



Lesson Plan: Handwashing and Germ Transmission

Activities for Toddlers through Adults

Overview:

This lesson plan focuses on proper handwashing technique as a preventative measure for disease transmission. Through hands-on activities, videos and sharing of resources through the Center for Disease Control (CDC) children will learn techniques for proper handwashing. Some activities will also enable children to see how easily bacteria and viruses can spread.

Goals/Objectives:

- Identify/explain/demonstrate how handwashing can prevent germs from spreading.
- Identify/explain how handwashing is one technique to keep our bodies healthy from germs.
- Use classroom materials to demonstrate how to properly wash hands to eliminate germs.

Background information:

Microbes are tiny living organisms that may or may not cause disease. **Germs**, or pathogens, are types of microbes that can cause disease. We naturally have microbes on our hands. Many of the microbes are normal and help keep us healthy, some bacteria and viruses can make us sick. When we touch things some of the microbes on our hands are transferred to the things we touch, and microbes from the things we touch are transferred onto our hands/body.



Here is a picture of a hand culture of a healthy child (Source: [Microbiologist Takes Handprint of Her Son After Playing Outside and Incubates the Results](#)). You can see the microbes that were on his hands growing in the culture. Some of these microbes are healthy some of them may be bacteria or viruses that could cause illness.

Keeping hands clean is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands with soap and clean, running water.

CDC recommends cleaning hands in a specific way to avoid getting sick and spreading germs to others. The guidance for effective handwashing and use of hand sanitizer was developed based on data from a number of studies.

To date, studies have shown that there is no added health benefit for using soaps with antibacterial ingredients compared to using plain soap. The FDA issued a final rule in September 2016 that 19 ingredients in common “antibacterial” soaps were no more effective than soap and water. As a result these products are no longer marketed to the general public. This rule does not affect hand sanitizers, wipes, or antibacterial products used in healthcare settings.

<https://www.cdc.gov/handwashing/show-me-the-science-handwashing.html>

To properly wash your hands, you will need to rub all surfaces of your hands – the backs, fronts, nails and between the fingers for 20 seconds. (For an easy 20 second timer, sing Happy Birthday two times OR the ABC song once.) There are good videos showing how to properly wash your hands (<https://www.cdc.gov/handwashing/videos.html>).

The CDC has created many resources (posters, fact sheets and printable stickers) that you can use to support this lesson, and in the classroom and share with families.

<https://www.cdc.gov/handwashing/materials.html>

The CDC recommends several strategies for limiting transmission of Coronavirus listed below. This lesson focuses on handwashing as one measure for prevention.

- *Avoid close contact with people who are sick.*
- *Avoid touching your eyes, nose, and mouth.*
- *Stay home when you are sick.*
- *Cover your cough or sneeze with a tissue, then throw the tissue in the trash.*
- *Clean and disinfect frequently touched objects and surfaces using a regular household cleaning spray or wipe.*
- *Wash your hands often with soap and water for at least 20 seconds, especially after going to the bathroom; before eating; and after blowing your nose, coughing, or sneezing.*
 - *If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol. Always wash hands with soap and water if hands are visibly dirty.*

(Source: CDC. Coronavirus Disease 2019 (COVID-19): Prevention (COVID-19)

<https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html>)

Standards addressed (Broad topics identified as specific standards will vary by age)

Next Generation Science Standards

3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Common Core Standards

W.2.8: Recall information from experiences or gather information from provided sources to answer a question.

Delaware Early Learning Standards/Teaching Strategies GOLD

SC36: Investigate and explore their questions using observation and previous experience to make predictions

Preparation:

Depending on your locally available resources, this handwashing lesson can be done using finger paints, cake decorating sprinkles or Glo Germ products. Directions for each approach are below.

Materials needed:

- Depending on which resources you have available: finger paints, cake decorating sprinkles, or Glo Gel and UV Light.
 - *Finger Paints* - Finger paints support instruction on proper handwashing. Finger paints are non-toxic water-base paint, and thicker than tempera paint. They seem to adhere to hands a little better and are better for supporting instruction on proper handwashing. If you do not have finger paints on hand, recipes for making them using household products can be found online. Additionally, non-toxic water-based tempera paint will work, although it washes off more quickly. If the paint begins to dry on the children's hands, it will take longer to completely wash off the paint.
 - *Cake Decorating Sprinkles (small)* - Using sprinkles provides opportunities to teach about both proper hand washing and transmission of bacteria/viruses. In this activity we suggest having children shake hands or do fist bumps - this is not a recommended disease prevention practice, however, if children in your classroom are already doing this and you want to reinforce why not to touch one another's hands this activity will enable you to illustrate this. Be sure to follow all activities with rigorous handwashing.
 - *Glo Germ and UV flashlight* - Working with *Glo Germ* provides opportunities to teach about both proper hand washing and transmission of bacteria/viruses. These materials are available online, but are selling out or on backorder through many sources.

