

8/1/2012



Assessing with
Learning
Progressions in
Science

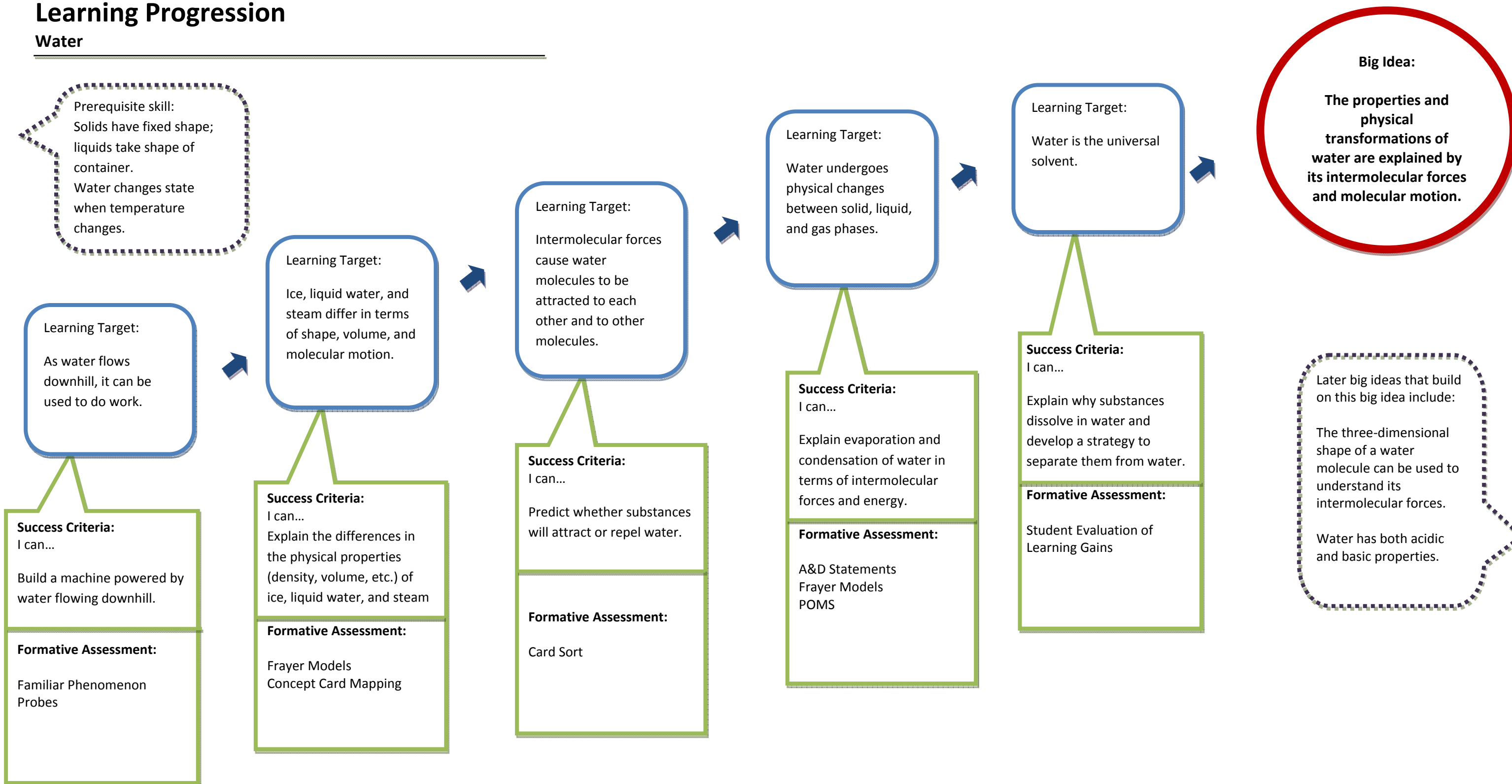
FOSS WATER

Photo source: Microsoft

Content Professional Development Tools | Contributor: Roxi Hulet

Learning Progression

Water



Familiar Phenomenon

Hannah is watching the rain through the windows. She notices that when raindrops hit the windows, they slide down to the bottom of the glass. She wonders why some raindrops slide faster than others. She asks her family, and this is what they say:

Mom: The smaller raindrops are able to slide down the window faster because they are lighter.

Dad: Some raindrops are heavier than others because they have absorbed pollution from the air. The heavier raindrops slide faster than the others.

Brother: Gravity pulls the raindrops down the window. The bigger raindrops are heavier, so they are pulled downward with more force and this causes them to move faster.

Sister: The wind blows some of the drops down faster than the others.

Aunt: The window is dirty on the outside, and the dirt particles that are stuck on the window cause some of the raindrops to slow down.

Which person do you most agree with, and why? Explain your thinking.

Operational Definition:

Characteristics:

SOLI

Examples:

Non-Examples:

Operational Definition:

Characteristics:

LIQUID

Examples:

Non-Examples:

Operational Definition:

Characteristics:

GAS

Examples:

Non-Examples:

Ice (Solid)

Water (Liquid)

Steam (Gas)

Volume

Shape

Motion

Molecules

Essentially
Fixed

Independent of
Container

Constant
Contact

Fixed in Place

Always
Vibrating

Same as
Container

Free to Move

Definitely
Varies

Not in Contact

Phases

Molecular H₂O

Mass

Density

Attracted To Water

Repelled By Water

Wax

Oil

Metal

Salt

Plastic

Glass

Alcohol

Wood

Paper

Cornstarch

Powder

Statement

How Can You Find Out?

1. When liquid water evaporates, it breaks down to hydrogen and oxygen gas.

_____ agree _____ disagree
_____ it depends on... _____ not sure

My thoughts:

2. Warm water evaporates faster than cold water. (assume identical masses and identical containers)

_____ agree _____ disagree
_____ it depends on... _____ not sure

My thoughts:

3. Shallow water evaporates faster than deep water. (assume identical masses)

_____ agree _____ disagree
_____ it depends on... _____ not sure

My thoughts:

4. Condensation occurs when molecules of steam slow down.

_____ agree _____ disagree
_____ it depends on... _____ not sure

My thoughts:

Operational Definition:

Characteristics:

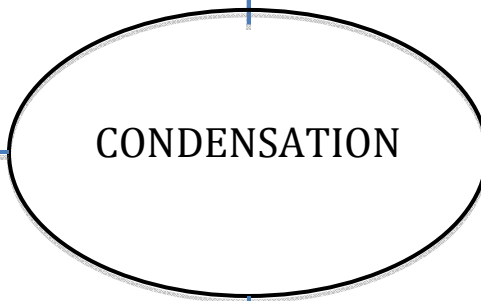
EVAPORATION

Examples:

Non-Examples:

Operational Definition:

Characteristics:



CONDENSATION

Examples:

Non-Examples:

Point of Most Significance

We have just investigated and discussed condensation and evaporation of water. What point made during this unit best helped you understand condensation and evaporation at the molecular level?

Check off how well each of the following helped you learn during this unit.

	Not at all	A little	Fairly useful	It helped me a lot!
Building the water wheel				
Watching me act like a solid, liquid, and gas				
Going over phase diagrams for water				
Doing density calculations for the water thermometer				
Analyzing the water thermometer situation				
Relating properties of water to molecular motion				
Using Frayer models				
Concept card mapping				
“Like dissolves like”				
Relating properties of water to IMFs				
Building the penny boat				
Card sorting				
A&D Statements				
Drawing heating curves				
Using the “exiting the building” analogy				
Planning out how to build a distillation apparatus				
Watching the lava lamp				
Taking Cornell notes				
Answering the POMS question				