

Itching to Invent

Focus of Unit & Alignment to Standards

Affective Focus: Persistence, resilience, responsibility for community, sense of humor, and curiosity

Academic Focus: Engineering, design, research, critical and creative thinking, wordplay, and communities

<p>Big Ideas</p> <ul style="list-style-type: none"> • Community members have a responsibility to help keep their environment safe and clean. • Inventions can be things or ideas. An invention can be a brand new idea, or a way to make something better or easier to use. • People create inventions to solve problems. • To solve a problem, you must learn about it to fully understand it. • Brainstorming is an effective tool to generate ideas for solutions. • Inventors & engineers draw a design and make a plan to anticipate problems. • Persistence and resilience are essential to achievement of academic and interpersonal goals. 	<p>Student Inquiries</p> <ul style="list-style-type: none"> • How can we help keep our homes, schools, and towns safe and clean? • What is an invention? Why do people invent? • Where do ideas for inventions come from? • How do I collect information to learn more about a problem? • What is brainstorming? • What is a design plan and why do we need one? • How can persistence help me to achieve my goals? • How will I share my invention with others?
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Skills Focus

<p>Affective Skills</p> <ul style="list-style-type: none"> • Positive risk-taking • Work ethic • Persistence • Resilience • Expressing and labeling feelings • Cooperative leadership • Developing a realistic understanding of one's abilities 	<p>Disciplinary Skills</p> <p>Math: Make sense of problems and persevere to solve them, look for and use patterns to solve problems</p> <p>ELA: Communicate clearly and accurately when speaking and writing, read and listen with a critical mind, cite evidence to justify opinions</p> <p>History: Famous innovators, interpretation of historical events and ideas</p> <p>Science/Technology: Ecology of one's environment, innovation, design process, use technology to enhance understanding</p>	<p>Thinking Skills</p> <p>Creative Thinking: Elaboration, originality, flexibility, imagery, creative problem solving</p> <p>Critical Thinking: Problem solving, evaluation, synthesis, analysis, identifying patterns, making generalizations, cause and effect</p> <p>Research: Observation, interview, data collection, experimentation, formulating meaningful questions, distinguishing relevant from irrelevant information</p>
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Learning Objectives

<ul style="list-style-type: none"> • Learners will articulate their feelings associated with risk-taking, failure, persistence and resilience. • Learners will define and apply an understanding of the meaning of vocabulary words. • Learners will identify and draw members of the forest community. • Learners will create an action plan to help keep their environment safe or clean. • Learners will solve visual problem solving puzzles. • Learners will read non-fiction text to identify relevant information and make inferences. • Learners will identify and apply steps in the (invention) design process. • Learners will apply research skills to learn about a problem. • Learners will create and execute a design (action) plan. • Learners will demonstrate persistence and resilience in the face of challenges.
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Alignment to Common Core State Standards

<p>CCSS.ELA-Literacy. Reading Literature K.1, 3, 4, 9,10 / RL.1.1-4,6,7,9,10 / RL.2.1,3,7,10 / RL.3.1,3,4,6,7,10</p> <p>CCSS.ELA-Literacy. Reading Foundations K.1-4 / RF.1.1-4 / RF.2.3-4 / RF.3. 3-4 /</p> <p>CCSS.ELA-Literacy. Writing. K. 2,3,7,8 / W.1.2,3,5,8 / W.2.3,4,8 /W.3.2,3B,C,D,5,7,8(when doing research)</p> <p>CCSS.ELA-Literacy. Speaking and Listening. K. 1-6 / SL.1.1-6 /SL.2.1-4 / SL.3.1-3,4,6</p> <p>CCSS.ELA-Literacy. Language. K.1-6 / L.1.1-6 / L.2.1-6 / L.3.1,2A,2C,2D,2F,3,4A-C,5A,5B,6</p> <p>CCSS.Math-Content.Measurement and Data. 1MD.C.4</p> <p>CCSS.Math-Content.Operations & Algebraic Thinking.2.OA.A.1</p>
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Lesson 1

Student Inquiry: How can we help keep our homes, schools, and towns safe and clean?

