An illustration of a bird, possibly a seagull, with a large, dark, irregular shape on its back representing an oil spill. The bird is shown in profile, facing left, with its wings slightly spread. The background is a light blue sky with a few birds flying and a darker blue sea with waves. The overall style is simple and graphic.

Clean It Up! Effects of Oil Spills on Water Birds

Grades 3-5

An integrated lesson plan covering four sessions of approximately one hour each

Lesson-Planning Approach

Some learners perceive their “world” as a whole, where all things are interconnected and dependent upon each other. These “integrated” students face major challenges in coping with our dominant educational, social, and economic systems, which tend to present information in a linear fashion without the necessity of integration into meaningful context. Integrated students are at-risk of failing as they attempt to grasp information in ways that do not match their experience. Among large populations of at-risk students are many from Native American and similar cultures who do not regard their world as a sum of parts but as a blend of all that they experience.

This lesson plan does include some traditional, linear approaches to delivering information (checklists, rules, analysis, problem solving and organization). In addition to the traditional, linear delivery of information, this lesson plan also includes some of the following strategies, designed to appeal to at-risk students as they learn academic/life skills:

- ❖ Integration of technology
- ❖ Story telling/anecdotal information
- ❖ Non-competitive group and team work
- ❖ Performance-based assessment and rubrics
- ❖ Visual presentations and practice through technology and other means
- ❖ Project-based assignments that integrate family and community
- ❖ Activities appealing to multiple intelligences (Gardner)

Lesson Overview

In this lesson students learn about oil spills and their effects on water birds. They perform an experiment which involves cleaning oil from feathers. A reading activity targets selected sounds and letter combinations.

Lesson Objectives

Lesson Project: Clean it up! Effects of Oil Spills on Water Birds

Project Objectives: When students complete this project, they will be able to...

- ❖ Describe basic causes and effects of oil spills.
- ❖ Draw conclusions from experiment results.

Integration of Other Functional/Academic Skills: (Critical thinking is required throughout the lesson.) Students will be able to...

- ❖ Reading
 - Follow experiment instructions.
- ❖ Oral Language
 - Describe sequential steps in an experiment.
- ❖ Writing
 - Complete a handout sequencing experiment steps and drawing conclusions from results.
- ❖ Technology
 - Navigate site with experiment instructions and follow links to possible responses.
 - Read about oil spills on bookmarked sites

State/National Standards

- ❖ Colorado State Reading Standard 1 – *Students read and understand a variety of materials.*
- ❖ Colorado State Reading Standard 2 – *Students write and speak for a variety of purposes and audiences.*
- ❖ Colorado State Reading Standard 4 – *Students apply thinking skills to their reading and listening.*
- ❖ Colorado State Reading Standard 5 – *Students read to locate, select, and make use of relevant information from technological sources.*
- ❖ Colorado State Science Standard 1 – *Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.*

Websites

Required:

[Cleaning oiled feathers –
What's the Story on Oil Spills?
Oil Pollution and Birds](#)

Pre-requisites

Third grade reading level
Go to bookmarked site on the internet

Required Materials

- Several clean, dry feathers for each group of three students
- Three bowls per group
- Vegetable oil
- Cocoa powder
- Dish-washing detergent
- Hot and cold water (the hot water should be about the same temperature you'd use to wash dishes, and not too hot to put your hands in)

Handouts

[Handout #1 - "Cleaning Oiled Feathers"](#)
[Handout #2 – Sequencing
Assessment Form](#)

Required Equipment/Technology

One computer per student with access
Projector

THE LESSON

Note: Students do not learn from what you do but from what you have them do.

Preparation

Day 1

Activity 1	Time Estimate	Instructor Notes
Project the following sites onto a screen and read/review the information with students. What's the Story on Oil Spills? and Oil Pollution and Birds	1 hour	Set up projector Go to www.ajkids.com and ask, "cleaning feathers". Bookmark "Cleaning Oiled Feathers" experiment at each computer.

Presentation

Day 2

Activity 2	Time Estimate	Instructor Notes
Go to bookmarked site, www.ajkids.com , "Cleaning Oiled Feathers". Review experiment.	½ hour	Depending on students' reading levels, the teacher may need to review the experiment procedures while projecting the site for all to view.

