

# Toys, Games, and Art: Excellent Tools for Teaching Ocean Science

<sup>1</sup>Heidi Crevison Souder, <sup>2</sup>Ashley Finger, and <sup>1</sup>Teresa Greely

<sup>1</sup>University of South Florida College of Marine Science

140 7th Ave. S, St. Petersburg, FL 33701, hskouder@marine.usf.edu

<sup>2</sup>Morgan Fitzgerald Middle School, Largo, FL



## Introduction

The National Science Foundation's (NSF) GK-12 OCEANS fellowship program is a partnership between the University of South Florida's College of Marine Science and the Pinellas County (Florida) School System. This partnership ensures that ocean science concepts are integrated into the science curriculum to enhance the understanding of mathematics, life science, physical science, earth science, and the nature of science. The students, mentor teacher and NSF graduate fellow explore all aspects of the ocean by engaging in a variety of hands-on, minds-on inquiry-based experiments. Play is considered the business of childhood allowing children free rein to experiment with the world around them. Child's play is actually a lot of work with problem solving, skill building, and overcoming physical and mental challenges which take place behind the scene. The development of these skills through play need not end as children enter the school system. Learning science is not easy for many students no matter what their age. However, the use of toys, games, and art are excellent ways to teach difficult science concepts for two reasons.

First, toys, games, and art subdue anxiety about difficult subject matter because although the science concepts may be intimidating, the objects used to teach the lessons are familiar. Second, these things are a motivating force in teaching because they convey "fun" to the students. Science is fun and should be reflected to those learning science. Play-Doh can be used to construct 3-dimensional models of molecules to teach physical science. It can also be used to teach cell division by constructing models of chromosomes and cellular organelles. Glow-sticks can be used to teach many science concepts including the effects of temperature on chemical reactions, conduction, and bioluminescence. Food items can be used to construct models of everything from DNA to mythical creatures called "Reebops." Results from utilizing toys, games and art to teach about the oceans are highlighted.

## Marine Science Lessons Using Toys, Games, and Art



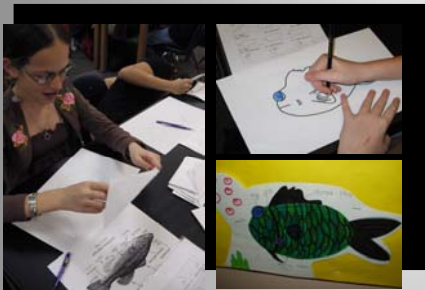
Valerie, Sara, Melody and Eric investigate the effects of temperature on bioluminescence using glow sticks. This activity can also be modified to teach the affects of temperature on a chemical reaction.



Tom and Alex model meiosis using Play-Doh. This activity can also be done by using Tinker Toys, Knex, or Leggos.



Elie and Mike twist models of DNA (constructed out of licorice bites, gum drops and toothpicks) into a double helix.



Samantha draws a fish for the Create-A-Fish activity. The fish drawings are constructed by selecting gene pairs which code for particular traits. This activity is perfect for teach an introductory fish anatomy and genetics.



Brianna and Kenny are exercising their brains during Ocean Bingo. Ocean Bingo cards can be made using clip art in Microsoft Word.



Gina, Tabassum and Samantha measure the carapace width of their sea turtle model for a sea turtle stranding simulation. Models or stuffed animals that can be found in theme park gift shops are perfect for this activity.



Alexis and Beth select genotype they will use to construct the phenotype of the mythical sea creature called a "Reebop."

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