Spring 2020 update: please contact us if you want to adapt this inquiry for remote learning!

Dear Teachers,

Welcome to ***Inquiry, Inc. and the Case of the Flooded Fields*****,** our second installation of the *Inquiry, Inc.* series. The Water Inquiry Story Group of Smith College creates interactive, illustrated storybooks and accompanying unit materials that encourage young readers to explore scientific questions through group discourse, field investigations, and inquiry-based problem solving. Our first story, *Inquiry, Inc. and the Case of the Missing Ducklings,* explores the topic of storm drains and weather patterns, encouraging first grade students to ask questions such as *"Where does water come from? Where does water go?"* alongside a plucky group of problem-solving characters who model effective thinking strategies.

Designed with an eye towards second through fifth graders, our second story, *Inquiry, Inc. and the Case of the Flooded Fields,* builds on students' knowledge by posing a new water problem: a flooded soccer field and one young athlete whose All Star Championship Soccer Playoffs are just days away! Together, students and characters inquire: *What happens when there is too much water? What are different ways to move water, or to work with too much water? How can we solve the problem of flooding… and how quickly?*

How does the Unfinished StoryBox work?

Questions mount as readers reach the last pages of this tale and discover blank pages: Inquiry, Inc. is stumped and, to resolve their problem and help "save the day!," they need your students to brainstorm possible solutions. Inspired by The Top Secret National YA Unfinished StoryBox Project founded by author and educator Kevin Cordi, we offer the Water Inquiry Unfinished StoryBox: a project that instills a sense of urgency by asking students to collaborate, design, and show their solutions to the problem (in alignment with NGSS Science & Engineering Standards) to finish our text and help save the day.

To launch this learning adventure in your classroom, we have created a Water Inquiry StoryBox. See final page for checklist of StoryBox Contents.

1. **Storybook:** illustrated read-aloud book complete with "hand-offs," or prompts that ask students to "stop and think; stop and talk; stop and do" throughout the text
2. **Letter to Teachers:** background resources and Guidelines to help students create their own endings.
3. **Classroom resources:** student handouts for completing original endings, copies of Challenge, copy of Problem Solving steps.
4. **Siphon Experiment:** Materials and instructions for an optional experiment in which students explore the technique of siphoning
5. **Priority Envelope:** to mail student work back to Inquiry Inc (responses promised!)

Once your students complete their conclusions, we encourage them to repack the StoryBox and "mail" it back to Inquiry, Inc. characters. Once received, we will send a final letter from Inquiry, Inc. congratulating students on their problem-solving and responding to their ideas.

Teacher Resources: recommended to review prior to read-aloud

1. **Guidelines for discussing topic of flooding (and other natural disasters).** First, because the topic of flooding might raise questions or concerns about water-related natural disasters, we have excerpted guidelines from the National Association of School Psychologists, "Helping Children After a Natural Disaster: Information for Families and Educators," with particular attention to those suggestions that most align with our emphasis on, and approach to, collaborative problem-solving.
2. **Gender pronouns: tips for teaching**
   Our character introduction incorporates each individual's gender pronouns. The protagonist of *Case of the Flooded Field*, Lee, identifies as non-binary and uses the pronouns they/them. We have included an article from Water Inquiry educator Katy Butler (Smith College '12, MAT '17) entitled, "5 Tips for Teaching about Pronouns," from her website www.genderinclassrooms.com We encourage you to explore her site for a variety of resources, including first-hand accounts from and for teachers about addressing gender identity in classrooms and curricula; external links to articles and professional development trainings; children's books and lesson materials for educators constructing an inclusive classroom.
3. **True story!! Children build floating soccer field in fishing village.**
   Teachers may want to share this true story as closure to the inquiry story project, and/or to inspire children to come up with their own solutions to the problem if they are stuck after reading the story. The story of children who build a floating soccer field in their fishing village on Koh Panyi Island, Thailand, is documented in an inspiring 5-minute film Panyee Football Club and through photographs and news articles.
4. **Guidelines for finishing the story: helping students create their own endings.**
   We recommend you read and adapt this outline to meet the interests and needs of your students. We have included a suggested time frame; strategies for facilitating whole group problem-solving discourse to launch the challenge; a framework for pairs or small groups to complete the Challenge; ways to make thinking visible on a final idea exchange and reflection on learning; and sample student solutions from a mini-pilot.

