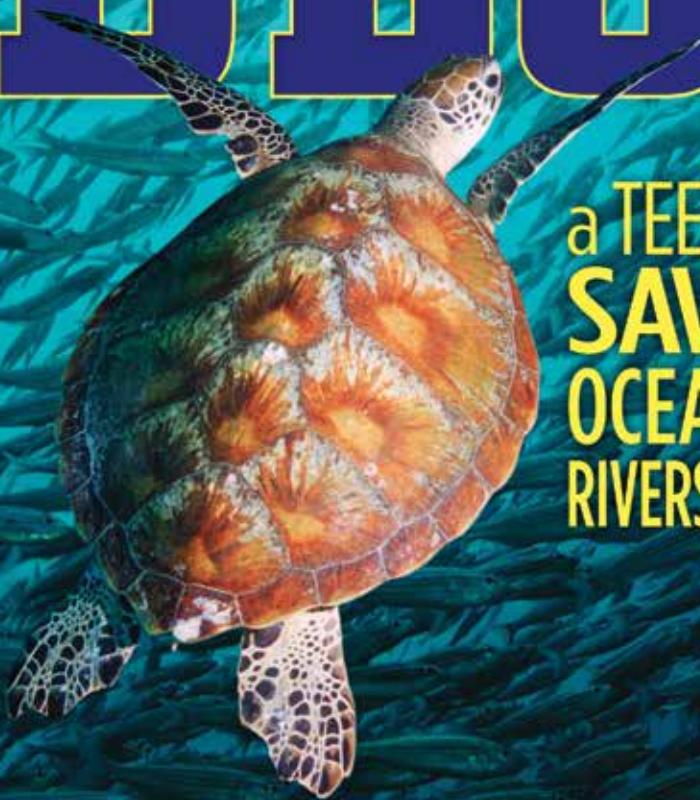


CATHRYN BERGER KAYE | PHILIPPE COUSTEAU

GOING BLUE

a TEEN GUIDE to
SAVING our
OCEANS, LAKES,
RIVERS, & WETLANDS



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Praise for Going Blue

“Kaye and Cousteau have given us a call to action.”

—*Laurie David, producer and author of The Down-to-Earth Guide to Global Warming*

“A mini treasure trove of information.”

—*Midwest Book Review: Children’s Bookwatch*

“Help[s] students navigate the potentially complex and overwhelming task of making a change in their world.”

—*Professionally Speaking, the magazine of the Ontario College of Teachers*

“If we truly want to save and protect our water planet for future generations, then we must empower today’s youth with the knowledge, technology, and tools to become tomorrow’s change agents. *Going Blue* offers young people an easy-to-read guidebook that energizes and empowers an entire generation to take part in sustainable activities that will benefit and ultimately save our environment.”

—*Lori McFarling, CMO, Discovery Education*

“Jacques Cousteau would be proud of *Going Blue*. His grandson, Philippe, is taking up his challenge, and is bringing a new generation with him. Philippe and Cathryn are helping to form tomorrow’s leaders and build a better future for us all.”

—*Daniel J. Basta, director, NOAA’s Office of National Marine Sanctuaries*

“Following in his grandfather’s footsteps, Philippe Cousteau leads a modern, passionate, and inspiring call to action to protect the planet’s most precious resource—water. With *Going Blue*, he and Cathryn Berger Kaye have developed a motivational and active guide that helps young readers understand the fragility and importance of our oceans and waterways. It will inspire all to live differently.”

—*Laura Michalchyshyn, president and general manager of Planet Green, Discovery Health, and FitTV*

GOING BLUE

a TEEN GUIDE to **SAVING** our
OCEANS, LAKES, RIVERS, & WETLANDS

by **Cathryn Berger Kaye, M.A.,**
with **Philippe Cousteau**
& **EarthEcho International**

free spirit
PUBLISHING®



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Service learning occurs in each of the fifty United States and internationally. Some project descriptions are attributed to specific schools or youth groups and identified by city, state, or region. All efforts have been made to ensure correct attribution. Some of the names of the young people quoted throughout the book have been changed to protect their privacy.

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Dedication

From Cathryn: “To all the young people who transform ideas into saving this water planet. And to my father, James David Berger, who first introduced me to our oceans.”

From Philippe: “To my mother, who inspired me to dedicate my life to making this world a better place.”

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From Cathryn: “I would like to thank my husband Barry for his patience with my late writing hours and my daughters Devora and Ariel—all of whom give me encouragement and love that inspires me daily.”

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What Teens Think About Saving Our Oceans, Lakes, Rivers, & Wetlands

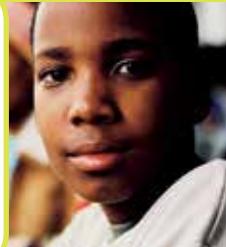
“People see the awesome power of the ocean and think it is indestructible. I believe that ocean life needs to be protected, and since oceans are all connected, our efforts have to be global to be successful.”—Ian, age 16



“For me, the oceans were all about going to the beach . . . until I found out about that mass of plastic floating in the Pacific. Where my trash goes matters. I can do something about this.”—Rhea, age 15

