

THE WATER PROJECT

LESSONS TO CHALLENGE AND INFORM



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INTRODUCTION

Dear Teacher:

Thank you so much for your interest in The Water Project! In the Teaching Tools portion of The Water Project web site, we have created several fun and engaging activities to help you teach your students about various components of the water crisis. We've set up the program in three parts: The Problem, The Solutions and Get Involved.



The activities are uniquely varied. Some of the activities are tied closely to our website while others allow students to interact with the material in their own ways. Many of the activities are done in groups, but modifications are certainly possible. Each of the activities can be used independently or together can become a full "Water Crisis Unit." There are also a few additional materials available for student research listed at the end of this document.

The Problem section has three lessons that look at specific components of the water crisis; water scarcity, the effects of unclean water, and lack of hygiene and sanitation training. Water Water Anywhere is an activity addressing issues of water scarcity, both physical and economic. Dirty Water... So What? explores four different effects of dirty water: health, hunger, poverty and education. Hand Washing Hang Ups looks at the challenges of teaching hand washing, one of the important sanitation and hygiene lessons that are taught during a water project in a developing country.

The Solutions section focuses on what types of water projects can be applied to address economic water scarcity. In the Village Voices Simulation, students are asked to take on a role of a water projects committee in a local village or community. Here they will help decide which type of project is best for four different villages. We have also provided a basic word-search where student recall the various types of projects that we support. These two activities work well together and can be used either as prerequisites or follow-ups of one another.

The Get Involved section asks students to take up the cause of the water crisis and do something about it. Students may choose to take our Water Challenge, giving up all beverages but water for two weeks and donating the money that they would otherwise have used on drinks. Using our Fundraising Ideas page, some students may want to organize a one-time event and donate the proceeds from ticket or merchandise sales.

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myWaterProject also allows students to raise their own awareness levels and fund-raise and can be used individually or with the whole class.

We have also included some potential student resources. The Water Crisis by the Numbers is a fact sheet that includes all sorts of compelling and interesting facts about the water crisis. Keep on Digging is an annotated bibliography that provides students (and you!) with links for future research. The bibliography is set up to familiarize students with the many different international organizations that report on different components of the global water crisis.

Thanks again for your interest in The Water Project and if there is anything that we can help you with - please do not hesitate to reach out to us!



R. Peter Chasse

Founder and President

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WHAT YOU WILL FIND IN THIS PACKET

THE PROBLEM:

Water Water Anywhere (Water Scarcity)

This activity requires some set up but quickly transforms the classroom into three “country-stations” to show students the differences between water abundance, economic scarcity and physical scarcity. Groups must fill a water bottle with the resources that are set-aside for their particular group using specific instructions. They are encouraged to evaluate their decisions and make honest reflections about how water is accessed around the world, and how priorities impact the use of water.

Dirty Water... So What? (Unclean Water)

Understanding all of the different ways that water can cause problems in a society can be a big challenge. The simple jigsaw activity and quiz are based off of the 4 effects components on our website (health, hunger, poverty and education). While the topics might seem easy to understand at first glance, this exercise will give students a glimpse into the complexity of the situation. As in all jigsaw activities, students are made to utilize reading and comprehension skills in discussing, summarizing and then re-teaching their fellow classmates. A list of potential additional activities are included to further students understanding of the effects of unsafe water.

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Hand Washing Hang Ups (Lack of Sanitation and Hygiene)

While toilets and hand washing are taken for granted in this part of the world, elsewhere they are brand new concepts. This lesson asks students to recall what they know about hand washing and find ways that they would be able to teach others. This lesson includes several components including a critical thinking free-write, a hand washing demonstration and introduction to the tippy tap technology (with 3 minute video), as well as a variety of creative ideas for students to create resources that could be used by a public health worker abroad.

THE SOLUTIONS:

Village Voices Simulation (Types of Projects)

Critical thinking and problem solving group activity which asks students to take on the role of a specific person in the developing world (expert geologist, expert climatologist, public

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health officer, or village elder) to determine the appropriate water solutions for four different communities. This activity is heavily dependent on students having read, or having access to the “Types of Projects” section of the website. This also includes an option for introducing students to real life challenges involved in the process of a water project, including such topics as corruption and ethnocentrism.

Water Project Word Search (Types of Projects)

Reading comprehension tool to ensure that students have read the information on the “Types of Projects” section of the website. As they read through the material, students should determine the answers to the clues and write them down before they begin looking for words in the puzzle.

GET INVOLVED:

The Water Challenge (Diverting Funds)

The Water Challenge asks students (and maybe even teachers!) to give up all non-water beverages for two weeks. The idea is that money that would normally be spent on consumption is simply diverted to a contribution. The Fundraiser Kit includes handouts, posters, videos and a Leader’s Guide. The Leader’s guide even includes a letter explaining The Water Challenge to parents. Participants also receive *free wristbands* to remind themselves of the challenge. More information is available at:

<http://thewaterproject.org/thewaterchallenge.asp>

Fundraising Ideas (Raising Funds)

Our Fundraising Ideas page is just the tip of the iceberg! Using the images, posters and logos in our Media Kit, the Fundraising Ideas will really take life and you’ll see just how creative your students can be. Students are welcome to design their own The Water Project t-shirts with our logo or host an event like a talent show or concert. Both of these great resources are available for download at: <http://thewaterproject.org/start-a-fundraiser.php>

myWaterProject (Raising Awareness)

The **myWaterProject** resource area allows any individual to learn more about the water crisis. Students can set up a profile and then gain impact points for downloading videos, handouts, and other materials. Students can also organize their own Water Challenges and

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fund-raising events through the interface. To log in and explore go to:
<http://my.thewaterproject.org/>

ADDITIONAL RESOURCES:

Just the Facts; Water Crisis by the Numbers (Fact Sheet)

This page gives all of the facts and statistics used throughout The Water Project website in one easy to access place. Citations are included for students that may be trying to cite or find original sources.

Keep on Digging (Annotated Bibliography)

This bibliography gives students a place to start their own personal research into the water and sanitation sector. Annotations are made to help students determine whether the particular source contains the sorts of information they are looking for.



LESSONS

LESSON: WATER WATER ANYWHERE

WATER WATER ANYWHERE

Water scarcity is often a concept that students have difficulty truly visualizing. In this activity, students will go through three different stations for approximately 5 minutes each in order to experience the effects of water scarcity. The stations include:

- Water Abundance
- Physical Scarcity
- Economic Scarcity

Overview:

In the first station, Water Abundance, students will see their water bottle (symbolic of their population) overflowing into a bowl with little effort and quite early on.

