

Driving Question

How can we use the phrase “reduce, reuse, recycle” to create a plan for how our school deals with waste?

Pack Summary

Many people understand the concept of reducing waste by recycling. However, even recycling affects the environment. People have other ways to deal with waste, including reducing and reusing. The more waste each person can reduce, reuse, or recycle, the better off the environment will be.

Young people can play an important role in caring for the Earth. If children begin reducing, reusing, and recycling, these habits will be established when they are adults. This pack explores various ways to deal with trash. Students will learn about the effect reducing, reusing, and recycling can have on the landfills and the Earth. They will learn about composting and survey teachers about recycling habits. Students will also discuss the ways people can reduce the amount of energy they use, which also helps the environment.

Objectives

Content Area Skills
Language Arts <ul style="list-style-type: none"> • Ask and answer questions to demonstrate understanding of key details in a text. • Identify the main topic of a text or sections of text. • Determine the meaning of words and phrases relevant to the topic and academic language. • Explain how specific images, such as diagrams, contribute to and clarify a text.
Social Studies <ul style="list-style-type: none"> • Ask and answer questions about how to plan a change that improves life in the school, community, or beyond. • Analyze the difference between wants and needs. • Evaluate how the decisions that people make are influenced by trade-offs among possible options. • Examine issues involving the rights and responsibilities of individuals and groups to the community.
Science <ul style="list-style-type: none"> • Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible and sometimes they are not. • Objects may break into smaller pieces.
21st Century Skills
<ul style="list-style-type: none"> • Create a project as part of a team to demonstrate learning. • Equally participate on a team. • Participate in team discussions according to agreed-upon rules. • Prepare for each meeting. • Help plan and manage the team’s time.

Reading and Activities Chart

Resource	Text Type	Source Type	Summary
<i>Landon's Pumpkins</i> leveled book Level P	Fiction realistic	Anchor Text	<i>Landon's Pumpkins</i> is a story about a boy who figures out a way to grow his own pumpkins in order to have plenty of pumpkins for Halloween. He keeps some and shares some, and he even uses all the seeds—supporting the idea that nothing goes to waste, a theme reinforced by the idea of reducing, reusing, and recycling.
Compost and Heat	Nonfiction experiment	Primary	Students test three variables to find out how soil compositions generate heat. The outcome shows the bag with mixed compost produces the most heat.
How Much Paper?	Nonfiction activity	Primary	In this activity, students measure the amount of paper they recycle in a week and use the data to predict the amount recycled in a school year.
Recycling and Reusing	Nonfiction survey	Primary	Students survey teachers about classroom recycling and reusing. Students use this data to analyze their school's efforts to reduce landfill waste.
Reduce, Reuse, Recycle	Nonfiction poster	Primary	This poster displays advertisements that encourage people to recycle. Students can evaluate the effectiveness of each advertisement.
Save Energy, the Earth, and Money	Nonfiction brochure	Primary	This brochure offers ten tips for saving energy and electricity around home. Students can use this brochure to evaluate the energy they use at home.
From Plastic Bottles to Clothes	Nonfiction flowchart	Secondary	This flowchart shows what happens to some recycled plastic bottles as they are processed and made into cloth used to make shirts.
School Energy Costs	Nonfiction diagram	Secondary	How much do schools spend on energy? This pie chart shows where the money goes—from heating to cooling and lighting the buildings.
The Waste Pyramid	Nonfiction diagram	Secondary	People have choices when it comes to what to do with what they use and throw away. This pyramid ranks and explains those choices. Avoiding waste altogether is the most preferred option, while disposing of waste is the least preferred option.
What Can (and Can't) Go in the Recycling Bin	Nonfiction diagram	Secondary	Many things can be recycled, but not everything. This diagram helps students see what should and should not go into the recycling bin at home or at school.

In addition, ensure students meet all pack objectives by using the [Pack Rubric](#); by collecting these project resources: [Ask and Answer Questions KWLS](#), [Driving Question Project Outline](#), [Investigation Planner](#), [Team Project Planner](#), [Teamwork Rubric](#), and [Peer Review Sheet](#); and by assessing final projects with the [Presentation Rubric](#).

