Forest Dilemmas

This lesson is the culmination of a unit on Idaho's forests, or can serve as an anticipatory set to such a unit.

Subject(s): Social Science, Earth Science, Economics, Mathematics

Grade Level: 6th-12th

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Time Required: 30 min. preparation and three to five 50 min. class periods.

Lesson Objectives:

Students will (1) work in teams to solve typical forest management problems, (2) experience the analysis and decision making that goes into managing forestlands, (3) participate in a simulation designed to teach how forest resources are managed using Best Management Practices.

Materials Needed:

Game board for every two teams, dilemma dollars, dilemma cards, readings, dice, calculators

Background:

-In Idaho 18 million seedlings are hand-planted each year, and nature plants millions more. Idaho is the nation's seventh leading lumber manufacturer, with annual sales in the $1.5 billion range. Forest management by all landowners (public and private) is changing to reflect an understanding of the forest as an ecosystem that contains many interacting parts, all of which need to be considered to have a healthy forest. One tool of forest managers is fire. Instead of trying to put out every fire, foresters now know that fire is part of the forests' natural cycle, and may use it in managing the forest.

-Idaho's forests have a variety of owners and managers, including the federal government (Forest Service, Bureau of Land Management), state government (Idaho Department of Lands), private industry, and private non-industrial landowners. Each of these land managers must work with the others to sustain the best possible management of Idaho's collective forests. Best Management Practices are used to protect water quality and maintain healthy forests to sustain the many benefits desired from our forests, not just now, but for hundreds of years to come.

Preparation: Copy the game board (one board per two teams), dilemma dollars, dilemma cards, and readings. Cut out the cards and money. Each team begins with $100,000 (one $50,000, one $25,000, one $10,000, one $5,000, and five $1,000). Provide one die per board and one game token (e.g., bean, coin, small toy) per team.

Procedure:

-Divide the class into teams of three to five students and distribute game materials. One game board per two teams. Each team represents a private forest products company.

-Within each team, students take the roles of company manager, forester, wildlife biologist, hydrologist, fish biologist. Students should choose which role to represent (or the teacher may assign roles) on their team. (If a team has only three students, leave out the last two roles.) When decisions must be made by the team, the students represent the interest of their role.

-Explain that each team must complete a 25-year forest management cycle. (Each trip around the board counts as one year.) Their goal is to have healthy forest lands and money left at the end of the twenty-five years.

Guidelines: A Community Bank should be set up for each game board. Unless designated to the $TimberVault$ (middle of board), funds come and go from the bank. One person on the team should conduct transactions with the bank. Teams may go in debt up to $750,000, but must pay the bank back immediately as they receive funds.

-Play the game. Students should keep a running tally of their money and the "years" accrued.

-Students create a balance sheet or use another method to present what happened to their team over time. Students should relate their team's situation to real life.

-Have the students generate a spreadsheet of their game activities and compare expenditures between teams.

-Search the Internet for commodities market prices for forest products or contact a local forest products company for this information.

Discussion: Costs of forestry. Environmental impacts. Government regulations. Trade-offs inherent in any decision. Student feelings—any changes due to the game

DILEMMA CARDS

The price of fuel dropped, and you save a bundle on your log truck operation. Collect $20,000	You planted sub-alpine fir at too low an elevation. Most of the seedlings died. Cost: $30,000. Lose one year
Local logging company offers your forester a consulting job. Your forester trades places with the forester of another team. Your cost (to train the new forester): $15,000	Your $500,000 salmon recovery project is going well. Decide whether to spend $50,000 to continue the project or stop now at no cost. Cost: $50,000 or $0 if you stop
The interpretive trail you developed for the general public is in need of maintenance. Decide whether to spend the $25,000 needed or let it go another year. Cost $25,000 or $0 if you wait	Deer ate all the seedlings you planted on harvested areas last year. You must replant Cost: $30,000 and lose one year
Your land was assessed incorrectly and you get a tax rebate! Collect the $TimberVault$ funds	Your forest is crowded. Trees are stressed and dying. You may thin the trees now (cost $30,000), or take your chances on losing more trees to insects and disease. The trees are too small to sell for $$.) Cost $30,000 or wait
On-site inspection of your operations finds Idaho Safety Code 552 U-NO-BETR was not followed. You are on probation and fined $25,000 Pay the $TimberVault$ $25,000.	Labor strike closes your mill operations for 20 days. Cost: $300,000
Lumber prices are up. Hire 20 more employees and contract out equipment to harvest more timber. Cost: $60,000 this year. You get back $100,000 per year for three years. **KEEP THIS CARD!**	Your $350,000 feller-buncher (tree cutter) rolls down a hill and crashes. The operator is safe but machine repairs cost $60,000. Give this money to the team on your right. Cost: $60,000
NO ACCIDENTS IN 12 MONTHS! Insurance rebate-$50,000 Collect $50,000	Spring flood silts stream. Harvest stops. Lose $100,000
A snag (dead tree) fell and injured one of your workers. She'll be okay, but your Workers Compensation fees increased because of the accident. Cost: $20,000	You discover a rare owl species on your land. You may disregard and sell the timber at $300,000 profit OR donate use of the land for research. Total tax write-off over the next ten years is $200,000.

