

HISI - LESSON OUTLINE

Module Title Klamath-Trinity watershed (Chem) LS Team Hoopa Grade level: 7-12

Lesson # 2(chem.) Title: Water and its contaminants	Number of Minutes: 47
Mathematical purpose: To be able to make calculations involved in pH, temperature, dissolved oxygen. To graph temperature over time	Scientific Purpose: To better understand pH, temperature, dissolved oxygen and their importance to healthy rivers.
Materials needed: Chemistry and the community Unit4 Water: exploring solutions Reading guide (physical properties of water) Macroscopic vs particulate view of world PPT (3 slides) Modeling mater: pictures in your mind (students create and evaluate various visual models of matter) reading guide	Academic vocabulary: pH, Dissolved oxygen, temperature, turbidity, concentration, Homogeneous, heterogeneous, mixtures, solutions, solute, solvent,
Common Core Standards (copy and paste): CCSS.Math.Content.HSS.ID.A.1 CCSS.Math.Content.HSS.ID.A.2 CCSS.Math.Content.HSS.ID.A.3 CCSS.Math.Content.HSS.ID.A.4 CCSS.Math.Content.HSS.ID.B.5 CCSS.Math.Content.HSS.ID.B.6 CCSS.Math.Content.HSS.ID.C.7 6.SP.B.5	Next Generation Science Standards (copy and paste): MS-LS2 Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycle of Matter and Energy Transfer in Ecosystems LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS4.D: Biodiversity and Humans HS-LS2 Ecosystems: Interactions, Energy, and Dynamics
When students are finished they will understand: The physical properties of water, (cohesions, adhesions, density, melting/boiling point) and the chemical properties of water, pH, dissolved oxygen, nitrates.	What are teacher questions or prompts? List 3 physical properties of water List 3 chemical properties of water What is the difference between homogenous/heterogeneous mixtures Identify and label the parts of a solution Define pH
What are questions you anticipate students will have? What is the difference between cohesion and adhesion What pH is dangerous for fish How does oxygen (or any gas) get dissolved in water	What are misconceptions students might have? The difference between cohesion and adhesion Heterogeneous vs homogeneous pH scale is a logarithmic scale (what does logarithm mean)

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<p>General outline of the lesson: Chemistry portion of the module: water-exploring solutions</p> <ul style="list-style-type: none">I. Sources and properties of waterII. Water and its contaminatesIII. Solubility, solution concentrations, pH, solubility curvesIV. Water purification <p>III. Water and its contaminates*</p> <ul style="list-style-type: none">a. Read pg 14-17 (Chemistry and the community Unit4 Water: exploring solutions)<ul style="list-style-type: none">a. Reading guide (physical properties of water)b. Particulate view of water<ul style="list-style-type: none">a. Macroscopic vs particulate view of world PPT (3 slides)b. Modeling mater: pictures in your mind (students create and evaluate various visual models of matter)c. Temperature, dissolved oxygen and life<ul style="list-style-type: none">a. Read pg 27-28<ul style="list-style-type: none">i. Complete reading guideb. Do lab and answer lab questions (link to Lab)	
<p>*Accommodations for students with special needs (see end of lesson outline)</p>	

Supplemental files/resources will follow

[Chemistry and the community Unit4 Water: exploring solutions](#)
[Reading guide \(physical properties of water\)](#)

HISI - LESSON OUTLINE

[Macroscopic vs particulate view of world PPT \(3 slides\)](#)

[Modeling mater: pictures in your mind \(students create and evaluate various visual models of matter\) reading guide](#)

III. Water and its contaminates *

- d. Read pg 14-17 ([Chemistry and the community Unit4 Water: exploring solutions](#))
 - a. [Reading guide \(physical properties of water\)](#)
- e. Particulate view of water
 - a. [Macroscopic vs particulate view of world PPT \(3 slides\)](#)
 - b. [Modeling mater: pictures in your mind \(students create and evaluate various visual models of matter\)](#)
- f. Temperature, dissolved oxygen and life
 - a. Read pg [27-28](#)
 - i. Complete [reading guide](#)
 - b. Do lab and answer lab questions ([link to Lab](#))
- g.
- I. Water testing*
 - a. Read pg [34-35](#)
 - i. Investigation and gathering/ interpreting evidence
 - b. Acids and Bases in solution
 - i. Read pg [35-36](#)
 - 1. Developing skills questions 1-4 (pg 36)
 - c. Solution concentration and pH
 - i. Read pg [36-38](#)
 - 1. Interpreting the pH scale 1-6 (pg 37)
 - 2. Sources of acid and basic contamination (pg 38)
 - a. Gather information and explore questions 1-4 (pg 38)

HISI - LESSON OUTLINE

- ii. Lab (gathering evidence) Titration of HCl ([pg 40-41](#))
- d. Analyzing water quality Data ([pg 42-43](#))
 - i. Students will be assigned to a group to study some of the data listed on pg 42. Each group will complete an analysis of for its assigned data and share with whole class

* **Accommodations:** Designed to accommodate for student with Specific Learning Disabilities (SLD) with processing disorders in Auditory and/or Visual processing, SLD with processing disorder in Attention or Cognitive Abilities, and Other Health Impairments (ADD, ADHD).

Part III

- ❖ Read pages 14-17 aloud while student reads/follows along
- ❖ Rephrase questions if needed
- ❖ Provide copy of PowerPoint for note taking support
- ❖ Read pages 27-28 aloud while student reads/follows along
- ❖ Rephrase questions if needed
- ❖ Read pages 34-35 aloud while student reads/follows along
- ❖ Rephrase questions if needed
- ❖ Read pages 35-36 aloud while student reads/follows along
- ❖ Rephrase questions if needed
- ❖ Read pages 36-38 aloud while student reads/follows along
- ❖ Rephrase questions if needed
- ❖ Group students by strengths and needs