For more information about the Water Inquiry project, as well as links to a variety of water-related resources, please visit our website at sophia.smith.edu/blog/waterinquiry.

Sincerely,
The Water Inquiry Story Group

Helping Children After a Natural Disaster: Information for Families and Educators

National Association of School Psychologists

Excerpts from guidelines, to consider when leading classroom discussions for *Inquiry Inc and the Case of the Flooded Field:*

1. Acknowledge and normalize their feelings. Allow children to discuss their feelings and concerns, and address any questions they may have regarding the event.
2. Encourage children to talk about disaster-related events. Children need an opportunity to discuss their experiences in a safe, accepting environment. Provide activities that enable children to discuss their experiences.
3. Promote positive coping and problem-solving skills. Activities should teach children how to apply problem-solving skills to disaster-related stressors.
4. Emphasize children's resiliency. Focus on their competencies. Help children identify what they have done in the past that helped them cope when they were frightened or upset.
5. Strengthen children's friendship and peer support. Children with strong emotional support from others are better able to cope with adversity.

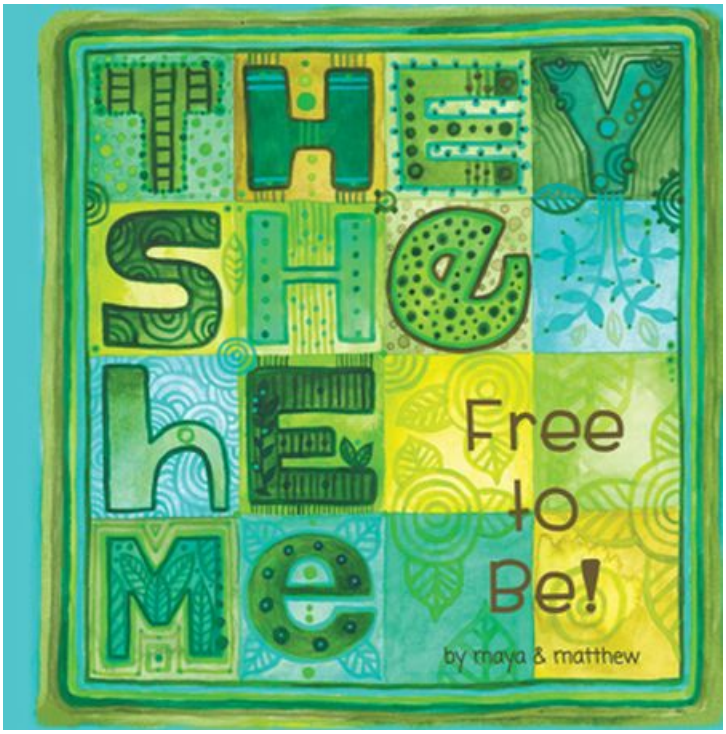
Article citation:

National Association of School Psychologists. (2015). *Helping children after a natural disaster: Information for families and educators* [handout]. Bethesda, MD: Author.

5 Tips for Teaching About Pronouns

February 18, 2018

By: Katy Butler, SC ‘12, MAT ‘17



For some teachers, teaching about pronouns may sound like an upper elementary grammar lesson. For many children, pronouns could be the difference between simply being in your classroom, and feeling as though they belong and are significant in your classroom.

We all have pronouns, or ways we are referred to when people don't use our names. Many of us are automatically given pronouns "he" or "she" and we never question them. It is another way we put ourselves and others into categories. Young children learn this early as well, and they know when the pronoun someone uses to refer to them doesn't feel quite right.

It is critical that as teachers we address all students with correct pronouns. A note on language here: many people mistakenly use the term "preferred pronouns". This makes it sounds as though their pronouns, and their gender identity, are a preference, or a choice. Just as we work hard to learn our students' names in those first weeks of school, we should work to learn their pronouns as well.

This may seem like a challenging task - especially in K-2 classrooms - when students don't yet have a concept of parts of speech. For a student who is gender creative or trans, however, this will help them assert themselves as an important part of the classroom community and will help them avoid questions such as: "are you a boy or a girl?".

