



Katie Culbert, a freshman at TRHS North had her science proposal focusing on essential oils and Varroa mites in honeybees, selected for **First Place** in the middle school division of the **2020 AEOP National Science Challenge, (AEOP - Army Education Outreach Program)...** Great job Katie!!!

Mrs. Girtain was awarded an \$850 community grant from Walmart that will be used to assist her ASR students in their research projects. Mrs. Girtain and Dr. Kretz were approved for a \$9000 Navy STEM Grant to assist in the ASR programs at all three of our high schools.

With the use of hybrid and virtual classrooms the science department has been utilizing multiple internet platforms to provide students with laboratory type experiences. Labster, Pivot, and Gizmo are just some of those technologies which are being utilized Below is just some of what has been done in Biology:

Enzyme Activity Lab

- Traditionally, students would examine Catalase activity in raw carrot, potato and liver using hydrogen peroxide and examine the activity in the cooked form for each item. They would measure the activity rate for each item, graph it and analyze it.
- Virtual Day 1: Students were given data on Catalase activity in a lab scenario, which they had to graph and analyze.
- Virtual Day 2: Placed under the document camera (shared via Google Meet for virtual students and projected on the TV for in person students) were petri dishes of raw & cooked potato, carrot, apple and chicken liver. Students made predictions on what they thought would happen. Then 30% hydrogen peroxide was added and students were able to view the reaction and make observations, as if they were completing the lab.

STEAM Biology Lab:

- Traditionally, students would have to determine what two unknown cells should be classified through an Argument Driven Inquiry. They would view prepared microscope slides representing bacteria, animal cells, plant cells, protist cells and fungal cells. From the data they would classify the two unknown cells and justify, with evidence, their conclusions.
- Virtually, students completed the Argument Driven Inquiry lab via the EduFlow platform online to complete the same lab. Students were presented with the problem and information on biological classification, cell structures and Transmission Electron Microscopes (TEM). At the end, they were given images of the three unknown cells and had to classify them. They used a Claim-Evidence-Reasoning table to justify their classification of each unknown cell.

Honors Biology Lab:

- Traditionally, students would use a microscope and prepared slides to examine the similarities and differences amongst cell types.
- Virtually, students completed a Cell Gizmo. This online platform allowed students to select a variety of cells under a compound light microscope. Students selected a sample, then focused on the sample using the coarse and fine focus controls of the microscope (just like they would have done traditionally). They were then able to compare the structures in six different samples to determine the similarities and differences across cell types.