The second station, Physical Scarcity, will require students to prioritize which segment of their population (agriculture, industry, human) are most important to receive a portion of the limited resource, water. The exercise is set up so this station will never truly be satisfied as they will simply not have enough water to fill their whole bottle. The challenge will be to process what happens when part of their resources are not fulfilled (hunger, poverty, health, etc.)

The last station is Economic Scarcity. In this station, though students technically have enough water, they can not easily access it. Their "potential" clean water is sealed and prohibited while the resource that they are permitted to use is "far away" (on the other side of the room) and dirty. This symbolizes the resources, such as underground water, that the population does not have access to for economic reasons. Further, they must carry an extra weight with them as they walk, individually, across the room. The weight here is symbolic of the physical burden of collecting water, while the individual walk, is meant to remind students of the vulnerability and dangers of the process. This third station will likely simply run out of time before their water bottles are filled. This is symbolic of the fact that people in this situation often don't have enough time to both collect water and earn an income.

At the end of the 5-minute period, students will spend a few minutes in reflection, answering the questions on their Notes pages before rotating stations. At the end of the activity, a discussion of the concepts and challenges relating to water scarcity should be much more effective as students have experienced water scarcity in a more tangible way.

LESSON: WATER WATER ANYWHERE

Materials:

- Water, Water Anywhere Notes handouts (3 pages)
- 2 1-gallon jugs of water
- 3 large (27 oz) Water bottles (We have some great ones in our store!)
- 1 3-cup measuring cup
- 30 5 oz. disposable paper cups
- 3 large flat bottomed bowls for water bottles to sit in
- Small opaque pitcher (approx. 4-5 cups)
- Coffee Grinds or dirt
- 5 pound weight (This can really be any size. The intention of the weight is to remind students of the physical burden of carrying water. A real jerry can weighs more than 40 pounds when full. An alternative to a hand weight might be a backpack filled with heavy books.)
- Clock
- Marker (for labeling)
- Paper towels (just in case)

Procedure:

1. Label everything:
 - Disposable paper cups per group: 7 "Agricultural Needs", 2 "Industrial needs" and 1 "Human needs"
 - 1-gallon water jugs: 1 "Potential", 1 "Resources"
 - Opaque pitcher and 3-cup measuring cup: "Resources"
 - 27 oz. water bottles: "Population"
 - Large bowls: "Water Abundant", "Physical Scarcity" and "Economic Scarcity"
2. Use the "Resources" gallon of water to fill opaque pitcher and 3-cup measuring cup.
3. Stir coffee grinds/dirt into the opaque pitcher to make it "dirty"
4. Set up each stations with the supplies (resources, needs and population) needed.

STATION 1: Water Abundance

- 1-gallon water jug labeled "Resources" (now partially empty)
 - 10 paper cups, labeled "Agricultural/Industrial/Human Needs" as stated above
 - 1 water bottle labeled "Population"; place inside "Water Abundant" bowl
-

LESSON: WATER WATER ANYWHERE

STATION 2: Physical Water Scarcity

- 3-cup measuring cup labeled "Resources"
- 10 paper cups, labeled "Agricultural/Industrial/Human Needs" as stated above
- 1 water bottle labeled "Population"; place inside "Physical Scarcity" bowl

STATION 3: Economic Water Scarcity

- 1-gallon jug of water labeled "Potential" (still full and sealed, if possible)
- 10 paper cups, labeled "Agricultural/Industrial/Human Needs" as stated above
- 5 pound weight or alternative such as backpack with books
- 1 water bottle labeled "Population"; place inside "Economic Scarcity" bowl
- Opaque pitcher labeled "Resources"
- Clear path across the room to where the opaque pitcher is located (if you can't have students walk, just have students wait 30 seconds between pours)

5. As students come in, distribute Water Scarcity Handouts and explain that each station represents a part of the world with a different condition of water. The students will "travel around the world" stopping in each station for 5 minutes to read about the specific situation and then provide their citizens with water by filling their 27 oz. water bottle as instructed.

6. At the five minute mark, have students stop pouring and give them 2-3 minutes to write down their observations and reflections on the handout.

7. Have students CAREFULLY return the water from their "Population" bottles and station bowls to its "Resource." Be sure to have paper towels on hand.

8. Have students rotate twice to do all three stations.

9. Discuss the experience! Give students a chance to share their reflection responses. Be sure that students understand the symbolism of the various components, especially in economic scarcity.

Optional:

You may want to have students write an essay for further reflection or use this activity to kick-off a Water Challenge (<http://thewaterproject.org/thewaterchallenge.asp>) or myWaterProject campaign (<http://thewaterproject.org/start-a-fundraiser.php>)

LESSON: WATER WATER ANYWHERE

WATER WATER ANYWHERE NOTES

STATION 1: WATER ABUNDANCE

You are in an area of water abundance. Water conservation is something you know about, but never really seems relevant with your excessive access to freshwater and advanced technologies. Use what is left of your five minutes to provide water for this population. Fill the "Need" cups from your "Resources" and pour it into your "Population." Because of your abundance, all cups should be completely full as they are added to the bottle - make sure your "Population" bottle is inside the bowl to prevent a mess.

Observations:

Did your population have enough water to fill the water bottle? Explain.

Reflections:

What went through your mind as you kept pouring more and more water into the abundant population? Did you ever think it was too much? Reflect on the experience.

LESSON: WATER WATER ANYWHERE

WATER WATER ANYWHERE NOTES

STATION 2: PHYSICAL WATER SCARCITY

You are in an area that has physical water scarcity. You may be located near a desert, or simply have had a population boom that has caused your old resources not to be enough. Use what is left of your five minutes to provide water for this population. Fill the "Need" cups from your "Resources" and pour it into your "Population." Because of your scarcity, water use is carefully allotted and conserved. Some cups will be half full while others are totally full. Choose carefully how you fill and mark your decisions in the chart below:

Cup:	1	2	3	4	5	6	7	8	9	10
Need:	Agric.	Agric	Agric	Agric	Agric	Agric	Agric	Indus.	Indus.	Hum.
None										
Half										
Full										

Observations:

Did your population have enough water to fill the water bottle? Explain.