Summary of Chapter 1

The Dragonfly Kids organize a Sun Valley clean-up day for the lake and park. The six friends have a special connection to the lake since it is here they first met Odie, their dragonfly friend. While working to pick up litter in the park, Ron's little sister, Daisy wandered into the forest and was lost. The kids worked together to find Daisy and return her safely. Ron promised that he would never lose Daisy again.

Learning/Performance Goals:

- Learners will write a narrative journal entry and articulate their feelings about helping others.
- Learners will define and apply an understanding of the meaning of vocabulary words.
- Learners will consult non-fiction resources to identify and draw members of the forest community.
- Learners will create an action plan to help keep their environment safe or clean.
- Learners will solve visual problem solving puzzles and draw their name using "maze lettering".

Minilesson

1. Introduce the book to learners

This book, Itching to Invent, is the third in a series about a group of six friends that work together to solve problems in their school and their town of Sun Valley. Viv, Luna, Grace, Kai, Ron and Niko have a dragonfly friend, Odie, that writes messages in the lake to help them solve the problems. In this book, the kids work together to create an invention that solves the problem of little kids getting lost on the forest path at the park. Through their work, they learn persistence and resilience in the face of problems and mistakes.

2. Introduce the chapter to learners

- Allow students to look at illustrations to make predictions. Facilitators can help learners focus the purpose for reading by stating, "Let's read to find out what happened at the Sun Valley clean-up day." For subsequent chapters, this statement can be taken from the chapter summary.
- Walk through the chapter with students to define and review any words that may be challenging. The new words for Chapter 1 are *entrance* and *relief*.
- Words that are included in the *New Words to Learn* list in Itching to Invent will be unfamiliar to most primary students and are indicated by italics in the text. There may be other words that are new to learners that should be reviewed. There are blank *New Words to Learn* task pages that can be copied for this purpose.

3. Introduce the tasks to learners

- Read the student inquiry for the lesson to students: **How can we help keep our homes, schools, and towns safe and clean?**
- Tell students that this is a question that they will be able to answer when they are finished with the activities.
- *Posting the student inquiry at the front of the room or near the student workspace can provide a reference and maintain student focus on the purpose for their activities. Inquiries might be posted on a white/chalk board, large chart paper, or laminated sentence strips. You might post an inquiry for the lesson alone or add each question to a longer list of unit inquiries. Learners will often have their own questions as they work through the tasks. Facilitators might consider adding those inquiries to the list, as long as*

they are “big idea” questions. Posting **all** student questions, if they are not concept based questions, can confuse learners and detract from the important focusing questions of the lesson.

- Facilitators can choose to introduce the tasks for the entire chapter at once or introduce each task one at a time. Introducing all chapter tasks at once allows students to complete tasks at their own pace.
- Explain to students that in this lesson, they will be working on tasks that help them to make a plan to help others.

Student Tasks

1. Journal Entry (Task 1.1)

- Prompt: Write (or draw) about a time that you helped clean up in your home, school or town. How did that make you feel?
- Instruct learners to write or draw a journal entry. Each chapter includes a journal entry prompt. Facilitators can choose to change the prompt based on the needs and interests of students.
- Encourage invented spelling if students are not using conventional spelling at this point. *Early gifted writers can be paralyzed by a fear of misspelling unknown words. If this is the case with your learners, use this behavior as an opportunity to discuss realistic expectations with them. Encourage learners to think about trying their best rather than being the best.*
- *Journaling accomplishes two learning objectives. It allows students to reflect and express their feelings in a safe space and provides practice with personal narrative writing. Facilitators can choose to respond to students’ journal entries with post-its or simply discuss responses when students meet during the next session. Young learners should be invited, but never required to share personal responses in a group session if they are not comfortable.*

2. New Words to Learn (Task 1.2) entrance, relief

- Young readers are ready to learn dictionary skills when they have a basic understanding of alphabetization. Most students will need a refresher in using the dictionary, whether they have access to a print or online dictionary.
- Words included in the New Words to Learn list are italicized in the chapter text. Readers may be unfamiliar with other words in the text, depending on their reading level and prior experience with this vocabulary set.
- Facilitators can copy and add unfamiliar words to the blank *New Words to Learn* task sheet in the student task book.

3. Forest Community (Task 1.3)

In this creativity task, learners will refer to non-fiction sources to identify and draw plants, animals, insects, birds and other creatures in a forest ‘community’. The task can help learners understand that community members can live together harmoniously in a balanced and healthy environment.

