HOLLISTON Public Schools

Unit 5: The Marine Aquarium

Subject Area: Science	**Course**: Marine Biology		
Unit Title: The Marine Aquarium	**Grade(s)**: 10-12	**Start**: September	**End**: January
Unit Summary: This unit grows throughout the course. The lecture topics increase students' knowledge and understanding of how to care for the marine aquarium. They are introduced to the materials and organisms and learn how to test water quality and eventually will understand the importance of the equipment, the roles of organisms and how to ensure care and survival of the marine organisms.			

Stage 1: Desired Results

Massachusetts Learning Standards

- HS-LS1-3. Provide evidence that homeostasis maintains internal body conditions through both bodywide feedback mechanisms and small-scale cellular processes.
- HS-LS1-6. Construct an explanation based on evidence that organic molecules are primarily composed of six elements, where carbon, hydrogen, and oxygen atoms may combine with nitrogen, sulfur, and phosphorus to form monomers that can further combine to form large carbon-based macromolecules.
- HS-LS1-7. Use a model to illustrate that aerobic cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and new bonds form, resulting in new compounds and a net transfer of energy.
- HS-LS2-1. Analyze data sets to support explanations that biotic and abiotic factors affect ecosystem carrying capacity.
- HS-LS2-6. Analyze data to show ecosystems tend to maintain relatively consistent numbers and types of organisms even when small changes in conditions occur but that extreme fluctuations in conditions may result in a new ecosystem. Construct an argument supported by evidence that ecosystems with greater biodiversity tend to have greater resistance to change and resilience.

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Vision of a Graduate Performance Outcome(s)

Innovative Thinker

An innovative thinker is someone who:

- Uses reasoning to question, process, and evaluate Information.
- Is curious, creative, resourceful, and adaptable when looking for solutions.
- Approaches challenges as opportunities for growth.

Transfer (Authentic, relevant application of learning to new situations)

Students will be able to independently use their learning to…

- Ensure the survival of marine organisms by the proper maintenance of a marine environment (aquarium) which requires daily testing, observations, feeding, cleaning and documentation of care provided and making well thought out hypotheses on how to correct problems that arise while working together and following teacher instruction.

Meaning

Enduring Understandings	Essential Questions
Students will understand that… • Maintain a stable marine environment (aquarium) • Understand the role of all organisms in their ecosystem (aquarium) from microscopic organisms to fish. • The water properties and chemistry ensure a successful marine ecosystem (aquarium)	**Students will consider…** • Why is daily water testing important? • Why is maintaining bacterial colonies important for fish survival? • Why is proper feeding important? • How do you maintain a stable marine ecosystem?

Acquisition

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Skills	Knowledge
Students will be skilled at… ● Water chemistry testing by using a test kit. ● Following the steps of the scientific method. ● Document and record all care for their aquariums.	**Students will know…** ● When there is a problem in their ecosystem (aquarium) how to correct the problem. ● How to use the scientific method to solve problems in their aquariums. ● The role of each organism in the aquarium.