Reflections:

How did you decide to fill your paper cups? What would it mean if you were only able to provide half the agriculture resources needed? (hunger, etc) industrial resources? (poverty, etc), domestic resources? (health, etc) Reflect on the experience.

LESSON: WATER WATER ANYWHERE

WATER WATER ANYWHERE NOTES

STATION 3: ECONOMIC WATER SCARCITY

You are in an area that has economic water scarcity. You have a good source of water but for some reason cannot access it. This might be due to political unrest, conflict, or simply lack of money. Instead, you use an unimproved water source that is dirty and far away to provide for your population. To fill the "Need" cups from your "Resources" (the pitcher across the room), you must individually *walk* across the room carrying the weight and a single cup, then *walk* back and pour the "Need" into your "Population." You may NOT use the "Potential" water at all. You may not have enough time to fill all of your population's needs so choose which cups are most important to fill first.

Observations:

Did your population have enough water to fill the water bottle? Explain.

Reflections:

How did you feel about having to do so much work in the economic scarcity station, (carrying extra weight, walking back and forth, getting dirty water, etc.) when you had a gallon of clean water in front of you? Reflect on the experience.

LESSON: DIRTY WATER ... SO WHAT?

DIRTY WATER... SO WHAT?

Understanding all of the different ways that water can cause problems in a society can be a big challenge. The simple jigsaw activity and quiz are based off of the 4 effects components on our website (health, hunger, poverty and education). They are easy to understand but should still give students a glimpse into the complexity of the situation.

Overview:

To learn about the effects of the water crisis, we suggest utilizing a jigsaw approach. Have students get in groups of 4; this group will be their 'home group'. Assign each student one web-page to read to themselves: Health, Hunger, Poverty, and Education (links listed below).

After reading the material, students will form an 'expert group' where they will meet with the students from the other 'home groups' who have read on their same topic. They will discuss with their 'expert group' and determine how best to teach their 'home groups' about their subject. After meeting with their topic groups, students should return to their 'home groups' to teach the other students about their particular sections.

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A simple half-page quiz is included to ensure that students have actually communicated the critical information to their 'home groups.' In the jigsaw method, the quiz should not be graded but simply be used as a check to ensure that students communicated overall ideas, not necessarily specifics. You may choose to use the quiz page as both a pre- and post- test or cut the quiz page in half to only have students complete the quiz after the jigsaw experience.

In addition to the jigsaw, you may choose to ask students to:

Create a public service announcement video using at least 1 fact from each effect. If you send us the YouTube link, we may even repost it!

Craft a 30 second news intro summarizing the effects of bad water. (Have your school's TV station use it before broadcasting the PSA!)

Host a debate arguing which effect has the greatest impact – or have students write position papers.

LESSON: DIRTY WATER ... SO WHAT?

Write a story about a family that experiences the effects of dirty water and predict how their life might be different after a well or other project is built.

Student Links:

Health: <http://thewaterproject.org/health.asp>

Hunger: <http://thewaterproject.org/hunger.asp>

Poverty: <http://thewaterproject.org/poverty.asp>

Education: <http://thewaterproject.org/education.asp>

Optional:

You may want to have students consider getting involved in solving the water crisis. One possible activity is a Water Challenge (<http://thewaterproject.org/thewaterchallenge.asp>) or other fundraising campaign where the class teams up to raise awareness and donate to a clean water project. For downloadable ideas and a media kit see:

<http://thewaterproject.org/start-a-fundraiser.php>

LESSON: DIRTY WATER ... SO WHAT?

QUIZ

1. Give *two* reasons why a student might miss class as a result of having dirty water?
2. True or False. At every age, *men* are *more* likely than *women* to go collect water.
3. Most of the world's water is used for:
A. Agriculture. B. Industry C. Household Purposes
4. True or False. In general, people in *urban* areas are *more* likely than people in *rural* areas to have access to water and sanitation facilities.
5. Give *two* examples of how dirty water keeps people in poverty.
6. This group is most susceptible to waterborne diseases.
A. Women B. Men C. Children

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LESSON: DIRTY WATER ... SO WHAT?

Quiz Answers

1. Give *two* reasons why a student might miss class as a result of dirty water?

- Caring for a sick parent/sibling
- Have to go fetch water
- Teacher is sick
- Student is sick from a waterborne disease

2. True or False. At every age, *men* are *more* likely to go collect water than *women* are likely to go collect water.

False. Girls under 15 are twice as likely; women are responsible to get water 66% of the time, while men only 22% of the time.

3. Most of the world's water is used for

Agriculture. Approximately 70% of water is used for agriculture and industry, 20% on industry and 10% on household uses.

Industry

Household purposes.

4. True or False. In general, people in *urban* areas are *more* likely to have access to water and sanitation facilities than people in *rural* areas.

True. In Sub-Saharan Africa specifically, urban areas are twice as likely to have access to water and sanitation facilities.

5. Give *two* examples of how dirty water keeps people in poverty.

LESSON: DIRTY WATER ... SO WHAT?

Examples:

Can't go to school/work because of illness

Money on medicine means no money for other things

No time to work or start a business because of time spent fetching water

6. This group is most susceptible to waterborne diseases.

Women

Men

Children. With weak immune systems - 1 of every 4 deaths in early childhood (before 5 years of age) is from a waterborne disease.

LESSON: HAND WASHING HANG UPS

HAND WASHING HANG UPS

Hygiene and sanitation training are an important component of any water project. Teaching the local community about how diseases are transmitted, and how best to use their new clean water source are essential components to the overall success of a new community water source. Without this education and the changed behavior that follow, diseases will continue to be transmitted unknowingly, and the benefits of the clean water will go unrealized.

Overview:

This activity session includes several shorter components. As teacher, you may choose to pick and choose certain activities or do the entire session. The session begins with a free-write to get students thinking about sanitation in their own life. Often in the developed world, we take toilets and sinks for granted, but this is not the case around the world. This first activity challenges students to do some self-reflection on the issue.

From there, students recall their own hygiene training in terms of hand washing. One student then demonstrates proper hand washing technique in order to determine just how much water is needed for a single hand washing. Students are then challenged to determine how much water it would take their families if they were to wash properly at all the appropriate times in a given day.

Faced with a realization of just how much water they use, this discussion leads to the need to conserve water in such scarcity situations. The tippy tap, a simple hand washing station, developed for use specifically in the developing world, is then introduced through a video and/or demonstration. The importance of hygiene and sanitation education is enforced in this session through video and follow-up discussion.