- *This introduction to the larger concept of ‘community’ will lay the groundwork for the big ideas of responsibility for others that is integrated in the unit.*
- Optimally, learners will have access to books or other resources that show examples of a healthy forest community. Facilitators might introduce each resource to show learners the information that is available to them. Facilitators could set up a small resource library in a learning station dedicated to this unit.

4. A Plan to Help Out (Task 1.4)

- In this critical thinking task, learners will identify a space in their environment that they could help keep clean or safe.
- Introduce this task to learners by reminding them of the work that the Dragonfly Kids did to organize and run a clean-up day for the lake and park. Discuss the responsibility of even the youngest members of a community to keep their environment safe and clean.
- Explain to learners that they will choose a room or area in their home or school that they can commit to helping to keep clean or make safer. They will choose whether they will make a plan to make and keep the space **clean** or make and keep the space **safe**. Be sure they understand that they can choose between safe and clean.
- If learners are unsure, facilitators can provide some possibilities; keeping their bedroom clean, picking up toys in a playroom where they might be a safety hazard AND developing a plan to organize those toys, organizing the classroom library or learning station area to keep it clean, or organizing classroom supplies to keep them clean or keep the area safe.
- *Advanced learners can have a tendency to “bite off more than they can chew” when it comes to tasks that excite them. It is important that facilitators manage expectations for this task. Keeping goals achievable will foster success and encourage independence. Facilitators should encourage learners to make action plans that they can complete independently.*

5. A-Maze-ing Fun! (Task 1.5)

- Learners will solve maze puzzles and draw their name using “maze lettering”.
- This task allows learners to practice visual problem solving. Maze lettering may be challenging for younger learners who are still developing fine motor skills. Support may be necessary. Facilitators could provide stencils for the letter outlines as a base for the mazes.

6. Invention Notebook 1 (Task 1.6)

- This is a brief introduction to the Invention Notebook for learners. Facilitators might choose to bind the Invention Notebook pages together as one booklet, or present it as part of the student task book.

Assessment

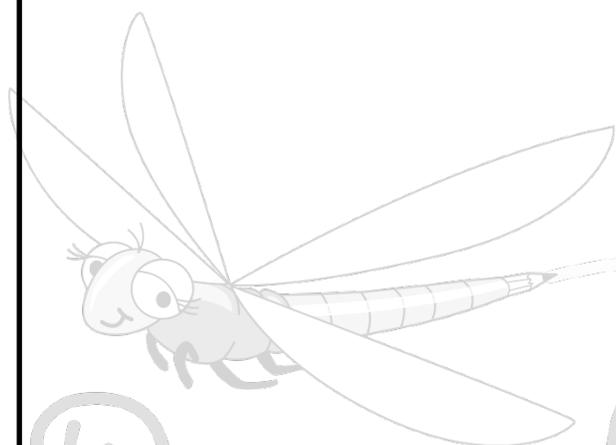
- Self-evaluation
 - Facilitators may choose to have students complete a self-evaluation (*Coaching Notes p. 42*) each day for each lesson, or once a week (*p. 43*). Self-evaluation makes students accountable for independent work.
 - *Self-evaluations help students to reflect on expectations and their own task performance. Meeting with students at regular intervals during or at the end of the unit to discuss these ratings would help students and facilitators document goal attainment and work habits, and inform future goal setting.*
- Anecdotal notes

Daily or weekly observations can be recorded to document student performance for all or some of the tasks. Facilitators can focus on specific skills for each student or the group.

 - *A sample of anecdotal notes, organized by student and class are included in the coaching notes (pp. 38-39). Anecdotal notes are a valuable tool to document student performance and academic and social-emotional growth over time.*
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Journal Entry

Write (or draw) about a time that you helped clean up in your home, school or town. How did that make you feel?



Dragonfly Kids

New Words to Learn

relief

I think it means...	Dictionary definition
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Draw a picture



Dragonfly Kids

Write a sentence

The Forest Community

We all live together in a community. When Daisy was lost in the forest, the Dragonfly Kids and the people of Sun Valley worked together to help find her. Communities live together, work together, play together and help one another.

The forest is a community too. A forest community does not have people, but has trees, plants, insects, animals, birds, and other living creatures. Finish the picture of the forest below. Draw the plants and creatures that live in a forest.