Build Background

Entry Event *(Time: 1 day)*

- Provide an entry event that supports the Driving Question. An entry event can be anything that provides a spark, such as an activity, a class discussion, a field trip, a visitor to the class, or anything related to the topic with real-world application for students. An entry event provides an introduction to the guided discovery or guided inquiry process that students use to learn and apply information throughout a project-based learning pack.
- Introduce the [Driving Question Project Outline](#). Preview the Problem Definition, Words I Need to Know, Words to Investigate, Project Definition, and Driving Question. Explain to students that as they work on this project-based learning pack they will be learning information that will help them answer the Driving Question and complete their project.
- Ask volunteers to share what they know about ways to deal with waste, including reducing, reusing, and recycling.

Set the Purpose for the Entry Event: Ask students what they would like to know about dealing with waste to answer the Driving Question.

Sample Entry Event Activities

- Present your class with pictures or real examples of waste, such as an empty soda can, a plastic bottle, newspaper, an old computer, and so on. Ask students to explain what they would do with each piece of waste. If possible, have three or four bins with labels “reuse,” “recycle,” “reduce,” and “trash,” and physically put each item into a bin based on students’ responses. Discuss their choices for each item.
- Create a word web that contains the word *waste* in a center circle and then several circles branching off the center circle. Have students think of other words we use to describe waste (*trash, garbage, pollution, litter*), and then have them come up with different kinds of waste. You may also want them to brainstorm the ways people deal or can deal with waste.
- Display pictures of landfills and/or public places where waste is a problem, such as litter on a beach or in a park. Describe what a landfill is, and have students identify objects that they see in the pictures. Explain to students what the problems are with landfills—they stink, they may make the soil around it unsafe, and they fill up fast. Ask students to brainstorm solutions to these problems.

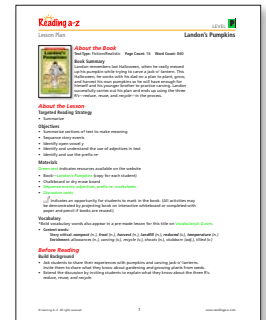
Preteach the Vocabulary *(Time: 1 day)*

- Read the Problem Definition and Project Definition from the [Driving Question Project Outline](#) and ask students to highlight or circle words that might be unfamiliar.
- Have students write the unknown words as Words to Investigate and ask volunteers to share their words. Read through the Words I Need to Know together. Ask volunteers to share which of the words that they need to know were on their Words to Investigate list. Tell students that understanding key academic and content vocabulary words will help them better understand the project and what they need to do to complete it.
- Write a few of the unknown words students share on the board, focusing especially on the Words I Need to Know. Discuss strategies for discovering what those words mean, including using context or using tools such as a book glossary, dictionary, or thesaurus. Model one of the strategies for students.

You might also review or introduce word webs or word meaning maps using Reading A-Z’s [Vocabulary Graphic Organizers](#), or use our sister website Vocabulary A-Z’s [Academic Vocabulary Lists](#) to help students understand new words.

Anchor Text *(Time: 1–3 days)*

- Introduce the anchor text, *Landon's Pumpkins* at Level P, to provide students with information about dealing with waste, including reducing, reusing, and recycling, and introduce the *Ask and Answer Questions KWLS*. As an alternative to the ask-and-answer questions strategy outlined below, you could follow the reading strategy and comprehension skill instruction in the guided reading lesson for the book. Use the graphic organizer provided with that lesson for before, during, and after reading activities.
- Depending on the needs of the students in your class, you might read the anchor text together as a read-aloud, pair up students to read to each other, or have students read the text during independent reading time. Ensure students use the KWLS before, during, and after reading to ask and answer their own questions as they read.
- Before reading, have students restate what they already know about dealing with waste, including reducing, reusing, and recycling, from the entry event and prior knowledge. Preview the book and talk about the table of contents, illustrations, or other visual devices you see.
- Review or explain that on the KWLS the *K* stands for knowledge we know, the *W* stands for information we want to know, the *L* stands for the knowledge we learned, and the *S* stands for what we still want to know about the topic.
- Ask students to write what they know in the (*K*) section of their graphic organizer. Have students create a list of questions about what they want to know and have them fill in the (*W*) section of their graphic organizer.
- Encourage students to stop periodically as they read to circle any questions on their KWLS that were answered and write any new questions that were generated. Have students write answers to the questions they circled in the (*L*) section of their KWLS. Have students repeat this process when they are finished reading.
- Ask students to share questions they added to their KWLS while reading, and ask them what questions were answered or not answered in the text.
- Reinforce that asking questions before and during reading, and looking for the answers while reading, keeps readers interested in the topic. It also encourages them to keep reading to find answers to their questions and helps them understand and enjoy what they have read.
- Remind students that all of their questions may not have been answered in the book. Invite students to fill in the final section (*S*) of their KWLS worksheet with information they would still like to know about dealing with waste.