To close, students are asked to be creative again and become a "volunteer public health worker." Students may choose an assignment, or you can select one for the whole class to actively do. Options include writing a skit, designing a pamphlet, writing a song or designing their own tippy tap.

Free Writing Activity:

Give students a few minutes to free-write on one of the following questions:

- How would your life be different without indoor plumbing?
 - Which is more important to you, your cell phone or a toilet? Why?
-

LESSON: HAND WASHING HANG UPS

As students share their answers, you may choose to give them these or other facts:

- 2.6 billion people do not have access to a toilet. That's just a little bit less than 1 in 3 people in the world.
- More people in the world have access to a cell phone than a toilet.
- Washing hands with soap and water reduces diarrhea deaths by more than 40%.

Note: Our "Water Crisis by the Numbers" fact page is located at the back of this packet if you'd like to bring in additional facts.

Hand Washing Demonstration and Discovery:

Materials:

- Pitcher
- Bucket
- Soap
- Towel
- 1000 ml graduated cylinder

Ask students to recall everything they know about washing hands and write it on the board.

- How long should you wash? ("Happy Birthday")
- What part of the hands has to be washed?
- When do you wash hands?

Have a student volunteer demonstrate proper hand washing technique in front of the class with soap, a pitcher and a bucket to collect the total water used. As the teacher, pour the pitcher over the student's hands. It's important that for this demonstration you do NOT try to conserve water. Be sure to have a towel on hand. Measure the water used in ml.

Have students complete the Activity Worksheet in the chart below for their own family using the number you just figured as the estimated water. In general people will estimate somewhere between 25 and 60 washes, but there are no right/wrong answers.

Note: this is an actual exercise used in some sanitation and hygiene programs to make people aware of how many times they should be washing their hands. In many communities this is a brand new concept. It may be a good reminder for your students as well.

LESSON: HAND WASHING HANG UPS

Once students have done the math, point out that every 20 Liters is another trip to the well. Point out that what this would mean is that if the family washes their hands properly, it could actually keep a child out of school to go and collect that water. Explain to students that because of this, water saving solutions, like the tippy taps that you'll explore next, are a necessary part of the developing world.

LESSON: HAND WASHING HANG UPS

**Activity
Worksheet**

**HOW MUCH WATER WILL THAT TAKE??
HOW MANY TIMES A DAY DOES A FAMILY NEED TO WASH?**

Estimated amount of water to wash hands CORRECTLY (in ml) _____

HAND WASHING	Number of times a day/ each person	Number of family members doing this	Total number of times a day
After defecation			
After cleaning a baby's bottom			
Before preparing food/cooking			
Before eating			
TOTAL			

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Estimated amount of water to wash hands CORRECTLY (in ml) _____

Multiply by number of washings _____

TOTAL AMOUNT OF WATER FOR A FAMILY

WASH CORRECTLY FOR ONE DAY _____

LESSON: HAND WASHING HANG UPS

Introduction to the Tippy Tap:

Explain to students that water saving solutions are necessary to keep kids in school, and women from having to spend all of their time walking to get water just for hand washing. One of the simplest solutions is the tippy tap. The tippy tap is a hand washing station that allows people to use small amounts of flowing water (40 mL instead of 500mL+) and soap instead of contaminating a whole bowl of water.

Have students watch this 3 minute video: <http://www.tippytap.org/videos/> and discuss briefly their reactions. You may also want to give out the handout on the next page for students to follow along.

As students discuss, explain that contrary to popular belief, soap is available and present almost everywhere in the developing world. It is simply thought to be more of a priority for laundry, dishes, and bathing than basic hand washing. Further, where soap is not available, many places will use ash for these tasks. All of that being said, basic hand washing can cut down on diarrhea rates by more than 40%. Further, the simple design of the tippy tap is vital to its success for three reasons.

1. Children can be taught how to build and operate it. This also means that they can teach their parents.
2. The hands free design means that no germs are transferred between users.
3. The water is not wasted but used by plants directly around the tap or put back into the water table.¹

Note: Students may wonder why education is important. The video "I am a Leader. I am Powerful."² illustrates how this principle of empowerment and knowledge works to change community behaviors. It is a critical tool to increase the likelihood that clean water is used effectively in a community. You can view it at the very bottom section of our home page: www.thewaterproject.org; or here at <http://vimeo.com/22845906>.

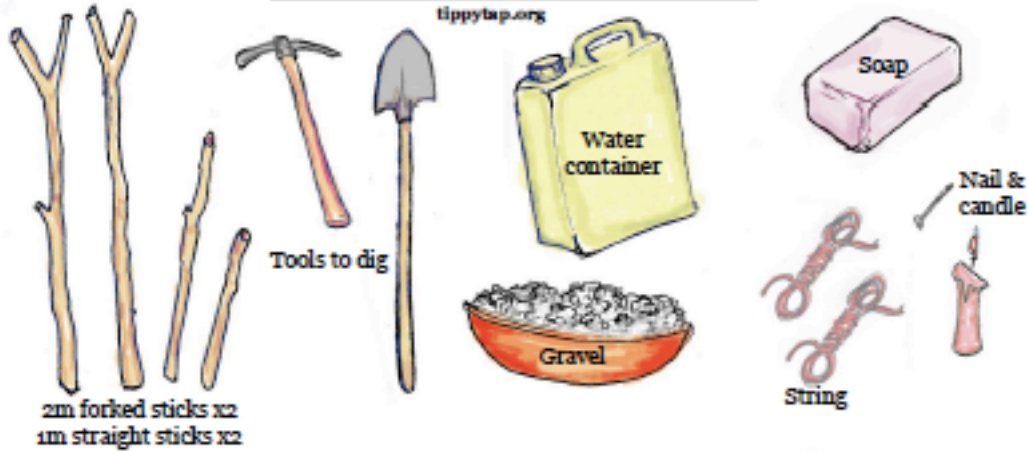
¹All statistics and facts from this section come from Tippy Tap: <http://www.tippytap.org/the-stats/> and <http://www.tippytap.org/the-tippy-tap/>.

²Video courtesy of Living Water International.

