

NDIA2018-2019 ACCEerator Grants Program

Project summary: - “Density Detectives at Work”

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On behalf of the entire science faculty at Milton High School, we thank the NDIA ACCEL organization for this \$1000 grant! With these funds, we purchased six new high-quality Ohaus Scout electronic scales and two new sets of density balls.

Over 300 students in grades 9-12 Physics, Physical Science and Chemistry classes were able to get hands-on experience for determining density of substances as well as using calculated density to help identify common substances. These students learned how to make the measurements needed for determining density with the formula $D=M/V$. Each student practiced using the water-displacement method for finding the volume of an irregular shaped mass; then group members collaborated on how to use the density formula.

Each lab group was given a sample of metal (one of the density balls) and they were tasked with calculating its density. Then, students compared their figures with a table of known density values for many substances and tried to identify the sample they were using.

When their computed values did not make an exact match with any substance, students engaged in critical thinking by using other properties such as color and hardness to fine-tune their identification. They also calculated the percent error for their calculation and discussed reasons for imperfect results.

We included career awareness as we viewed clips from the “CSI” tv series and discussed how substances may be identified through examination of their many properties.

The equipment we purchased with the grant funds is dependable and durable—we will be able to repeat these activities each year for a long time to come as well as using the equipment for related activities in Chemistry and Physics.