Reading Strategy:
Summarize

Comprehension Skill:
Sequence Events

Investigation

Question and Plan *(Time: 1–3 days)*

- Ask for volunteers to share what they wrote in the (*L*) section of their KWLS. Facilitate a class discussion to summarize what students have learned so far that will help them answer the Driving Question. Explain that a summary is a brief overview of the most important information and helps students understand and remember what they have learned.
- Write the Driving Question on the board. Create spokes out from the Driving Question, modeled after the *Investigation Planner*. Ask volunteers to share their remaining questions. Write student questions from the (*S*) section of their KWLS near the end of each spoke on the board.

- Model for students how to determine which remaining questions will further help them answer the Driving Question. Remind students about the Project Definition on their *Driving Question Project Outline*. Comparing their list of questions against the Project Definition will help students determine which questions can focus their investigation and which questions might be saved for another time.
- Group students as pairs or in teams of 3–4 students.
- Introduce the *Investigation Planner* to all of the teams. Have each student write the Driving Question in the space provided on the planner. Teams will discuss their remaining questions and come up with a set of three Investigation Questions (I.Q.s). The Investigation Questions will form the main questions to answer with their research.
- Explain that identifying tasks to help students answer each question will help team members manage their project tasks on their *Team Project Planners*. Ask a volunteer to share an Investigation Question and model setting a task on the project planner based on that question.

Find and Evaluate Resources *(Time: 4–5 days)*

- Create bundles of 3–4 Reading and Activities Chart resources from the pack and put them at stations throughout the room. Explain that each team will visit each station in turn to preview the resources available.
- After each team has had a chance to preview the resources, have each team meet again to discuss what sources they might use from the materials available or brainstorm other sources they might use to locate additional information to answer their questions. Have students add where they might find the answers to their questions in the space provided on the *Investigation Planner*.
- Encourage students to use other resources from the classroom, library, or approved websites or searches in addition to the provided resources of the pack. You might create a set of websites using the bookmark tool of your computer's browser. At this time, let all teams know that they must complete the experiment *Compost and Heat* as part of their research.
- Explain that when students find information that helps them answer their questions, they should put the title and author of the source on their Sources list on the *Investigation Planner*. Explain that this will help them if they need to refer back to any sources throughout their project.
- Provide copies of the Reading and Activities Chart resources to each team to allow students to divide up reading or tasks easily and allow them to highlight and take notes directly on the pages provided. Be sure that students understand when it is appropriate to mark in a reference and when it is not.
- Explain the *Research Bookmarks* for evaluating sources so students can determine the value of their sources for answering their questions. The questions on the bookmarks will help students think critically about their sources. Explain that knowing when a source was created, who created it, and under what circumstances it was created helps students better understand the information provided by the source.

Write on the Board

- ♦ *What are my questions?*
- ♦ *How will I locate information?*
- ♦ *What sources will I use?*

Provide Project Choices

- Have students discuss with their teams what form their project presentations will take. Use the list of project ideas provided below for suggestions or limit students' choices to just a couple of options. Ensure students have some choice in their projects to keep them motivated and interested in the project.
- Projects might include creating a story, a song, a cartoon, an advertisement, a poster, a public service announcement, or a news article.

Organize Information *(Time: 1–2 days)*

- Remind students to review the Project Definition on their *Driving Question Project Outline*. Ask students to summarize what they need to know to include each objective in their projects.
- Introduce the Main Ideas and Details section of the *Investigation Planner*. Explain to students that they should use this tool to help them organize their team's presentation once they have identified what information they will share with the class. Model grouping main ideas with appropriate details as needed for your students.
- Ask students to describe how they will include each objective in their projects in the space provided on the *Driving Question Project Outline*.

