Incorporating a Service Learning Component into General Chemistry Laboratory

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Abstract

Service learning is a meaningful way to combine classroom instruction with community service. By applying course content to community activities, service learning projects engage students with the community and heighten public awareness of the subject matter. Advantages of service learning projects reach four populations: benefiting not only the student, faculty, and university but members of the local community as well.

General Chemistry Laboratory students from KSU Trumbull Campus recently partnered with Book Buddies at the Warren-Trumbull County Public Library to include a science literature night. For this special event, children (grades 1-4) selected from a list of science themed books to read with their assigned tutor and then subsequently participated in hands-on science experiments highlighting topics presented in the books. KSU Trumbull chemistry students designed all of the safe, fun, and entertaining experiments to excite young children and foster a positive learning experience with science.

Experiment #1: Erupting Coke Volcano

Introduction Story: In the old village of Ger, there stood a huge volcano. Inside of the volcano, there lived a 100 foot tall dragon, who breathed fire. The dragon’s name was DC, and DC’s favorite thing to do was to fly from kingdom to kingdom and kidnap each kingdom’s princess before she could marry her king in Shining Armor.

One evening in the village of Satmar, DC appeared and scooped up the princess. He flew her back to his volcano where he lived. Sir Mendy, the most honorable knight in all of Satmar was supposed to marry the princess the next morning. Needless to say, he was not happy to hear this news. Sir Mendy got on his horse and rode all the way to get his bride back!

When he arrived, Sir Mendy didn’t see the dragon anywhere. One of the villagers told the knight he lived in the volcano just beyond the village. Sir Mendy knew he had to draw out the dragon. He reached into his pocket and pulled out two magic rocks he had received from a magical wizard. Sir Mendy climbed to the top of the volcano and threw in the rocks. Almost immediately, the ground began to shake violently! Just before the volcano erupted, the dragon, who was holding the princess, jumped out of the volcano. DC was terrified to see what great lengths Sir Mendy would go to reclaim his bride. So, the dragon decided to return her to her kingdom. Sir Mendy and the princess returned home to their village to be wed, and they lived happily ever after.


Experiment #2: Slime

Introduction Story: The government has made you one of their top secret agents. This means you’ll be doing just about anything, but you must be very careful! Your first assignment is to create a substance that can trap your enemies. Proceed with caution though because the last agent that tried to complete this task ended up... in detention!!!


Experiment #3: Milk Madness

Introduction Story: There once was a playground where all the drops of food coloring liked to play. One day a new group of kids came to the playground: Soap, Water, and Fat. Part of Soap really liked Water and the other part really liked Fat, but Water and Fat were not friends. Soap tried to play with Fat and Water together, but they kept running away from each other. Soap would chase after both of them which caused all of the drops of food coloring to have to move out of their way. The drops of food coloring got all mixed up and the playground looked pretty very. This experiment shows soap has a polar end and a nonpolar end which allows it to be attracted to both water and fat molecules. The movement is showed by drops of food coloring.

Children’s Literature: A Rainbow of My Own by D. Freeman; Majesty’s Rainbow Dream by L. Cousins

Experiment #4: Lava Lamp Fun

Introduction Story: The Boy Scouts were sitting around a camp fire. They had been wanting to tell a scary story but needed something to make the story extra scary. They didn’t have much to work with so each boy scout set out to find something they had in their bag, hoping they could use it to the project. One boy had the empty bottle from his dad’s beer. He had heard earlier, another thought to use the vegetable oil they had brought to use the next day for their fish fry. Another kid had brought some Alka Seltzer tablets because he wasn’t feeling too well. They had some grape juice that they were going to drink in the morning with their breakfast, and one scout found his flashlight in his bag that he thought he lost. They put all of the materials together and created a lava lamp. Finally, they got to sit around the fire and they each took turns telling a scary story. The lava lamp was the perfect addition to their stories!

Children’s Literature: Light is All Around Us by W. Pfeffer; Magic School Bus – Voyage to the Volcano by J.B. Stamper and J. Cole

Experiment #5: Sink or Float?

Introduction Story: Two boys were swimming in the pool one day. It was a hot summer day and the kids wanted to try out new toys in the pool. Mark, one of the boys, grabbed an inflated spaceship raft to float in the pool. John, the other boy, also grabbed a raft, but unfortunately, it wasn’t blown up yet. Mark put his raft into the pool and he floated right away. However, John put his raft into the pool and it sank to the bottom. John, with an upset look on his face, went and asked with his mom if he had done something wrong. His dad said, “Did you blow up your raft?” John shook his head no. His dad then said, “Without any air, your raft is too dense and will sink to the bottom. Try blowing up your raft so that it will be less dense than the pool water and it will float.” John blows the raft up and then puts the raft in the water. The raft floats and John is very happy. John then jumps onto the raft and starts playing spaceship in the pool with his brother.


Conclusion

This service learning project successfully engaged local elementary school children with science literature and hands-on science experiments in a fun and relatable manner. The children’s sheer delight and awe when performing the experiments was contagious and enthused everyone who participated in the event.

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References