



### **NDT Externship – Application in the Home School Acknowledgement\***

1. Educator Name: William Chess
2. School District and School: Mercer Area SD/Mercer Area HS
3. Date(s) of NDT Unit: Feb 6, 2024
4. Length of lesson or unit: 45 min
5. Number of students: 51
6. Grade level of students: 11-12

Description of Activity: I began with an introduction to NDT to include methods and applications. I then focused on ultrasonic inspection and principles of sound waves. I demonstrated ultrasonic frequencies to the students by allowing them to find the upper end of their own audible range using a function generator and a speaker. I also discussed the speed of sound and how it varies based on the medium. I demonstrated a standing longitudinal wave in an aluminum rod. The students then began an inquiry activity in which they determined the speed of sound in air using a tube closed at one end (see attachment). Results were then shared with the class.

What elements from your NDT Externship were used in the preparation or delivery of the unit? (i.e. PPTs provided, information gathered from discussions or activities, etc.)

I used PPTs provided by the College as well as information gathered from lessons in order to prepare the lesson.

How were students engaged with the unit? What hands-on activities occurred?

Students were engaged via an interactive demonstration (determining audible range) as well as a hands-on activity (measuring the speed of sound.)

Explain connections that were created/discussed between NDT careers and higher education.

I explained the career opportunities in NDT that I learned about during the externship as well as the NDT program offered at Penn College of Technology. I emphasized the demands of the NDT program and career to help students determine if it would be something they would have the skills, abilities and motivation to pursue.

How did students respond to the unit?

The student response was very positive. One student actually commented that it was the best lesson of the year.

This material is based upon work supported by the [National Science Foundation under Grant No. 20000831](#). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Were parents involved or aware of the unit? What was their response to the activities?

Parents were not involved in or aware of the unit.

*A goal of this program is to make NDT education and information available to high school students. As such, Penn College is attempting to build a repository of activities that can be used across the K-12 environment. In the subsequent pages, please provide additional information on the lesson/units you implemented so that others can implement similar activities in their classrooms. Please be sure to include any material lists, photos/evidence of student work (not of student participants), and any other relevant information required to implement in another school.*

\*By submitting this form, you acknowledge all information is accurate and correct to the best of your knowledge and you agree to the sharing of this information via publicly accessible websites.