

PETS IN THE CLASSROOM- AQUARIUM-FISH

STEELE ELEMENTARY SCHOOL

MS. LAURA RAKOWSKI-COLE'S CLASSROOM GRADES

K-5

While my self-contained, special needs classroom is comprised of students in grades kindergarten through 5th grade, the majority of my students this past school year were 3rd-5th graders. Therefore, my lesson plans reflected the curriculum addressed for grades 3-5. My younger students also participated in all of the activities; receiving assistance from the older students.

YEAR'S THEME: ONE WORLD, ONE HABITAT

Goal: To create an ocean habitat within the classroom setting. From this, study the creatures, habitat and compare similarities and differences between the classifications of animals living in our little habitat. In addition, look at habitats different from the ocean and incorporate reading, writing and math to provide a cross curriculum unit for the students.

Process: Well before school began, it was necessary to begin the set up for a salt water tank. The tank needs to cycle through nitrogen blooms, algae blooms and more for a couple months before adding any fish or corals. Therefore, a small 5 gallon tank was set up at my house in June. It all began with live sand, live rock and some salt water!

Step One: I first decided upon the type of tank I wanted to begin with. I knew that I would be upgrading tanks and as I added more creatures, would need to increase the size of the tank. Initially however, I wanted to begin small so that the students could experience the process of cycling a new tank after the holiday season. I chose the Marineland ML90609 Portrait Aquarium Kit, 5-Gallon tank because of the thick glass, structure and clear, glass top. The light that came with the tank wasn't adequate for corals so I also ordered a tall,

swing-arm desk lamp and an ABI LED Aquarium Light Bulb, 12W (comprised of Royal Blue 450nm + Cold White 10000K + Actinic Blue 425nm + Blue 470nm). The clear, glass lid on the tank allowed the lighting to penetrate the tank and provide necessary lighting for the corals I would add later.

Step Two: When building a salt water habitat, it's imperative to have live rock and live sand. I'm lucky enough to have a very unique pet shop near me that cares for and sells salt water fish and supplies. I chose 5 pounds of live rock and 5 pounds of live sand. I also purchased 2 five gallon jugs to store water. The store sells pre-mixed salt water which is very helpful when you don't have access to a fountain with r/o water (reverse osmosis). They also sell r/o water without salt for topping off the tank when the salt water evaporates. I added the sand, rock and salt water to the little tank.

Step Three: Aeration, heat, natural biological organisms and filtration are a must for a healthy, salt water habitat. I purchased a nano (small) circulation pump, a small protein skimmer that removes oils, waste and toxins from the water daily, a 50 watt heater and also some supplements to be added to the tank once I added corals. I purchased a bottle of "seed" that adds healthy bacteria and speeds up the cycling process as well.

Step Four: Cycling! Running the lights, heat, pumps (one comes with the tank as well), protein skimmer and letting the tank sit without fish and corals for two months allowed the live rock and live sand to acclimate to the new surroundings. Little creatures "come alive" and exit the rock. I would often see tiny starfish, worms and unusual looking hitchhikers come out at night. The tank would produce algae of different kinds which would then taper off and disappear. It would become cloudy and then clear up. After two months, I purchased some test kits that tested nitrates, nitrites, phosphates, ammonia, calcium, KH, magnesium and salinity. All of these need to be tested weekly to determine appropriate conditions for the inhabitants I wanted to add. If the kits showed results that weren't favorable, I knew I couldn't add anything at that time. The local pet store also helped me with determining the right time to begin adding fish and corals.

I do want to note that initial set up of a salt water aquarium is not cheap! It is also a hobby that requires a lot of attention and management. To create such

a habitat in the classroom, one needs to prepare for power outages, drops or increases in the balance of the aquarium that can affect the living creatures in the tank and the cost of purchasing such creatures. One fish may run 40.00 to 100.00 each.