LESSON: HAND WASHING HANG UPS

BUILD YOUR OWN TIPPY TAP

tippytap.org



<p>1. Dig two holes 18 in (45 cm) deep and about 2 ft (66cm) apart</p>	<p>2. Place the forked sticks in the holes and ensure they are level</p> <p>Oil bottom of sticks to prevent termites</p>	<p>3. Fill holes with soil & rocks, and pack tightly</p>
<p>4. Heat the nail and make 2 holes in the water container</p>	<p>5. Make a hole in the soap and thread string through it</p>	<p>6. Hang container & soap and fill with water</p>
<p>7. Attach string to water container</p>	<p>8. Attach other end to foot lever stick</p>	<p>9. Use gravel basin to capture water</p>



LESSON: HAND WASHING HANG UPS

Be a Volunteer Health Worker:

Have students choose an activity from the list below. Groups may be needed for some activities.

Create a Skit:

Your skit will be used to teach a group of adults about germs and the importance of hand washing. The tricky part is that not everyone speaks or understands English in a lot of countries. So you have to use pantomime or other ways of communicating beyond words.

Create a Pamphlet:

In some places people still don't know how to read but they still have to learn about disease. One way that is used to teach people is pamphlets with lots of pictures. Create a pamphlet that can be used anywhere in the world to show people how and when to wash their hands.

Write a Song:

Children learn new languages a lot easier than adults so in some places the children know more English than their parents. Write an original song for children that teaches them how to properly wash their hands.

Design Your Own Tippy Tap:

We've seen people use all sorts of things - like a hollowed out gourd with a pen casing - to create tippy taps from whatever materials they have available. Using only materials in the classroom and/or your home, design your own tippy tap. If you actually make it - take a picture and send it to us! We may re-post it!

Optional:

You may want to have students consider getting involved in solving the water crisis. One possible activity is a Water Challenge (<http://thewaterproject.org/thewaterchallenge.asp>) or other fundraising campaign where the class teams up to raise awareness and donate to a clean water project. See <http://thewaterproject.org/start-a-fundraiser.php> for downloadable ideas and a Media Kit.

LESSON: VILLAGE VOICES

VILLAGE VOICES

The Village Voices simulation is meant to give students a fuller understanding of the conditions necessary for the various technologies that are used to provide clean and safe water to people in developing countries. In short, it is a way for students to become familiar with the solutions to the water crisis. We recommend that students familiarize themselves with the “Types of Projects” section of The Water Project website before the simulation, (http://thewaterproject.org/water_project_detail.asp) with access to the site, or detailed notes during the simulation. You may also choose to share this article, written by Jack Owen, our WASH Programs Director, as he explains a little bit about choosing projects here. <http://thewaterproject.org/community/2011/05/03/sand-dams-and-other-miracles/>:

Overview:

In this activity, your class will be broken into groups of four to determine the best water solution for each of four different communities. You can choose to assign students one or all of the communities depending on your time allowance. Each village is completely independent.

Each student will assume a role as a Geologist, Climatologist, Public Health Officer, or Village Elder. Students will each receive a paper with specific insights for their role on each of the 4 villages. Using the information from the “Types of Projects” section of The Water Project website, groups must work together to determine which technology is best for each village.

Included in this activity are

- Individual role pages
- Suggested answers, justifications and examples, and
- An optional follow up activity on the challenges of community development

Optional:

After processing through this exercise, students may want to take action and get involved in the water crisis solutions themselves. It happens often! One possible activity is a Water Challenge (<http://thewaterproject.org/thewaterchallenge.asp>) or other awareness and fundraising campaign where the class teams up to donate to a clean water project. For other ideas and resources, see <http://thewaterproject.org/start-a-fundraiser.php> for downloadable ideas and a Media Kit. For more inspiration, read what

LESSON: VILLAGE VOICES

other groups have done to bring clean water to communities in need on our Featured Fundraiser pages (<http://thewaterproject.org/community/category/featured-groups/>).

LESSON: VILLAGE VOICES

VILLAGE VOICES ROLES

EXPERT GEOLOGIST

Your Role:

As an expert geologist, the people in this meeting look to you for advice on how deep the water table is and what can be done about pulling water from the earth. If you're going to drill a well, it's up to you to make sure it's the right depth.

Village 1:

This soil here is very rocky, but it appears to be consistent all the way down. To reach water we will have to go down at least 400, maybe even 450 feet.

Village 2:

The ground is dry but not as bad as I've seen. I just don't think it is good for crops. There aren't any rivers within walking distance, but the water table is only about 40 feet down.

Village 3:

There is a riverbed just a few hundred feet from the village, but it's dry right now and seems to have been that way for months. The water table, you ask? It's about 200 feet below the surface.

Village 4:

The bad news is that once you get past the first few feet of good soil, the rock goes down 400 feet and then turns into sand for another 200 feet. After that, you still have to go another 250 feet before you can actually get to the water table.

LESSON: VILLAGE VOICES

VILLAGE VOICES ROLES

EXPERT CLIMATOLOGIST

Your Role:

Water - it's your job. Understanding how the rain impacts potential water solutions is why you're here at these meetings. Make sure that whatever option your group chooses is sustainable.

Village 1:

It rains here almost everyday for a few minutes but we never have more than an inch at a time.

Village 2:

This village is a great example of a clear tropical climate. Massive rains come twice a year, but the rest of the time it is bone dry.

Village 3:

This is Sub-Saharan Africa. The Sahara is a desert - of course it's dry. We only get rain twice a year, but when it rains – watch out for flash floods!

Village 4:

It rains here a few times a month sometimes a few inches, sometimes a little less.

LESSON: VILLAGE VOICES

VILLAGE VOICES ROLE

PUBLIC HEALTH OFFICER

Your Role:

Your assignment as a Public Health Officer in Rural Africa comes with its own share of challenges as you experience life in several different health clinics in the region. Using your notes, help the group to decide what is the best solution to get clean, safe water.

Village 1:

There are lots of young girls here who are already have terrible back problems from walking so many miles to the river with so much weight on their backs. Between the back problems and the cholera outbreak last year, we really have to do something.

Village 2:

People do what they can to boil water, but the well in the next village has been contaminated, and sometimes people just can't afford the extra fuel needed to boil.

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Village 3:

Water is a luxury here but the people have learned to adapt, now only if we could get the animals under control!

Village 4:

The thatched roof here at the clinic is a pain when it rains, I have to run around to make sure that my patients don't get wet in their beds from the holes in the ceilings. I should be grateful though, this roof is one of the best in the village.

LESSON: VILLAGE VOICES

VILLAGE VOICES ROLE

VILLAGE ELDER

Your Role:

You have become a trusted advisor to the people in several different villages. As you approach this meeting, you are a representative of each of the local water boards. Use these quotes from the local water boards to make sure that their interests are served.

