LESSON: DIRTY WATER ... SO WHAT?

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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.

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.
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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
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
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.
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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.
**Health**

Good health begins with access to clean water.

Did you know that half of the world's hospital beds are filled with people suffering from a water related disease? In developing countries, about 80% of illnesses are linked to poor water and sanitation conditions. 1 out of every 5 deaths under the age of 5 worldwide is due to a water-related disease. Clean and safe water is essential to healthy living.

Tiny worms and bacteria live in water naturally. Most of the bacteria are pretty harmless. But some of them can cause devastating disease in humans. And since they can't be seen, they can't be avoided. Every glass of dirty water is a potential killer.

Most of these waterborne diseases aren't found in developed countries because of the sophisticated water systems that filter and chlorinate water to eliminate all disease carrying organisms. But typhoid fever, cholera and many other diseases still run rampant in the developing parts of the world.

**Water and Young Children**

Infants and young children are especially susceptible to diseases because their immune systems are experiencing everything for the first time. Even in developed countries, lots of moms boil water before giving it to their children - just to be doubly safe. In poor countries, the fuel for the fire can be so expensive that mothers can't afford to boil water and cook food.

**Poor health leads to poor productivity.**

The sickness caused by dirty water saps people's energy to do much of anything. If you've ever had food poisoning, you know how horrible it can be. Students who suffer from water borne illness can't stay in class. They miss out on the chance to learn and the cycle of poverty continues. That and when one person is sick, someone else has to take care of them, which means that the second person can't work either. If the sick person needs medicine, that money can't be used for other things, like food or school supplies.

Rural dwellers and the urban poor feel the lack of safe water and proper sanitation in the developing world the most. With few medical resources at their disposal, the poor are particularly vulnerable to chronic illnesses that hinder their productivity, making the escape from poverty even more difficult.
**Hunger**

Relieving hunger in Africa has to begin with access to clean water. It may seem simple, but we forget that without access to a reliable source of water, food is hard to grow and even more difficult to preserve and prepare.

It takes huge amounts of water to grow food. Just think, globally we use 70% of our water sources for agriculture and irrigation, and only 10% on domestic uses.

Water is fundamental to relieving hunger in the developing world. 84% of people who don't have access to improved water, also live in rural areas, where they live principally through subsistence agriculture. Sometimes, areas that experience a lack of water suffer because of poor water management, but more often it is a relatively simple economic issue that can be addressed. This is the difference between physical and economic scarcity.

**The Rural-Urban divide**

In Sub-Saharan Africa, people in urban areas are twice as likely as people in rural areas to have clean, safe water. Another way that we see the urban-rural divide is in sanitation. While rural areas often have less access to sanitation facilities, in Sub-Saharan Africa the situation is very poor. Only 24% of the rural population and 44% of the urban population have access to sanitation facilities. This means that less than one in three people in Sub-Saharan Africa have access to a proper toilet.

**The water cost of food**

Consider the following foods we take for granted...

<table>
<thead>
<tr>
<th>Food</th>
<th>Water Needed to Produce (in liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Glass of milk</td>
<td>200</td>
</tr>
<tr>
<td>Cup of Coffee</td>
<td>140</td>
</tr>
<tr>
<td>Bag of Chips</td>
<td>185</td>
</tr>
<tr>
<td>Slice of Bread</td>
<td>40</td>
</tr>
<tr>
<td>Egg</td>
<td>135</td>
</tr>
<tr>
<td>Apple</td>
<td>70</td>
</tr>
<tr>
<td>Hamburger</td>
<td>2,400</td>
</tr>
</tbody>
</table>
Poverty

There are a number of reasons why poverty has become an epidemic in Africa. Poverty can be the result of political instability, ethnic conflicts, climate change and other man-made causes.

But one of the greatest causes of poverty in Africa is also the most overlooked...the lack of access to clean drinking water.

Nearly one billion people do not have access to clean, safe water - that's the equivalent of 1 in 8 people on the planet!
Education

Education is critical for breaking the cycle of poverty and yet over half of the world's schools lack access to safe water and sanitation facilities.

Lack of clean water has serious effects on student's academic performance and attendance rates. The lack of safe water can cause even the best students to lose momentum as they deal with stomach pains and diarrhea from disease and hunger.

Students miss class to go fetch water, or to care for sick parents or siblings. In many places HIV/AIDS has already caused a large percentage of children to become orphans, requiring students to drop out and find work to provide food and care for younger siblings. If teachers are sick, classes get cancelled for all students.

Schools cannot run programs if they cannot provide water to students, faculty and their families.

Lack of Water = Lack of Equality

For girls, the situation is especially troublesome. If schools do not have proper toilets, girls drop out once they reach puberty. Further, it is typically the responsibility of the women to fetch water thus limiting their access to both education and business opportunities. Think about it: everyday, women and young girls carry more than 40 pounds of dirty water from sources over 4 miles away from their homes. This leaves little time for education which is critical to changing the long term prospects of developing nations.

With the many additional burdens that a lack of clean water brings, education simply becomes less of a priority. This sets up an unfortunate cycle of poverty and inequality as without a proper education, there is little chance of improving one's situation later in life.