

Eco Facts

TEACHER'S GUIDE

Eco Facts is a series of vividly illustrated guides to the environmental challenges affecting our planet. Each book explores examples of environmental threats, disasters, and solutions around the world. Young readers will discover fascinating facts and statistics and learn some simple ways they can make a difference. The *Eco Facts* Teacher's Guide is packed with engaging, student-centered lessons that help students develop the critical-thinking skills needed to analyze the changes taking place in their local and global environment.

The innovative and multi-modal lesson plans in this guide are tailored for grades 5 to 7 and are focused on helping students understand their impact on the environment, explore environmental issues, and consider how to live in a more sustainable way. They will build their critical thinking skills to evaluate environmental issues and how humans contribute to them. Students will explore what it means to live a more sustainable life, and begin to recognize what that means in their own life.

The lessons in this guide follow a sequential order that works to scaffold understanding, and can be taught as such. With some modifications, the lessons can stand alone. Reproducible worksheets and assessment tools accompany each lesson plan. The titles in *Eco Facts* include:

Biodiversity Eco Facts

Climate Change Eco Facts

Energy Eco Facts

Natural Resources Eco Facts

Overpopulation Eco Facts

Pollution Eco Facts

PACING CHART AND VOCABULARY

| Lesson Plan Title | Pacing | Vocabulary |
|----------------------|--------------------|--|
| Text Features | 1-2 class periods* | caption chart diagram glossary graph heading icon index illustration key words maps subheading table of contents text box timeline |
| Ecological Footprint | 1 class period | ecological footprint impact |
| Is it Sustainable? | 1-2 class periods | action plogging sustainable zero-waste |
| Infographics | 2-3 class periods | infographic |

* 1 class period = 40-60 minutes

ACCOMMODATION STRATEGIES

Accommodations provide equal access to learning and equal opportunity to demonstrate what is learned. Accommodations allow a student access to the subject or course without any changes to the knowledge and skills the student is expected to demonstrate.

Educators are encouraged to adapt the instructional approach, activities, and assessments included in this guide to best meet the diverse interests, needs, and abilities of their students. Possible accommodations may include:

Instructional Strategies

- Break tasks into parts with accompanying time lines
- Provide extra time for processing of oral information.
- Pair oral instructions with visual ones (writing or symbols)
- Pre-teach new vocabulary and regularly review previously taught vocabulary
- Provided model of completed work
- Frequently check with the student to get him/her started
- Provide oral and visual instructions and examples
- Provide a checklist of tasks for the student

Environmental Strategies

- Proximity to teacher
- Strategic seating
- Flexible or mixed-ability grouping
- Provide an alternative setting for learning that is free from visual and auditory distractions.

Assessment Strategies

- Build in extra time to allow student to process questions asked and answers given
- Provide written instructions and rubrics for assignments
- Offer a choice of assessment activities so that the student can choose one suited to their strengths
- Space out or extend assignments to prevent student feeling overwhelmed
- Reduce the number of tasks used to assess skill or concept
- Allow students to use assistive devices or technology

LESSON 1

Text-features

Curriculum Correlations

Common Core State Standards

R1.5.5
R1.6.5
RST.6-8.5

Ontario Language Arts

Grades 5 to 7 Reading
Overall Expectation 2
2.2, 2.3

Materials

- Eco Facts books
- *Text Features Scavenger Hunt Worksheet*
- *Text Feature Exit Card*
- *Text Feature Exit Card Checklist*
- Sticky notes

Objectives

Students will be able to:

- Understand how different text features help readers to understand the content in a nonfiction book.
- Become familiar with common text features and be able to recognize them.

Setting the Stage

Begin by asking students what makes a book interesting or exciting to read. Record ideas on the board. Then, ask students what makes a non-fiction book interesting or easier to understand. Record these ideas on the board.

From the list, circle any text features that are listed. Ask for other text features students are familiar with and add them to the board.

Activity

Put students into 6 groups and give each group an Eco Facts book. Allow the groups a chance to flip through the book and identify text features.