So, how do you do it? Here is a quick possible list:

1. Normalize the use of pronouns. Name them and have conversations about them. Teach them how many options there are beyond "she" and "he" (see link to a list below). Say, for example, "My name is Mx._____. When people aren't using my name, I like them to say "they" or "them" like this: 'They are my teacher', or 'I like to read to them'." or "My name is Mx. _____. I use they/them pronouns. What do you like people to say when they aren't using your name?"

2. Pay attention to your use of pronouns. Do you refer to all animals in books by "he"? Do the stuffed animals in your classroom get labeled as "he"? As you read a story, how are you unintentionally naming pronouns for characters when you're unsure.

3. Model how to ask for a person's pronouns. When someone visits the classroom, introduce them and ask what they would like the children to call them. Then, ask something like "when we are not using your name, what words would you like us to use when we talk about you? She? He? They?" Even if it seems "obvious" to you what the person's gender is, it is important to keep reiterating to children that you can't tell a person's gender just by looking at them.

4. Read books about gender identity and pronouns with kids (like the ones below). Decide to use "she" in a book where you think the kids will automatically assume "he". Be intentional.

5. Start to get in the practice of using "they" pronouns unless you know otherwise. As you talk about animals, people, characters, etc. model using the singular they as a pronoun so that children get used to hearing it. This can feel challenging at first, especially for those who are used to using "they" only to refer to a group. See some links and resources below for practicing.

True story!! Children build floating soccer field in fishing village built on stilts.

Teachers may want to share this true story as closure to the inquiry story project, and/or to inspire children to come up with their own solutions to the problem if they are stuck after reading the story.

The story of children who build a floating soccer field in their fishing village on Koh Panyi Island, Thailand, is documented in an inspiring 5-minute film: Panyee Football Club and through photographs and news articles.

How the 1986 World Cup inspired Panyee FC, one of Asia's most remarkable clubs.

"Inspired by the 1986 World Cup, a group of football-hungry children decided that despite obvious limitations – like their entire village being built on stilts – that they would take matters into their own hands, using any sources of wood to build their very own floating pitch..."

Guidelines for finishing the story: helping students create endings

"Create your own endings" is an invitation for students to problem-solve; make their thinking visible; and get feedback from each other and the Water Inquiry team. The design of this interactive story is inspired by the Unfinished StoryBox Project and aligned with NGSS Science and Engineering Practices: asking questions, defining problems, and developing models. We encourage you to adapt these recommendations for your classroom and we are eager to hear about what you try and what you learn.

Time frame: 2-3 class periods (more if you plan to build and test models)

A. **Launch the Challenge.** Whole group. 1 class period (~ 40 min's)
B. **Complete the Challenge.** Pairs/small groups. 1 class period (~ 40 min's)
C. **Idea Exchange and Wrap-Up:** 1/2 or 1 class period (~ 20-40 min's)

Materials needed:

- ❏ ***Inquiry Inc. and the Case of the Flooded Fields*** – storybook to read aloud
- ❏ Copy of 1-page ***Problem Solving Steps*** (included in StoryBox)
- ❏ Class notes from Handoffs #1, #2, and #3 (as documented during reading).
- ❏ Copies of the **"Challenge"** to distribute to groups of students, or project on screen.
- ❏ Copies of ***"blank" student handouts for each group of students*** to complete and submit.
- ❏ Pencils and sketching/drawing materials.
- ❏ Optional: materials to build models/experiments; take and print photos.
- ❏ Priority envelope to return responses to Inquiry, Inc.

A. Launch the Challenge – 1 class period (30-40 minutes) - Whole Group

Note: we recommend completing Inquiry Steps #1. and #2. and modelling #3 with the whole group, before breaking into pairs/small groups to complete the Challenge.

1. Finish reading **Inquiry Inc. and the Case of the Flooded Fields** through Handoff #4.
2. Show students the **two empty pages** in the "unfinished" story book.
    a. *What goes here? Who will complete these pages? You will!*
3. Reveal and open the **envelope** attached to the back cover of the book.
4. Read aloud (and show) the **hand-written letter from Inquiry, Inc.**
5. Read aloud the **Challenge.** Show, pass around, or project if possible.
6. Check in with students for questions/reactions. Build excitement to accept the Challenge, design solutions and send them to Inquiry, Inc.

[Note: this is a good time to break if you are doing shorter sessions.]

