

## OSP Interactive Educational Programming

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| <b>Lesson Title: What's pH is it?</b>  | <b>Grade Level: 3rd</b>   |
| <b>Teacher: Kathi Murray</b>   | <b>Duration: 40 -50 minutes</b>   |
| <b>Essential Question(s)/Objective(s):</b><br><b>What does pH of a solution tell us?</b><br><b>If it is clear, is it water?</b><br><b>Does all water have the same pH?</b>   |   |
| <b>Science Georgia Standards of Excellence</b><br><b>S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.</b> <ol style="list-style-type: none"> <li>a. Ask questions to differentiate between plants, animals, and habitats found within Georgia's geographic range.</li> <li>b. Use evidence to construct an explanation of why some organisms can thrive in one habitat and not in another.</li> </ol> <b>S3L2. Obtain, evaluate, and communicate information about the effects of pollution (air, land, water) and humans on the environment.</b> <ol style="list-style-type: none"> <li>a. Ask questions to collect information and create records of sources and effects of pollution on plants and animals.</li> <li>b. Explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.</li> </ol> |   |
| <b>Key Vocabulary</b>  | <b>pH, acids, bases, alkaline</b>   |
| <b>Teacher Materials</b>   | Samples of various water samples and solutions, cups, lab sheet, graph sheet<br><b>IMPORTANT</b> – students must understand they are not to smell, put their hands in, or drink the solutions   |
| <b>Student Materials</b>   | Pencil/pen  |
| <b>Teaching Strategy/Procedures</b>  | Have students in groups of 2-4 measure the pH of various water samples and solutions<br>Have the students compare the pH of the water samples to their solutions and complete their lab sheet<br>Students will transfer their lab sheet data to the bar group lab sheet |
| <b>Differentiation</b>   | Split into 2 groups – have 1 group testing acids and the other bases, then switch   |

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| <b>Summarizing Strategy</b>              | Teacher will explain that different water sources have different pH and that the organisms found in each have adapted to that environment. For example, the pH of Swamp Water is acidic but the pH of River water is closer to neutral. Organisms that live in the swamp have adapted to an acidic environment. Pollutants also affect the pH of aquatic ecosystems. Acid rain and decaying vegetation make the environment more acidic; limestone rocks in an aquatic environment make it more alkaline. Extremely high or low pH is usually unsuitable for most aquatic organisms. |
| <b>Assignment(s)</b>                     | Test the pH of various water samples and solutions and complete their lab sheet  |
| <b>Assessment For and/or Of Learning</b> | Complete the pH graph sheet  |
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