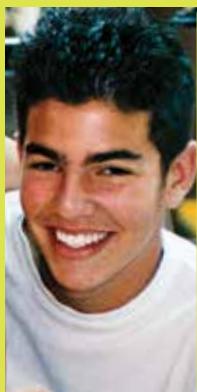


“We need to care about our environment now to help us survive on Earth. We need the oxygen from trees, the clean water, and the healthy air that we get from taking care of what we have.”—Evan, age 14



“If we use up all of our natural resources, there will be no more and then the world will be in chaos. To start, kids can pick up garbage by the water and make signs and banners to warn people about what will happen if they throw garbage away carelessly.”—Nabil, age 14

“Think of all of the things that live in our water—the animals, the plants, the bacteria, the bugs. They are all living creatures like us so they deserve to live just as much as we do. Imagine you lived in the water and one day a giant dumped a bunch of oil in it, and everything around you dies, and then finally you die, too. See what I’m talking about?”—Maddie, age 13



“Protecting our oceans and waterways is important because if they get polluted, our culture could drastically change. The environment would become our first priority, and we’d have to set aside some of the other, equally important things such as world peace. If we protect our waterways now, we are protecting our entire society.”—Jude, age 15

“The work we do today is important for future generations. We may not see much effect in our lifetime, but we know our children will.”—Kiddest, age 17



A Call to Action from Philippe Cousteau

Philippe Cousteau is the cofounder of the ocean conservation and education organization EarthEcho International and grandson of the legendary ocean explorer Jacques Cousteau. In this interview he explains why now is the time—more than ever—to become an environmental champion.



My grandfather's first adventures into the world at large were considerably different than the ones we embark on today. He was one of the first people to explore the oceans—his was a true journey of discovery. Few, if any, had seen the wonders of the deep captured on film. Jacques Cousteau and his crew were the first to capture those images and share them with the wider world. Imagine all the creatures we have grown up with and take for granted—from coral reefs to polar bears, Nemo the clownfish and even Shamu the whale. All were total mysteries to the world.

I encourage you to watch two films my grandfather produced many years ago. *The Silent World* and *World Without Sun* won Academy Awards and showcase Jacques Cousteau and my father Philippe Cousteau Sr. diving the reefs off the coast of Southern France and the Red Sea in the 1950s and 60s and filming them for the first time in human history.

My father, Philippe Cousteau Sr., passed away in an airplane accident six months before I was born. Growing up with tales of his adventures, I heard stories of how he took his first breath underwater and descended to those reefs. I was told of his devastation at seeing what happened to those very same reefs, now mere shadows of what they once were, due to climate change and pollution. I spent many hours of my own youth diving off the coast of France and I can no longer stand to go back. I find the barren, desolate underwater landscape so terrible. It can break

your heart when you see the beauty captured by my grandfather on film and know that today that beauty is virtually gone.

As part of the third Cousteau generation, I see my role as a journey to understand the relationship between humans and nature, and especially to be a steward of this planet. Of course I am proud to have the Cousteau name. But I'm not a Cousteau only because of my name. The Cousteau spirit of conservation and care for the environment was taught to me. It lives on through me because of my actions, not my birth certificate.

Daily, I consider the choices I make and the influence I can have by sharing information and ideas with others. Of the many concerns facing our environment, without question, the excessive output of carbon into the atmosphere is the most troubling. Carbon is the leading cause of climate change. This current global crisis is changing our oceans—the primary drivers of our climate.

As climate changes, the domino effects will be felt around the world. For example, water scarcity will likely be the defining cause of conflict and mass migration of people in the 21st century. In large part this will be instigated by the world's changing weather patterns brought about by changing currents and rising temperatures and sea levels in the ocean—all caused by climate change. That is a bit of a simplification, but you get the idea: everything is connected to everything else on this planet.

But climate change isn't the only problem caused by carbon. The excessive output of carbon into the atmosphere is also responsible for another very scary problem that has nothing to do with climate change: ocean acidification. OA, as we call it, is caused purely by the absorption of carbon by the oceans. The carbon absorption causes oceans to become more acidic and ocean creatures that build shells—such as coral, shellfish, mollusks, and pteropods (small free swimming snails that form the basis of many ocean food chains)—are unable to build shells and survive. If this continues, the wholesale collapse

“The Cousteau spirit of conservation and care for the environment was taught to me. It lives on through me because of my actions, not my birth certificate.”

of many ocean ecosystems will have disastrous effects on the planet. Imagine: more than a billion people currently rely on fish for their primary source of protein. If fisheries collapse because they have no basic food source, those people would starve and many would go to war to feed themselves. That is just one example; others are just as serious.

If this seems pretty depressing, remember: there is hope. The key to helping these creatures survive is to give them the healthiest, safest environments in which to live. For example, coral reefs in a pristine environment are much more likely to adapt to rising water temperatures than those already stressed from pollution and overfishing. That is good news, and it means that we must double our efforts to protect our environment.

Some of the most effective solutions involve replacing the exploitation of natural resources with alternatives that protect our environment and have mutual benefits. In Florida during the 1990s, gill net fishing (a very destructive form of fishing) was banned along the coast. Instead of putting the gill net fishermen out of work, scientists devised a way for them to grow clams in baskets along the shore. This simple form of aquaculture was even more lucrative than gill net fishing and it protected the environment. In a short period of time, Florida went from being last in clam production in the United States to being first.

