ACTIVITY 3.2

# DROPS OF KNOWLEDGE FOR RIVERS OF CHANGE

## GLOBAL TEACHING AND LEARNING MATERIAL

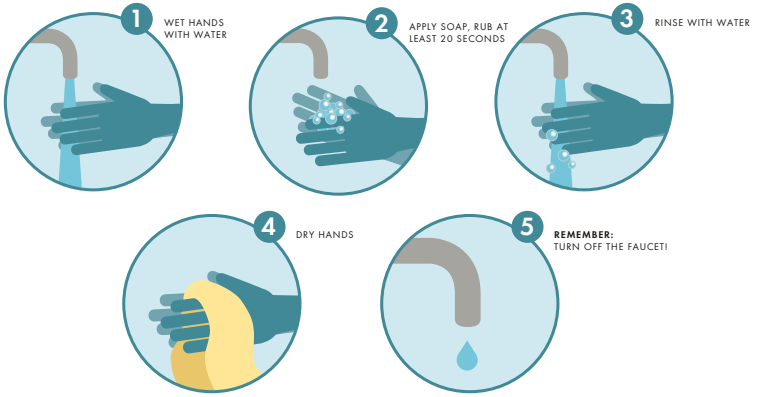
A hands-on guide to teaching
and learning about
water, sanitation, hygiene,
and the environment

SWAROVSKI
WATERSCHOOL

## ACTIVITY 3.2: GERM DETECTION AND HAND WASHING

Most of the germs that cause diarrhea, cholera, and other waterborne diseases come from exposure to human and animal feces. Many illnesses can be prevented by good hygiene and access to sanitation. Much of the health benefit of water supply and sanitation is realized through changes in our behavior. Hygiene education and promotion of good hand-washing practices, especially in primary schools, can save lives.

Do your students wash their hands after visiting latrines and before eating? Do they use soap? Each year, nearly 22 million school days are lost to the common cold alone. When children practice healthy habits, they miss fewer days of school. Thoroughly washing hands is the single most important thing students can do to keep from getting sick or infecting others. The typical person's hands contain millions of microbes. Most are naturally occurring and are harmless, but some may be disease-causing germs. Vigorous hand washing—for at least 20 seconds and using soap—is the best way to lift off the microbes and rinse them away.




**Source:** http://www.cdc.gov/features/handwashing

**15** Centers for Disease Control and Prevention, "Stopping the Spread of Germs at Home, Work & School," Atlanta: United States Government, September 4, 2014, www.cdc.gov/flu/protect/stopgerms.htm.

## ACTIVITY 3.2

The experiment in this activity vividly shows students the importance of hand washing. It can be conducted with an ultraviolet (UV) light, also called a "black" light, and powder or gel that simulates the presence of germs on students' hands. Examples include products that are commercially available from Glo Germ (www.glogerm.com) or Germ Juice (www.germjuice.com).

**Time:** 50 minutes / **Thematic Areas:** Science, Health, Life Skills / **Goal for Learning:** Students learn that "clean" hands may not be so clean after all and discover the critical importance of washing their hands to prevent the spread of disease.

**Materials:** ☐ Pens/crayons and paper / ☐ Gel that simulates the presence of germs on students' hands / ☐ UV light / ☐ Place for washing hands with soap (sink, basin, or other) / ☐ Towels

### ACTIVITY STEPS:

1. Ask students, "How do you think germs are spread? If one person has a cold, how can you catch it?"

2. Students will give many answers, such as "If you sit next to them"; "If you drink out of their cup"; and "If they sneeze on you." Write these answers down

3. Next, ask students to develop a chart that will help them score how clean their hands are. Divide a large piece of paper into five sections. Trace the outline of a hand in each section. Now have students use pens or crayons to shade their idea of completely dirty, very dirty, dirty, and slightly dirty hand. Label the completely dirty hand as ++++, the very dirty hand as +++, and so on. Use a minus sign (−) to represent the "completely clean" hand.

4. Spread some of the germ-simulating gel, paint, or powder evenly on both of a student's hands, including the backs of the hands and the skin next to and under the fingernails. Allow the material to dry completely on the student's hands (this should take a minute or two). Then place the student's hands under the UV light.

5 Under the light, the "germs" will show up. Have other students use the chart to determine the cleanliness of the student's hands that are covered in germs

6 Have the student wash her or his hands for 5 seconds. Stop and check the cleanliness of the hands under the light. Record this as "5 seconds."

7 Have the student wash her or his hands for an additional 5 seconds. Stop and check under the light. Record this as "10 seconds."

8 Repeat the procedure two more times, for 15 and 20 seconds. Each time, have students record the level of cleanliness. 9. Change roles and repeat the activity until everyone has had a turn being the hand washer.

**Optional Extension:**

9 If gels and UV lights are not available, you can substitute either a nontoxic, water-soluble children's paint or a mixture of vegetable oil, baking flour, and food coloring. In this case, one student will smear the paint or mixture on her or his hands, then shake hands with the group, and all can check their hands to see how the "dirt" travels from one person to another.

GIRLS WASHING HANDS

## OBSERVATION AND DISCUSSION:

Discuss with students what they have learned from the hand-washing experiment; that it is not easy to remove germs. It is necessary to use both soap and water, to wash hands for at least 20 seconds, and to rub vigorously.

Discuss with students how germs can be picked up or spread through inadequate hand washing. Cold viruses can be spread by touching people or objects. Many waterborne diseases such as diarrhea are spread through contact with contaminated water. Young children can put a toy in their mouth and then give it to another child, who picks up germs from the toy. Ask children to think about other examples. Hand washing protects you from illness, and also protects other people you may encounter.

Explain to students that because germs are living organisms, they require certain conditions to live. The "environment" is the surroundings and conditions external to the host that cause or allow the disease to be transmitted. Some diseases live best in dirty water. Others survive in human blood. Still others, such as E. coli, thrive in warm temperatures but are killed by high heat (such as boiling water).

ADDITIONAL RESOURCES:

Crawford, Elizabeth O., "Water and Sanitation for All: Bringing the Issue Home – An Early Childhood Unit (Pre-K to 2)," New York: TeachUNICEF, 2010. Open PDF from: http://teachunicef.org/sites/default/files/units/Water-and-Sanitation_PreKto2.pdf

Global Public-Private Partnership for Handwashing with Soap, "Global Handwashing Day," 2015, http://globalhandwashing.org/global-handwashing-day

Khamal, S., et al., Joyful Learning on Hygiene, Sanitation, Water, Health and the Environment: A Source Book for Lesson Plans, Delft, The Netherlands: IRC International Water and Sanitation Centre, 2004. Available at: www.wsp.org/Hygiene-Sanitation-Water-Toolkit/Resources/ReadingsLifeSkills.html

## ACKNOWLEDGMENTS

Swarovski Waterschool gratefully acknowledges the contribution of all partners that have led to the development of this global teaching material.

**Art Direction & Design:**
Swarovski, Global Corporate Creative Services (Wattens)
**Editor:**
Catherine Rutgers

---



SWAROVSKIGROUP.COM