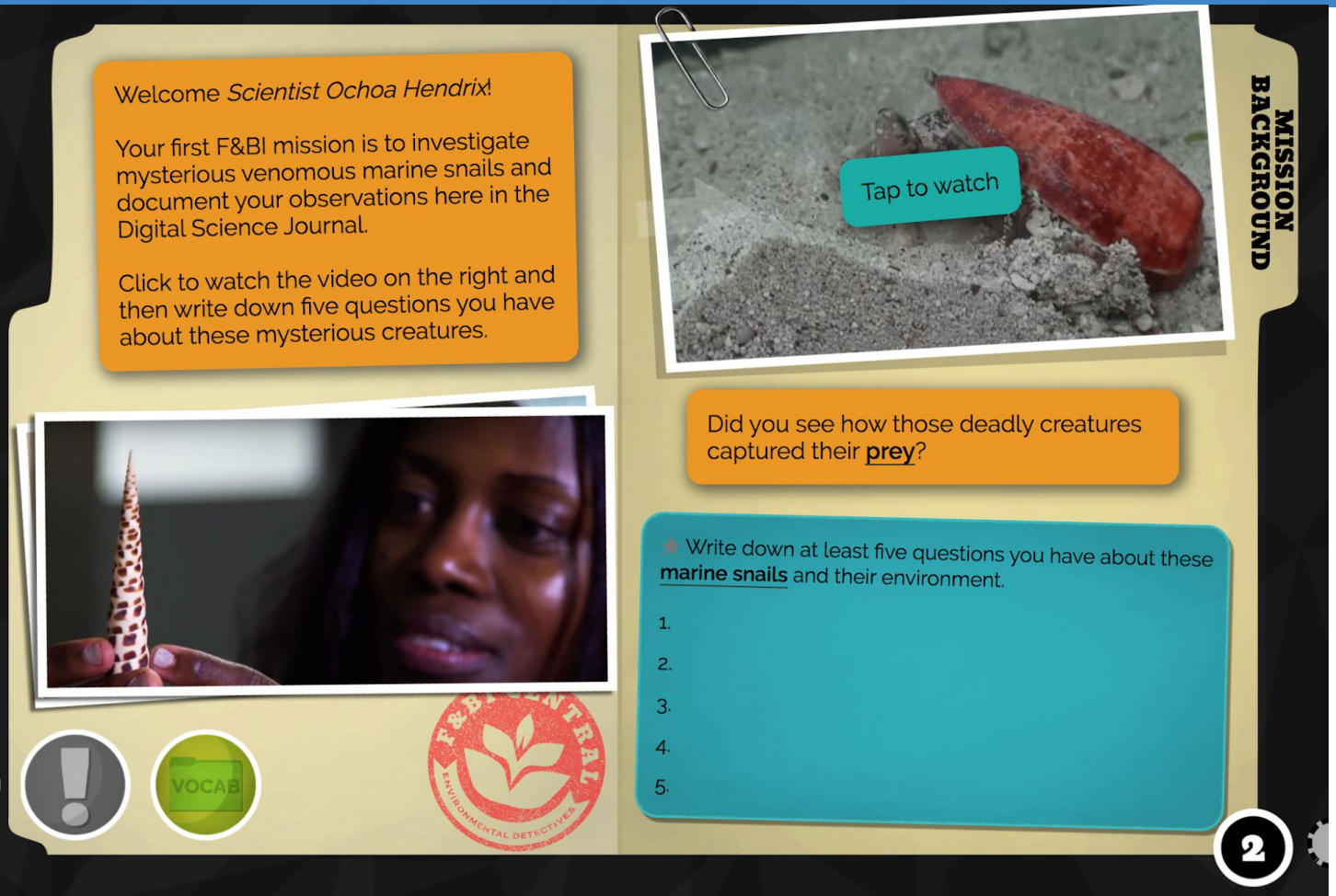
Introducing BioDive: MultiModal Experiential Learning

