

## Smartphones as detector the speed of sound: A classroom explanation and demonstration

This paper presents how smartphones determine the speed of sound ( $a$ ) with a classroom explanation and demonstration to design a variety of lab instruments. Smartphone sensors such as mics and speakers were used as experimental tools by students for calculating the value of speed of sound. Mathematics is used to describe physics principles using only the mean of repetitive experimental results. After conducting an experiment with 43 students, majoring in general science, faculty of education and educational innovation, Kalasin University, the students report the value of the speed of sound nearly to theoretical values ( $a = \sqrt{\gamma RT}$  at vary room temperature ; provide by NASA) with a percentage difference of less than 2%, equipment used in everyday life in the classroom, equipment that is cheap, along with a simple calculation of speed of sound, is an advantage of this experiment.

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**Track Classification:** Physics Education