



8a.7 Minecraft Water Sanitation Plant

Story Extension for This Lesson:

Build a simulated water Treatment plant.

Grade: 8

Strand: Water Systems

Big Ideas:

- Water is crucial to life on Earth.
(Overall expectations 1 and 2)
- Water is an important resource that needs to be managed sustainably.
(Overall expectations 1 and 2)

Overall Expectations:

1. assess the impact of human activities and technologies on the sustainability of water resources
2. investigate factors that affect local water quality

Specific Expectations:

2.2 investigate how municipalities process water (e.g., obtain it, test it, and treat it) and manage water (e.g., distribute it, measure consumption, and dispose of waste water)

2.6 use appropriate science and technology vocabulary, including water table, aquifer, polar ice-cap, and salinity, in oral and written communication

3.2 demonstrate an understanding of the watershed as a fundamental geographic unit, and explain how it relates to water management and planning

Inquiry Skills:

Modelling, Constructing, Teaching

Other 21st Century Skills

(If Minecraft EDU) Coding

Instructions:

Have students design and create a (physical or virtual) model of a working water and waste treatment plant. This should show the full process of water being taken from a natural source, treated, distributed to a community, returned to the waste treatment plant for sorting cleaning, and eventually returned to the water source.

Materials List:

- computer
- Minecraft (Minecraft EDU)
- foam-core
- Coro-plast
- cardboard

Subject Area:

Environmental, Science, Math, Art, Social Studies

Connects to:

All Grades

Handouts/Assessments:

- - Water Systems 7

Minecraft Water Filtration System

Name: _____

Design and create a (physical or virtual) model of a working Water and Waste treatment plant. This should show the full process of water being taken from a natural source, treated, distributed to a community, and then returned to the waste treatment plant for sorting cleaning and eventual return to the water source.



Remember to use the Learning Process, and conference to develop your ideas.

Water System Quiz

Name: _____

Section A. Vocabulary Questions (5 marks)

Directions: Match the vocabulary words in Column 1 with the choices in Column 2.

(Place the letter in the box)

Column 1 Terminology Words		Column 2 Options
1. watershed		A. water that soaks into the earth
2. glacier		B. a massive body of salt water
3. ground water		C. a source of drinking water
4. the Great Lakes		D. an area of land where water drains to one water body
5. Ocean		E. a slowly moving mass of ice and overlying snow

Section B. Multiple Choice Questions (7 marks)

Directions: Place the letter of the correct answer in the space provided.

6. What is the name of the bacteria that infected the town of Walkerton, Ontario?

- (a) Bifid bacterium
- (b) E. coli
- (c) Ebola
- (d) Salmonella

Answer: _____

7. Water can transform from gas to liquid to solid to gas again, the terms we use for those transformations (in order) are...

- (a) precipitation, evaporation, sublimation
- (b) liquefaction, evaporation, condensation, sublimation,
- (c) condensation, solidification, sublimation
- (d) evaporation, condensation, sublimation, liquefaction

Answer: _____

8. Which of the following is true of drinkable fresh water ?

- (a) it represents less than 1% of all the water in the world
- (b) it is evenly distributed throughout the world
- (c) it is available in an unlimited supply
- (d) both b and c

Answer: _____

9. When water condenses in the atmosphere it forms:

- (a) clouds
- (b) lightning
- (c) wind
- (d) snow

Answer: _____

10. What is the relationship between life expectancy and access to fresh water?

- (a) Life expectancy decreases as access to fresh water increases
- (b) Life expectancy increases as access to fresh water decreases
- (c) Life expectancy decreases as access to fresh water decreases
- (d) there is no relationship between life expectancy and access to fresh water

Answer: _____

11. What is a watershed?

- (a) an area of land where rainfall is always heavy
- (b) an area of land where all water drains into one main water body
- (c) important only to the people living right beside a river
- (d) not connected to any other watershed

Answer: _____

12. Which of the following is true of atmospheric water (water in the air)?

- (a) is formed from the respiration of animals
- (b) is formed from the transpiration of plants
- (c) can be felt as humidity in the air
- (d) all of the above

Answer: _____

Section C: Corresponding Questions (5 marks)

Directions: Match the **correct letter** from the column on the right to each item in the column on the left.

13. The_____plant that deal with water that leaves your home.	(a)Water Treatment (b) recycled (c) evaporation (d) Waste Treatment (e) concentration
14. The_____of salt distinguishes saltwater bodies from freshwater bodies.	
15. The_____plant deals with the purification of water before it reaches your house	
16. Water vapour enters the atmosphere from the_____of oceans, rivers, and lakes	
17. There is no new water on earth. It is_____over and over.	

Section D: Questions with Written Answers (Rubric)

19. **Directions:** Answer **one** of the following questions in complete and meaningful sentences.

- What occurs at the Water treatment plant, which makes raw water (from a lake) ready for us to drink.
- We have talked about contaminants of water, what are they, giving 1 example of each.
- Water moves through what we call a cycle. Explain why this is not completely accurate. Give examples to prove your point.
- How do you think the Walkerton tragedy affected the area at that point of time, and what future effects could be potentially felt by the residents?

Assessment Rubric

	Level 4	Level 3	Level 2	Level 1
Knowledge and Understanding				
Understanding of content	Student demonstrates thorough understanding of content.	Student demonstrates considerable understanding of content.	Student demonstrates minimal understanding of content.	Student need to continue to develop their understanding of content.
Communication				
Use of conventions, vocabulary, and terminology	Student uses vocabulary, of the subject with a high degree of effectiveness.	Student uses vocabulary, of the subject with considerable effectiveness.	Student uses vocabulary, of the subject with promising effectiveness.	Student uses vocabulary, of the subject with considerable effectiveness.
Application				
Application of knowledge and skills in familiar contexts	Student applies knowledge and skills in familiar settings with a high degree of effectiveness.	Student applies knowledge and skills in familiar settings with considerable effectiveness.	Student applies knowledge and skills in familiar settings with some effectiveness.	Student needs to develop knowledge and skills in familiar settings.