Ask students to share the text features they found. Write them on the board to create a class list of different text features. The list should include these features: graph, diagram, chart, timeline, illustration, caption, maps, heading, subheading, text box, icon, key words, glossary, table of contents, index.

If students are unfamiliar with some of the text features, show examples from the books.

Possible Examples:

Graph: Eco Facts: Overpopulation p. 4

Diagram: Eco Facts: Natural Resources p. 16 or p. 28

Chart: Eco Facts: Climate Change p. 8

Timeline: Eco Facts: Energy p. 7

Map: Eco Facts: Pollution p. 8 or p.12

Icons: All books; Fact File Section

Give each group a *Text-Feature Scavenger Hunt Worksheet* and sticky notes. Have the groups work together to flip through the book and look for the text features included on the scavenger hunt. When they find them, mark them on the worksheet and with a sticky note. They should write the text feature on the sticky note and place it where the feature appears on the page.

Extensions

- ▶ Ask students to think about how the text features help readers to learn new information.
- ▶ Have students research an environmental issue on the computer, until they find a useful website. Have them identify the features that are being used on the website. How are the features on the website different or similar to those in the books? What other features do you find on websites that you would not see in books? How does this positively or negatively affect the reader's ability to understand the content? Do students find it easier to gather information from the website, or the book?

Wrap-Up

Have each group display a copy of their scavenger hunt beside the book that they used. Students will walk around in a gallery walk to observe the different books and how the text features were used. If they spot text features that were not identified by the group, they can mark them with a sticky note of a different color.

Bring the group back together and have each student complete the *Text Feature Exit Card*. Once all the tickets have been collected, you could discuss with the group how the text-features play a role in helping readers to understand the material in the book.

Assessment

Discussion and creation of the text feature list assesses students' prior knowledge during setting the stage to determine their level of understanding of text features, and exposure to these terms.

Following the lesson, have students complete the *Text Feature Exit Card* to determine their understanding of the use of text features. This will help students moving forward throughout the lessons, to help when researching and creating meaning from a variety of texts and informational sources. Use the *Text Feature Exit Card Checklist* to assess.

Name: _____ Date: _____

Text Feature Scavenger Hunt

Book: _____

| Text Feature | Page Number(s) | What does the text feature tell you? |
|-----------------------------|----------------|--------------------------------------|
| Table of Contents | | |
| Index | | |
| Glossary | | |
| Photograph/ Illustration | | |
| Caption | | |
| Text box | | |

| Text Feature | Page Number(s) | What does the text feature tell you? |
|---------------------|----------------|--------------------------------------|
| Heading/ Subheading | | |
| Key words | | |
| Icons | | |
| Graph | | |
| Diagram | | |
| Chart | | |
| Timeline | | |
| Map | | |

Name: _____ Date: _____

Text Feature Exit Card

How do different text features help you as a reader? Please give an example.

Name: _____ Date: _____

Text Feature Exit Card

How do different text features help you as a reader? Please give an example.

Text Feature Exit Card Checklist

Student's Name: _____ Date: _____

| | Achieved | Somewhat Achieved | Has not yet Achieved |
|--|----------|-------------------|----------------------|
| The student understands why text features are used. | | | |
| The student is able to provide an example of how to use text features. | | | |

Comments:

LESSON 2

Ecological Footprint

Curriculum Correlations

Next Generation Science Standards

5ESS3-1

LS4.D

Ontario Science

Grade 5: Conservation of Energy and Resources

Overall Expectation 1

1.1

Grade 6: Electricity and Electrical Devices

Overall Expectation 1

1.2

Grade 7: Interactions in the Environment

Overall Expectation 1

1.1

Materials

- Pictures of footprints in sand and footprints in concrete
- Chart paper
- Markers
- Eco Facts books
- *Ecological Footprint Template*
- *Ecological Footprint Rubric*

Objectives

Students will be able to:

- Understand what an ecological footprint is.
- Understand their individual and household's impact on the environment.

Setting the Stage

Show students two photos of footprints: one of footprints in the sand, one of footprints in concrete. Have them discuss the two photos in pairs. How are they similar and different?

Have some pairs share their thoughts. As a group, discuss how the two footprints are different and similar.