A Plan to Help Out

The Dragonfly Kids helped the people of Sun Valley by leading a town clean-up day at the lake and park to keep it safe and clean. We can all help keep our *environment* clean and safe. Our environment is where we live, play or work. Our environment is our town, our school, and our home. You will choose a space in your home or school that you can help make safer **or** cleaner and make a plan to keep it that way.



STEP 1:

Look around your house or school and choose a space that you can make safer or help to keep clean.

Home Ideas

your bedroom
playroom
family room
yard

School Ideas

classroom
cafeteria
library
playground

STEP 2:

Draw the space here

Dragonfly Kids





STEP 3:

How safe is the space?

Look around for anything that could be a safety hazard. *(Things that someone might get hurt on.)*

Circle the safety hazard in red on your Step 2 drawing.

STEP 4:

How clean is the space?

Look around for ways that you could help keep the space clean.

Circle the places you could help keep clean in green on your Step 2 drawing.



STEP 5:

Choose: Safer **or** Cleaner?

How are you going to make the space **safer** or help to keep it **clean**?
Brainstorm ideas and list them here.

Dragonfly Kids

STEP 6:

Choose 2 good ideas from your list and make an "action plan." An action plan is what you promise to do to make the space safer or cleaner.

1. What will you do to **make** the space safer or cleaner?

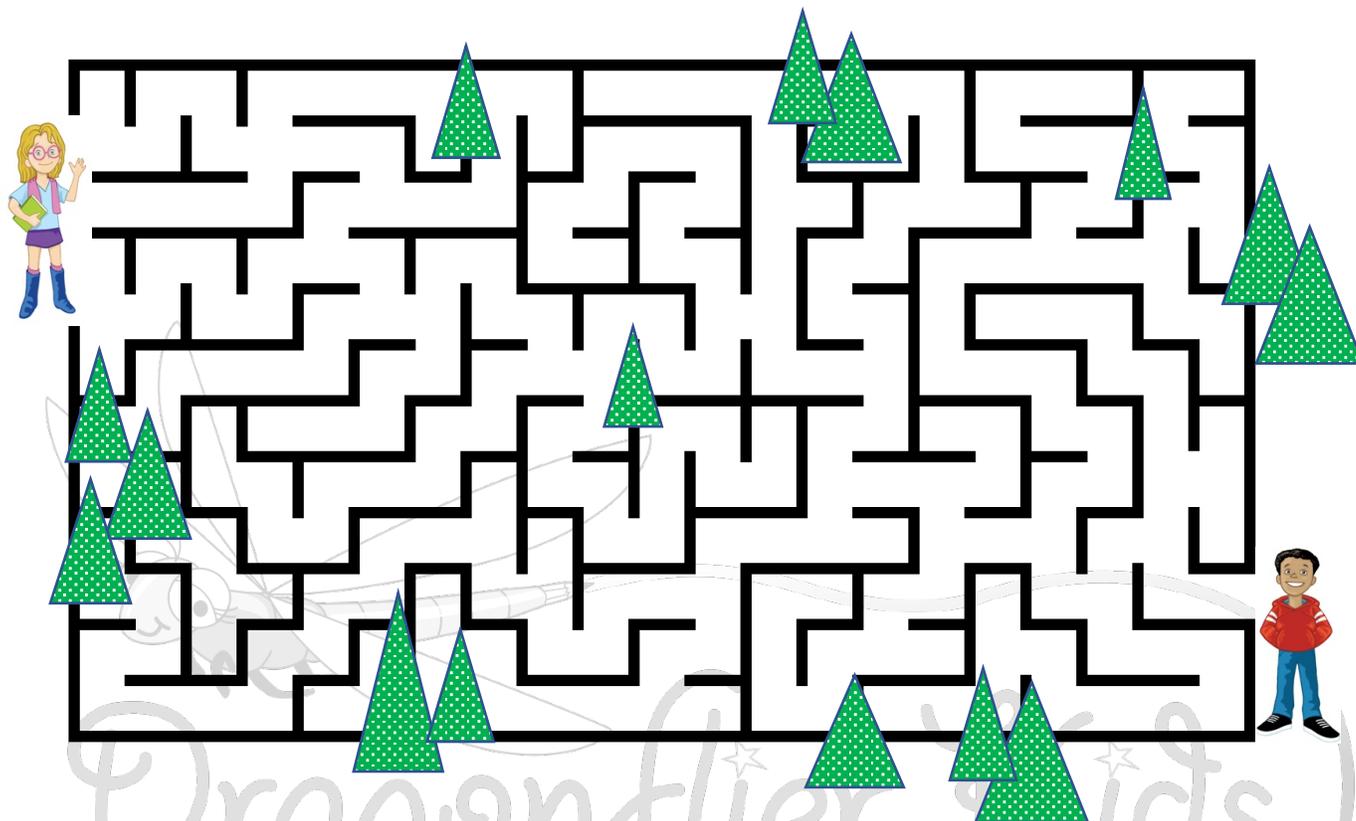
2. What will you do to **keep** the space safer or cleaner?