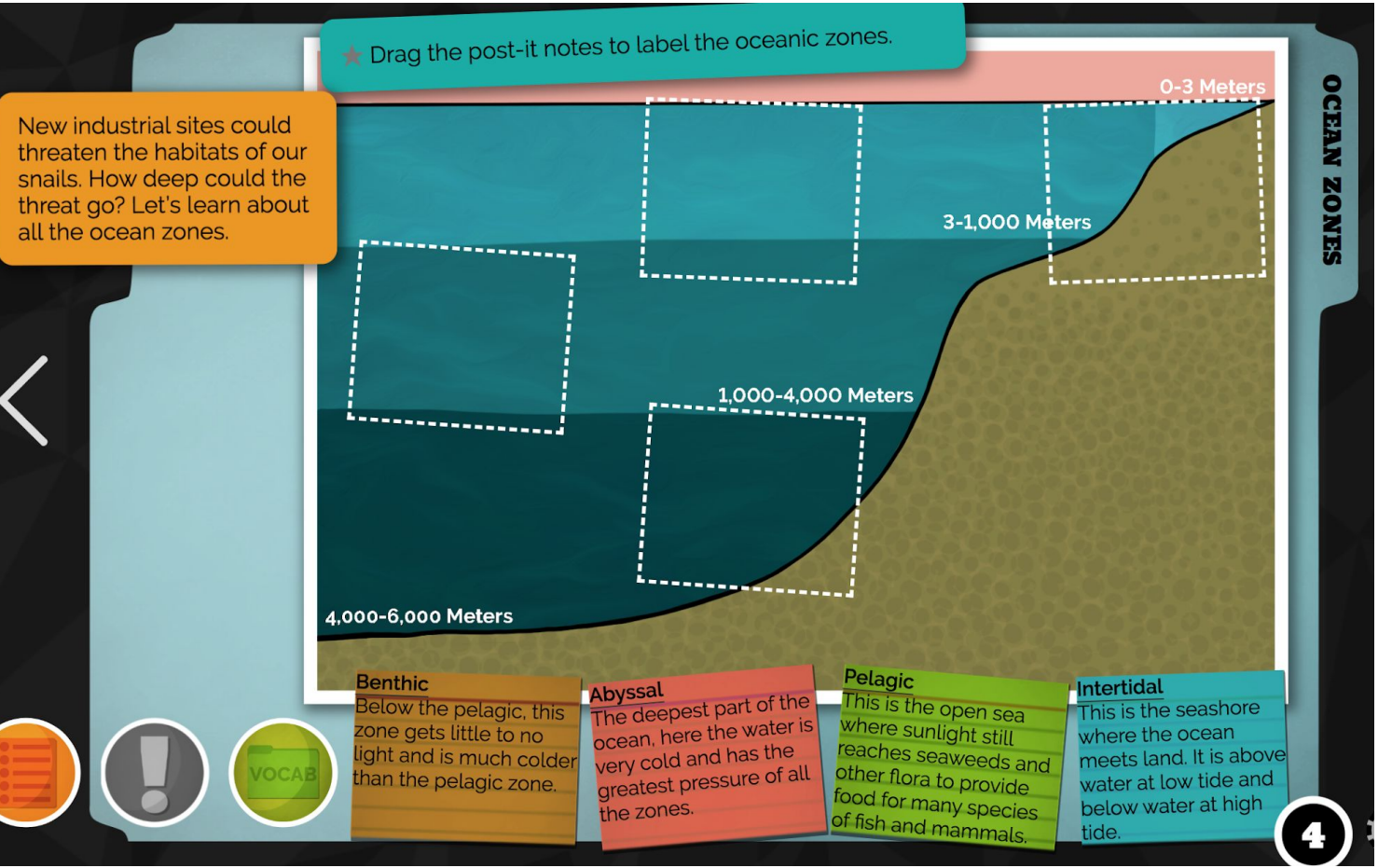


The three linked pieces enable students to learn and explore while teachers can monitor progress and offer feedback whether in person or remotely.

BioDive Digital Science Journal



Students begin in their individualized online journals with an anchoring phenomenon that drives the experience.



Student interactions in the journal provide a variety of ways to demonstrate knowledge acquisition.

Alert from HQ: *Chief Scientist Holford* needs an update on your analysis, *Scientist Ochoa Hendrix*. Please share your hypotheses with headquarters on the impact of the abiotic factors on the biotic organisms.