- Different: the concrete footprint is more permanent and harder to remove, while the sand footprints can easily be washed or brushed away
- Similar: both leave an impact and show where you have been.

Write the words ecological footprint on the board and have students discuss what they think it might mean. To prompt them, ask them to identify which words they recognize within the phrase. Write ideas on the board.

Have students look up definitions and images related to ecological footprint. Connect the term of ecological footprint to the idea of leaving a footprint on the environment based on your actions.

Activity #1

Place students into small groups, and give each group a piece chart paper. On the chart paper, they will create a T-table of positive and negatives ways to impact the environment.

Have the groups discuss ways they can impact the environment. They should include both small and big actions. Encourage students to include a variety of ideas—not only the things that they already do.

Give groups five to ten minutes to generate as many ideas as they can. Then, have students share in a “popcorn style,” in which they should out negatives and then positives. They should try not to repeat ideas.

Post all the t-charts around the room for students to refer to throughout the second activity.

Activity #2

Provide students with the *Ecological Footprint Template*. They will fill in the template with words and pictures that represent their own footprint—including both positive and negative aspects of their footprint. They can divide up the template into different sections, based on which negative and positive actions they participate in.

Encourage students to think about the different sections and the size of each section before coloring and adding details. Brainstorm a list of categories students could include, such as:

- waste
- transportation
- recycling
- electricity use
- water use
- food choices

Refer back to the positive and negative charts students created for additional ideas.

Complete an example version for students to refer to on the board or chart paper.

Extensions

- ▶ Students can do research on where they live to see what the ecological footprint of their country is. They can then choose another country's ecological footprint and compare and contrast the two.
- ▶ Students can complete their own ecological footprint survey online to discover their personal footprint as well as other contributors to their footprint.

Wrap-Up

Once students' individual ecological footprints are completed, place students in small groups to discuss their interpretation of their own ecological footprint.

Have students share the categories they included and how they choose to organize their ecological footprint.

If students want to share, consider doing a gallery walk in which some students share with the whole class.

Assessment

Assess students' understanding of the lesson by collecting completed ecological footprints with the students' completed checklists. Assess using the *Ecological Footprint Rubric*. The rubric helps determine students' understanding of the concept of their individual impact on the environment.

Ecological Footprint Template



Ecological Footprint Rubric

Student's Name: _____ Date: _____

| | Achieved | Somewhat Achieved | Has not yet Achieved |
|---|----------|-------------------|----------------------|
| The student has recognized different area of their life that impact the environment | | | |

Comments:

Ecological Footprint Rubric

Student's Name: _____ Date: _____

| | Achieved | Somewhat Achieved | Has not yet Achieved |
|---|----------|-------------------|----------------------|
| The student has recognized different area of their life that impact the environment | | | |

Comments:

LESSON 3

Is it Sustainable?

Curriculum Correlations

Next Generation Science Standards

5ESS3-1

ETS1.B

Ontario Science

Grade 5: Conservation of Energy and Resources

Overall Expectation 1

1.1

Grade 6: Electricity and Electrical Devices

Overall Expectation 1

1.2

Ontario Social Studies

Grade 7

Overall Expectations Strand B3

B3.5

Materials

- Cue cards
- Chart paper
- Markers
- White board or black board
- Access to videos (computer/ iPad) one for each group
- Completed *Ecological Footprint Template* from prior lesson
- *Is it Sustainable? Checklist*

Setting the Stage

Write the word Sustainable on the board. Ask students what word they see inside sustainable. Talk about what it means to sustain something. Give an example, such as the following:

- Would it be sustainable to eat only carrots for the rest of your life?
Have students explain their answer.

Have students stand up. Designate one side of the room as sustainable and one side as not sustainable. Give a situation and have students stand on the side of the room that represents their answer. Any students who are unsure can stand in the middle. The groups on each side of the classroom then must come up with a quick summary about why they think the example is sustainable or not.

Remind students that they need to be respectful of different opinions in this activity. What they think would be sustainable is not going to be the same for everyone and their situation.