Write on the Board

- ♦ *Evaluate my sources and revise my plan for using them.*
- ♦ *Choose information I'll use.*
- ♦ *Make connections and inferences.*
- ♦ *Organize my information.*

Time Management and Teamwork

Tool for Managing Tasks and Time

- Introduce or review the *Team Project Planner* to help students organize their teams and project work. Preview each item on the planner.
- Explain that students will use the chart on the planner to fill in tasks, dates, and names for items they need to complete both individually and as a team, such as reading or other activities for research, discussion of findings, and creation of resources for the team's presentation.
- Review each *Team Project Planner* periodically to make sure everyone in the group is participating equally. You might choose to enlarge the project planners and display them in the classroom to hold students accountable and provide encouragement as tasks are completed.
- Teams should meet every day if possible, or at least three times per week.
- Teams should keep referring back to the Project Definition to guide their discussion and presentations and ensure that they are meeting the objectives of the project.
- Set a time limit for the length of project presentations. Five to ten minutes per team should be sufficient to present the findings of a project.
- Help teams construct their project timelines on the *Team Project Planner*. Set important milestone dates for your students or have them set the dates themselves, depending on their experience with time management. Setting an end date for a project and working backward is recommended.

Tool for Working as a Team

- Introduce or review the *Teamwork Rubric* to assess students' participation within groups. Students should use the rubric every time their team meets. Alternatively you could ask students to keep a project journal and provide a prompt for students to respond to at the end of each team meeting. Use the rubric as a starting point for your prompts.
- When teams first meet, you might lead a whole-class discussion to brainstorm ideas for what behaviors make a positive team experience. Encourage each team to develop rules for discussions and to follow them each time they meet (take turns talking, listen when others are speaking, come prepared, etc.). When teams meet, move among them and stop to coach with suggestions for problem solving or to facilitate group discussion when needed. If more than one team is struggling with a particular aspect of group work, pull them together as a class for a quick mini-lesson.
- Also use this time to correct misconceptions that students might have from inadequate research of a topic. Guide students to research further by asking additional questions about the misconception.

Presentation and Assessment

- Set project presentation expectations by introducing the [Peer Review Sheet](#) and answering any questions students might have about organization, voice, body language, etc. Visually demonstrate each speaking and listening or presentation standard.
- Project presentations can happen in the classroom, in an assembly, or in another venue. Tell or remind students about what resources they have available to them in that space (or what kinds of resources they might be able to bring themselves) for the project presentations.
- One week before teams present their practice presentations for peer review, teams should provide you with a list of expected resource needs such as a laptop with Internet access, a projector, a microphone, a table to place posters, etc., and expected props, audio, or visuals they will include in their presentations.

Practice Presentation and Peer Review *(Time: 1–3 days)*

- Have students actively listen and watch each presentation in order to fill out the [Peer Review Sheets](#) during each team's practice presentation. Depending on the space you have, you might have the whole class review each team in turn or pair two teams together to take turns reviewing each other's presentations while other groups continue to work.
- Remind students to use the Feedback Frames on their [Peer Review Sheets](#) to provide helpful feedback to each team to make their presentations better. Collect the [Peer Review Sheets](#) as part of your assessment.

Final Presentation and Assessment *(Time: 1–3 days)*

- Use a [Presentation Rubric](#) to score each team's presentation and collect each [Team Project Planner](#), [Teamwork Rubric](#), and [Peer Review Sheet](#) to ensure students have met 21st Century Skills.
- Use the [Pack Rubric](#), Reading & Activities Chart resources (as appropriate), and the [Ask and Answer Questions KWLS](#), [Driving Question Project Outline](#), and [Investigation Planner](#) to assess the content area objectives each student and team met as part of the project-based learning pack.

Reflection

Opinion Writing

- As a final activity, have students reflect on their project-based learning experience by writing a letter to the editor of their local or school newspaper encouraging readers to reduce, reuse, and recycle. Encourage them to include information they learned during the project.
- Review or explain to students that letters to the editor appear in newspapers—both in print and online—and are written by readers. Tell students that people write these letters to the editor to share their opinion with other people or persuade others to take some sort of action. Read aloud some examples about familiar topics from a local paper.
- Have students begin by clearly stating their opinion or their call to action on a graphic organizer. Encourage them to write details that support their opinion. Then have students write their letter. Provide mailing addresses or email addresses, stamps, and envelopes as necessary. Perhaps have a field trip to a nearby mailbox if there is one.