We have a chance to change this world. The last 50 years have seen the greatest amount of destruction on this planet in history, and it is the next 50 years—our 50 years—that will decide its fate. This means demanding that our politicians take these problems seriously by expressing a willingness to make changes in our own lives. Ask yourself: “Do I really need a bigger house or a bigger car?” A comfortable life is what we all aspire to, that is human nature. However, a comfortable life could be defined by living in gracious and sustainable harmony with the planet. Each

“Remember: there is hope. The key to helping these creatures survive is to give them the healthiest, safest environments in which to live. . . . We must double our efforts to protect our environment.”

of you has an exciting opportunity to consider what choices you will make and what distinct steps you will take to be part of both a local and a global solution.

You probably hear people tell you all the time that you can make a difference. But the truth is this: You already make a difference. *Everything you do makes a difference.* Every single one of your actions has consequences. What do you want to be the results of the actions you take every single day? Look around at the world you live in—this time with “super-vision”—to see deeper into the impact of each choice. What can you be doing?

Start with simple things, like bringing reusable bags when you shop, finding an area in your community to protect, being “water smart” at every opportunity, and encouraging your parents to vote for politicians who care about your future. Endless reports prove the number one reason adults change their behavior is because of the influence of their children . . . you have power!

I grew up sitting with my grandfather and listening to his life’s stories, hearing the urgency in his voice, being inspired by the passion my own father had for taking action for a better future. Their voices influenced me in becoming the person I am today. You could call it a family legacy, or just good teaching. Regardless, I am a firm believer that if we are to build the sustainable future we all dream of, we must do it together. Each of us—all of us—making a positive difference; that is a legacy we can all share.

“You probably hear people tell you all the time that you can make a difference. But the truth is this: *Everything you do makes a difference. . . . What do you want to be the results of the actions you take every single day?*”



Philippe Cousteau

What Do You Know?

1. “Water has no beginning, end, or middle.”
What does this statement mean?
2. What fraction of the earth is covered by water?
3. Which of the following does the ocean provide: oxygen, rain, food, or oil?
4. What percentage of the oceans has been explored:
5%, 25%, 50%, or 85%?
5. Which of your everyday activities affect our oceans?

Have you thought about our oceans and **waterways** lately? Perhaps you've seen headlines about polluted lakes, toxic rivers, droughts, waterborne illnesses, rising sea levels, or coral reef damage. These days more ocean species are considered endangered than ever, and human overfishing threatens to starve dolphins, sharks, and seabirds. During the summer of 2009, the world's ocean temperatures were the warmest ever recorded. New lakes and rivers are being added to endangered lists yearly. In many countries, drought has dried up food crops and safe drinking water is difficult to find.

The term **waterways** (as used in this book) includes all bodies of water on Earth apart from oceans—from ground springs to streams, brooks, creeks, ponds, marshes, wetlands, lakes, rivers, canals, bays, lagoons, ice fields, and seas.

We have depended upon our waters since the dawn of life on this planet. They feed us, quench our thirst, help us travel and transport goods, provide medicine, create energy, and let us swim, surf, sail, and dream. However, these same waters are changing in ways that threaten our way of life now and for future generations. Our oceans and waterways are hurting. With increasing acidification in the oceans, glaciers melting at the poles, and trash accumulating everywhere, what we have taken for granted for too long needs to be addressed. And fast.

The good news is that we can do something. We can step in, learn about the issues that are all interconnected—just like our waterways—and create plans for action. We can talk with others, find out what is already being done in our communities, regions, and nations, and join in. We can come up with brand new ideas to meet the water needs we see around us every day.

You've probably heard the phrase "going green," which means pitching in to help the environment—our forests, fields, land, and air. This remains essential. What this book proposes is to add another color to the mix by going *blue* and helping to conserve and protect our planet's water. What can you do to go blue?

"We all have to take responsibility for the direction we are going. In our schools we need, from the earliest times, to get across the concept that we are connected to nature and that we are trying to find a space to sustain ourselves."

—Sylvia Earle, oceanographer

Starting Now

However you found this book or it found you, these pages will help you discover ways to address community or global problems. Whatever you choose to do to help our oceans and waterways—whether it's organizing a water usage awareness campaign, cleaning a local creek, planting trees to stop soil erosion, or eating more locally grown food—the time to start is now.

Did You Get the Right Answers?

Here are the answers to the questions on page 6. Our oceans and waterways are all interconnected and flow without beginning, middle, or end. A full three-fourths of the earth is covered by water, making ours truly a "water planet." Our oceans provide all four of these things: oxygen, rain, food, and oil. Only 5 percent of our oceans have been explored by humans, which leaves plenty for you to do! And every single one of your daily activities affects our oceans and waterways—from the electronics you use, to the clothes you put on, to the foods you eat. By reading on, you will find out exactly how these choices and others reach to the furthest depths of the ocean.

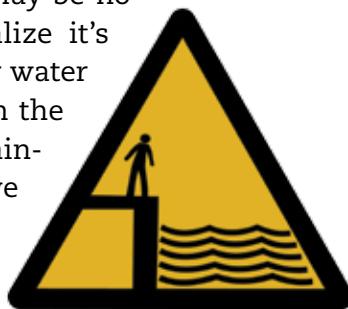
What's Inside?