- Soap, sink, paper towels
- Writing tools (such as markers)/Chart paper or white board
- Online resources and videos
 - Videos teaching proper hand washing techniques from the Center for Disease Control <https://www.cdc.gov/handwashing/videos.html>
 - Hand washing songs
 - “Germs for Kids | Wash Your Hands Song” Presents a song that demonstrates the importance of handwashing to eliminate germs. https://www.youtube.com/watch?v=LaePayB_pC4 (1:34 minutes).
- Hand washing posters, printable stickers and facts from the CDC <https://www.cdc.gov/handwashing/materials.html>
- Hand culture photographs <http://twistedgifter.com/2015/06/microbiologist-takes-sons-handprint-and-incubates-the-results/>

Procedures:

Teaching proper handwashing using finger paint

- Show the children the picture of the culture of the child’s hand (above). Explain that the things that they see growing on the culture plate are a mix of “good” and “bad” microbes, and that we all have microbes on our body all the time.
- Ask the children what they know about germs and how bacteria and viruses are transmitted. Record their comments on chart paper or the board.
- Ask the children what they know about how you can prevent or slow down transmission of illnesses. Record their comments on chart paper or the board.
- Discuss methods for preventing or slowing transmission of germs.
- Show a video from the CDC on proper handwashing technique. Share posters and resources from the CDC.
- Review proper handwashing techniques, have the children practice handwashing in the air for 20 seconds. They need to be sure to rub the inside and backs of their hands as well as between their fingers and their fingernail beds while singing Happy Birthday two times OR the ABCs once.
- Place a dollop about the size of a nickel or quarter of finger paint on each child’s hand. (Depending on your group size and how many sinks you have accessible may do this as a whole class or in small groups.)
- Tell them to rub the paint all over their hands and be sure to spread it between their fingers and on their fingernails. (If children touch objects in the classroom, they will also see how paint/microbes are spread through contact.)
- Line them up at the sinks to wash their hands.

- Have them wet their hands with running water, put soap on their hands, and then wash their hands rubbing all parts of their hands while singing (Happy birthday 2x or the ABCs 1x). Ask them to watch the paint on their hands, and wash until all of the paint is gone. How easy/hard is it to get all the paint off of their hands? How long did it take to get all of the paint off every part of their hands?
- After the activity is complete, re-group as a class and debrief the activity talking to the children about what they observed and again discuss ways that they can keep themselves and their families/ classmates healthy.

Handwashing and germ transmission activity using sprinkles

- Put sprinkles on your own hand and then shake the hands of the children in the room. OR Put sprinkles on the hands of a few students.
- Ask the children to go around the room and shake hands with their classmates, exchange fist bumps, or touch objects in the room.
- Gather everyone for a whole class discussion.
- Show the children the picture of the culture of the child's hand. Explain that the things that they see growing on the culture plate are a mix of "good" and "bad" microbes, and that we all have microbes on our body all the time.
- Ask the children what they know about germs and how bacteria and viruses are transmitted. Record their comments on chart paper or the board.
- Ask the children what they know about how you can prevent or slow down transmission of illnesses. Record their comments on chart paper or the board.
- Discuss methods for preventing or slowing transmission of COVID-19.
- Show a video from the CDC on proper handwashing technique. Share posters and resources from the CDC.
- Review proper handwashing techniques, have the children practice handwashing in the air for 20 seconds. They need to be sure to rub the inside and backs of their hands as well as between their fingers and their fingernail beds while singing Happy Birthday two times OR the ABCs once.
- Tell the children that you had sprinkles on your hand and shook other people's hands, or touched classroom objects.
- Ask them to look around the classroom and explain what they see. Discuss how easily and rapidly the sprinkles spread from student to student and from person to object. Discuss how germs spread with person-to-person contact and by touching surfaces.
- Connect these observations to the importance of frequent hand washing and regular wiping down of surfaces (handles, table tops, phones, computers...).
- Have the children wash their hands for 20 seconds using proper technique in the classroom sink using soap and water.