7. Work through **problem-solving steps** as a whole group
   You may want to elicit students' ideas about problem-solving steps before referring to the story: *Does anyone remember how Inquiry Inc. likes to solve problems? Does anyone have a suggestion about how to get started?*
   For ***Problem-Solving Steps***, see p. 13 of the story, and copy in StoryBox.

Problem Solving Steps:

I. **<u>Identify the problem</u>** – write group discussion notes on chart paper/whiteboard
   A. *What's the problem you are working to solve?*
   B. Refer to the story (including p. 13) and the Challenge.
   C. Review class notes from Handoff #2: *What do you think is the problem? What do you need to understand to solve the problem?* (p. 15)
   D. Water goes downhill (p. 15 & p. 19). *How does this inform the problem?*

II. **<u>Come up with questions</u>** – write notes on chart paper, or have students write questions on sticky notes

III. **<u>Brainstorm ideas</u>** – model with whole group first, elicit at least 2-3 different ideas, and tell students they will be working in pairs/small groups to continue brainstorming
   A. Remind students "half-formed thoughts" and "wild ideas" are welcome.
   B. Elicit connections to students' prior experiences with "too much water" in the home, neighborhood, community, news, etc.
   C. Review ideas of Inquiry, Inc. story characters:
      1. Prim says: *in Bangkok they pile up sandbags*; *a giant tunnel to let the water flow out*; *a really big tube* (p. 19)
      2. Characters brainstorm solutions: *giant heat lamp*, *really big vacuum*, *poke giant holes* (p. 23)
   D. Review Handoff #3: *Ever wondered how to make water go uphill?*

IV. <u>Test your ideas – optional extension activity</u>
   A. This step will depend upon the availability of time/materials for building and testing models. One way to "test" an idea is to run it by classmates if you don't have time to make and test models: this could take place during the Idea Exchange whole group activity (see below).

B. Complete the Challenge: 1 class period (~40 min's) - Pairs or Small Groups

- *Note: We recommend working on the Challenge in pairs or small groups (like Inquiry Inc. characters model in the stories). Individual solutions also welcome.*

Distribute the Challenge to each pair/team, or project on big screen.
*Steps are listed on the **Challenge** page (in envelope at the back of the storybook)*

1. Brainstorm with a partner or group about your ideas.
2. Keep a list of your ideas, even if they seem wild.
3. Choose one idea from your list to work with.
    a. One way to "test ideas" is working through them with a partner/group. *What are the strengths and drawbacks of each idea? How/can ideas be combined?*
4. Show your idea. You can make a drawing, diagram, comic (storyboard) or a photograph of a model or experiment: **Image goes on the handout "Show..."**
5. Please tell us about your idea in writing: **Writing goes on the handout "Tell us..."**
    a. *What do you like best about your idea?*
    b. *What questions do you have?*
    c. *Include any other writing that will help Inquiry Inc. understand your idea!*
6. Note: **plan ahead** If you want students to test and refine their solutions after eliciting feedback from classmates: if so, you may want them to design "draft" endings in pencil for easy revision. If these are final solutions, they can be shared/displayed at the Idea Exchange as "final" design ideas.

C. Idea Exchange & Reflection on Learning: 1/2 or 1 class period - Whole Group
Note: This may be an opportunity for students to "test ideas" by getting feedback from classmates and then refining solutions; or it may be a culminating display/discussion.

1. **Idea Exchange/Making Thinking Visible.** Format options include:
    a. **Gallery walk** with solutions on display and sticky notes for classmates to post a response (e.g. 1 comment, 1 question).
    b. **Roundtable discussion** where each pair/group shares highlights of their solution and answers questions from the group.
    c. **Marker Talk** display 1-2 solutions at each station with chart paper and markers. Classmates circulate and write comments/questions on chart paper accompanying each solution.

2. **Closing discussion:** the scope of this closure will vary depending upon the classroom's interests and experiences: it might focus on **problem-solving** (e.g. *what was the greatest difficulty you encountered and how did you solve it?*); the **story** (e.g. *What's one thing you learned, one thing you still wonder?*); or **broader problems/solutions for too much water** (e.g. *what connections do you see between the Case of the Flooded Fields and water problems/solutions in other contexts?* (E.g. Mill River Flood of 1874; local and global design solutions to flood control; flooding and climate change).
3. Optional: show video of Thailand Floating Football Pitch. This is an innovative, upbeat, kid-powered solution to the problem of how to play soccer on lutions in the Priority Envelope and send to Inquiry Inc.

