



El Dorado County Career Technical Partnership

In Partnership: Folsom Lake College • El Dorado Union High School District • El Dorado County Office of Education

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Title: Mixtures		
Content Area: Chemistry	Grade:11	Duration-Two Class Periods (one block)- year long use of skills.
Career Technical Industry Sector:	X	Agriculture and Natural Resources
	X	Hospitality, Tourism, and Recreation
Standards and Benchmarks:	<p>California Standards for Chemistry</p> <p>Specific applications of Investigation and Experimentation standards (grades nine through twelve):</p> <ul style="list-style-type: none"> 1. c Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions. 1.d Formulate explanations by using logic and evidence 1. m Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. <p>Pathway Standards</p> <ul style="list-style-type: none"> E2.4 Understand the component of a plan that monitors water quality. <p>Foundation Standards for Science/Agriculture and Natural Resources Industry Sector</p> <ul style="list-style-type: none"> 8.1 Know the major local, district, state, and federal regulatory agencies and entities that affect the industry and how they enforce laws and regulations. 8.2 Understand the concept and application of ethical and legal behavior consistent with workplace standards. 9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings 9.6 Understand leadership, cooperation, collaboration, and effective decision-making skills applied in group or team activities, including the student organization. <p>Scans Occupational Competencies</p>	



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	<p>C5 Acquires and evaluates information</p> <p>C6 Organizes and maintains information</p> <p>C7 interprets and communicates information</p>
Objectives:	<p>Student will demonstrate summarizing information, use of sketches as a quick way to represent ideas, and following instructions during execution of the laboratory task. Student will understand the terms solution, suspension, colloid, turbidity and flocculent.</p>
Resources and Materials:	<p>Materials per laboratory station for two students: Four 50 mL beakers, 2 funnels, funnel stand, filter paper, colloidal mixture of a non-dairy coffee creamer, slurry of clay, distilled water, blue solution (blue food coloring in water), flocculating agent (alum- aluminum potassium phosphate).</p>
Differentiation:	<p>Students will use different modalities of reading/writing as well as visual (sketching) and kinesthetic (carrying out the experiment)</p>
<p>Preparing Students for the Lesson:</p> <ul style="list-style-type: none"> • Transitions • Expected Behaviors 	<p>Transitions: Students will need to move to assigned laboratory stations.</p> <p>Expected Behaviors: Move quickly to and from lab stations and work with partner at lab station on assigned experiment. Student will wear appropriate safety equipment: goggles and apron.</p>
<p>Teaching the Lesson (Lesson Sequence/ Activities):</p> <ul style="list-style-type: none"> • Motivation/ Anticipatory Set • Pre-Assessment/ Activating Background Knowledge • Teacher Input, Modeling, & 	<p>Motivation/Anticipatory Set: Students will receive introductory presentation with demonstration on heterogeneous and homogeneous mixtures. Special attention will be given to solutions and colloids as homogeneous mixtures. The terms turbidity and flocculation will be introduced and demonstrated.</p> <p>Pre-Assessment/Activating Background Knowledge: Students will be shown four samples (to be used later in the lab) and asked which they think would be safe to drink. They will then come up with criteria that would be used to determine if water is “pure,” i.e., drinkable.</p> <p>Teacher Input, Modeling, & Checking for Understanding, Guided Practice and Independent Practice:</p> <p>Students state what the difference is between “pure” and drinkable. Further state on how they would judge water to be drinkable.</p> <p>Teacher shows power point of water purification process by EID.</p> <p>Teacher models set up of pre-lab from prepared laboratory instructions. Teacher demonstrates how to observe the Tyndall effect in a turbid (colloidal)</p>



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<p>Checking for Understanding</p> <ul style="list-style-type: none"> • Guided Practice • Independent Practice • Closure 	<p>solution.</p> <p>Students transition to lab stations and perform experiment to determine if a particular mixture is a solution, suspension or colloid. They monitor and report on their success at each stage of the process. They record their observations at each step before and after filtering.</p> <p>Closure: Compare clarity of each of the mixtures before and after filtering noting any changes brought about by filtering. Make a statement as to the effectiveness of adding a flocculating agent and further filtration to the colloidal mixtures.</p>		
<p>Assessment:</p>	<p>Students turn in completed lab reports with questions to be graded by teacher, after the report has been read and “witnessed” by a colleague. Answers will be reviewed and questions on the test will be asked regarding definitions and observations. See attached Rubric for the Lab</p>		
<p>Notes & Reflections:</p>			
<p>Externship Sites:</p>	<p>EID</p>		