



## Using the pH100 and pH10 in Class to Determine pH in Common Liquids

With the advent of YSI's EcoSense® product line, several markets, including education, have greater access to YSI's quality products. After the NSTA (National Science Teachers Association) annual show, many teachers downloaded curriculums on the [ysiecosense.com](http://ysiecosense.com) website and asked questions about introducing the products into their classrooms.

Mrs. Amy Rohrback's kindergarten class at Arrowood Elementary School in Xenia, Ohio, were finishing up a project learning about pH in general and the effects of pH on plant growth. Before the project was completed they used the pH10 and pH100 products to help understand the use of scientific instruments as part of the learning process.

### Activity

The students spent time observing the results of ivy plants watered with an acidic mixture of vinegar and water and discussing these results. As part of this process, the students wrote down their observations during a couple weeks. They quickly learned the more acidic water affected the ivy plant very quickly. To help further their knowledge of pH they were introduced to the pH scale as well and learned how values were placed on the scale to help determine its acidity. In order to understand the scientific process of hypothesizing, analyzing, and concluding their results, they needed to use technical equipment and decided the EcoSense pH10 pen-style instrument and the EcoSense pH100 handheld instrument would be perfect additions.

The students were separated into 8 groups of 2-3 students. Each group was allowed to test common household liquids including soda, milk, and grape juice. They tried to "guess" if the pH would be acidic or basic and they subsequently recorded the results in their individual pH Notebooks. Each student colored a glass in their

pH books the same color of the liquid they tested, wrote down the name of the liquid, and recorded their pH values next to the picture. The students were allowed to hold the pH10 and determine when the readings were stable before saying it out loud to Mrs. Rohrback to put on the board.

Each group also collected soil samples and brought them into class and made soil sample slurries. They helped by following a process to make the slurries and allowed the mixtures to sit the appropriate amount of time as they sampled the common household liquids. The pH100 with the 112-1 flat-tipped pH electrode was used to test the soil slurries. The students tested each of their groups soil pH and recorded it on the board and in their pH books. They were then asked to determine which soil was most acidic and which was most basic. Afterwards they tried to determine from a plant pH chart which types of plants may grow best in the pH range of their soil.

The simplicity in design and ease of use of the EcoSense product line allowed the pH100 and pH10 to be introduced into a kindergarten setting. The ability and willingness of the students to use and understand the readings displayed on the instruments shows the desire of young students to use technological instrumentation to further their educational knowledge. After the tests, the students were asked "who wants to be a scientist?" Every hand went up immediately!



*The EcoSense pH100 with flat-tipped probe for soil (above); the pH10 for common household liquid pH values (below).*



*For additional information regarding EcoSense Products for use in the classroom or other applications, please contact us:*

**YSI Environmental**

Tel. +1 937 767 7241

US 800 897 4151

Fax +1 937 767 1058

Email. [ecosense@ysi.com](mailto:ecosense@ysi.com)

Web. [www.ysiecosense.com](http://www.ysiecosense.com)