

“Water Travels with Dewey”

Kindergarten (30 minutes)

Lesson Objectives

Students will understand the paths of water as it travels from rain water, through storm sewers, to DMWW treatment plant, to homes and businesses, to the wastewater treatment plant (WRA), back into the river, and evaporates or travels on downstream. Students will understand how water becomes polluted as it travels on its journeys and ways that this pollution can be prevented.

Lesson Overview

Students will watch a puppet show that uses Dewey the waterdrop character and picture cards to describe where water goes in its journey from rainwater, through the storm sewers, to the river, to DMWW treatment facility, to homes and businesses, to WRF, and back to the river.

Materials

- Plastic storage bin containing:
 - Dewey puppet
 - Pipe for Dewey to peek out from behind
 - Cardboard faucet (attached to stick)
 - Plastic boat (attached to stick)
 - Sand and gravel sample bottle
 - Laminated numbered picture cards for various parts of the water journey (on numbered paint sticks)
- Velcro® straps for puppet theater
- house picture, river picture, clouds picture
- Laminated picture cards with strings (to go around kids' necks)
- Portable puppet theater
- Teacher follow-up packet
- “Dewey™ Travels” poster puzzle for each student

Procedure

Introduction

Introduce yourself and ask students if they know where water comes from and some of the places it might go. Tell students that they are going to travel on a journey with Dewey, the waterdrop puppet, to find out where water comes from, where it travels, and what happens to it along the way.

Set up

Set up the puppet theater on a table with a chair behind the table for you to sit on. Use Velcro® straps to anchor sides, clouds, house on left and river on right, sand and gravel, boat and pictures on sticks readied behind stage; kindergarten plastic container to left of your chair so you can quickly stack pictures on sticks there after you are done with them.

Begin the play, “Water Travels with Dewey”

(Remember to speak slowly and loudly!)

(Dewey peeks out from clouds on puppet theater.)

Hi, I’m Dewey, the waterdrop. These clouds are getting so heavy because they are full of so many waterdrops just like me that it’s going to start raining...right now!

(Dewey falls out of clouds and slides down roof on house.)

Whoa, I can’t stop; this roof is too steep. It looks like I’m headed for the pavement. *(Looks at kids)* Why don’t you come with me on my “Water Journey.” Yuck, what is that stuff I picked up that was on the driveway (#1 -- *picture of oil spot in driveway*)?

Kids, what do you think it is? It’s oil; someone must have let his car leak oil in the driveway. Well, that oil is going to go where I’m going -- wherever that is. I guess we’re heading out into the street. Oh, no, here comes a bunch of dirt washing off of that yard. (#2 -- *picture of dirt washing into street*.)

Don’t they know they should have grass planted there? I’ll never stay clean! There’s no stopping here either. (#3 -- *water running down street*)

Garbage is right in my way; it's going to come along with me, too. (#4 -- *garbage in storm sewer*)

Help! I'm falling through those holes in the storm sewer! (*Dewey falls into picture and below stage. Take down house.*)

(#5-- *Hold up pipe along lower edge of stage and put Dewey behind pipe and have him peek out behind top hole at students.*) Where am I? What is this? It's some kind of pipe. Oh, I know; it's a storm sewer pipe. They are under the ground and carry storm water. It stinks down here, and what a mess! Don't people know this isn't a garbage can?! Boy, I never get to stop and rest, I'm always on the move (*moves down pipe and peeks out far end*). I wonder where I'm going next? Where do you think I'm headed?

(*Dewey comes out end of pipe into river on side of stage.*) This must be the Raccoon River -- it sure is muddy. I guess *lots* of people aren't planting grass and trees to hold their soil in place, and it gets washed into the river just like I did.

(#6 -- *boat in river*) I wonder if the guy in that boat knows gasoline is leaking into the river --P.U. He'd better get his motor fixed. If it wasn't so dirty around here, this floating along wouldn't be half-bad.

Oh, look. (#7 -- *picture of intake pipes at DMWW*). I wonder where that pipe leads? What do you think? Well, I guess I'm going to find out. Come on.

(#8 -- *Dewey in a pipe again, peeking out*). Do you hear those large motors? That must be what's moving this water. It feels like I'm being vacuumed up. Oh, good, this is Des Moines Water Works (#9 -- *picture of front of DMWW*).

They clean water and make it safe for drinking. (#10 -- *picture of topside of basins*) Boy, this is a **big** tank under that grassy area you can see (look all around). It's bigger than a gym. There's 4 million gallons of water in here! I see the dirt and other harmful stuff getting settled to the bottom of the tank, so this water I'm in is looking a lot cleaner now.

