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\* Lesson Plans \* S.T.E.M. & Common Core \* Water Experiment \* Vocabulary \* Coloring Pages \* Card Game, Puzzles \* Art Project



Water Cycle Lesson Plan

#### Grades 3-5

Several activities, discussions and exercises here can be chosen or adapted to fit grade level and time available.

**Common Core Literacy Standards for Scientific Literacy** http://www.corestandards.org/ELA-Literacy/RST

### Third Grade

Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

#### Fourth Grade

Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

## Fifth Grade

Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

In all 3 grades, with increasing levels of complexity, the CC Standards suggest that students learn to describe/explain scientific phenomena happening in a series, as well as cause and effect. The book Agent H2O Rides the Water Cycle, with its illustrations and this lesson plan, meets this criteria by presenting water cycle events that are related, repeated, observable, and evidence-based. The whimsical adventure story is a vehicle to make it interesting and fun, but the science is accurate.







# Water Cycle Lesson Plan

#### Next Generation Science Standards

Specific Science Standards in Common Core start in the sixth grade, earlier grades instead have Literary Standards as they Relate to Science, as presented on the previous page. I therefore use Next Generation Science Standards (NGSS) as a guide for student performaance goals. https://www.nextgenscience.org/understandingstandards/understanding-standards NGSS has a video: https://www.generationgenius.com/videolessons/water-cyclevideo-for-kids/ and a Water cycle experiment more elaborate than mine: https://www.generationgenius.com/activities/water-cycleactivity-for-kids/

#### **Suggested Presentation Structure**

Reading Book: Takes about 8 minutes, unless you add impromptu questions and comments.

Discussion questions:

- What are the 3 forms of water? Liquid, gas (vapor) and solid (ice)

What happens to a puddle on a sunny day? Why does it happen? Evaporation

- What other uses for water are there besides hydration? swimming, skiing, boating, fishing, cleaning, watercolor

- What are 2 ways dirty water gets clean? 1. Evaporating, because the dirt particles don't evaporate with the water. 2. seeping down through an aquifer.







# Water Cycle Lesson Plan

-Does water leave the earth, and new water made when it rains? It's millions of years old, and keeps recycling. Rain was water vapor that condensed.

Is water vapor the same as steam? No, vapor is a gas, invisible. Steam is made of droplets in liquid form, very tiny.
What 2 things very rarely happen in the water Cycle?
Sublimation, a form of evaporation where water changes from a solid to a gas without becoming liquid first; and Deposition, the opposite, where vapor turns solid, without the middle liquid step.

#### Experiment

- Give everyone a plastic cup and have them fill it half full with water.Give them a tissue or paper towel to wipe the outside.

- Give everyone 2-3 ice cubes to drop in, making sure no water gets on the outside of the cup.

-Wait a minute and see water droplets form on the outside of the cups.

- They should look like this:

### Questions

Where did the drops come from? They were already in the air, but invisible. What made the condensation, and what makes all the changes in the water cycle? Cooling or heating.

What is this process called? Condensation.

Where is this happening in the world?

In the clouds, when they cool.

What would happen if you put your cup in a freezer?

There would be ice on both inside and outside.







## **Fun New Words**



Aquifer: Underground layer of rock, sand, and gravel.

Clouds: Tiny droplets of condensed water vapor floating high above the ground.

Condensation: Vapor changes to liquid.

Deposition: Vapor changes to solid without becoming liquid first.

Dew: Condensation found on the ground, usually on grass.

Evaporation: Liquid changes to vapor.

H2O: Chemical name for water.

Hydration: Provide water to a person, animal, or plant.

Percolation: Water filters down through gravel, sand, and rock.

Precipitation: Rain or snow falls to earth after condensing from vapor.

Sublimation: Snowflakes and frost change to vapor without becoming liquid first.

Vapor: A gas; it's invisible.

Water Cycle: The cycle of the water evaporating and condensing on earth. It has been happening for millions of years.