Village 1:

We have never had a well here but have always walked several miles to get water from the river. We work very hard here but we have never had very much money.

Village 2:

When I was young we had a good well but when the rebels came, it was used for scrap metal. Now it's just a concrete slab.

Village 3:

You only have to live through one tropical storm to really understand the power of water. If only we could hold on to those rains a little bit longer!

Village 4:

We've been talking about getting water for many years and raising money too. Whatever the cost, now is our chance.

LESSON: VILLAGE VOICES

SUGGESTED ANSWERS, JUSTIFICATIONS AND EXAMPLES

Village 1:

Rain catchment is preferred. The light consistent rains will do a good job of ensuring that the tanks stay full.

Water is too far down for a shallow or hand-dug well.

The nearest river is several miles away making a dam impractical.

There has never been a well present to do a repair.

A deep well is probably going to be more than what the community can afford.

For a real example of a rain catchment go to: <http://thewaterproject.org/nzatani.asp>

Village 2:

Well repair is preferred. While there may be some interest in digging a new well, from a financial standpoint, rehabilitating the old well will likely be best. Closed off shallow wells with hand-pumps are a much safer option than open hand dug wells, but these are both viable options.

The water table is much too shallow to warrant the use of a deep well.

There is no river nearby to dam so weirs are not practical.

The rains too irregular for rain catchment to be effective.

For a real example of a well repair project go to:

<http://thewaterproject.org/community/projects/sierra-leone/lunji-yongoroo-32-qbanty-rd>

Village 3:

A weir (sand dam) is ideal here with the riverbed being so close to the village, but a shallow well might also work if animals can not be kept away from the water.

***Depending on the size of the population, both may be necessary.**

Two hundred feet is too shallow for a deep well.

Two hundred feet is too deep for a hand-dug well.

It rains too irregularly for rain catchment to be effective.

For a real example of a weir go to: <http://thewaterproject.org/ngiini.asp>

Or read Bridget's story to see how such a project really can make a difference:

http://thewaterproject.org/meet_bridget.asp

Village 4:

A deep well is likely the best solution if the people have raised enough money or have a donor, as drilling through that many layers will definitely be expensive. The other

LESSON: VILLAGE VOICES

option here is rain catchments; however, it may be that the village has to use some of the money to enhance the roofed structures in the village before they can install catchments and tanks.

A hand dug or shallow well will never get through the deep rock.

No river or riverbed was mentioned to construct a weir.

For a real example of a deep well go to:

<http://thewaterproject.org/community/projects/kenya/house-of-hope-orphanage-well>

LESSON: VILLAGE VOICES

Optional activity on the challenges of community development:

This additional activity will allow you to bring in discussions relating to corruption, bias, cultural relativism and a variety of other challenges that really do sometimes occur in the field. However, it may also cause increased tensions and/or hurt feelings as students take on a new level to their roles. As such, please take care if choosing to introduce this level to the conversation.

After having each group determine what the best solutions are, give each student this insight into their back-story.

- The Expert Geologist also owns the drilling company and only gets paid if a well is built.
- The Expert Climatologist has been bribed by the geologist to get a cut every time (s)he recommends a well be built.
- The Public Health Officer is a foreigner and suffering from a waterborne disease him/herself.
- The Village Elder, though excited about the potential for clean water, is not very trusting of the Public Health Officer because (s)he (the Village Elder) used to be the medical expert in the community using traditional remedies.

Option 1: Discuss how the dynamic of the conversation, and their answers may change with this new information. If time allows, you may even want to have groups re-do their discussions.

Option 2: Reveal this information to students individually and have them re-do their discussions. Then discuss how their conversations/answers have changed.

LESSON: WATER PROJECT WORD SEARCH

WATER PROJECTS WORD SEARCH

The Water Projects Word Search is a quick way to ensure that students have read and comprehended the information from the "Types of Projects" pages on The Water Project's website.

Overview:

Have students use the information from the "Types of Projects" pages to fill in their answers (http://thewaterproject.org/water_project_detail.asp). It is recommended that you have students show you their answers before they are allowed to find them in the puzzle to ensure that they've actually read and not just searched for the key words.

Note: This activity makes a great pre-requisite or follow-up to Village Voices.

Answers:

S	H	A	L	L	O	W							
A										A		Y	
N		H	Y	G	I	E	N	E		U		O	H
I										S		N	A
T						D				T		G	N
A	W	E	L	L	R	E	P	A	I	R		O	D
T		E				E				A		N	D
I			I			P				L		I	U
O				R						I			G
N										A			
R	A	I	N	H	A	R	V	E	S	T	I	N	G

HYGIENE 1. This type of training includes teaching people about washing hands.

SANITATION 2. Toilets are the main focus of this word.

WELL REPAIR 3. This is a very cost-effective solution for broken wells. (2 words)

WEIR 4. This solution is a natural barrier to keep water from going downstream.

RAIN HARVESTING 5. Gutters that lead to a tank store rainwater in this solution. (2 words)

AUSTRALIA 6. Rural parts of this developed country also use rainwater catchments.

LESSON: WATER PROJECT WORD SEARCH

- YONGONI 7. This Kenyan village dam will cost \$5,250 and will help over 1000 kids.
- HAND DUG 8. These wells can get contaminated easily if left uncovered. (2 words)
- SHALLOW 9. This type of well gets water from about 150-200 feet below ground.
- DEEP 10. This type of well can help over 3,000 people but is very expensive.