- Put soap and water on wet paper towels and wipe down table tops or surfaces that people touched during the activity. Depending upon the ages of the children and availability you may choose to use other cleaning products.
- After the activity is complete, re-group as a class and debrief the activity talking to the children about what they observed and again discuss ways that they can keep themselves and their families/ classmates healthy.
- How Germs Spread is a short video made by a Stormy Capalare classroom teacher about her version of this activity using glitter:
https://www.youtube.com/watch?time_continue=183&v=aoMotY9A12c&feature=emb_title

Handwashing and germ transmission lesson using Glo Germ product

- Give each child a dollop of Glo Germ lotion or liquid and ask them to rub the product on all over their hands.
- Gather everyone for a whole class discussion.
- Show the children the picture of the culture of the child's hand. Explain that the things that they see growing on the culture plate are a mix of "good" and "bad" microbes, and that we all have microbes on our body all the time.
- Ask the children what they know about germs and how bacteria and viruses are transmitted. Record their comments on chart paper or the board.
- Ask the children what they know about how you can prevent or slow down transmission of illnesses. Record their comments on chart paper or the board.
- Discuss methods for preventing or slowing transmission of COVID-19.
- Tell the children that the Glo Germ product is visible under UV light. Turn off the lights to the classroom. Go around the room with UV flashlights. As the children have been sitting many of them probably touched their clothes, faces and objects around them. Without shining the flashlight in anyone's eyes. Look to see where the Glo Germ product has spread.
- Ask the children to share their thoughts and observations.
- Discuss how easily and rapidly the Glo Germ was spread. Discuss how germs spread with person-to-person contact and by touching surfaces.
- Show a video from the CDC on proper handwashing technique. Share posters and resources from the CDC. Review proper handwashing techniques, have the children practice handwashing in the air for 20 seconds. They need to be sure to rub the inside and backs of their hands as well as between their fingers and their fingernail beds while singing Happy Birthday two times OR the ABCs once.

- Connect these observations to the importance of frequent hand washing and regular wiping down of surfaces (handles, table tops, phones, computers...).
- Teach proper hand washing technique. Share videos and posters from the CDC.
- Have the children wash their hands for 20 seconds using proper technique in the classroom sink using soap and water.
- Use the UV lights to assess how well the children washed their hands. Let them wash their hands again as needed.
- Put soap and water on wet paper towels and wipe down table tops or surfaces that people touched during the activity. Depending upon the ages of the children and availability you may choose to use other cleaning products.
- After the activity is complete, re-group as a class and debrief the activity talking to the children about what they observed and again discuss ways that they can keep themselves and their families/ classmates healthy.

Extension: Have children create their own hand washing chart to take home, or share resources with families.

Picture Books for Teaching about Viruses and Bacteria

Alesund, M., & Alesund, A. (2018). *Bacteria and antibiotics*. Middletown, DE: Baby Medical School.

Written in an accessible way, this book provides an introduction to bacteria, antibiotics, viruses, and the immune system. (Kindergarten - Grade 5)

Bielawski, R. (2014). *Meet Bacteria!* Middletown, DE.

Using clear language and simple illustrations, this picture book provides a general introduction to the many roles bacteria play in the world. (Preschool - Grade 2)

Davies, N. (2016). *Tiny Creatures: The World of Microbes*. Somerville, MA: Candlewick Press. Excellent introduction to microbes and the many roles they play in the world. (Grades K - 5)

Gallagher, A. (2017). *Microbes*. Las Vegas, NV: Thunderstone Books.

Book provides an overview of microbes and specific sections about bacteria, viruses, fungi, algae, archaea, and protozoa. (Grades 3 - 8)

Professor, B. (2017). *Virus vs. Bacteria : Knowing the Difference - Biology 6th Grade | Children's Biology Books*. Newark, DE: Speedy Publishing LLC. (Grades 4-8)

NOTE: NSTA has specific safety standards regarding working with live microorganisms in the classroom. They do not support culturing unknown microorganisms as a part of classroom instruction. Before considering any culturing work, refer to: <https://www.nsta.org/safety/>