I chose to set up this type of aquarium because I had experience with one and was willing to take on this type of project because I knew such a habitat would provide the students with an experience like no other. I am so glad that I did! The results far surpassed my expectations.

WE ARE UP AND RUNNING! HERE COMES OUR TEAM OF LIVESTOCK!

The first type of creatures one can add to an “almost ready” tank are found in the clean up crew. The clean up crew is comprised of snails, small crabs, sand sifting starfish and shrimp. Since my tank was so small, I chose 8 snails of different varieties, an Emerald Crab and some Peppermint Shrimp. The clean up crew was put into the tank one week before the final testing to determine perfect conditions for fish and corals.

Once I received the okay from the pet store and my own tests correlated with theirs, I was ready to add fish and corals. I decided to buy two fish. A five gallon tank is very, very small and one should double the size of the fish in inches and compare that to gallons when determining what type of fish to add. I purchased a tiny, baby Clownfish that was only 1 inch long and a Blenny that was 1.5 inches long. So, with 2.5 inches total of fish, I doubled their size and got 5. Thus, 5 gallons for their current size was adequate housing for the time being. As they grew, I knew I would need to get a larger tank.

I also purchased a few corals. The lighting in the tank was best for softer corals like Zoanths and mushrooms. These corals like to spread over the rocks and add a lot of color. They are also easy to care for and are quite tolerable of changes in the water. I decided to get 2 colonies of Zoas and 2 mushrooms to start with.



Our little Clownfish “Nemo” and our Blenny “Blaze” in the new tank.



A Nassarius Snail that sifts the sand and a Turbo snail that will grow very large.



Some Zoanthids (Zoas) and 2 varieties of mushroom we had in our tank.



The Peppermint Shrimp, Emerald Crab and new buddies, Blaze and Nemo!

INTRODUCING THE TANK TO THE CLASSROOM

My students typically remain with me their entire elementary experience. Therefore, I am in close contact with the families that I work with. While the tank was cycling, I kept parents and student informed of the progress. I posted pictures and explained changes in the water that I witnessed. When school began, everyone was excited to come in and see the ocean habitat. While small in size, the impact the tank had on the children was huge! I had the tank displayed on a small, sturdy table that allowed the children access on three sides. I also took pictures of activity and of the inhabitants of the tank daily and shared them on the whiteboard so that they could see in large form, the diversity in the tank.

It truly seemed that whatever subject we studied, the tank could somehow be referred to and incorporated into our discussion. The students often asked questions about changes they observed or the behaviors of specific creatures and it was so easy to turn their questions into a writing activity or a math challenge. Not only did the tank provide countless hours of entertainment, there was always something new to see each day.

We began the habitat unit with the ocean. Background on the ocean such as the three zones (Sunlight, Twilight and Midnight), the levels of salt found depending on the ocean and the area and what zones supported life and specifically, what type of life were discussed the first week of school. The students determined that our tank best represented the twilight zone as there were areas of the tank that appeared shaded and dark but most of the surface

and upper areas were illuminated by the light that represented the sun. We classified the creatures in our tank as well. The Blenny and Clownfish being fish. The crab being a crustacean. The snails as mollusks. The shrimp as a different type of crustacean. The corals had their own classifications as corals are listed in their own category and with their own characteristics.

One thing that kept occurring was the molting of the Peppermint Shrimp and the Emerald Crab. Both of these creatures molted weekly and this also led to discussions of the need for some creatures to shed their exoskeleton due to their growth in size. At times, it appeared that the creature had died. The Emerald Crab would shed its outer layer and sometimes the exterior had a green tint to it. I had to remove it from the tank to prove to the students that it hadn't died. The exoskeleton of the Peppermint Shrimp were often white so this was less startling to the children.

We also noticed the personality of each creature in the tank. The shrimp were nervous and shy. The crab liked to be alone. The Blenny and Clown became playmates and would swim around playing what appeared to be Hide and Seek with each other. This amused the kids and brought them joy.