(#11 -- *filter pools*) Wow, this building looks like a swimmer's paradise--there's 16 pools just like this one! This is called the Filter Building. Water sinks down through sand and gravel at the bottom of each of these pools

(#12 -- *bottle of sand and gravel*) and is caught in pipes. Did you know sand and gravel are good at trapping dirt? Now I'll be even cleaner. A couple more chemicals are added, and I'm done being cleaned.

(#13 -- *lab chemist*) People in the laboratory at Des Moines Water Works are always testing the water to make sure it is safe and clean. They're ready to ship me out.

Oh, boy, I'm on the move again through another pipe (#14 -- *Dewey peeks from behind pipe again*) (#15 -- *Pumping Station*). These are the pumps that send me out from Des Moines Water Works. I wonder where I'm going this time?

(#16 -- *hold up cardboard faucet and have Dewey pop out of it*) Where am I? (*Looks around until sees cardboard faucet.*) Did I just come out of that faucet? I'm lucky nobody drank me, but I know where I'm going now, do you? -- down the drain ... (*Dewey's voice gets lost as Dewey sinks down below the puppet stage*) ... into another pipe.

(#17 -- *Dewey looks out from behind pipe again*) Well, I didn't get to stay clean for long. This pipe is full of all the water everyone pours down the drain and flushes down the toilet. I'll be glad to get to the next treatment plant so I can get cleaned up again -- some of this water journey stuff is stinky business.

Now it's on to the Wastewater Treatment Plant (#18 -- *picture of Wastewater Treatment Plant*) and the bar screen room (#19 -- *bar screens*) where they remove items that got put down the drain and shouldn't have. Don't people know they are not supposed to flush things like toys, rags, and diapers?

Hang on! (#20 -- *picture of pipes that pump water upwards*) This part is kind of like a roller coaster, I'm pumped 30 feet up, and then gravity will carry me the rest of the way. Now it is on to the grit removal tank (#21 -- *grit removal*) where sand and gravel fall to the bottom so they can get rid of it, and I keep on moving along with the rest of the water.

(#22- *primary clarifiers*) Now I'm in these big round tanks called primary clarifiers. It's kind of like a watery sandwich -- there's oil that floats to the top and solid waste that falls to the bottom and I'm in the middle with the

rest of the water. They get rid of the oil and solid waste and send us water drops onto the next step. The stuff that settles to the bottom is called “sludge” and can be recycled. Do you know what recycled means? It means there’s a way it can be used again. It is spread on farm fields so crops can grow better.

And I’m on the move again. (#23 -- *aeration tanks*) Wow, tanks around here just keep getting bigger and bigger! Look at all the bubbles -- it’s kind of like a bubble bath. Do you know what makes bubbles? That’s right- air. There’s air coming into these tanks, so they call them aeration tanks. Little tiny creatures eat waste that’s in the water here.

(#24 -- *WRA lab*) The wastewater treatment plant has a lab, too, so they can test the water and make sure they are getting rid of all of the harmful waste materials.

(#25 -- *channel where chlorine added*) Boy, I have to go a lot of places here. It smells kind of like a swimming pool here. That’s because they add a little chlorine just like they do in pools to help get rid of harmful germs. This water started out pretty dirty, but it’s even cleaner than the river water now.

(#26 -- *pipe*) Another pipe ... and I’m ... in the river again (*go out end of pipe and into river*)!

I think I’ll just float along and soak up the warm sun. Well, I guess I’m not staying here very long either. Some of us water drops close to the top are going up into the air to make clouds all over again.

(*Dewey slowly rises into air*) It’s called *evaporation*. See you -- thanks for joining me on my “Water Journey,” but next time it rains, I’ll be back to start the whole thing all over again.

Review

To review the water journey the students just viewed, select 10 students to come to the front of the room, place the 11 laminated picture cards with string around their necks, and have them face their classmates in a line. Tell one of the students with a cloud picture (there are 2) to go to the end to be the start of the water journey. Select a seated student and have him or her walk up to the front, find the person wearing the card he thinks tells where water goes next, and tell that person to go stand next to the person with the cloud.

If a child makes a wrong selection, see if you can guide them into figuring out what might come before the one they chose. Then select another seated student to go to the front and continue the process of selecting which card should go next and so on until all 10 cards have been placed in order.

The following is the preferred order of cards, but rainwater could go right into rivers and bypass streets and storm sewers.

(1)cloud, (2) cloud with rain, (3) street, (4) storm sewer, (5) river, (6) Des Moines Water Works, (7) faucet with large drip, (8) sink where water going down drain, (9)Wastewater Reclamation Authority, (10) river, (11) cloud [some water evaporates back into the atmosphere]

Follow up

Follow up with a discussion on the types of things that get in water to make it polluted and how pollution can be prevented.