This book is filled with curious questions, eye-opening facts, useful information, inspiring quotes, amazing photos, extraordinary stories, and plenty of examples of what teens just like you are doing to keep this planet of ours healthy. All of this information is divided according to the five stages of an exciting journey called *service learning*. These five stages are **Investigation**, **Preparation**, **Action**, **Reflection**, and **Demonstration** (each stage is explained in detail in the next chapter). You'll also notice four repeating sections throughout the book: The **Teens in Action** sections tell recent stories of real teens across the world making significant contributions. The **Your Turn** boxes help you relate the topics discussed to your own life and give you ideas for getting involved. The **Time for Reflection** boxes ask questions that encourage you to pause, think, and look at the larger picture of what you are doing. And the **EarthEcho** boxes suggest tips for how to transform the information and ideas that you read here into simple day-to-day actions that benefit the planet.

How to Read This Book

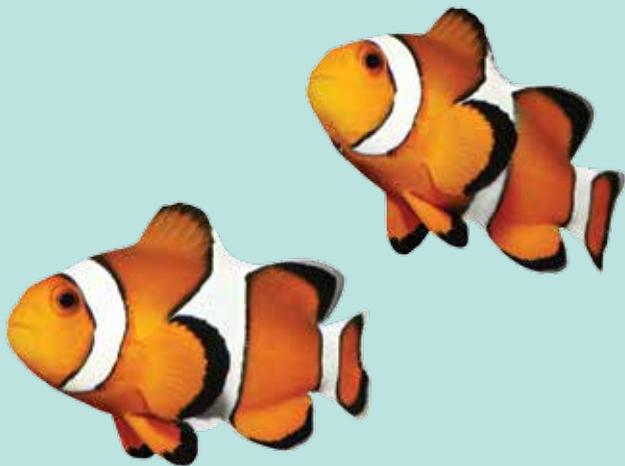
There is no one “right” way to read this book. You might decide to plunge in and read it straight through, from beginning to end. Or you can pick and choose sections that interest you at a given time, or that relate directly to a service plan you already have in progress. To help navigate whichever route you choose, each of the five service learning stages is introduced with an example of what actual teens did at that stage during a specific service learning experience (see **The Story of Tar Creek, Parts #1–5**, beginning on page 18), and each stage ends with a box briefly summarizing its contents.

Beware that once you dive in, there may be no returning to the surface. You may realize it’s time to change the tide and reclaim your water planet. You may feel compelled to join in the challenge to investigate, explore, brainstorm, plan, and get involved to improve your world. You may find yourself a changed person. You may even find yourself turning a little . . . **blue**.



Tips for Using this Book

- You are holding a written guide, but you will find other guides around you—adults you meet who know about our waters, friends, family, and community members who are all eager to help. People all across the globe are getting involved every day. Ask them questions. Learn what they have to share.
- Use a journal (made of recycled or reused paper) to keep track of your thoughts and observations as you read.
- Stay informed about current news involving our oceans and waterways, including issues of climate change and global warming.
- Visit the many websites listed in this book to find additional information and resources.
- Involve others in your journey—friends, family, a class, or a youth group. Learn, think, laugh, and work together to get the job done.
- Let your creativity inspire you to be an agent of change. Planet Earth needs **you**.



Service + Learning = Service Learning

What is service learning and how does it fit into all of this? Simple: service learning is the adventure that will take you from where you are now . . . to where you will be—helping rescue our planet’s water by using your knowledge, skills, interests, energy, and enthusiasm. Service + Learning = a recipe for action and success. This chapter introduces you to the process of service learning, and along the way provides examples of what you can do at each of its stages.

Service: Service means contributing to or helping to benefit others and the common good.

Learning: Learning means gaining an understanding of a subject or developing a skill through study, experience, or an exchange of ideas.

Service Learning: The ideas of service and learning combine to create service learning. Investigation, preparation, action, reflection, and demonstration are the five stages of service learning. By understanding how each stage works, you can be more effective in making plans to help in your community and the world.

Stage 1: Find Out → Investigate

“People can only protect what they love, but they can only love what they know.”—Philippe Cousteau Sr., explorer

The journey of service learning begins the way you begin many things: you **investigate**. What do you investigate? First, you investigate the resources that you bring to helping this planet. Then, you investigate the needs in your community related to oceans and waterways.

YOUR TURN**Create an Inventory of Your Skills and Talents.**

Do you enjoy photography, writing, art, research, math, or science? Are you a behind-the-scenes organizer or do you prefer being onstage with a microphone? Throughout service learning, your interests and abilities can be further developed. Stretch your mind as you think of all your skills and talents. If you are exploring Going Blue with a friend, interview each other to discover skills and talents. Ask questions. Make an inventory—a list—and keep it visible as you prepare, act on, demonstrate, and reflect on your ideas. This inventory can be helpful at every stage of your voyage. Remember, every person has unique value.

What Community Needs Interest You? Start a list and then discuss it with others and let your list grow. What topics are of greatest interest to people you speak with? Which ones capture the attention of just a few? Here's a surprise: Nearly every community need you can think of will have something to do with water. As you read on, you will find out how.

Investigation Example: Water Audit

Sometimes a community need appears in the form of a question. That happened when one middle school student asked: "How much water do we use?" This led her class to the challenging task of investigating and evaluating water usage at their school and in their homes. Were they wasting water? How could they find out? What could they do about it?

