

\Learning Biology Concepts through Inquiry and Real Life Project

Davidson Middle School

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The first Davidson Middle School Honors Biology class had a very successful learning experience with the lab materials purchased with this grant. Students were not only able to reinforce the information they were learning from their textbooks, but also practiced lab skills. Critical thinking skills were in demand as students solved problems that arose during labs. Practicing inquiry skills was also an important part of this project. Finally, making application of the information found in the text book to real life made their learning relevant.

The first part of this project presented biochemistry. Students studied the structure and characteristics of simple and complex carbohydrates, lipids, amino acids, and proteins. Students also tested food samples for the presence of these chemicals.



A lab on the functions of enzymes included how temperature, pH, exposure time and concentration affected the action of the enzyme on substrates. This lab was very helpful in reinforcing student knowledge about the behavior of enzymes.



Another part of the project presented activities related to the field of genetics. Students studied the structure and function of DNA. Students learned more about the characteristics of DNA as they extracted their own DNA from cheek cells. A simple gel electrophoresis lab demonstrated the varying molecular weight of the nitrogen bases. Students were then able to

make a real life application of this technique to how DNA fingerprinting can be used to identify individuals.



Students placed their DNA in glass tubes and created DNA necklaces for their parents.

The project also addressed the chemical processes of photosynthesis and aerobic respiration. Students applied iodine to the leaves of *Coleus* and learned how light affects the production of food in plants grown in darkness and light. Bromothymol blue was used to study the products of respiration. Fermentation was addressed in a separate lab where students learned the effect of food on the fermentation process as they measured glucose and carbon dioxide levels during the reaction process.



The field study at Fred Gannon Rocky Bayou State Park taught students about chemical and physical characteristics of estuaries. Students learned how to test factors that affect the quality of water. Test kits and equipment for water quality testing were purchased with this grant. Students collected data at the estuary, analyzed the data and rated the quality of water. Students used critical thinking skills and observations to determine why they got their results. Student presentations shared this information with peers.



May 18 Field Study at Rocky Bayou State Park

My 29 students join me in saying thank you to NDIA for providing us with the opportunity to use inquiry and critical thinking as we learned the biology standards for our course.