Practice and Performance

Day 3

Activity 3	Time Estimate	Instructor Notes
Teacher displays materials for experiment and does a mock demonstration. Students work in groups of 2 or 3 and complete experiment by following the handout #1 procedures and answering questions.	1-1 ½ hours	Set up enough stations so that all groups can be working at once. Circulate and give help as needed. Each student should receive a handout to be completed independently. Teacher (and aids) monitor group interactions using assessment form .

Day 4

Activity 4	Time Estimate	Instructor Notes
Within small groups, students review the sequence of steps in the experiment and complete handout #2 as a group. Group members take turns orally sharing the sequence of steps in the experiment with the class.	1 hour	Distribute one handout per group

Lesson Assessment Strategy

These questions will be answered by students on a questionnaire yet to be developed.

Preparation, Presentation and Overall Implementation (Instructor)

- Are instructions and expectations clear?
- Is the lesson adaptable for students with low reading and writing skills?
- How is this lesson integrated?
- Is adequate time taken to set up for experiment?
- Is modeling sufficient for students to work independently?
- Are IEP modifications being considered?
- Are group interactions being evaluated?

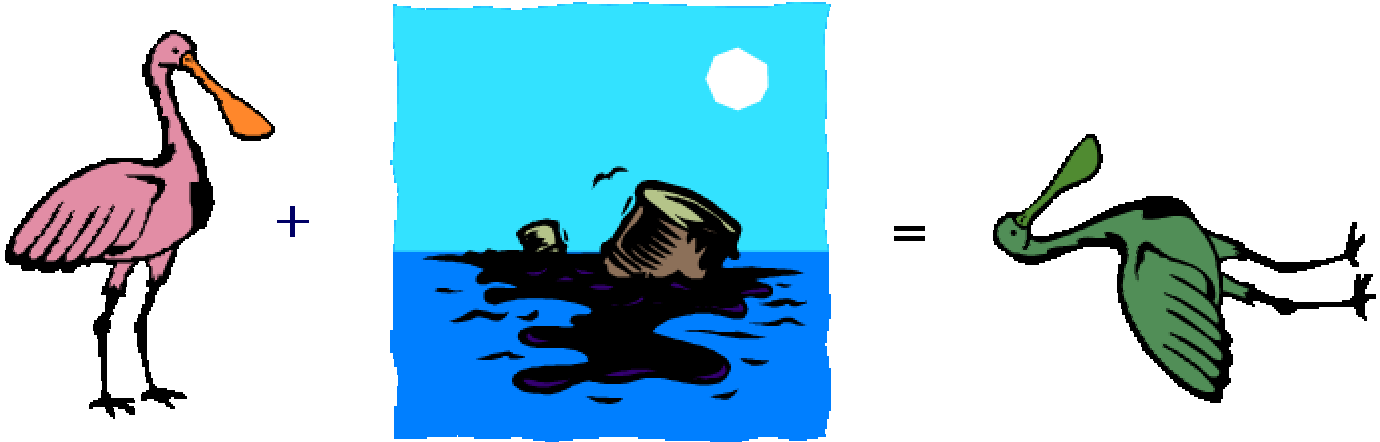
Performance and Practice (Student)

- Are students connecting to the lesson?
- Are all students participating in the activities?
- Are all students performing at appropriate individual levels?
- Are all students interacting and participating within their groups?

Technology

- If a required Internet site is down, do I have backup material?

Name _____



Cleaning Oiled Feathers Experiment Instructions

Adapted from "[Cleaning Oiled Feathers](#)" SiteAsk "cleaning feathers". Go to "Cleaning oiled Feathers" experiment by Office of Response and Restoration, National Ocean Service, NOAA

Materials

- Several clean, dry feathers
- Three bowls
- Vegetable oil
- Dish-washing detergent
- Hot and cold water (the hot water should be about the same temperature you'd use to wash dishes, and not too hot to put your hands in)

Instructions

1. Get a bowl and some vegetable oil. If you'd like, you can mix a little cocoa powder into the vegetable oil to make it show up better and look more like crude oil.
2. Fill the bowl with water to an inch below the rim. Pour some oil on the water.
3. Dip a feather into the oil on the water.
4. Take a look at your feather and answer the following questions:



What happened to the feather when it got oiled?



