



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: Production of native flora for sale		
Content Area: Life Science	Grade: 7	Duration: 10 days over the school year
Career Technical Industry Sector:	x	Agriculture and Natural Resources
		Hospitality, Tourism, and Recreation
Standards and Benchmarks:	<p>Academic Standards California Model Standards for Science Grade 7</p> <p>Structure and Function in Living Systems</p> <p>5f. Students know the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit.</p> <p>Investigation and Experimentation</p> <p>7a. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.</p> <p>Agriculture business pathway</p> <p>A2.3 Understand the law of supply and demand as it effects price determination.</p> <p>A4.2 Understand the use and importance of budgets, income statements, balance sheets, and financial statements.</p> <p>A5.4 Understand how recordkeeping, farm plans, and an analysis of best practices affect risk management decisions.</p> <p>A7.1 Understand how marketing functions in a free market society.</p> <p>A7.2 Understand the advantages and disadvantages of the various marketing options for agricultural products and services.</p> <p>A8.2 Understand the stages in making a successful sale and the various techniques used to approach potential customers and overcome their objections.</p> <p>SCANs</p> <p>Competencies</p> <p>Resources: Identifies, organizes, plans, and allocates resources</p> <ul style="list-style-type: none"> • <i>Time</i> - selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules • <i>Money</i> - uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives • <i>Material and facilities</i> - acquires, stores, allocates, and uses materials or space efficiently <p>Information: Acquires and evaluates information</p> <ul style="list-style-type: none"> • <i>Acquires and evaluates information</i> 	



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- *Organizes and maintains information*

Interpersonal: Works with others

- *Participates as member of a team* - contributes to group effort
- *Serves clients/customers* - works to satisfy customers expectations

Systems: Understands complex interrelationships

- *Improves or designs systems* - suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

- *Selects technology* - chooses procedures, tools, or equipment including computers and related technologies

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens, and speaks

- *Reading* - locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
- *Writing* - communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
- *Arithmetic/mathematics* - performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
- *Listening* - receives, attends to, interprets, and responds to verbal messages and other cues

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

- *Creative thinking* - generates new ideas
- *Decision making* - specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternatives
- *Problem solving* - recognizes problems and devises and implements plan of action

Personal Qualities: Responsibility, self-esteem, sociability, self-management, integrity, and honesty

- *Responsibility* - exerts a high level of effort and perseveres towards goal attainment
- *Self-esteem* - believes in own self-worth and maintains a positive view of self
- *Sociability* - demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
- *Self-management* - assesses self accurately, sets personal goals, monitors progress, and exhibits self-control



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Objectives:	<ol style="list-style-type: none"> 1. Identify and collect seeds for <u>Cercis occidentalis</u> (western redbud) 2. Pretreat to prepare for germination 3. Record germination success as to method and time 4. Develop list of supplies 5. Develop budget 6. Develop sales plan 7. Write a summary report using graphical analysis and spread sheet to demonstrate germination success rates and profit.
Resources and Materials:	<p>Internet - http://www.deserttropicals.com/Plants/Fabaceae/Cercis_occidentalis.html</p> <p>Procedure for propagation worksheet(attached)</p> <p>Peat moss</p> <p>Plastic bags</p> <p>Planting mix</p> <p>Vermiculite</p> <p>Coarse sand</p> <p>Planting pots</p> <p>Computer with spreadsheet (i.e. excel)</p> <p>Sales fliers</p>
Differentiation:	<p>Higher level students:</p> <ul style="list-style-type: none"> • Complete records of germination success with graphs and charts • Expense profit analysis on spreadsheet • Complete summary and results report <p>Lower level students</p> <ul style="list-style-type: none"> • Operate as assistants to more capable students • General summary of germination success • A list of expenses and income showing overall profit • A simple summary of the overall project
Preparing Students for the Lesson: <ul style="list-style-type: none"> • Transitions • Expected Behaviors 	<p>Day 1 – 20 minutes – introduce the western redbud and show specimens.</p> <p>Give overview of the assignment and one week to collect mature seedpods.</p> <p>Students will divide themselves into five groups. Students will research various</p>



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	<p>pretreatment strategies for the seeds and choose or be assigned one method.</p> <p>Day 2 - 1 class period – students will separate seeds from pods. Students will receive the Propagation of redbud handout. Students will divide seeds into sets of ten. Students will pretreat the seeds and place into cold storage.</p> <p>Day 3 – 1 class period – after two months of cold storage. Students will examine the seeds and observe differences between each pretreatment group. Students will record data for their final report. Students will repackage and leave in a dark warm location for three weeks. Students will prepare planting pots for use over the next three weeks. Students will calculate and record cost of planting materials.</p> <p>Day 5,6,7 - 10 minutes one week apart – record the seeds that have germinated and plant into prepared pots. Leave outside in a protected area for growth under natural conditions. Record data for final report. Graph data.</p> <p>Day 8 – 1 period – prepare fliers to advertise plant sale</p> <p>Day 9 – set up table and sell plants</p> <p>Day 10 – count profits. Prepare report summarizing the success rates of germination strategies, cost/profit analysis, and conclusions.</p> <p>Students will work together completing all tasks. Students will collaborate within groups and share information with other groups. Students will keep accurate records for use in the final end of project report.</p>
<p>Teaching the Lesson (Lesson Sequence/ Activities):</p> <ul style="list-style-type: none"> • Motivation/ Anticipatory Set • Pre-Assessment/ Activating <p>Background Knowledge</p>	<p>Set – Conduct a nature walk in the surrounding area and/or show a slide show of local flora. Include information on local retail prices of native plant species. Discuss the ecological advantage of planting native species in regard to climate, watering needs, and horticultural requirements.</p> <p>Background knowledge – review a simple exercise in percentages and bar graphing and recording expenses/income.</p> <p>Teacher input – demonstrate stratification techniques, cold storage and germination techniques. Pass out propagation work sheet.</p> <p>For each day review that day's goals, procedures and requirements.</p> <p>Guided/independent practice – follow procedure to complete each day's exercise (see attached). Fill out work sheet as is applicable to each day's goal. Collect data and keep it safe until final report is due.</p>