LESSON: WATER PROJECT WORD SEARCH

WATER PROJECT WORD SEARCH

Directions:

Use the information from the "Types of Projects" pages to fill in your answers *before* you find them in the puzzle. (http://thewaterproject.org/water_project_detail.asp)

S	H	A	L	L	O	W	J	E	R	S	I	N	E
A	E	L	R	P	S	T	I	N	F	A	M	Y	O
N	R	H	Y	G	I	E	N	E	S	U	P	O	H
I	A	R	T	I	A	N	S	S	G	S	E	N	A
T	L	D	O	H	V	D	C	H	E	T	T	G	N
A	W	E	L	L	R	E	P	A	I	R	R	O	D
T	P	E	A	K	Z	E	N	H	T	A	I	N	D
I	O	L	I	L	L	P	O	N	R	L	N	I	U
O	E	R	G	R	T	I	N	A	S	I	G	Y	G
N	C	H	A	S	R	I	C	E	S	A	U	O	E
R	A	I	N	H	A	R	V	E	S	T	I	N	G

- _____ 1. This type of training includes teaching people about washing hands.
- _____ 2. Toilets are the main focus of this word.
- _____ 3. This is a very cost-effective solution for broken wells. (2 words)
- _____ 4. This solution is a natural barrier to keep water from going downstream.
- _____ 5. Gutters that lead to a tank store rainwater in this solution. (2 words)
- _____ 6. Rural parts of this developed country also use rainwater catchments.
- _____ 7. This Kenyan village dam will cost \$5,250 and will help over 1000 kids.
- _____ 8. These wells can get contaminated easily if left uncovered. (2 words)
- _____ 9. This type of well gets water from about 150-200 feet below ground.
- _____ 10. This type of well can help over 3,000 people but is very expensive.



GET
INVOLVED

GET INVOLVED

WAYS TO GET INVOLVED

The global water crisis is a big problem but there are lots of ways and organizations committed to solving it. Here at The Water Project, we invite students to get involved in several different ways.

Overview:

The Water Challenge

The Water Challenge asks students (and maybe even teachers!) to give up all non-water beverages for two weeks. The idea is that money that would normally be spent on consumption is simply diverted to a contribution. The Fundraiser Kit includes hand outs, posters, videos and a Leader's Guide. The Leader's guide even includes a letter explaining The Water Challenge to parents. Participants also receive *free wristbands* to remind themselves of the challenge. More information is available at:

<http://thewaterproject.org/thewaterchallenge.asp>

Fundraising Ideas

Our Fundraising Ideas page is just the tip of the iceberg! Using the images, posters and logos in our Media Kit, the Fundraising Ideas will really take life and you'll see just how creative your students can be. Students are welcome to design their own The Water Project t-shirts with our logo or host an event like a talent show or concert. Both of these great resources are available for download at: <http://thewaterproject.org/start-a-fundraiser.php>

myWaterProject

The **myWaterProject** resource area allows any individual to learn more about the water crisis. Students can set up a profile and then gain impact points for downloading videos, handouts, and other materials. Students can also organize their own Water Challenges and fund-raising events through the interface. To log in and explore go to:

<http://my.thewaterproject.org/>

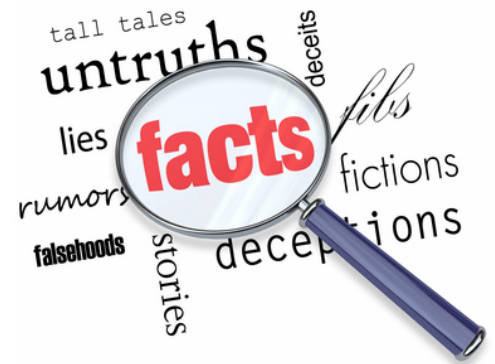


RESOURCES

RESOURCES: JUST THE FACTS

JUST THE FACTS: WATER CRISIS BY THE NUMBERS

In a world where we have so much information it is hard to sort out what is fact and what is just ... well, fiction! We've done the footwork for you so you can learn what the facts are about the global water crisis.



- Globally we use 70% of our water sources for agriculture and irrigation, and only 10% on domestic uses.¹
- 84% of the people who don't have access to improved water, live in rural areas, where they live principally through subsistence agriculture.²
- Less than one in three people in Sub-Saharan Africa have access to a proper toilet.³
- Over half of the developing world's primary schools do not have access to water and sanitation facilities. Without toilets, girls typically drop out of school at puberty.⁴
- 443 million school days are lost each year due to water-related diseases.⁵
- Girls under the age of 15 are twice as likely as boys their age to be the family member responsible for fetching water.⁶
- Almost two-thirds, 64% of households rely on women to get the family's water when there is no water source in the home.⁷
- In developing countries, as much of 80% of illnesses are linked to poor water and sanitation conditions.⁸

RESOURCES: JUST THE FACTS

- Nearly 1 out of every 5 deaths under the age of 5 worldwide is due to a water-related disease.⁹
- By investing in clean water alone, young children around the world can gain more than 413 million days of health!¹⁰
- Half of the world's hospital beds are filled with people suffering from a water-related disease.¹¹
- Nearly a billion, 884 million people do not have access to clean and safe water. 37% of those people live in Sub-Saharan Africa.¹²
- The average container for water collection in Africa, the jerry can weighs over 40 lbs when full. ¹³
- The United Nations estimates that Sub-Saharan Africa alone loses 40 billion hours per year collecting water; that's the same as a whole year's worth of labor by the entire workforce in France!¹⁴
- Research has shown that for every 10% increase in women's literacy, a country's whole economy can grow by up to 0.3%.¹⁵
- According to the World Health Organization, for every \$1 invested in water and sanitation, there is an economic return of between \$3 and \$34!¹⁶
- 1 in 8 people world wide do not have access to safe and clean drinking water.¹⁷

⁹AQUASTAT. Food and Agriculture Organization of the United Nations. "Water Use." http://www.fao.org/nr/water/aquastat/water_use/index.stm

²WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. "Progress on Sanitation and Drinking Water 2010." Available at www.wssinfo.org/

RESOURCES: JUST THE FACTS

³WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. "Progress on Sanitation and Drinking Water 2010." Available at www.wssinfo.org/

⁴UNICEF. "Water, Sanitation and Hygiene" Updated May 2010.
http://www.unicef.org/media/media_45481.html

⁵United Nations Development Programme. "Human Development Report 2006: Beyond Scarcity: Power, Poverty and the Global Water Crisis." 2006. Available at <http://hdr.undp.org/en/reports/global/hdr2006/>

⁶WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. "Progress on Sanitation and Drinking Water 2010." Available at www.wssinfo.org/

⁷WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. "Progress on Sanitation and Drinking Water 2010." Available at www.wssinfo.org/

⁸United Nations. Statement by Secretary General Koffi Annan. June 2003.
<http://www.un.org/News/Press/docs/2003/sgsm8707.doc.htm>

⁹WHO/UNICEF. "Diarrhoea: Why children are still dying and what can be done." 2009.
available at http://www.unicef.org/health/index_51412.html.