Corals really don't show personality. The Zoas and Mushroom did grow quite quickly and began to spread over the rock work.

STUDENT RESPONSIBILITY

Once a week I would move around names on the chore chart for the classroom. One student would get to eat lunch with me and during that time, we would do a 25% water change in the tank, add necessary doses of calcium and other additives the testing showed were lacking in the water. The students would assist in filling test tubes with the salt water, add the chemicals for testing and we would look at the comparison charts of what a healthy tank should look like. During this time we would also clean out our classroom bearded dragon's cage, feed her crickets and soak her in the sink to hydrate her. The students looked forward to having their name placed under this "chore". The student chosen also fed the dragon and the fish daily.



Our bearded dragon “Journey” who has been in our classroom for four years now. She looked forward to lunch date day as she got to roam the classroom while the fish tank and her tank were cleaned.

ANOTHER FRIEND JOINS THE TANK

The students loved observing the tank between sessions and during their breaks. They often asked if another fish could join the habitat. After doing some research, I discovered the War Paint Green Clown Goby would only reach 1 inch in size. I found one at the pet store that was only $\frac{1}{2}$ inch long. I decided that since I would be upgrading the tank after December, a fish as small as this wouldn't upset the balance. The kids named the tiny fish “Shrimp”.



Shrimp was stunning in color! This little guy preferred to stay on the sand and hide most of the time. He usually only came out at night so I had to take pictures to share with the kids to prove that he was still in the tank.

CYCLING THE NEW TANK

The Clownfish and the Blenny were much bigger in size by October and I knew I would need to begin cycling a new tank for the classroom. This was not going to be an easy task. It required getting a new tank (I prefer the all in one tanks) with lighting that would meet the needs of the softer corals, as well as new live sand and more live rock. The live rock actually helps keep the tank healthy and provides necessary micro-organisms for the creatures in the tank. I wouldn't reuse the current live sand because waste, uneaten food and other kinds of toxins, once stirred up, would impact the new tank in a negative way.

We had a fun day of math activities, reading and writing activities when discussing the changing over of the tank. I explained to the kids that I would be setting up the larger tank (I chose a 13 gallon all in one tank that came with a pump as well) on the current table and would move the 5 gallon tank to the counter temporarily. Since we had Thanksgiving and Christmas breaks coming up we would be out of school quite a bit I planned on taking the 5 gallon tank home right before Thanksgiving break and keeping the fish, corals and other inhabitants at home until after we returned from break. This would not only give the larger tank a chance to cycle, it would relieve me from having to go to school daily to monitor the small tank and feed the fish. The dragon in the room hibernates from November 1st through April 1st each year and does not eat at any time while she is sleeping, so she was already taken care of!

The kids were sad to see their ocean friends leave for a few weeks while they were still in school but their attention turned to the new tank and all of the changes they observed. They saw various algae blooms, water changes, little creatures coming out of the new live rock (I took 2.5 pounds of the live rock from the 5 gallon and bought 8 more pounds to add to this new tank) and this brought forth more discussions about water chemistry, adding more inhabitants to the tank and proper dosing and filtration needed for the tank.

INCORPORATING THE IMPACT OF THE OCEAN HABITAT

As the year progressed, the students studied various habitats found on Earth. During the summer, I had painted a small room in my classroom to depict the ocean and walls in my classroom to depict other habitats. Since animals are well loved by my students, I will always be able to use these walls in some way to lead discussions. This only helped encourage conversation about habitats and how they resembled and were different from each other.



The entrance and doorway view of my classroom showed the Arctic habitat and the various areas around the world. A canopy umbrella mimicked a rainforest and a pop up tent sat in the Grasslands.



The “Ocean Room” has a large octopus, dolphin and Killer Whale while the classroom wall shows a jungle complete with birds, a lion and elephant. We have a tank for a hermit crab in the Ocean Room.

