

# Is the Hands-On Experience Increasing the Retention of Ocean Literacy for Special Education Students

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**Abstract:** This presentation will highlight results from a research project about Ocean Literacy for special education students. This research was conducted as part of the GK-12 OCEANS Fellowship program sponsored by the National Science Foundation and the University of South Florida's College of Marine Science. There are many types of learners and learning styles. The following research analyzed the way in which positive interactions and feedback can help special education students retain science concepts through

hand-on, inquiry-based experiences and teaching. The study group consists of a group of 12 exceptional students that require special attention in their learning process. Students used hands-on, inquiry experiences to conduct field-based research on the school campus. They measured and monitored water quality and nutrient levels in a retention pond located at Bay Point Elementary school in St. Petersburg, Florida.

The main objective of the experience was to provide a positive experience in which the students were able to retain basic science concepts related to water quality. These concepts were then extended to ocean related concepts. Students were exposed to the concepts through an engagement activity, a series of mini Power point presentations to stimulate questions, then exploration in the field. Each activity was followed by reflection (drawing or story) and a performance based assessment to measure how concepts were

retained after conducting the activity. The technique of positive reinforcement and engagement with the science concepts will allow scientists and teachers to apply other hands-on, inquiry activities to build a more complex science vocabulary in students with special learning needs. This research contributes to the bigger picture of science literacy by contributing Science to All learners, while promoting ocean literacy standards within a K-12 learning environment through the GK-12 OCEANS Fellowship Program.

*The OCEANS program is a partnership between University of South Florida's College of Marine Science and the Pinellas County School System designed to bring ocean science concepts and research to K-12 learning environments to enhance the experience of learning and 'doing' science.*



## Education Purpose:

- Gain an understanding on how effective hands-on activities are for special education students

## Learning goal:

- Special education students will be exposed to a series of ocean literacy concepts
- After exposure to ocean concepts students will be evaluated to quantify how much information they retain
- Special education students will gain knowledge about ocean science concepts while having fun



## Why special education students?

Sometimes special education students are left behind because there is a misconception about how much information students will retain after a lesson. Although it is very hard to introduce concepts to them it is not impossible, you just need to speak their language.

## Materials:

- Fresh seawater sample from Maximo Park, St. Petersburg, FL
- Microviewers and phytoplankton slides
- Microscopes and slides
- Eyedropper
- Paper towel
- Phytoplankton identification key

## Activity Set-up:

-Day one: students were given a 30 minutes lecture about ocean concepts (plankton, plankton types, food chain, phytoplankton classification, etc)  
-Day two: Students were given a 15 minutes overview; divided into groups of three, then a microscopes and microviewers were provided for each group, along with phytoplankton identification keys. Each group had 20 minutes to find phytoplankton in their sample and identify the genus.



## Evaluation:

Students should be able to understand the concepts of oceanic plankton and types, and explain the difference between phytoplankton and zooplankton after the lesson they should understand that phytoplankton plays an important role in the food web.



## Students Retention:

After day one, students were evaluated on how much information they retained by answering 6 related to the topics already discussed during the lecture. The average retention percentage was 55%. Retention scores ranged from 16% to 83%.

Day two results indicated that after one lecture and one hands-on activity retention average increased on average by 10%.