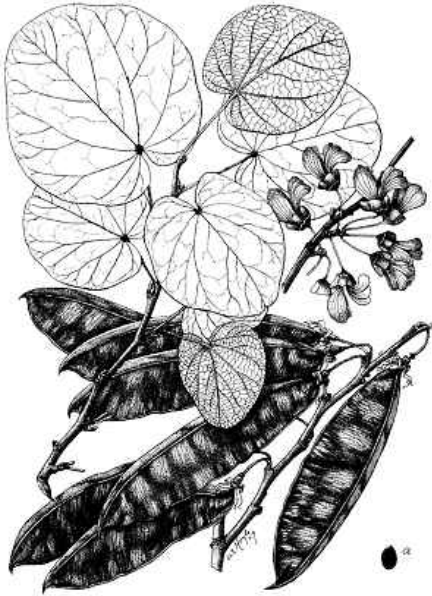


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<ul style="list-style-type: none"> • Teacher Input, Modeling, & Checking for Understanding • Guided Practice • Independent Practice • Closure 	<p>Closure – Complete a report on the exercises. Include the method of pretreatment with observations comparing the success and failures of various methods. Include graphical analysis of each method. Report on the actual cost of materials. Report on the profit made. Make and final observations on the exercise and draw conclusions as to the success of the project. Include what changes would be made if the exercise was to be repeated. Include a copy of the sales flier you created.</p>
<p>Assessment:</p>	<p>Informal assessment: Teacher will monitor student progress, quizzing students on what that day’s goal is, and on any observations they have. Teacher will take anecdotal notes on on-task behavior and level of motivation.</p> <p>Formal assessment: Teacher will grade the report sheet. Teacher will grade the graphs and tables generated by the students. Teacher will return work for students to redo or modify, and use in final report. Students will turn in a final report for grading.</p>
<p>Notes & Reflections:</p>	<p>This can be modified to propagate any local native flora. Refer to USDA manual for germination information</p>

<p>Externship Sites:</p>	<p>National Forest Service Tree Nursery</p>	<p>2375 Fruitridge Road Camino, CA 95709</p>	<p>530-622-9600</p>



(Desert Tropicals; http://www.desert-tropicals.com/Plants/Fabaceae/Cercis_occidentalis.html)

Procedures for propagation of Cercis occidentalis, western redbud;

In November, collect mature redbud seed pods. Remove the seeds and sort into sets of ten seeds.

Treat the seed lots as follows.

Set 1 - no treatment

Set 2 - scarify seeds with sand paper

Set 3 - scarify with razor blade or knife

Set 4 - soak in concentrated sulfuric acid for 45 minutes

Set 5 – pour boiling water over the seeds and let soak for 7 days.

All seeds are placed in plastic bags with moist peat moss and stored in a refrigerator for two months.



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Seeds are transferred petri dishes with wet peat moss and left in a warm area to germinate.

Students will record germination over a three week period.

Germinated seeds will be placed into small pots with $\frac{1}{2}$ planting soil, $\frac{1}{4}$ vermiculite, and $\frac{1}{4}$ coarse sand.

Students are to keep track of expenditures on a spreadsheet to track cost and expense.

Students will create posters advertising the sales event

Students will set up and man a sales table at the end of year open house. Profits will go toward science budget.

Students are to prepare a report comparing rates of germination success for each pretreatment and a cost – income analysis using a spreadsheet.

For further information refer to the USDA publication: Woody Plant Seed Manual for Cercis sp.

Team number: _____

Production of native flora for sale

Members

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.



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Scarification strategy:

What is the purpose of this strategy and how does it accomplish the goal?

What is the purpose of cold storage?

Germination success

Lot number	number of seeds	week 1	week 2	week 3
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Which germination method seemed most successful? Why?



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Compared to purchasing the plant from a local retailer, how is the process of plant propagation better or worse?

How would use of native plants in our yards and gardens affect our environment?



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	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Completion of worksheet	Partially complete	Short answers with no analysis	Complete answers with limited analysis	Complete answers with in depth analysis	
Spreadsheet and graph	Incomplete or utilized considerable support to finish	Data entered but not sorted Hand drawn graph	Data entered and sorted Neat, complete graph	Data entered and sorted Computer generated graph	
Advertisement of plant sale	Relied on others to complete	Hand drawn with errors in grammar and spelling Not neatly done	Neat lettering Colored graphics Few errors	Neatly done with no significant errors	
Final Report	incomplete	Data is complete Little analysis Few conclusions Contains grammatical and spelling errors	Data is complete Few errors Some conclusions	Data is complete Computer processes Excellent analysis Thoughtful conclusions Errors do not detract from final product	
Overall effort	Limited motivation Required considerable support	Some motivation Required support	High level of motivation Required limited support	Self starter Showed initiative Helped others Showed insight	