The various habitats the children studied were:

- Ocean- zones, creatures, locations, life cycles
- Rainforest/Jungle- creatures, locations, life cycles
- Arctic- creatures, locations, life cycles
- Grassland- creatures, locations, life cycles
- Desert- creatures, locations, life cycles
- Woodland- creatures, locations, life cycles

Each unit also had the students classifying what type of creature they were studying, the life cycle of that creature, how it reproduced, life span and environment and the issues that affected the environment. The different classifications of creatures we studied were mammals, reptiles, amphibians, birds, fish, mollusk, crustacean. Once identified, the students had to list details about each creature that supported their stance that it belonged to a specific classification.

When studying the ocean, we found the most variety of classifications and constantly referred back to our findings, comparing other animals from different habitats with those we discovered in the ocean.

We also added more creatures to the 13 gallon tank. More corals were added as well as another Clownfish (the kids named Marlin), a Royal Gramma, a Firefish and some shrimp called Sexy Anemone Shrimp.



Seen here from left to right...

Firefish, Nemo, Marlin and the Royal Gramma (the kids called her Grandma).

Some Duncan corals are seen closed up in the picture as well.



The “Sexy” Shrimp hosting a Duncan Coral & Pulsating Xenia coral.



An interesting fact.... All Clownfish are born male. It is only after a Clown meets a partner and decides it wants to pair up will it become a female. Nemo was a male and once Marlin was added, she converted into a female. She quickly grew twice her size and she took on a dominant behavior with Marlin. It was a great discussion point for the kids!



Another interesting aspect of wildlife is how it often can resemble what we see in the human world. The children witnessed bullying in our ocean habitat. The Blenny and Gramma were relentless in harassing the firefish (on the left). It attempted multiple times to jump out of the tank (thank goodness for the lid) so to escape these two, it squirmed up the back of the tank and into the refuge area in the back that held the pumps, skimmer and heater. It lived there from February until the end of the year, when I returned it to the pet store so that it wouldn't have to live its life in fear. These social dynamics between the fish in our tank brought forth multiple conversations about bullying and also allowed us to discuss our own special needs and how they have affected our lives.

Hearing the students describe their lack of friends and not understanding why the students in the general education population often ignored them, motivated me to reach out to the other teachers and ask for their help. The entire school showed movies to their classrooms discussing Autism, Down Syndrome and Learning Disabilities / Cognitive Impairments. Shortly after this, my students were seen being accepted into playground groups and conversations initiated by general education students among my students. It was simply wonderful to see!

The students also experienced death in the fish tank. Our stunning, green Goby became ill for some reason and spent a week on its side, laboriously breathing. We decided as a class that it was more compassionate to end its life than to allow it to suffer. I disposed of the fish one night after the children left for the day. This was a great discussion as well.

IN CONCLUSION

I am happy that I decided to bring a salt water tank into the classroom this past school year. Not only did it provide the students with visual stimulation, it was the catalyst for many conversations that dealt with social issues, academics and required goals. The tank also promoted responsibility and a sense of independence for the students as they had to carry out the chore of feeding and cleaning the classroom habitats.

The parents often commented on how their child spoke of the tank at home. They were impressed with the information their child retained and how their son or daughter were able to easily discuss topics that could be directed to similarities with the tank.

When school ended in June, I made the choice to keep the tank in my home and upgrade to a 30 gallon tank. A tank of this size is very difficult to move and due to summer cleaning and variations in temperature, keeping the tank in the classroom over summer vacation wasn't a possibility.

I do not regret for one moment the additional work and commitment to visiting the classroom during breaks and off time. This tank provided dynamics in the classroom that elicited hands-on learning and incorporated all of the mandated strands of education. I ended the year feeling as if the children had learned more about their world and their part as citizens in their own habitats.

We continue to have our bearded dragon and hermit crab as members of the classroom. I will always have animals in my classroom. I encourage every teacher to look into some type of creature that will instill not only a love of learning but a sense of responsibility and compassion in their students.

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