Here are some possible situations:

- Bringing reusable bags to the grocery store
- Walking or biking to school once a week
- Not owning a vehicle and walking or taking public transit everywhere
- Not going to fast food restaurants anymore
- Having one meat-free meal a week
- Taking four-minute showers

When the activity is done, have students return to their seats and give them the proper definition of sustainable:

- **Able to be maintained at a certain rate or level.**

Leave this definition on the board for students to refer back to throughout the activity.

Activity

Students are going to be watching videos about people who have taken some kind of action to be more environmentally friendly. There are four videos included here, but you could include more or different videos and have more groups.

Place the students into four groups and assign each group a different video to watch. Students can watch the video independently or with their group. Groups should wait to discuss the video until they have watched the whole thing.

Here are the suggested videos:

- Plogging: www.youtube.com/watch?v=kXWFATvYKfM
- Zero-waste Town: www.youtube.com/watch?v=eym10GGidQU
- Packaging-free Store: www.youtube.com/watch?v=62uqnirkID0
- Zero-waste Family: www.youtube.com/watch?v=epTPhU4Hg4U

Once the groups have finished watching their video, provide the group with a piece of chart paper and markers. List these four questions on the board for each group to answer together on their chart paper.

1. What are some positive effects of making this lifestyle change?
2. What are some negative effects of making this lifestyle change?
3. How does taking this action help the environment?
4. Is this a sustainable change you could make in your own life? Explain why or why not.

Remind students to refer back to the definition of sustainable.

Allow groups to work on answering the questions in relation to their video. Once all the groups are done, have them share about the video they watched and their answers to the questions. If there are some answers group members disagreed about, have them share their different opinions.

Extensions

- ▶ Have students track their progress on sticking to the change they pledged to make. Students can also track the difference their action has made. For example: using a lunch bag instead of a plastic bag to bring their lunch to school. Track how much plastic they saved by making the change.
- ▶ Research what your school, country, city or community is doing to help improve the environment, compare this to what other areas are doing. Present this to the class and discuss if these changes are sustainable, or the impact they are having.

Wrap-Up

Once all the groups have shared their information, have students return to their seats and give each student a cue card.

Have students pull out their completed *Ecological Footprint Template* from the previous lesson to refer to. Prompt students to think of one small action they could take in their own lives that would be sustainable for them. Discuss how it should be something simple they can do themselves (i.e., spend less time using electronics, bike to their friend's house, take showers instead of baths etc.). Students' actions should also be sustainable, which means that they can continue doing it for a long period of time.

Allow students to add their sustainable action to their template, or decorate new templates or action cards. Have students share their action with the class and then display the new creations around the room.

Objectives

Students will be able to:

- Understand the meaning of sustainable, and define it.
- Recognize the importance of making sustainable changes in their own lives.
- Create their own sustainable action goal.

Assessment

Assess students' understanding during lessons using observational and anecdotal notes. Using the *Is It Sustainable? Checklist*, assess the students' participation in group work, presentation, and deciding on a sustainable action.

LESSON 4

Infographic

Curriculum Correlations

Common Core State Standards

W.5.2A
W.5.2B
W.6.2A
W.6.2B
WHST.6-8.2A
WHST.6-8.2A

Ontario Language Arts

Grade 5 Writing
Overall Expectations 1, 2, 3
1.4, 2.1, 3.7
Grade 6 Writing
Overall Expectations 1, 2, 3
1.4, 2.1, 3.7
Grade 7 Writing
Overall Expectations 1, 2, 3
1.4, 2.1, 3.7

Materials

- *Eco Facts* books
- Devices with Internet access, for research and activity
- Other books and materials related to environment issues
- *Infographic Organizer*
- *Infographic Layout*
- *Infographic Peer Assessment*
- *Infographic Rubric*
- Blank paper
- Colored pencils & markers
- Construction paper
- Sticky notes

Objectives

Students will be able to:

- Explore an environmental issue and understand the impact it is having on the environment.
- Create an action plan related to their issue.
- Display their information using a variety of text features in an infographic.

Setting the Stage

Remind students of the lessons and activities they have taken part in prior to this activity. Ask students to recall text features discussed from the first lesson. Create a list on the board, and allow students to use the *Eco Facts* books to help them create the list.