The students learned to read water bills and took a walking tour of their school to identify ways to conserve water. They developed a survey for home use to record how much water each family member used per week. They compared the results with the average water use in the United States of 80 to 100 gallons each day. After hearing a guest speaker describe strategies for water reduction at home, and conducting research through books and the Internet, students created and distributed a family-friendly guide, *Save Water: We Need Every Drop*.

Reread the previous paragraph. What skills and talents did the students put to use? What techniques did they use to investigate the community need? This will help you begin to investigate water issues in your own community.

Stage 2: Dive In → Prepare

“It takes as much energy to wish as it does to plan.”

—Eleanor Roosevelt, former first lady of the United States,
author, humanitarian

The next step on the service learning journey is to *prepare*. You have experience preparing all the time. You prepare for school in the morning, you prepare for a basketball game by shooting hoops, you learn lines for a play, and you gather ingredients to bake cookies.

Preparation Example: Flood Readiness

Imagine that your community experiences severe flooding. The flood might be due to a storm, to problems with overdevelopment, to soil erosion, or to some other cause. After investigating the issue, you decide to find ways to help people in your community know what to do if flooding occurs again. How would you prepare to help your community be ready for a flooding disaster? Answer this question on your own first, before reading the list below.

Now look at this list. Did you have similar ideas?

- Talk to people who work for emergency relief services, such as the Red Cross. Find out what they require for a flooding emergency. Do they need common supplies that could be collected, like blankets? What do they suggest people do to prepare for a flood?
- Speak to rescue workers, such as paramedics or firefighters. Are local maps accurate enough for them to reach the most remote homes in your community?
- Interview community members who were affected by past floods. What advice do they have about preparedness?
- Visit the location where people have been relocated during past floods, such as a school gymnasium or community center. What would make this place more welcoming—for

adults, children, and pets—if it is needed again for this purpose?

- Read about the causes of flooding in your community and what can be done to prevent it. Educating the community about flood awareness could be part of your action plan.
- Check out local newspaper coverage of recent floods. Who in your local government has ideas and knowledge about the issue? Can you meet with this person?

Part of preparation is finding people and organizations that care about the community need you've chosen to address. Gather the contact information for these people and build a team that can help you plan. This includes brainstorming ideas and generating possibilities. Think big and wide—all of this preparation and planning leads to the next stage of service learning . . .

Stage 3: Get Going → Act

“If you’re walking down the right path and you’re willing to keep walking, eventually you’ll make progress.”—Barack Obama, United States President

Once you have investigated your interests, skills, and community needs, and are prepared with the background knowledge you need, you are ready to create and carry out a plan to *act*. Action typically occurs as direct service, indirect service, advocacy, research, or a combination of several of these approaches.

Direct Service:
Your service involves face-to-face interactions or close contact with people, animals, or the environment—such as rivers, lakes, oceans, or any part of the watershed that is near you.

Indirect Service:
Your action is not seen by the people or animals who may benefit from it, but it meets a real need.

Advocacy:
What you do makes others aware of an issue and encourages them to take action to change a situation.

Research:
You gather and report on information that helps a community.

Action Example: Flood Readiness

Using the scenario of flood readiness again, here are examples of the different types of action that students have taken.

Direct Service: Students organized books, games, and toys and placed them in bins to be stored in the school gymnasium for use in flooding emergencies. They would then be able to lead activities with young children, entertain pets, and help families cope with the difficult situation.

Indirect Service: In case of flooding and evacuation, what documents must a family take with them? Students prepared large envelopes with a list of all the necessary documents—birth records, insurance papers, medical information, pet information—that families can place inside and take with them in case of an emergency evacuation.

Advocacy: A youth group learned how commercial development had caused soil erosion, leading to increased risks of flooding. They worked with local politicians to hold a town forum to discuss local concerns and advocate for zoning to protect fragile areas.

Research: Using photography, video, and podcasts, students documented the experiences and effects of flooding in their community and compiled a report for response teams and civic groups.



Four Action Strategies

What if you wanted to address toxic dumping in your local waterways? Think of an example for each of these four types of action.

Stage 4: Think Back → Reflect

“The most important thing is to actually think about what you do. To become aware and actually think about the effect of what you do on the environment and on society. That’s key, and that underlies everything else.”—Jane Goodall, environmentalist

What is one piece of information you have learned so far that you want to remember? What is one idea you have now that you didn't have before opening this book? When you answer these questions, you **reflect**: you look at your experience to determine what it has to do with you. Reflection takes place all along the service learning journey: as you investigate and prepare, as you do the service, and as you demonstrate what you have learned and accomplished. You will find reflection built into this book in the **Time for Reflection** boxes and in a series of questions in the Reflection section on pages 128–129.

Stage 5: Tell It → Demonstrate

“Not only is your story worth telling, but it can be told in words so painstakingly eloquent that it becomes a song.”—Gloria Naylor, novelist and educator

In this final stage you review what you learned, how you planned, what you did, and how you've reflected along the way. Then you tell others; you **demonstrate**. Here, you can again draw upon your interests and abilities to showcase your service learning efforts. How you tell your story is up to you. Will you:

Make a mural?

Create a website?

Build a display for your school or town hall?

Produce a PowerPoint presentation?

