

Decision Making and Recycling

Lesson Plan for Grades: 9-12

Length of Lesson: 2hr 30 min

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Subject area/course:

- Psychology, Environmental Systems, Earth & Space Science, Integrated Physics and Chemistry, Physics

Materials:

- Posters
- Post-its
- Sustainability Bingo
- Colored markers and pencils
- Internet

TEKS/SEs:

§113.45. Psychology

(6) Individual development. The student understands behavioral and social learning theories. The student is expected to:

- (A) demonstrate an understanding of the principles of operant and classical conditioning and of social learning.

(17) Social studies skills. The student develops long-term and short-term goal-setting skills for individual and community problem solving. The student is expected to:

- (B) use a decision-making process to identify a situation that requires a decision, gather information, identify options, predict consequences, and take action to implement a decision.

§112.36 Earth and Space Science/ §112.37 Environmental Systems

(1) Scientific processes. The student, for at least 40% of instructional time, conducts hands-on laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:

- (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

(5) Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:

- document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability.

§112.37 Integrated Physics and Chemistry/ §112.39 Physics

(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:

- (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

Decision Making and Recycling

Lesson objective(s):

- Students will be able to identify the motivation behind behavior in terms of rewards and consequences.
- Students will create a poster with a diagram or table showing rewards and consequences are of recycling as well as an action plan for how to implement recycling in their home, communities or school.

Differentiation strategies to meet diverse learner needs:

- The teacher should ask students whether they prefer to read or watch videos to learn about concepts; then have students learn in their preferred learning style. However, the teacher may assign students certain methods to improve their skills. For example, if a student prefers reading, teachers may have them watch a video and take notes to improve their listening skills.
- ELL students and students with learning disabilities should have multiple forms of instruction including visual and written instruction sheets as well as a verbal instruction and demonstration.

ENGAGEMENT (15 minutes)

- Teacher passes out Sustainability Bingo Cards. Students have 10 minutes to find classmates for each one of the bingo squares listed. Students may not sign in more than one place.
- At the end of the activity, teacher shall ask some of the prompts from the bingo and see which sustainability practices students are already doing.
- Teacher will ask students what motivates people to make sustainable decisions in terms of rewards and consequences.
- Teacher introduces the project for this lesson: to explore the psychology of rewards and consequences. Students create a poster with a diagram or table showing rewards and consequences are of recycling as well as an action plan for how to implement recycling in their home, communities or school.

EXPLORATION (45 minutes)

- Students explore the difference between classical and operant conditioning as well as the difference between positive and negative reinforcement:
 - www.simplypsychology.org/operant-conditioning.html
 - allpsych.com/psychology101/conditioning
- Based on their understanding of positive and negative reinforcement, students will write some initial thoughts on what are the rewards and consequences (positive enforcement and punishment) of recycling. Students will answer the questions on a post-it note and put it up on the board: “What motivates people to recycle? What are some reasons people don’t recycle?”
 - Teacher walks around the room asking questions about what students are doing
 - Teacher listens to student ideas as they talk to each other
 - Teacher provides support to students as needed (without providing the answer)
- Students will then get in groups of 3-4 and start on the posters. Students receive rubrics as a guide for how to create the poster.
 - Students will research recycling and why it is beneficial. They will also compose a diagram with the rewards and consequences of recycling (reasons that people are motivated to recycle and reasons why they may choose not to recycle). Lastly, students will create an action plan on how to implement recycling in their school, community or at home.
 - Students will be given a list of resources that they may use but they will also be given the freedom to search for their own sources to support their evidence.

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EXPLANATION (1 hour)

- Posters will be presented in a gallery walk. Each team will be divided into presenters and evaluators.
- Presenters for each team will share team's poster. Evaluators from all other teams will use the poster rubric to assign a rating to each of the posters as well as write down questions and comments for the team.
 - Teachers encourage students to explain concepts in their own words.
 - Teachers highlight important ideas that students provide.
 - Teachers introduce vocabulary, formal labels or definitions as needed.

ELABORATION (30 min)

- Teacher reviews engagement activity (types of sustainable practices), as well as diagrams created and what are some of the reasons why people chose to recycle or not.
- Students form teams of 3-4 students. Each team will pick an area (home, school, city, work, etc.) and develop one idea on how to be more sustainable, one strategy to implement it and what type of conditioning or reinforcement it uses. Students have 20 minutes to develop their ideas.

For example: Encourage students to bike to school. Students who bike to school receive a raffle ticket to a set of prizes at the end of year. The more you bike, the more chances you receive. This is a type of positive reinforcement.

- Teachers ask students to use the new vocabulary appropriately.
- Teachers encourage students to incorporate real world connections.
- Each group quickly shares their ideas.

EVALUATION (throughout)

- Students will be evaluated on their posters and evaluations of team posters during the gallery walk.
 - Teachers ask questions that provide insight into student progress.
 - Teachers observe students as they create products and look for evidence of understanding.