Write the word *Infographic* on the board. Ask students if they know what this is.

Use two different colors to highlight the parts of the word: *info/graphic*. Discuss how an infographic presents information using a variety of text features or graphics. Discuss how the *Eco Facts* books use infographics to show information. Show students a few examples from the books.

Activity

Tell students they are going to pick an environmental issue that they have learned about or are interested in. This issue does not need to come from the *Eco Facts* book series, but students can look through the books for ideas if they wish.

Students will create their own infographic (a single page) discussing their chosen environmental issue. Students will need to include:

- At least four relevant text features, including a chart, graph, map, timeline, diagram, illustration, icon, caption, heading/subheading, key words, photograph, and text box
- An action section to inspire others to take action related to this issue. Remind students that their action items should be things anyone can take part in.

Hand out the *Infographic Organizer* sheet for students to start planning. Students should do additional research on their topic in order to make sure they have all the necessary information.

Once students have completed the organizer, have them visit the teacher's desk to show their work. Check the organizer to make sure students are on the right track. Then, give them the *Infographic Layout* sheet. Have them sketch a rough drawing of what their layout will look like and where the text features and different components will be on the page. Students should then check in with the teacher before beginning a final copy.

To create the infographic, provide students with a variety of options so they can choose what works best for them. Some students may wish to create their infographic by hand, some may use a combination of drawing and attaching pictures or elements made from construction paper, or students may use a computer/iPad. When using technology, students could use a variety of programs they are familiar with (Microsoft Word, PowerPoint, etc.) or use a website designed for creating infographics (Piktochart, Canva, Venngage, etc.). Some of these sites require a membership fee and/or creation of an account.

Extensions

- ▶ Have students take their infographics to other classrooms and present on their topic and action plan they created
- ▶ Hold a living library session where other students can come into the classroom and talk to the students about their infographic topic, action ideas and how they created their infographics
- ▶ If applicable, students can write to a member of government or an organization persuading them to do something to help their environmental issue and include a copy of their infographic

Wrap-Up

Once all the students have completed their infographics, have students complete a peer assessment using the *Infographic Peer Assessment* sheet.

Then, complete a gallery walk by placing all the infographics around the room. Give students a number of sticky notes to leave positive comments on their peers work.

Once the class has completed their gallery walk, display the infographics in the hallway or communal space for other students in different grades to learn about the different environmental issues.

Assessment

Students will complete a peer assessment of a classmate's infographic. Students will also have a checklist to complete when planning their infographic. Teachers can assess the students final completed infographic using the *Infographic Rubric*.

Name: _____ Date: _____

Infographic Organizer

Topic: _____

Record your ideas and research in the spaces below:

| | |
|--|---|
| How is this issue negatively affecting the environment? | What will happen if nothing is done about this issue? |
| Facts or statistics about your topic: | Action Plan (what can others do to help with this problem) |

Name: _____ Date: _____

Infographic Layout

Draw a rough sketch of where the information is going to go on the page. Make sure to include all your chosen text features.



Checklist:

- Discussed your issue
- Facts and statistics
- Action plan related to your topic
- At least 4 different text features
- What will happen if the problem gets worse

Infographic Peer Assessment

Name: _____

Infographic created by: _____

Topic: _____

| Criteria | Completed Yes or No |
|--|---------------------|
| Included at least 4 different text features | |
| Action plan includes steps that anyone could do | |
| Included statistics and facts about their issues | |
| Layout is easy to follow and understand | |
| Explained their issue and why it is a problem | |

Something that was well done:

Something to improve on next time:

Infographic Rubric

Student's Name: _____ Date: _____

Topic: _____

| Criteria | Level 1 (Did not meet expectations) | Level 2 (Approaching expectations) | Level 3 (Met expectations) | Level 4 (Exceeded expectations) |
|---|--|---------------------------------------|-------------------------------|------------------------------------|
| The infographic explains the issue and its significance | | | | |
| The infographic includes statistics and or facts about the issue | | | | |
| The infographic includes at least 4 different text features | | | | |
| The infographic includes an action section | | | | |
| The infographics layout is easy to follow and understand | | | | |

Comments:
