

Royal Flush

Activity Overview: Students will examine how a toilet works and will see just how much water an efficient toilet can save.

Objectives:

Students should learn how to:

- Identify the highest water-consuming device in the home (the toilet);
- Estimate how many litres of water are used per flush;
- Describe the difference between a high-water efficient toilet and a regular-flow toilet; and
- Identify ways to conserve water in the bathroom.

Materials:

- Double toilet display
- Plastic containers to catch the water

Setup: None. However, please put water back in the toilet tank in preparation for the next group

Takedown: Please ensure that the water is emptied, and that all the materials are placed together.

Safety: Please make sure students do not climb on the displays or put objects of any kind into the toilets!

Vocabulary:

Hydrologic Cycle – The Earth's water is always in movement, and the **hydrologic cycle**, also known as the **water cycle**, describes the continuous movement of water on, above, and below the surface of the Earth.

What Will I Be Doing? (Procedure)

Before you start your presentation check with the teacher or chaperone that the entire group is present and ready to start.

*Remember that kids have more fun when they are **doing** an experiment and **discovering** the answer, rather than watching and listening. So, try to involve as many children as possible.*

Part 1: Discussion

Say: “Welcome to Royal Flush. In this activity you will be learning about how a toilet works and how much water they use. Use water wisely by using a high water-efficiency toilet and only flush when needed.”

Ask: “What are some ways you use water in your home?”

Answer: Having a bath, drinking, washing dishes, doing laundry, brushing teeth, etc

Ask: “What are some different objects in your home that use water?”

Answer: Washing machine, shower, toilet, etc

Ask: “What do you think uses the most water in your home?”

Answer: Toilet.

Part 2: Activity – How Toilets Work

Say: “Here we have two toilets; one is a low-flow toilet (uses 6 litres of water per flush) and the other is a high efficiency toilet (uses about 4.8 litres of water per flush).”

Explain to the students how they work:

Say: “In a low-flow toilet, water fills up in the tank (show the tank) and when you flush the toilet, gravity pulls the water through. It needs to use lots of water to flush the ‘stuff’ in the toilet down the drain.”

Say: “The new high efficiency toilets have been designed to use less water while still having a strong flush. The toilet bowl and tank (show the bowl and tank) are a different shape which helps to suck the ‘stuff’ down the drain.”

Ask: “Who wants to see the toilets work?” Choose two students to act as your flushers.

Ask: “Which one do you think is going to use more water?”

Answer: the low-flow toilet

Get the students to flush at the same time by **saying:** “On your mark, get set, flush!”

Discuss which one used more water by looking at the clear plastic water jugs located beneath each toilet.

Ask: “What happens to the water that gets flushed down your toilet?”

Answer: Toilets take the waste (poop and pee) from our homes and take it to get treated at a wastewater treatment plant. The water gets treated and then goes into Lake Ontario, and then later becomes our drinking water again. Before people had toilets, they had to take the waste out of the home themselves.

Say: “Although the water gets treated, there are certain things, like chemicals and medicines, that we do not want to put down the toilet because it could harm the environment. These are hard to take out of the water and they end up in our lakes and rivers.”

Ask: “So do you think it’s a good idea to throw out garbage in the toilet?”

Answer: No, we should never use the toilet for throwing out garbage. Household hazardous waste (chemicals, paints, medicines, etc) should never be flushed down the toilet or put down a sink.

Part 3: Activity – Water Consumption

Say: “Now we are going to think about how much water we use in our houses each day just from the toilet.”

Say: “I’m going to put you into groups and in your groups, I want you to decide how many times a day you think the toilet gets flushed in your house (think about all the people who live in your house, and how many times a day we use the bathroom).”

Give the students time to discuss in their groups. After a couple minutes, discuss their answers.

Things to note in the discussion:

- The average person flushes the toilet 5 times a day (with a high efficiency toilet, this would total 24 litres, which is 12 two-litre pop bottles. The regular toilet would total 30 litres, which is 15 two-litre pop bottles).
- See if they can calculate how much water is used from just the toilet at their house in a day (i.e., 4 people times 5 flushes each = 20 flushes a day. If each flush uses 6 litres of water, this would be 120 litres in a day just to flush toilets!)

Part 4: Review with the students what you have taught them in this activity

Ask: “What room in our house is the one where we use the most water?”

Answer: bathroom

Ask: “How can we conserve water?”

Answer: flushing the toilet only when necessary, never flushing garbage down the toilet)

Ask: “What type of toilets use the least water?”

Answer: low-flow. Note there are now toilets on the market that flush with even less water than 6L

Ask: “Why do we need to conserve water?”

Answer: Because all living things need water to survive, and it is important to share. Clean water is a precious resource that we must protect.

Specifically remind the students:

- Use water wisely by using a high water-efficiency toilet and only flushing when needed.

Background Information:

Once we use water it becomes wastewater which re-enters the hydrologic (water) cycle through our sewer systems. Peel Region treats this wastewater before it returns to Lake Ontario. Unfortunately, our water use almost always leads to some degree of deterioration in water quality. The more water we waste, the more we upset the natural balance of our aquatic ecosystems, which in turn results in declines in water quality and ecosystem health.

Our water supply is not endless. Only 3% of the water on earth is fresh; of that only 0.01% is readily available for drinking; the rest is locked away in Polar ice caps or buried deep underground. All living things require water to survive. Clean water is a precious resource that we must protect. Everyone has to pay for water and wastewater treatment. The less water we use, the more money we save and the more we preserve the environment. It is not hard to conserve water. Practicing water efficiency does not have to drastically change our lives.

As Canadians, each of us uses about 326 litres of water each day. Of that, 30% is flushed down the toilet. Another 35% is used in showers and baths.