SOURCES AND RESOURCES

- *Hot Science – Cool Talks #97 “If It’s Unsustainable, Why Does It Feel So Good?”* by Dr. Art Markman and Dr. Bob Duke, www.hotsciencecooltalks.org
- www.economist.com/node/9249262
- www.youtube.com/watch?v=0hI9WKT02Kw
- www.nytimes.com/2015/10/04/opinion/sunday/the-reign-of-recycling.html
- www.youtube.com/watch?v=MEX2J_sAdGs
- www.youtube.com/watch?v=nEQghbA3pLM
- www.recommunity.com/education/

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ENGAGEMENT ACTIVITY

Purpose: To explore what sustainability practices (including recycling) that students in the class are already doing.

Materials: Sustainability Bingo, pens

Safety Information: N/A

Procedure: Pass out handouts. Give students 10 minutes to try and get as many bingo squares filled as possible. A student may only fill out one square per handout.

At the end of the time limit, go over some of the answers and see which students are already doing some or know someone who is doing these recycling and sustainability practices.

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STUDENT HANDOUT: Find someone in your classroom who has done one of the activities in the squares and have them sign their name. Do not ask the same person to sign more than one square. *Hint: You can also have someone sign if they have a friend or family member who meets the requirement in the square.*

Bikes to school everyday	Uses own water bottle instead of buying bottled water	Recycles paper products	Has their own plant garden
Turns off the lights if they are last person in the room	Likes walking or hiking outdoors	Buys products made from recycled materials	Turns off water faucet when brushing their teeth
Uses public transportation	Eats healthy, nutritious food	Has ever bought a product from local farm groups or food co-ops	Enjoys exercising
Uses reusable bags when shopping	Turns off electronic devices when not in use	Uses the stairs instead of the elevator	Walks to school everyday

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STUDENT HANDOUT: POSTER INSTRUCTIONS

Create a poster with a diagram or table showing the rewards and consequences are of recycling as well as an action plan for how to implement recycling in their home, communities or school. Include the following in your poster:

- Create a diagram (chart, table or any other graphic) comparing the recycling rewards (why people recycle) and consequences (why people do not recycle).
- Create an action plan on how to implement recycling in your home, school or community.

Other guidelines:

- Work in teams of 3-4 students
- Integrate some of the key terms regarding positive and negative reinforcement in your chart or plan

Positive reinforcement
Negative reinforcement
Reinforcers
Punishers
Behavior shaping
Behavior modification

- Each team will have presenters and evaluators. Presenters have 4-5 minutes to share the major concepts of their poster.
- Evaluators will provide a score to each poster based in the rubric below along with some comments and questions regarding each team's presentation.

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Team: _____

1	2	3	4
Chart or action plan is missing. Chart or plan is unlabeled, unclear or irrelevant. No key terms integrated in plan.	Most parts present and correct. Chart or plan may be present, but may not be labeled or relevant. No key terms integrated in plan.	All parts present and correct. Chart and plan are present. Integrates at least one key term in chart or plan.	Chart and action plan are included. Chart is clearly labeled. Integrates 2 or more key terms in chart or plan. Answers the essential question.

Comments:

Questions:

Team: _____

1	2	3	4
Chart or action plan is missing. Chart or plan is unlabeled, unclear or irrelevant. No key terms integrated in plan.	Most parts present and correct. Chart or plan may be present, but may not be labeled or relevant. No key terms integrated in plan.	All parts present and correct. Chart and plan are present. Integrates at least one key term in chart or plan.	Chart and action plan are included. Chart is clearly labeled. Integrates 2 or more key terms in chart or plan. Answers the essential question.

Comments:

Questions:

Team: _____

1	2	3	4
Chart or action plan is missing. Chart or plan is unlabeled, unclear or irrelevant. No key terms integrated in plan.	Most parts present and correct. Chart or plan may be present, but may not be labeled or relevant. No key terms integrated in plan.	All parts present and correct. Chart and plan are present. Integrates at least one key term in chart or plan.	Chart and action plan are included. Chart is clearly labeled. Integrates 2 or more key terms in chart or plan. Answers the essential question.

Comments:

Questions:

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STUDENT HANDOUT: RESOURCES AND LINKS

Below are some videos and links to help you research recycling and sustainability. You may find additional resources on your own (not Wikipedia):

Recycling:

- www.youtube.com/watch?v=MEX2J_sAdGs
- www.youtube.com/watch?v=nEQghbA3pLM
- www.recommunity.com/education/

Why recycle and why people don't (Benefits and rewards)

- *Hot Science – Cool Talks #97* – “If It’s Unsustainable Why Does It Feel So Good?” by Dr. Bob Duke and Dr. Art Markman: www.hotsciencecooltalks.org
- www.care2.com/greenliving/5-reasons-why-people-dont-recycle-and-5-reasons-they-should.html

Benefits/rewards of recycling

- www.economist.com/node/9249262
- www.youtube.com/watch?v=0h19WKT02Kw

Consequences of recycling

- www.nytimes.com/2015/10/04/opinion/sunday/the-reign-of-recycling.html
- www.youtube.com/watch?v=colcvdcKhq8