How will Inquiry, Inc. respond?

Inquiry, Inc. will ***"send positive notes"*** back to students who submit responses (as promised in the handwritten letter in the envelope at the back of the story book). Two sample endings are attached, more are available upon request.
Some of the things we are looking for include solutions that:

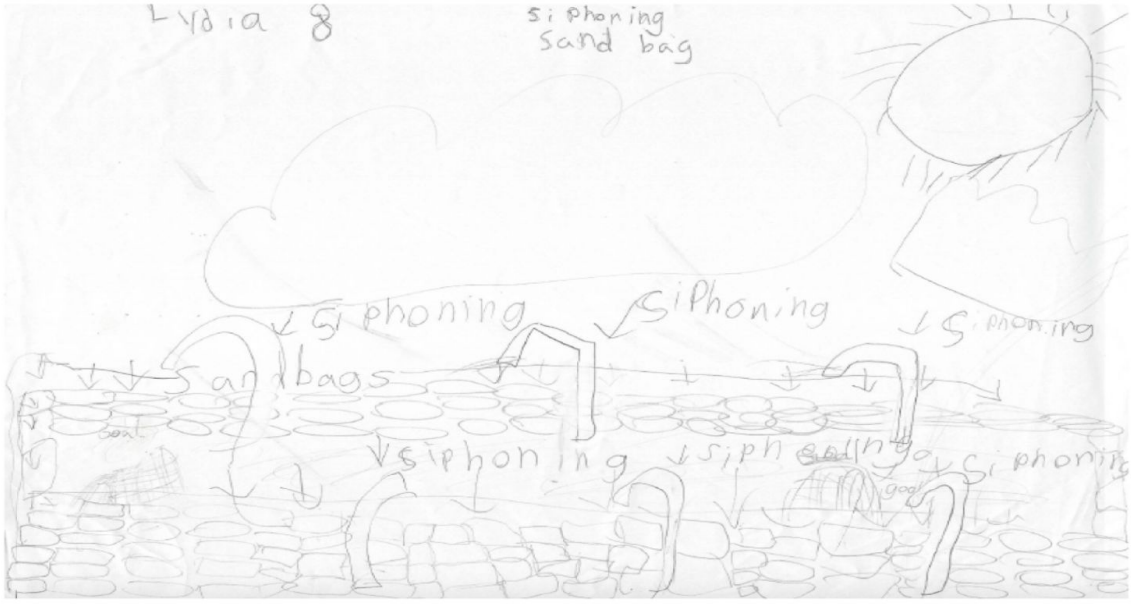
- ➢ Communicate ideas clearly through visual images and writing
- ➢ Show understanding of the problem
- ➢ Spark new insights into the problem (surprising, different perspective)
- ➢ Demonstrate evidence of thinking about what works
- ➢ Convey enthusiasm for addressing the challenge and sharing solutions
- ➢ Build on knowledge from story, classmates, expert sources, etc.
- ➢ Make connections to students' prior experiences, observations, and learning

Sharing endings with a broader audience of participants:

