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| |  | | --- | | https://peer.tamu.edu/curriculum_modules/Water_Quality/images/teach.jpg |  |  |  | | --- | --- | | **TEKS for Middle School Science**  **6-8 Middle School TEKS**  **AS-Aquatic Science TEKS**  **B-Biology TEKS**  **C-Chemistry TEKS**  **ES-Environmental Systems TEKS**  **NOTE: Some of the wording of the process TEKS 1-4 have been condensed to include multiple subjects** | **How the TEKS are Integrated into the Lesson** | | **6.1A, 7.1A, 8.1A, B.1A, AS.1A, C.1A, ES.1A** Demonstrate safe practices during laboratory and field investigations as outlined in Texas Education Agency approved safety standards | During the **Activities,** students will be required to use safe practices. | | **6.1B, 7.1B, 8.1B, B.1B, AS.1B, ES.1B, C.1C** Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials | During the **Activities,** students will practice appropriate use and conservation of resources. | | **6.2A, 7.2A, 8.2A, B.2E, AS.2E**, **C.2E**, **ES.2E** Plan and implement comparative and descriptive investigations by making observations, asking well defined questions, and using appropriate equipment and technology | During the **Activities,** students will implement comparative and descriptive investigations. | | **6.2C, 7.2C, 8.2C, B.2F. AS.2F, ES.2G, C.2F** Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers | During the **Activities,** students will collect and record data. | | **6.2E, 7.2E, 8.2E, B.2G, C.2H** Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends | During the **Activities,** students will analyze data. | | **AS.2G. ES.2G** Demonstrate the use of course apparatuses, equipment, techniques, and procedures. | During the **Activities**, the students will use equipment to collect data and follow procedures. | | **AS.2H, ES.2I** Organize, analyze evaluate, build models, make inferences, and predict trends from data. | In the **Activities**, students will build models and analyze data. | | **AS.2J, ES.2K, AS.2J** Communicate valid conclusions using essential vocabulary and multiple modes of expression such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. | During the **Activities**, students will communicate conclusions using various forms of reports. | | **6.3A, 7.3A, 8.3A** **C.3A**, **ES.3A, AS.3A** Analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student. | In the **Activities,** students will investigate scientific evidence and reasoning and draw a conclusion about a water-related environmental issue. | | **6.4 A,B, 7.4A,B, 8.4A,B, B.2F** The student knows how to use a variety of tools. The student will use preventative safety equipment. **7.4A** specifies water test kits | Throughout the **Activities,** students will use laboratory tools and safety equipment as needed to measure mass and volume and to calculate concentration. | | **AS.5B** Collect baseline quantitative data, including pH, salinity, temperature, mineral content, nitrogen compounds, and turbidity from an aquatic environment. | In the **Lesson Presentation and Activities**, students will learn how to measure nitrate concentration. | | **AS.7C** Identify water quantity and quality in a local watershed. | In the **Lesson Presentation**, students will learn how to measure nitrates in the water. This skill will be needed to identify water quality in watershed. | | **ES.5B** Identify source, use, **quality**, management, and conservation of water. | In the **Lesson Presentation** and **Activities**, the students will analyze water quality. | | **7.8C** Model the effects of human activity on ground water and surface water in a watershed | In the **Activities**, the students will use data and analyze maps to measure nitrates in the water that are directly related to human activity. | | **ES.9B** Investigate the types of air, soil, and water pollution such as chlorofluorocarbons, carbon dioxide, pH, pesticide runoff, thermal variations, metallic ions, heavy metals, and nuclear waste. | In the **Lesson Presentation** and the **Activities**, the agents of water pollution will be explored. | | **ES.9C** Examine the concentrations of air, soil, and water pollutants using appropriate units. | In the **Lesson Presentation**, the method for calculating concentrations of pollutants will be presented. In the **Activities**, concentrations of nitrates will be explored and calculated. |  |  |  | | --- | --- | | **Next Generation Science Standards**  **Disciplinary Core Ideas** | **How the NGSS are Integrated** **into the Lesson** | | **MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.**  Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage, land usage, and pollution of the air, water or land. | Water quality testing is a method used for monitoring and minimizing human impact on the environment. Measuring mass, volume, and concentration of substances in water are key skills used in water quality testing. The **Lesson Presentation and Activities** allow students to evaluate nitrate levels and explore methods for minimizing the human impact on the environment from nitrates. | |