¹⁰World Health Organization. "Costs and benefits of water and sanitation improvements at the global level." http://www.who.int/water_sanitation_health/wsho404/en/

¹¹United Nations Development Programme. "Human Development Report 2006: Beyond Scarcity: Power, Poverty and the Global Water Crisis." 2006. Available at <http://hdr.undp.org/en/reports/global/hdr2006/>

¹²WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. "Progress on Sanitation and Drinking Water 2010." Available at www.wssinfo.org/

¹³Jerry cans carry approx. 5 gallons of water so if a single gallon of water weighs 8.3 pounds, 5 gallons are 41.5 pounds.

¹⁴United Nations Development Programme. "Resource Guide on Gender and Climate Change." 2009. Available at http://www.undp.org/climatechange/library_gender.shtml

RESOURCES: JUST THE FACTS

¹⁵ UNICEF. "Water, Sanitation and Hygiene" Updated May 2010.
http://www.unicef.org/media/media_45481.html

¹⁶ World Health Organization. Executive Summary of "Costs and benefits of water and sanitation improvements at the global level."
www.who.int/water_sanitation_health/wsh0404summary/en/

¹⁷ Based on 87% of the global population using improved sources. Found in WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. "Progress on Sanitation and Drinking Water 2010." Available at www.wssinfo.org/

RESOURCES: KEEP ON DIGGING

KEEP ON DIGGING

This annotated bibliography should give you some insights into the different sources that we've used at The Water Project and may help you in your own research to see where you might want to keep digging to learn more.

AQUASTAT. *Food and Agriculture Organization of the United Nations.*

http://www.fao.org/nr/water/aquastat/water_use/index.stm

AQUASTAT provides the United Nations with statistics on water with a focus on agriculture. They look at water resources, uses and agricultural water management. They focus on Africa, Asia, Latin America and the Caribbean. AQUASTAT provides information in country/regional fact sheets and maps as well as providing reports on water usage and withdrawal. On The Water Project website, we use AQUASTAT statistics when we talk about how water is used around the world for agriculture, industry and household purposes.

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United Nations. *Statement by Secretary General Koffi Annan. June 2003.*

<http://www.un.org/News/Press/docs/2003/sgsm8707.doc.htm>

Former Secretary General of the United Nations, Koffi Annan, gave a statement on June 5, 2003 for World Environment Day. His speech focused on water and the need for the UN to increase their efforts to breakdown the barriers that lead to economic water scarcity and increased disease in the developing world. The Water Project has used this speech to emphasize the huge portion of disease developing countries that could be prevented through improved water sources.

United Nations Development Programme. *"Human Development Report 2006: Beyond Scarcity: Power, Poverty and the Global Water Crisis."* 2006. Available at

<http://hdr.undp.org/en/reports/global/hdr2006/>

RESOURCES: KEEP ON DIGGING

The United Nations Development Programme (UNDP) is the United Nations Agency that targets all sorts of development issues to try to alleviate poverty around the world. The Human Development Report is an annual report that addresses various obstacles to development. The 2006 report focused on the global water crisis. The report itself gets very technical in some places and so the UNDP also provides a Summary and a Youth Booklet with the highlights from the report. The Water Project has used this report for facts relating to health and education.

United Nations Development Programme. "Resource Guide on Gender and Climate Change." 2009. Available at http://www.undp.org/climatechange/library_gender.shtml

The UNDP Resource Guide is a smaller report than the UNDP Annual Development Report as it focuses just on gender and climate change at large. It looks at how gender and climate change impact each of the Millennium Development Goals. The Water Project has used this report in explaining how water collection is especially detrimental for women's development.

UNICEF. "Water, Sanitation and Hygiene" Updated May 2010. http://www.unicef.org/media/media_45481.html

The United Nations Children's Fund, better known as UNICEF, is the United Nations Agency that focuses on children. UNICEF has all sorts of information about various issues that impact children, including waterborne diseases and water supply. This particular link is primarily a summary of the past several years of reporting on water and sanitation issues. At The Water Project, we've used information from this link to discuss how a lack of water in schools causes girls to miss class after reaching puberty.

RESOURCES: KEEP ON DIGGING

World Health Organization. *"Costs and benefits of water and sanitation improvements at the global level."*

http://www.who.int/water_sanitation_health/wsho404/en/

The World Health Organization (WHO) addresses all sorts of global health issues, from disease to unhealthy behaviors. This particular document explains how improving water and sanitation can improve the entire global economy. Because it is written in very high level economic terms, some people may prefer to simply use the executive summary. At The Water Project, we have referenced both documents for quoting statistics on the economic impact of clean water.

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. *"Progress on Sanitation and Drinking Water 2010."* Available at www.wssinfo.org/

The Joint Monitoring Programme (JMP) is the principal mechanism for analyzing and monitoring the progress of the United Nations Millennium Development Goal 7c which aims to halve the portion of the population without access to drinking water and improved sanitation. Every two years they publish a report with detailed statistics on water and sanitation on the national, regional and global levels. At The Water Project, we've used their information in many of the statistics relating specifically to access to toilets, and improved water sources.

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WHO/UNICEF. *"Diarrhoea: Why children are still dying and what can be done."* 2009. available at http://www.unicef.org/health/index_51412.html

This report is written jointly by UNICEF and the WHO and focuses on diarrhea, a health issue that is the second leading killer in children under 5 years of age. Like many reports from these major global agencies, it breaks down the problem (in this case diarrhea), gives a status report, and then presents a plan for how to potentially fix the problem. The Water Project uses this report for our statistics of waterborne disease and global health.

RESOURCES: KEEP ON DIGGING

Additional Resources:

We haven't quoted from these sources directly, but they are great to know!

UN-Water. "Welcome to UN-Water" <http://www.unwater.org/>

UN Water is meant to be a one-stop-shop for everything that the United Nations does regarding water. The JMP, for example is one of their programs. They also put out the World Water Development Report and the Global Annual Assessment on Sanitation and Drinking Water.

United Nations "Millennium Development Goals"

<http://www.un.org/millenniumgoals/>

The United Nations Millennium Development Goals website gives information on each of the goals and their specific targets. There is a Youth section that specifically gives students a way to get involved in the solutions.

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UN Millennium Project Task Force on Water and Sanitation. "Health, dignity and development: What will it take?" 2005. Download available at:

www.unmillenniumproject.org/documents/What_Will_It_Take.pdf

This report was written by the UN Millennium Project Task Force on Water and Sanitation. It tracks each of the Millennium Development Goals and explains a little bit about how providing people with clean and safe water can potentially impact almost all of the goals.

The Water Project



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