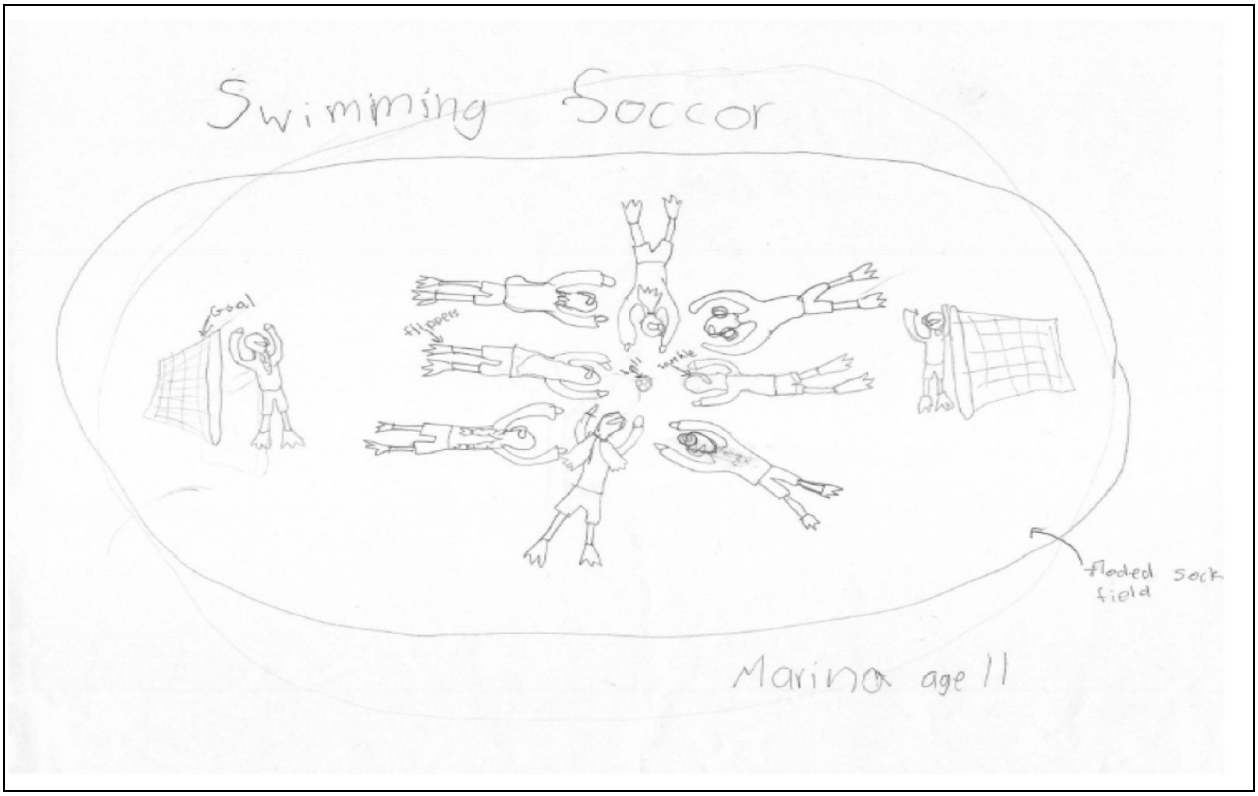
The Water Inquiry group would like to create an online gallery of endings to share with project participants, to celebrate idea diversity and to learn with and from each other how to engage with the problem of too much water.

Please consider giving permission to share your student endings on the Water Inquiry website, with credit given to student designers. Please return Consent Form with ending (included in StoryBox).

Sample student endings from mini-pilot (July, 2018)



"Put sandbags around soccer field and use one of those things [siphon] to get rid of the water. Sandbags will keep the water from going back in." Lydia, age 8.



Ever wondered how water can run *up* a hill? See attached siphon experiment for optional exercise to discover possible method of water removal.

SIPHON EXPERIMENT

Supplies Required: *Long, skinny, clear hose (provided in storybox), a block or container to raise one container above the other, a small pipette, and two clear plastic cups. Food coloring to make it easier to watch water flow (recommended).*

Here is the link to an explanatory video: https://www.youtube.com/watch?v=CZmP0vsRBZ8
Note: Prompts in italics are designed to encourage students to make observations, ask questions, and develop theories about what's happening and why.

Be sure to fully read each step before you complete the actions!

Step 1: Fill one cup with water and place it on top of the container. Put the other cup next to it (and below it).

Step 2: Place one end of the tube in the raised cup with water. Hold the other end of the tube in your hand.

Step 3: Insert the pipette into the end of the tube you are holding (keep the other end submerged in the liquid in the upper cup. It might be easier to have a friend help you!).

Step 4: Squeeze the end of the pipette and notice what happens to the water in the raised cup.

What's happening to the water in the raised cup? Why do you think this is happening?

Step 5: Slowly release your grip on the pipette and observe what the water does. If nothing happens, keep squeezing and releasing the pipette until you notice something happening.

If the water is moving, what is causing the movement? Can you come up with a couple of ideas that could explain what you're seeing?