Learning from the Forest

Fire burns 15% of your forest and costs you $300,000.	A new law limits logging on federal lands. Lose $250, 000 due to loss of federal timber sales you were counting on to provide wood for your mill.
You have a stand of 250-year old trees on your land. You may: 1) Harvest for a profit of $350,000 OR 2) Leave for public enjoyment at no profit.	Be a good neighbor. Donate $30,000 to the SAVE THE BEAR fund or lose two turns.
The WAY2GO Foundation honors you for outstanding environmental stewardship of your timber producing lands. Collect $20,000 award.	Because of steep slopes, helicopter logging is the ONLY way to harvest your timber. It costs much more than other methods of logging. Pay $50,000 to the team on your right.
You skimped on BMP's to save money. Now you must post $10,000 bond and are on probation for future public land timber sales.	Endangered species found on your land. Lose 5 years while you deal with federal agencies on critical habitat issues.
It's the holiday season, and you give bonuses to your employees. Cost: $10,000	Your lodgepole pine trees are infested with dwarf mistletoe. You must clearcut and replant. Collect $200,000. This stand of trees is now unavailable for harvest for 50 years.
Implementation of a new Best Management Practice for road building will cost you an additional $75,000 this year.	You've joined a partnership of private industries and state and federal agencies to study migratory birds. You provide $10,000 to help pay a biologist's assistant.
A windstorm blew down many trees in your forest. You planned to salvage log them. Court appeals have gone on so long that the trees aren't worth salvaging. You lose $100,000.	The weather has been ideal. This, along with your careful forest management, has made your trees grow better than planned. Gain two years.
Timber sales on federal land have dropped. Thus, Forest Fund returned to counties for schools and roads have dropped. Your county was forced to raise property taxes. Your cost: $30,000.	The price of paper is up! Decide whether to sell trees now (ten years earlier than planned) for $300,000, OR wait and let them grow more (as planned) and hope for a good market.

Up for re-election this year, your "environmental senator" convinces you to delay a controversial harvest until next year. You lose $10,000 due to wasted planning costs.	Because of a series of dry years, and lack of management, your forest is crowded and unhealthy. Lose one year.
Due to your intensive forest management your forest is HEALTHY! Gain two years due to rapidly growing trees. (You may eliminate an "unhealthy" forest card with this card. Return it to the deck.)	You win the bid on a timber sale that will net you $200,000. Collect this money unless you are on probation for any reason. If on probation, the team to your right gets the sale and the money.
It's been a wet spring. Driving on the soggy soil will cause damage. But you're losing money waiting around! Decide to wait until it's dry (lose $50,000) or go ahead anyway (gain $30,000).	Great weather conditions! Gain one year.
Because of your quality products and fair business practices, your happy customers have spread the word. Collect $50,000 because of increased business.	The local public library needs a new wing. They've come to you as a valued member of the community to ask for extra funds. Decide whether to donate $50,000 to the cause or not.
You win the bid on a timber sale that will net you $100,000. Collect this money unless you are on probation for any reason. If on probation, the team to your right gets the sale and the money.	Due to your pre-commercial thinning of trees, the remaining trees have grown like crazy! They're ready for an earlier harvest. Collect $100,000 and gain a year.
Your motivated employees have been working so efficiently that you've saved money. Collect $50,000. Decide whether to give $30, 000 back to you employees as a bonus.	Decide whether to pre-commercial thin trees at a cost of $60,000 this year. If you do, keep this card. Receive $200,000 five years from now when you harvest some of the remaining trees.
Decide whether to fertilize some of you forests. Cost: $100,000 this year. If you do, keep this card. Three years from now, cash it in to gain one year due to rapid growth.	You're not using one of your expensive pieces of equipment. You've decided to lease the machine to another company. Collect $20,000.
Due to your intensive forest management your forest is HEALTHY! Gain two years due to rapidly growing trees. (You may eliminate an "unhealthy" forest card with this card. Return it to the deck.)	An ice storm followed by strong winds knocked down many of your trees. Lose $150,000 in future sales. If you salvage harvest now, you can get $50,000 of that money back.