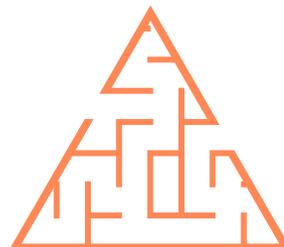
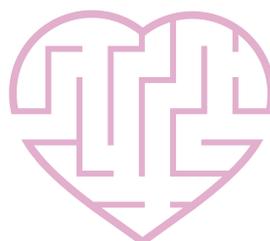
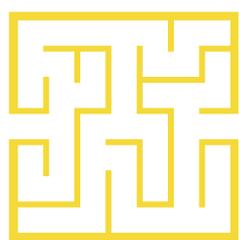
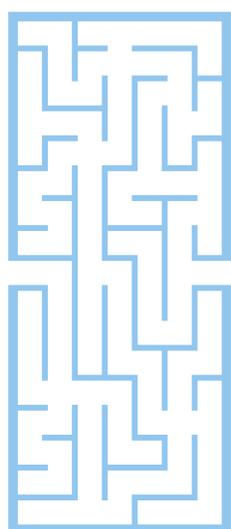
Thanks for
helping out!

A-MAZE-ING FUN!

Daisy was lost on the winding path in the forest. When you don't know where you are, you sometimes feel like you are in a maze. Can you help Viv find her way through the forest to Niko?

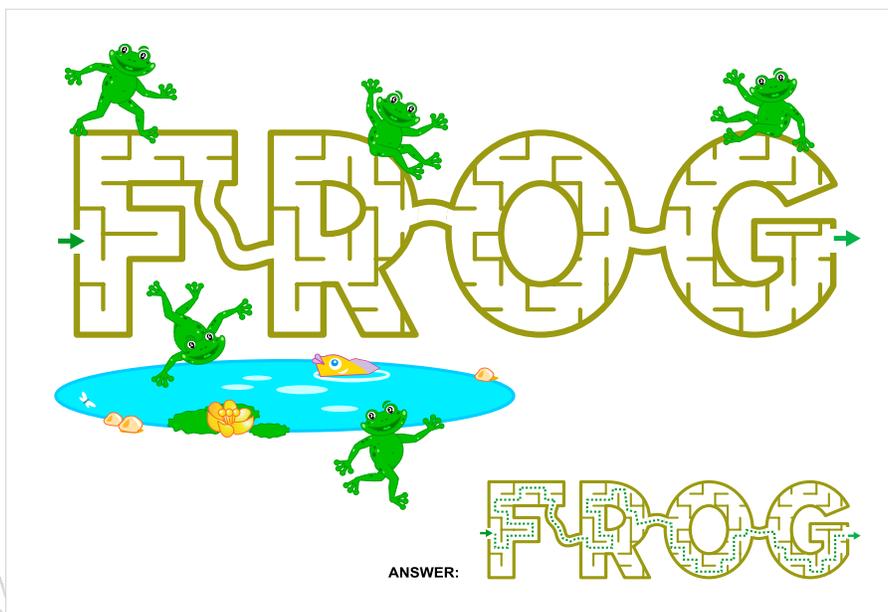


Mazes come in all shapes and sizes. Try these for fun.



MAZE NAMES

Did you ever think about using MAZE letters to write your name? Look at this example with the word FROG.



Try writing your name in MAZE letters here!

*Hint - First draw the outline of the letter and then draw the maze lines.

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