	CULEBRA	LAS PERLAS
	ABIOTIC SURFACE DATA	
TEMPERATURE	28.0°C	28.0°C
pH	8.5	8.5
SALINITY	32.0 ppt	32.0 ppt
WATER CLARITY	Clear	Cloudy / Poor
DISSOLVED OXYGEN	15 mg/L	6 mg/L

VOCAB

viewing Eastern Pacific Answer Key!

★ *Chief Scientist Holford*, there are 2 potential impacts on the abiotic data I've collected:

HYPOTHESES

It appears that changes in dissolved oxygen at the Las Perlas site will cause decrease in animals/plants.

Changes in water clarity at the Las Perlas site will cause a decrease in species variation.

Although there were **no significant changes** to 3 factors at Las Perlas site, I now predict that:

Changes in temperature in the Las Perlas site will cause Less animals to live there.

Changes to the pH in Las Perlas site will cause less fish present.

Changes to the salinity in Las Perlas site will cause all life to die.

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Students collect data in virtual expeditions and then use data to make predictions in their journals.

Vocabulary

Abiotic *(adjective)*: Something that is not life-like, a non-living organism

Abyssal *(4,000-6,000 meters)*: Below the pelagic, this zone gets little to no light and is much colder than the pelagic zone

Autotrophs *(noun)*: All producers

Benthic *(1,000-4,000 meters)*: The deepest part of the ocean, here the water is very cold and there is greater pressure

Biodiversity *(noun)*: Many different species of plants and animals in an environment

Biotic factor *(noun)*: Anything living

Biotic *(adjective)*: Something life-like, a living organism

Dire *(adjective)*: Desperately urgent

Ecosystem health *(noun)*: Health of the environment as evidenced by water clarity, strength of coral, diversity of organisms

Energy Transfer *(noun)*: Conversion of one energy form to another

Food web *(noun)*: All related food chains in an ecosystem. Also called a food cycle

Heterotrophs *(noun)*: All consumers

You are viewing Eastern Pacific Answer Key!

VOCABULARY

ABIOTIC DATA

COMPARISON

CULEBRA

LAS PERLAS

★ Use **vocabulary** words to revise your prediction about the impact of abiotic and biotic factors on local marine biodiversity near Dr. BIG's factory.

Water looks less dire than I thought it would!

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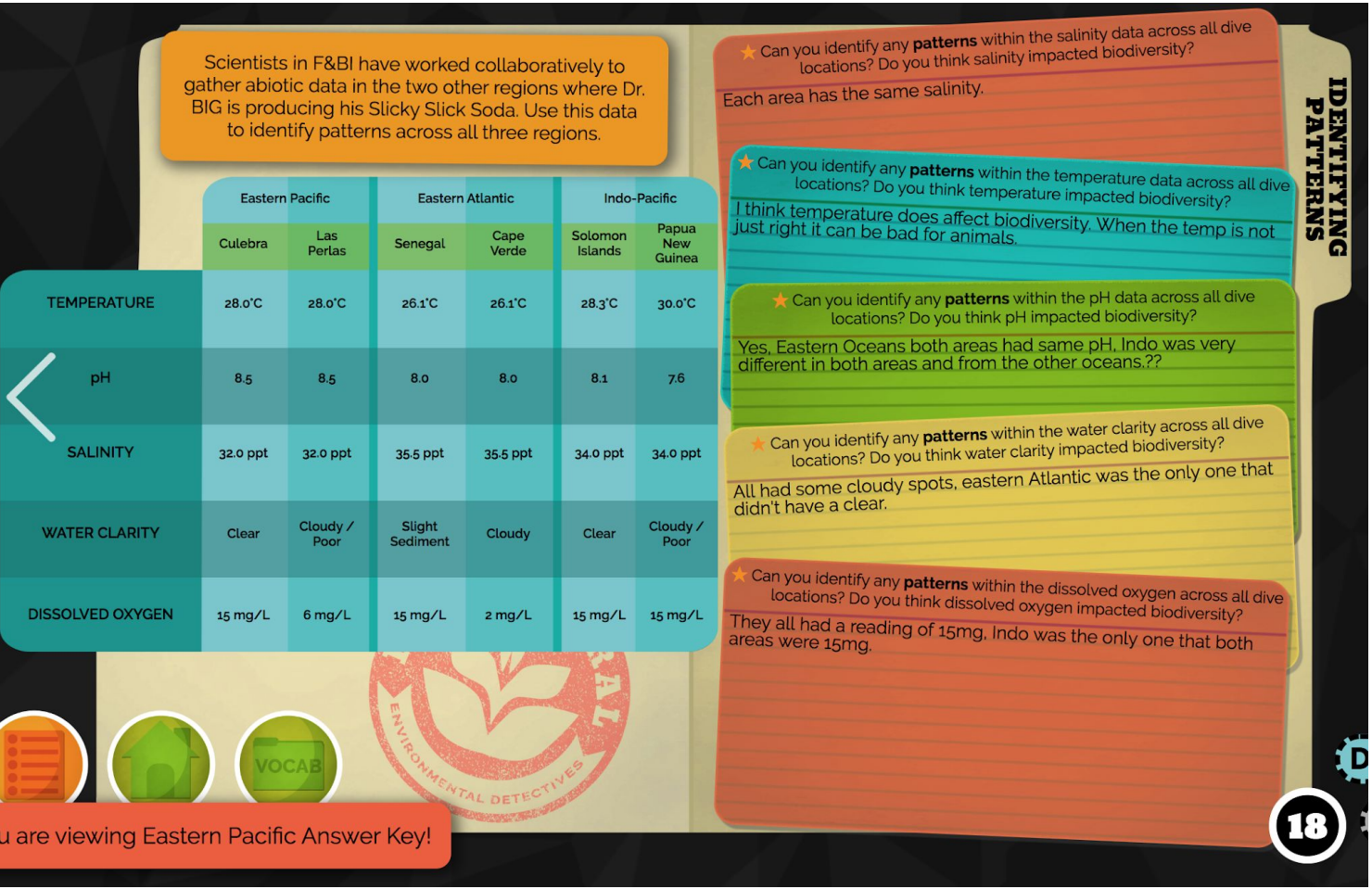
Students create models based on their predictions, then revise their models after observing results.