How do you think this might affect a water bird wearing these feathers?

5. Now try three methods of cleaning feathers:

Cold water washing. Put some cold water in a bowl. Then try washing some of the oiled feathers in it. Feel the feathers to see what happened.

Hot water washing. Put some hot water in a bowl. Then try washing some of the oiled feathers in it. Feel the feathers.

Washing with detergent. Add some detergent to the bowl with hot water. Then try washing some of the oiled feathers in it. Feel the feathers.



Which method worked best?



Imagine that you're washing a real, live bird that has been oiled. What things would you need to think about?

Names _____



Experiment Sequence – Handout #2

We have completed the “Cleaning Oiled Feathers” experiment. These are the steps we followed:
(Continue on the back if necessary.)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Rubric

5	Complementary to other students Participates fully in tasks Asks others' opinions and listens Explains personal viewpoints Accepts others' viewpoints
4	Complementary to other students Shares moderately in tasks Asks others' opinions Explains personal viewpoints Not accepting of others' viewpoints
3	Mildly negative toward other students Limited sharing in tasks Does not ask others' opinions Not accepting of others' viewpoints
2	Obviously negative toward group Limited or no sharing in tasks Not accepting of others' viewpoints
1	Defiant toward others No sharing in tasks

Group Interactions Student Assessment Form

Rate each student for group work on experiment and presentation according to Rubric on left.

Group # _____

Name	Experiment Rating	Presentation Rating

Group # _____

Name	Experiment Rating	Presentation Rating

Group Interaction Assessment Continuation Form

Group # _____

Name	Experiment Rating	Presentation Rating

Group # _____

Name	Experiment Rating	Presentation Rating

Group # _____

Name	Experiment Rating	Presentation Rating

Group # _____

Name	Experiment Rating	Presentation Rating

Activity Checklist

Clean it up! Activity Checklist

	Review information in sites What's the Story on Oil Spills? and Oil Pollution and Birds with your teacher.
	Go to bookmarked site, www.ajkids.com , "Cleaning Oiled Feathers". Review experiment.
	Complete handout #1 as you perform the experiment with one or two other students.
	Within your group, review sequence of experiment. Then complete handout #2 .
	Take turns with other group members describing sequence of steps in the experiment to the class.

Lesson Rubric

Rubrics for *Clean it up!*

	Handout #1 Experiment	Handout #2 Presentation	Group Interactions
5	Follow all steps in sequence Little or no down time between steps Complete all questions in handout #1 Clean up completely	At least 6 experiment steps recorded in order Paper is neat Take a turn presenting Voice is always clear and audible	Complementary to other students Participates fully in tasks Asks others' opinions and listens Explains personal viewpoints Accepts others' viewpoints
4	Follow all steps in sequence Considerable amount of time between steps Complete all questions on handout #1 Clean up completely	4 or 5 experiment steps recorded in order Paper is neat Take a turn presenting Voice is usually clear and audible	Complementary to other students Shares moderately in tasks Asks others' opinions Explains personal viewpoints Not accepting of others' viewpoints
3	Perform all experiment steps in random order Lots of time breaks during experiment Complete 3 questions on handout #1 Incomplete clean up	2 or 3 experiment steps recorded – not in order Paper is messy and difficult to read Take a turn presenting Voice is mostly inaudible	Mildly negative toward other students Limited sharing in tasks Does not ask others' opinions Not accepting of others' viewpoints
2	Perform only some of the experiment steps Lots of down time – distractions Complete 1 or 2 questions on handout #1 Incomplete clean up	1 experiment step is recorded Paper is messy and difficult to read No turn presenting	Obviously negative toward group Limited or no sharing in tasks Not accepting of others' viewpoints
1	Experiment not performed No questions answered on handout No clean up	Nothing is recorded Does not present	Defiant toward others No sharing in tasks