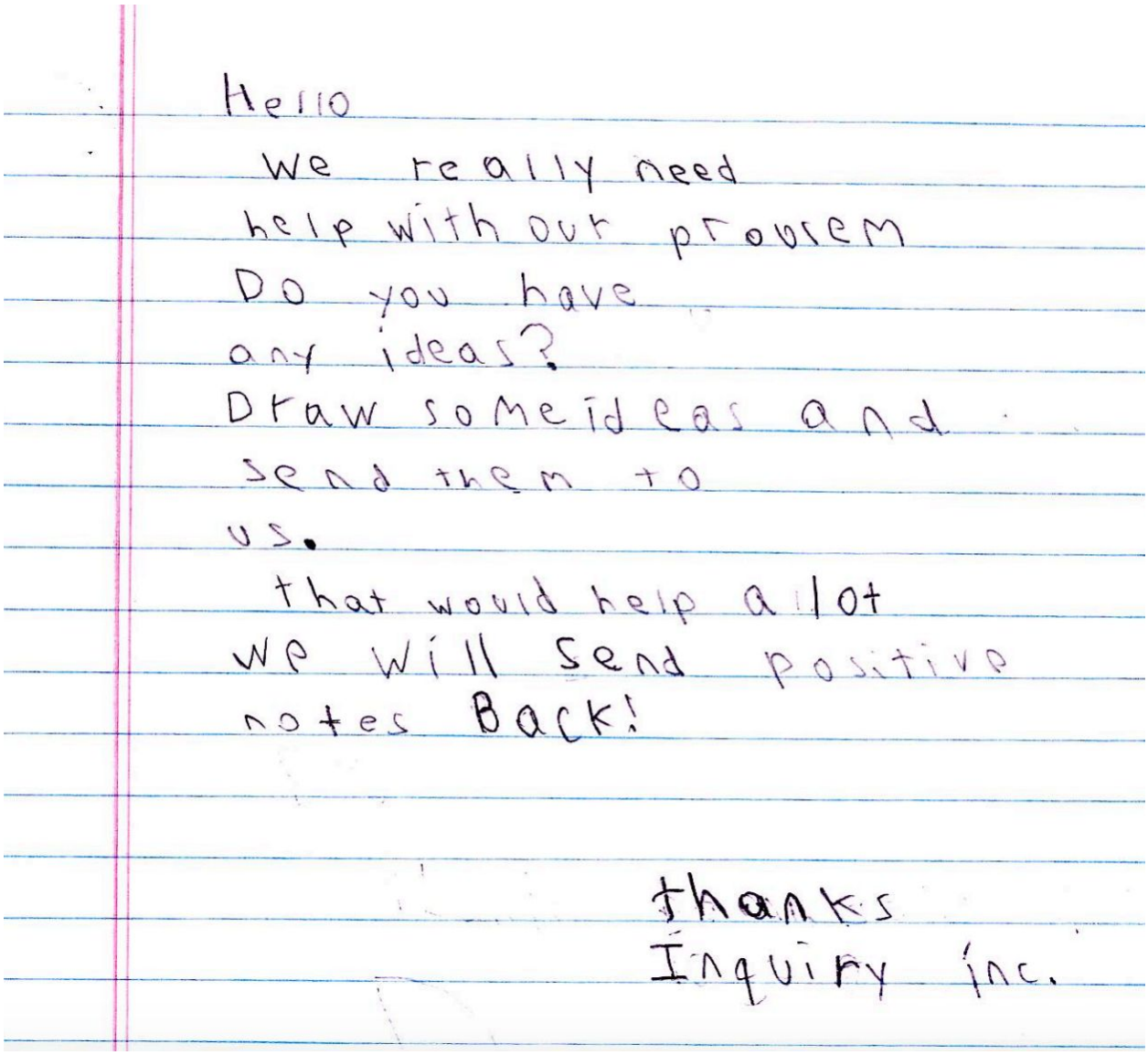
Step 6: Bring the end of the tube down into the lower cup. Remove the pipette from the tube, making sure that you hold the other end below the waterline of the liquid in the raised cup.

Is the water travelling from the raised cup to the lower cup? Is the path entirely downhill?

Step 7: What happens if you play around with the experiment? For example, try having a friend move the raised cup further up or down. You could also remove the end of the tube from the raised cup at some point in the experiment. Come up with other changes you could test out and see what happens!

Step 8: You just made a siphon! Talk with your neighbors about how you could use a siphon in the real world based on your discoveries. Have you ever seen siphon in action? Where?

Read with Handoff #4: Letter from Inquiry, Inc.