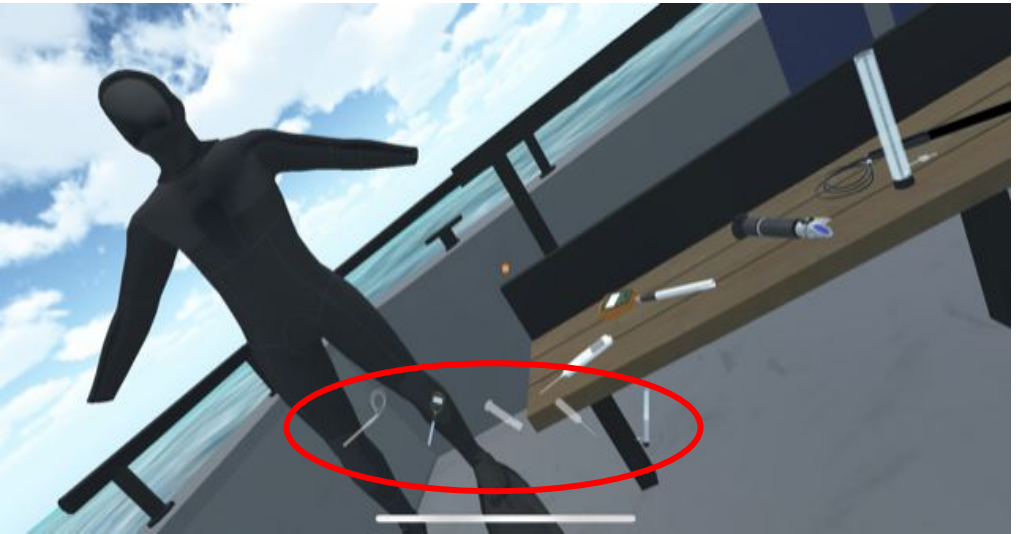
Students use tables to analyze data and identify patterns.

Classwide Virtual Reality Experiences

WebVR provides the VR experience without an extra device. Students access the VR on web-enabled devices (Chromebook/Laptop / Tablet).