$1000 DILEMMA DOLLAR$	**$1000 DILEMMA DOLLAR$**
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$1000 DILEMMA DOLLAR$	**$5000 DILEMMA DOLLAR$**
$5000 DILEMMA DOLLAR$	**$5000 DILEMMA DOLLAR$**
$10,000 DILEMMA DOLLAR$	**$10,000 DILEMMA DOLLAR$**
$25,000 DILEMMA DOLLAR$	**$25,000 DILEMMA DOLLAR$**
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$50,000 DILEMMA DOLLAR$	**$50,000 DILEMMA DOLLAR$**
$100,000 DILEMMA DOLLAR$	**$100,000 DILEMMA DOLLAR$**
$100,000 DILEMMA DOLLAR$	**$100,000 DILEMMA DOLLAR$**
$200,000 DILEMMA DOLLAR$	**$200,000 DILEMMA DOLLAR$**

ROLL AGAIN

LOSE A TURN

Collect $TimberVault$ funds (but lose one year for each $50,000 you get). You may choose to leave the money in the fund for no loss.

Identify ten (more) items in the classroom that are forest products. When you are finished, roll again.

Roll the die and move backward that number of spaces.

PLACE DILEMMA CARDS HERE

DRAW A DILEMMA CARD

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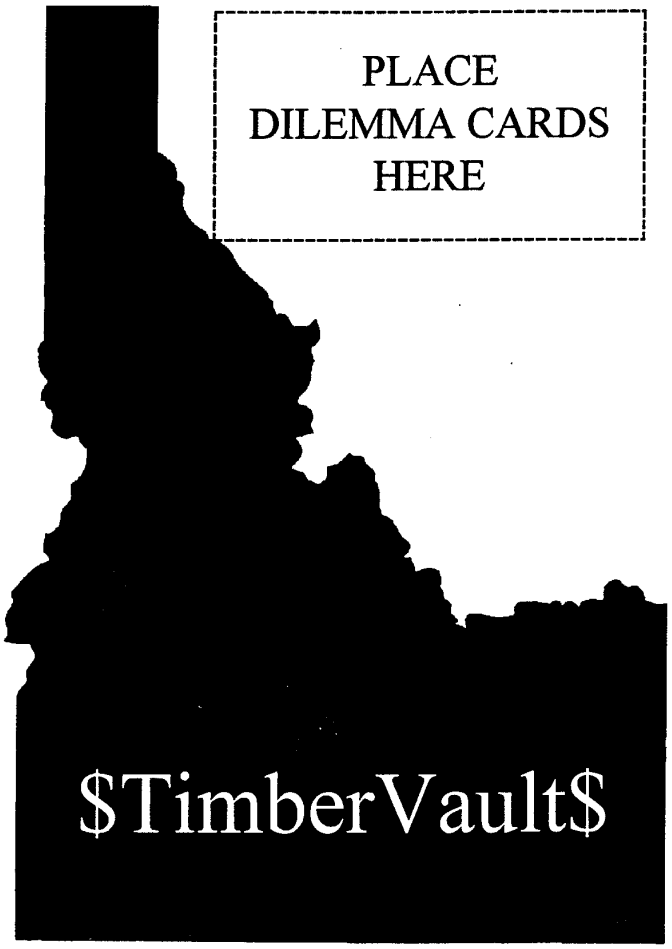
Members of both teams must read and discuss one item from "An Idaho Forester's Top Ten List." Then roll again.



HARVEST TIME! Choose between clear cut ($300,000 gain), seed-tree cut ($200,000 gain) and selective harvest ($100,000 gain). (If you clearcut or seed-tree cut last time you were on this space, you must do nothing this time.)

DRAW A DILEMMA CARD

LOSE ONE YEAR. (Subtract it from your progress toward the game-ending 25 years.)

Cattle break down your stream banks and contaminate the water with silt. Pay $1000 to the $TimberVault$.

NEW YEAR! (Keep track. You need 25 to finish the game.)