Hello
We really need
help with our prouiem
DO you have
any ideas?
Draw some ideas and
send them to
us.
that would help a lot
we will send positive
notes Back!

thanks
Inquiry inc.

Read with Handoff #4: The CHALLENGE!

Calling all problem solvers! Our soccer field is flooded. We need you to come up with a plan so that Lee's championship game can still take place on this field in a few days.

Brainstorm with a partner or group about your ideas. What will we do with the water? What will we need to use? Keep a list of your ideas, even if they seem wild!

Choose one idea from your list to work with. Now, show your idea. You can make a drawing, diagram, comic, or a photograph of a model or experiment. We can't wait to see what you create!

Please tell us about your idea in writing. What do you like best about it? What questions do you have?

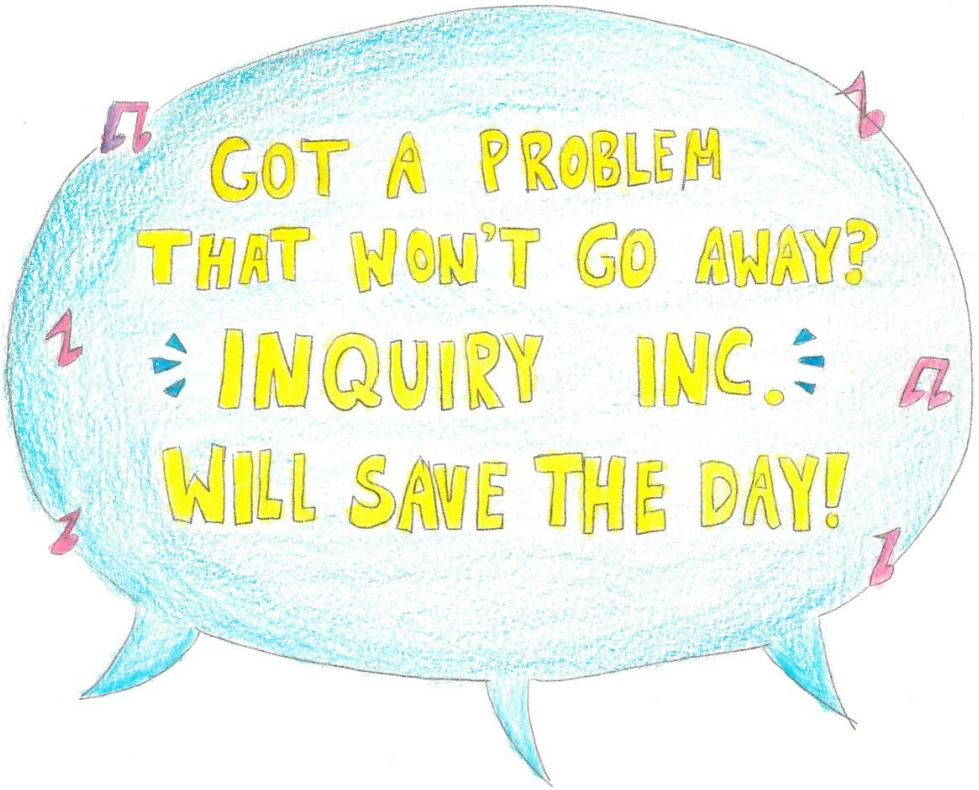
Thank you for your help!

Sincerely,

Inquiry Inc.

Inquiry, Inc.'s Problem Solving Steps

1. Identify the problem
2. Come up with questions
3. Brainstorm ideas
4. Test your ideas



Inquiry, Inc. and the Case of the Flooded Fields
Contents of Unfinished Story Box

- ❏ Copy of illustrated storybook.
  Includes envelope inside back cover with "Letter from Inquiry, Inc." and "Challenge"
- ❏ Letter to Teachers
- ❏ Siphon Experiment (Handoff #3): directions, tubing, pipettes
- ❏ Culminating Challenge (see Handoff #4): copy also found in envelope attached to back cover of storybook
- ❏ Problem solving steps (1 page)
- ❏ Worksheets (2 forms) for students to complete story endings
- ❏ Priority envelope to return original solutions to Inquiry, Inc.

Note that the box can be used as a display station! Post a page on the inside cover and open the top (e.g. problem solving steps, "challenge," character bios, or image/text students bring in and want to share with the class.)