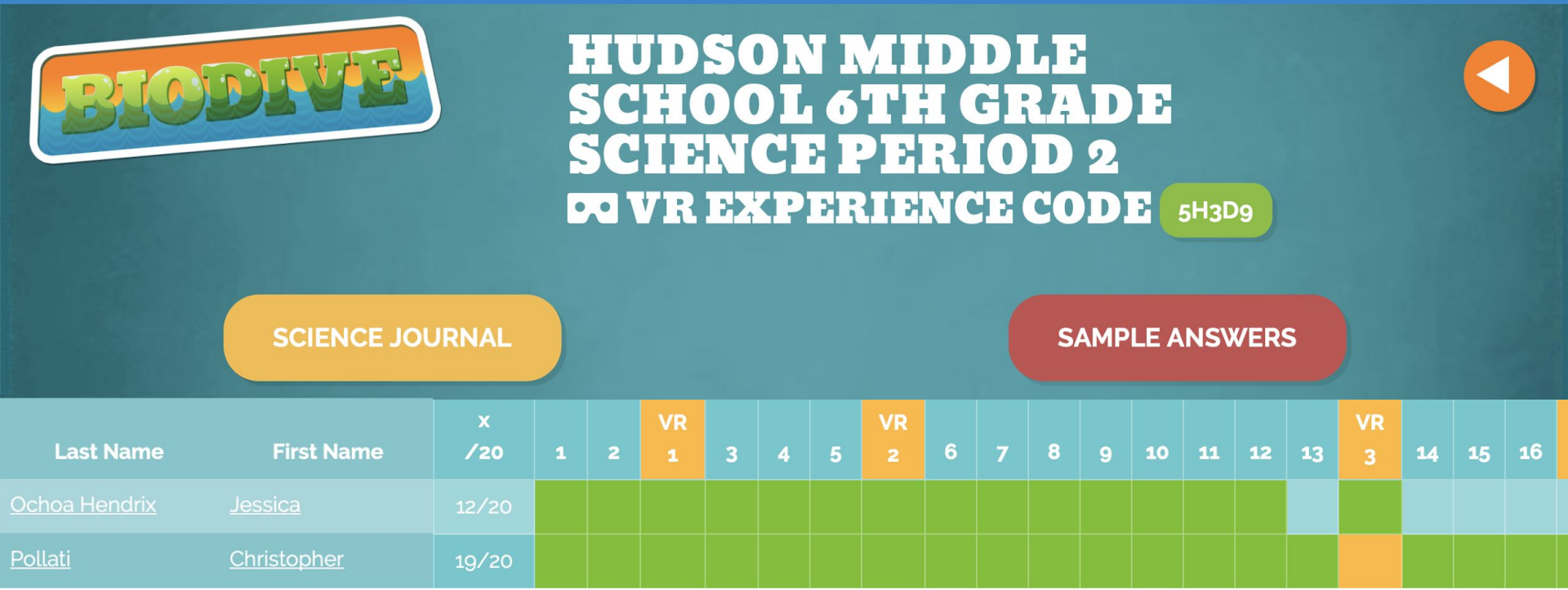
4 VR scenes are interspersed throughout BioDive.

Each virtual reality experience has a clear goal.



Tracker along the bottom shows which measurements have been taken.

Educator Assessment Dashboard



Last Name	First Name	x /20	1	2	VR 1	3	4	5	VR 2	6	7	8	9	10	11	12	13	VR 3	14	15	16
Ochoa Hendrix	Jessica	12/20																			
Pollati	Christopher	19/20																			

The educator dashboard shows the full class progress and includes an answer key. Teachers can click on the squares to see student responses and to leave feedback.

Teachers communicate through the journal.
Students are notified when teachers leave feedback.