## Water Cycle Crossword





#### Across

- 2. A sudden \_\_\_\_wind causes deposition
- 5. A tiny liquid ball
- 7. Provide H2O to people, animals and, plants
- 10. Liquid H2O falling down
- 12. Vapor changes to liquid
- 14. Liquid H2O is \_\_\_\_
- 15. Solid H2O
- 17. Rain or snow falling down
- 20. Vapor changes to solid without becoming liquid first
- 21. Water collects in a river, ocean or\_\_\_\_
- 22. Underground part of a plant that takes H2O in
- 23. Invisible H2O
- 24. H2O has been here for millions of \_\_\_\_

- 1. Turns vapor to liquid and liquid to ice
- 3. A sudden \_\_\_\_ dry wind causes
- sublimation 4. Desert land is

Down

- A green growing thing that H2O hydrates
- 8. Liquid changes to vapor
- 9. Frozen, white fluffy H2O falling down
- 11. A sand & gravel place that cleans H2O
- 12. A group of droplets in the sky
- 13. Snow & frost change to vapor without melting into liquid first
- 16. H2O uses an aquifer to \_\_\_\_\_pollution
- 18. Water collects in a lake, ocean or \_\_\_\_\_
- 19. Turns ice to liquid and liquid to vapor
- 21. Green part of plant where H2O comes out and evaporates

#### Word List

AQUIFER	DRY	LAKE	SNOW
CLOUD	ESCAPE	LEAF	SUBLIMATION
COLD	EVAPORATE	PLANT	VAPOR
CONDENSE	HEAT	PRECIPITATE	WET
COOL	НОТ	RAIN	YEARS
DEPOSITION	HYDRATE	RIVER	SNOW
DROP	ICE	ROOT	SUBLIMATION







## Making a Water Cycle Zine from one sheet of paper

Step 1: Fold and crease your paper in half lengthwise, then open. Step 2: Fold and crease paper the other way, and again the same way.

Step 3: You should have your paper divided into 8.

Step 4: Unfold the last fold and cut from the folded edge to the crease.

Step 5: Open again and fold lengthwise, separating the slit part to make another page.

Step 5: Flatten and straighten the book. It's 8 pages, including front and back covers.

Step 6: Give everyone a printed copy of the following page of this lesson plan, they can cut and paste the pictures into their zine, and color them.

My video of making a zine

https://www.youtube.com/watch?v=r885cQrLBfY&t=16s

### **Card Game**

I grant permission to reproduce all the pages and activities of this lesson plan, including the following pages of the card game. I suggest you print the card game pages on heavy card stock and cover the blank sides with patterned sticky shelf paper, like Contact. Then cover the other sides with clear Contact paper. Then cut the cards out. The children can then wipe the cards off after a game, to reduce spread of germs.

More activities for this book and others I've written are in my newsletter: Orangutans And More. Subscribe at: https://shoutout.wix.com/so/33MpLXHTO#/main Please email questions/comments to ritagoldner4@gmail.com THANKS! Rita Goldner H2O Cards: 12 Liquid Drop Cards 12 Ice Crystal Cards 12 Vapor Cards Action Cards: 4 Scummy Pollution Cards 4 Aquifer Cards 4 Cold Wind Cards 4 Warm Wind Cards

#### PLAYING:

1. Recommended for 4 players. If more people want to play, form teams. Each player is dealt seven cards, face down. The rest of the cards are placed in a Draw Pile, face down. A space should be designated for a Discard Pile. The top card from the Draw Pile is placed face up in the Discard Pile. If its an Action Card, put it back in the middle of the Draw Pile and turn over the next Draw Pile card (until you get an H2O Card to start the Discard Pile). The game begins!

2. The goal is to be the first player to get rid of all your cards.

3. First player discards an H2O Card matching the one on top of the Discard Pile. If he doesnt have a match he can:

a. Draw one card from the Draw Pile and skip his turn (even if he draws a match).

b. Play a Scummy Pollution card (if he has one) and the next player skips his turn.

c. Play a Cold or Warm Wind Card to change the Discard Pile top card.

Warm Wind changes Ice Crystal to Liquid Drop, or Liquid Drop to Vapor. Cold Wind changes Liquid Drop to Ice Crystal, or Vapor to Liquid Drop Then he can discard a matching H2O card.

4. Play continues clockwise.

5. When a player uses a Scummy Pollution card, it ordinarily means that the next player forfeits a turn. That player can avoid this penalty by playing an Aquifer Card (if he has one) and then declare a change in the H2O card, and discard a matching card. He doesnt HAVE to change suit if the one they were playing helps him get rid of more cards.

6.A player can also get rid of an Aquifer Card just as a regular discard, with no penalty / benefit involved, if thats all he has left in his hand at the end of the game.

7. When one player has no more cards, the game is over and that player wins.

#### NOTE:

You can have another optional rule (sort of like "Gin Rummy") that speeds up the game: During his turn a player can discard (at the bottom of the Discard Pile) 3 matching H2O Cards (not Action Cards) from his hand. Each player can only do this once in the game.

There are 52 cards. If you want a longer playing game, print out another set and have 104 cards.