Perform a skit for a class or youth group?

Record a video or podcast?

Write an article for a school or community newspaper?

Create a comic book or brochure showing the steps you took?

Going Blue guides you through the service learning journey as you investigate, prepare, act, reflect, and demonstrate—all toward saving our oceans and waterways. So let's get started!



STAGE 1

FIND OUT → INVESTIGATE

In this first stage of your service learning journey, you will take steps to find out more about yourself and your skills and about the community you are trying to help. You will learn about the issues and identify a water-related need that you want to address.

The Story of Tar Creek: Part #1

Miami, Oklahoma, United States

Brownish orange in color, Tar Creek stretches across the north-eastern tip of Oklahoma, a region suffering from almost a century of lead and zinc mining that has left behind a mess of residue. Starting here with Investigation (Stage 1), you will follow the story of Tar Creek through the Five Stages of Service Learning.

Imagine seeing mountains of toxic waste wherever you looked. Students in Miami, Oklahoma, actually live in these surroundings, where mining waste has poisoned their land, water, and air. In fact, their community is so badly polluted it has been identified as a **Superfund site**. At the local high school, the students and their school counselor, Rebecca Jim, took the challenge of educating the community about their hazardous surroundings—including Tar Creek, one of the most polluted bodies of water in the United States. They have since become knowledgeable advocates determined to save their community.

A **Superfund site** is identified by the Environmental Protection Agency as a place where toxic waste has been dumped and needs to be cleaned up. About 600,000 toxic waste sites exist across the United States. One out of four people in the United States lives within four miles of a Superfund site.

How Did They Investigate?

The initial group of students who took on the Tar Creek challenge used various means of research to uncover the need. They documented their observations with photography and personal stories; they mapped areas that seemed most impacted. They studied the history of mining in the area to root out the causes of the toxicity. They interviewed local ranchers and community elders to gather accounts of what they have seen and experienced over time. Based on this rich evidence, students established a real need: community awareness to prevent exposure to Tar Creek polluted water and other waste from mining.

The Story of Tar Creek continues on page 60.



Tar Creek Superfund site. Photo credit: Janice Curtis

Getting Started: Your Water, Your Community, Your World

What needs to be uncovered about water in your community? Become a detective and find out what you need to know.

Get Active in Your Research

Have you ever received an assignment to do research and headed straight to Google? That's one way to research. Another way is to do *action research*—where you still use technology, but you also get to do much more. As you investigate the water situation in your community and the larger world, consider using these four action research methods:

- **Media:** includes books (such as the one you are reading right now), newspapers, magazines, movies, television, and the Internet—Web pages, blogs, Facebook, YouTube, and other online sites. Think of ways you can work with different media to learn more about water related topics.



- **Interview:** typically involves a person with expertise or experience in a given area. You will find many experts giving advice on the pages of this book. Can you think of someone you know personally whose work involves water? You might also ask around at school or in your community or search the Web to find a good person to talk to.
- **Survey:** gathers information from a group of people. You read about students conducting a survey of water usage in their school and homes on page 11. Surveys help you obtain facts, opinions, and ideas. Who could you survey about water issues in your community—students, family members, neighbors, business people, government officials, scientists, or teachers? How many surveys would you want to complete to get a full perspective on the issues?
- **Observation and Experience:** draws upon what you already know, have seen, and have done, and what you may venture out to see starting this very moment. Have a camera? Taking photos or videos of what you see around you tells a powerful story.

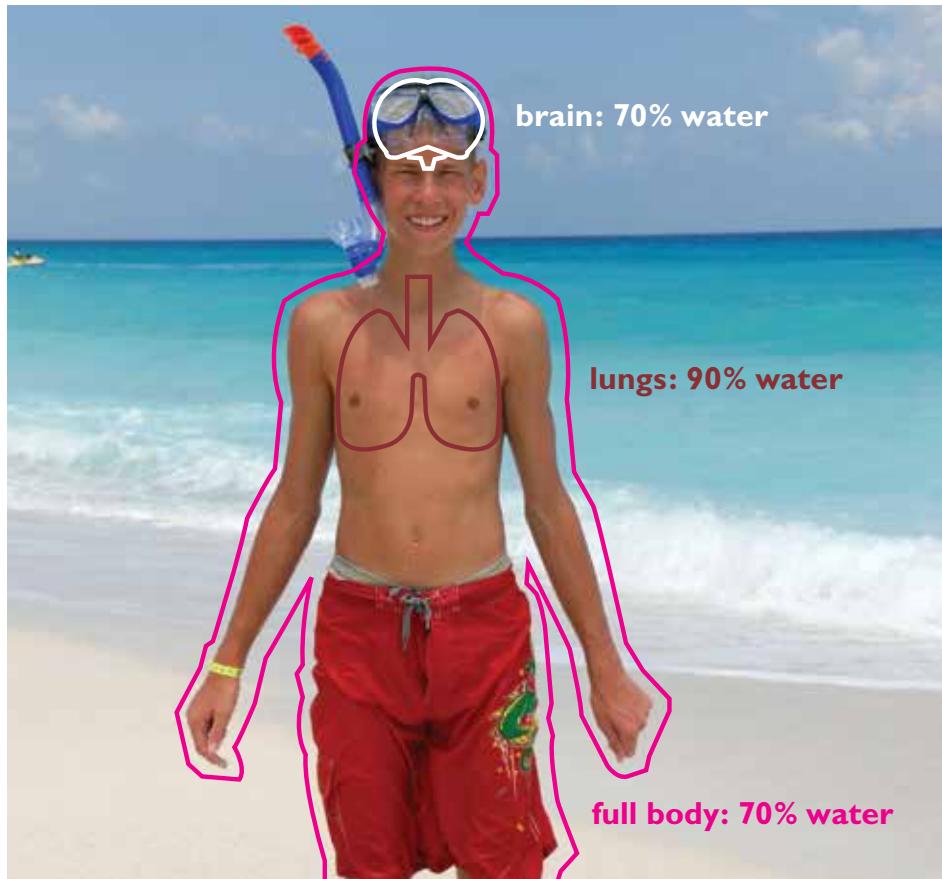
As you use these research methods, note which you like best. You may find you are a budding journalist who enjoys combining interviews and photos, or a statistics wizard who loves compiling survey results. Keep these methods in mind whenever any kind of “research” is calling you.