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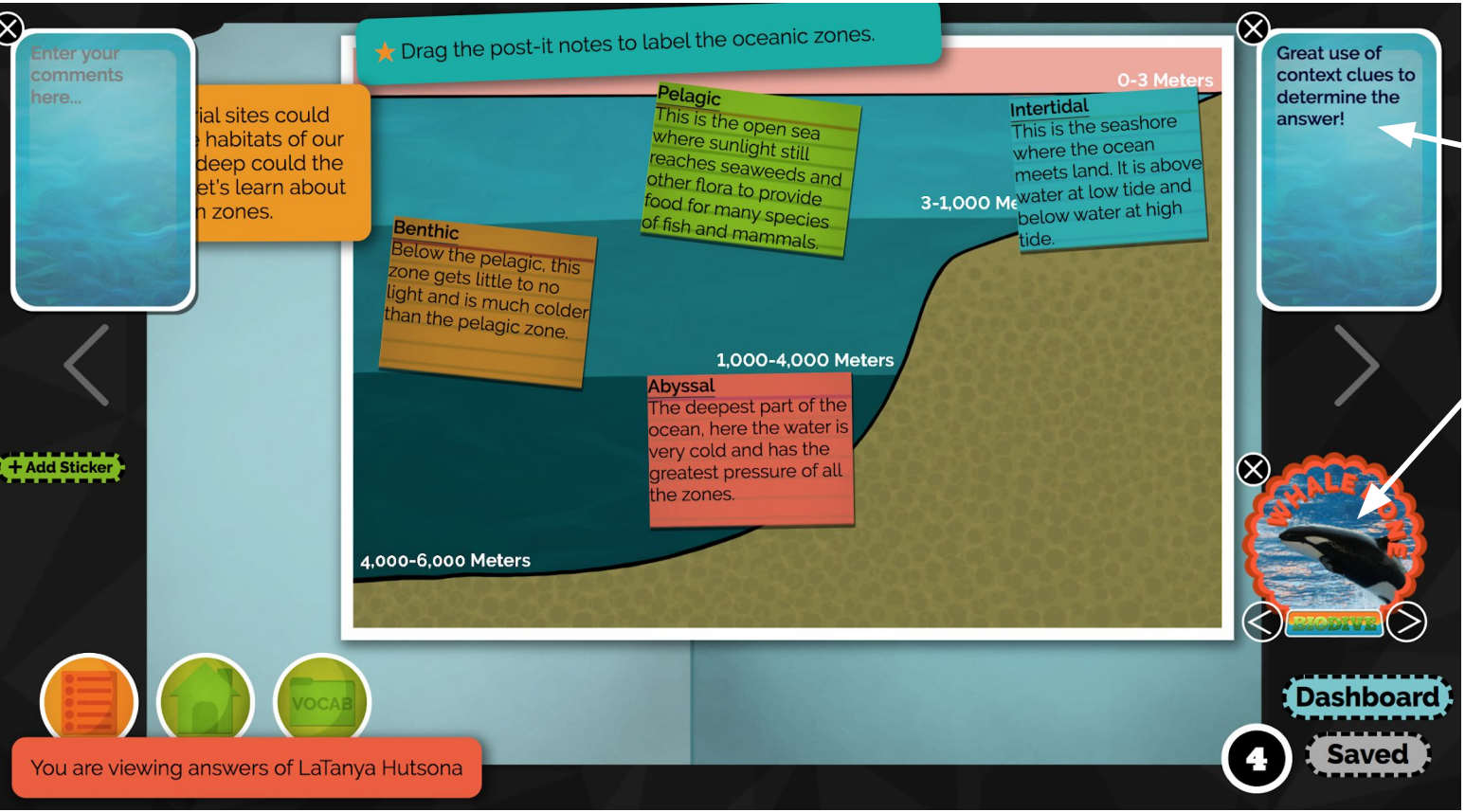
viewing answers of LaTanya Hutsona



Teachers can provide feedback though chat boxes and stickers!

Educator Support Guide

Each lesson has an educator support guide which provides: context, background knowledge, SWBATs vocab, discussion questions and alignment to NGSS.

Context for Lesson:

Students are introduced to different ocean zones and observe how differences in abiotic factors influence the organisms that live in a habitat. Lesson 2 introduces the idea that industrial sites could threaten the venomous marine snails' habitat. This lesson increases student knowledge around oceanic zones, predator prey relationships, and provides concrete representations and manipulatives of food chains in a single ecosystem to prepare students to understand and describe the impact of abiotic and biotic variables on ecosystems.

NGSS PerformanceExpectations:

Contributes to MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Contributes to MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

SEP:

Asking Questions and Defining Problems

Developing and Using Models

DCI:

LS2.A: Interdependent Relationships in Ecosystems

LS2.B: Cycle of Matter and Energy Transfer in Ecosystems

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

CCC:

Cause and Effect

Systems and System Models

Video Overview & Contact Us!

Contact us:
jessica@killersnails.com

Weekly PD sessions for BioDive offered on Thursdays at 1pm EST:
meet.google.com/bts-rged-nhe