Be a Critical Consumer

As you investigate and research the issues and facts surrounding oceans and waterways, be aware that not everything you read or hear is accurate. It is up to you to try to separate the fact from the fiction. Consider your sources of information: are they dependable? Are they nonbiased (providing information regardless of their own interests)? Currently many diverse opinions exist about the condition of our environment, the causes of its condition, and what should be done as a result. For example, the majority of scientific opinion supports the theory that human industry plays a key role in global warming and climate change, which is potentially devastating for our planet, and yet the theory still has its detractors. Always validate your sources of information and be prepared to use this information to defend your statements and actions if needed.

You're All Wet!

A quick look at human anatomy lets us know that going waterless is not an option. We are simply *all wet*. Our brains alone are nearly three-quarters water, our lungs are a full 90 percent water, and our bodies on average consist of 70 percent water . . . just like this water planet we live on.



Life Takes Water

In addition to your body, everything about you requires water—your home is built from materials grown or produced with water. The food you eat needs water to be grown, processed, and shipped. The clothes you wear—you guessed it: water. Is there anything you use that doesn't rely on water to be produced? Not much. Check out the following chart that shows how much water is used to make, process, and transport some common goods.

How Much Water Does It Take to Make . . .

A SHEET OF PAPER?

2 gallons 

A CUP OF TEA?

8 gallons 

AN APPLE?

18 gallons 

A CUP OF COFFEE?

35 gallons 

A GLASS OF APPLE JUICE?

50 gallons 

A 2-LITER BOTTLE OF SODA?

132 gallons   

A POUND OF SUGAR?

200 gallons     

A PAIR OF JEANS?

500 gallons                    

 = 35
Gallons



A HAMBURGER?

630 gallons                      



A COTTON T-SHIRT?

700 gallons                   



Now you're probably wondering: *Why so much water?* Consider all that goes into producing these items. To make a hamburger, most of the 630 gallons of water go into growing grain to feed the cattle. To make your favorite pair of jeans, water is used to grow, process, and dye the cotton, and to keep the factory operating. Water also is used in the plant that manufactures the plastic bottle that holds your soda . . . and in the freighter that transports your Colombian-grown coffee beans to your grocery store.

What does this mean about the choices you make every day? Do your choices matter?

If you are a typical person living in the United States, you use an average of 80 to 100 gallons of water every day.

Consider that . . .

When you . . .	you use . . .
Flush a toilet	5–7 gallons per flush
Take a shower	7–10 gallons per minute
Fill a bathtub	36–50 gallons
Brush your teeth	10 gallons if the tap is running
Wash your hands	2 gallons if the tap is running

World Water Monitoring Challenge is an international education and outreach program that builds public awareness and involvement in protecting water resources around the world by engaging citizens to conduct basic monitoring of their local waterways. Visit www.worldwatermonitoringday.org for more information.

Note that even how you *discard* your waste takes a lot of water. And this list does not even include countless other activities—such as drinking water, cooking food, washing your clothes, watering your lawn, and running a dishwasher.

YOUR TURN

How Do I Love Water? Let Me Count the Ways . . .

Can you think of other ways that you use water every day? Make a list. Ask others how they use water. Challenge a friend to a see who can list the most uses for water. Combine your lists. This may lead to a water usage awareness campaign in your school or community.

TEENS IN ACTION

Victoria, British Columbia, Canada

Don't Be a Drip

At South Park Family School in Victoria, British Columbia, students participating in the Roots & Shoots program (see the Roots & Shoots box on page 27) decided to conserve water at school, home, and workplaces, and to teach the community how to conserve, too. They performed skits, made posters, and placed stickers at every sink, fountain, and shower in the school with the slogan: Don't be a drip—Turn me off quick!

Colombo, Sri Lanka

Camp Biodiversity

In Colombo, Sri Lanka, students organized a two-day camp for kids to study biodiversity in a local forest. They implemented 400 water monitoring tests using kits received from the World Water Monitoring program and constructed 20 household rainwater-saving units as models for the community to follow. When the students found five disappearing species of mango trees, they reintroduced them by cultivating 1,000 seedlings to be replanted. Along the way, they learned about the water shortages facing their communities and the importance of water conservation. Ultimately, they developed a newfound respect for environmental preservation efforts and their surrounding ecosystem.

Nova Scotia, Canada

Rocks in the Pot

Ecole Saint Catherine's School Roots & Shoots program in Halifax, Nova Scotia, invited a representative from Clean Nova Scotia to their school to deliver a presentation on climate change and water conservation. After becoming informed about water issues, students aimed to reduce their consumption by installing water reservoirs in the school's 45 toilets. Students collected 500mL plastic bottles from recycling bins, filled them with water and pebbles, then put two bottles in every toilet tank, reducing each flush from 13 liters to 12.



Turning off the tap is the obvious way to use less water. But it's just as easy to do what the Halifax students did to instantly turn your toilet into a low-flow version. Simply fill a used plastic bottle with water and put the full bottle in the tank of your toilet. The number of ounces that the bottle holds is how much water you save every time you flush!



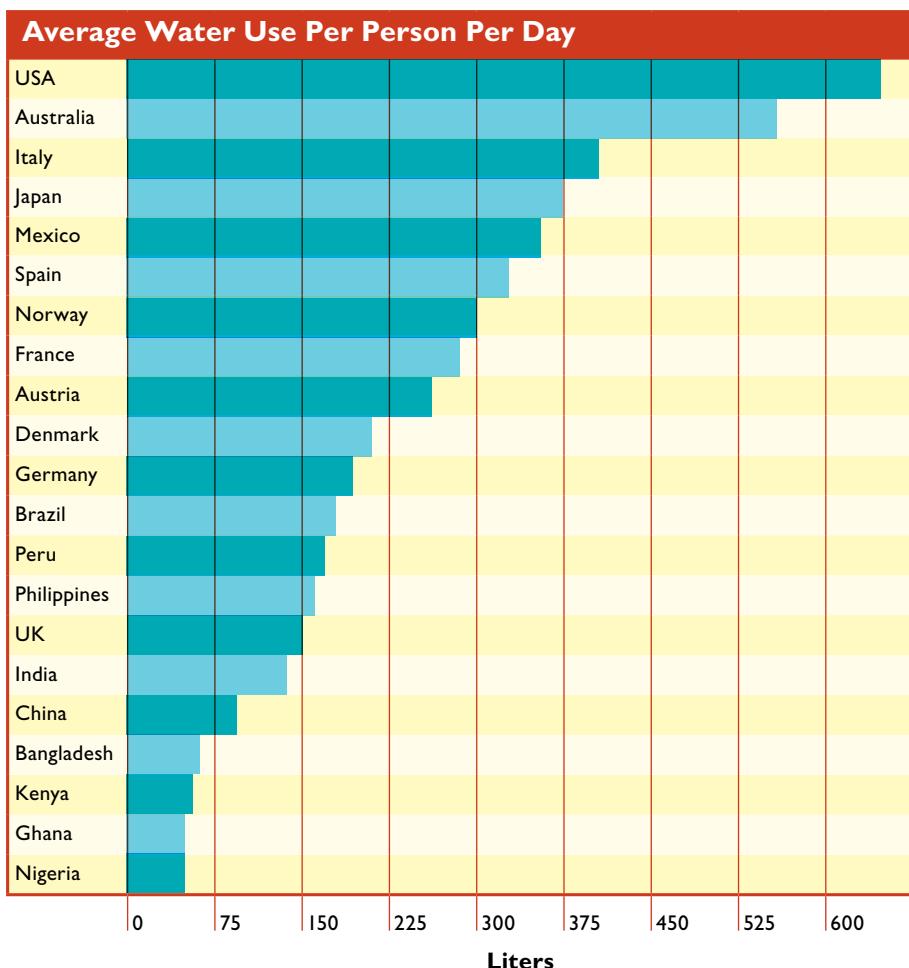
World Water Use

Is water usage the same everywhere in the world? Not at all. People living in the United States consume the most. The following chart shows the average daily water use in some of the world's nations.

Only a small percentage of the world's population consumes the majority of its water resources.

Why do you think this is the case? Unfortunately, with all the water on our water planet, there is not an endless supply for people everywhere to use, as you will read in the next section.

If everyone in the United States used just one less gallon of water per shower daily (that's roughly six fewer seconds in the shower) . . . 85 billion gallons of water per year would be saved.



Water, Water Everywhere . . . or Is It?

- 71% of Earth's surface is covered by oceans.
- The average depth of the ocean is 2.5 miles.
- The average temperature of the ocean is 39 degrees Fahrenheit.
- The Pacific Ocean is the largest body of water in the world, covering 33% of Earth's surface.
- The Arctic Ocean is the smallest ocean, holding only 1% of Earth's seawater. This is still more than 25 times as much water as in all the rivers and freshwater lakes combined.
- Antarctica has as much ice as the Atlantic Ocean has water.
- The average sea level has risen between 4 and 10 inches over the past 100 years alone.
- 97% of the world's water is in the ocean.
- The largest living structure on Earth is in the ocean. It is the Great Barrier Reef, which covers an area larger than Great Britain and can be seen from space.
- Three-quarters of the world's largest cities are located by the sea.
- More than 90% of the goods traded between countries are carried by ocean freighters.



Jane Goodall's Roots & Shoots program is a global network of young people taking action to make the world a better place. Find out more at their website.