The Ultimate Merger: Scene 1

Two teenagers are at the park one evening when they notice something strange.

Student 1: Hey did you see Halle Berry in that movie Baps last night? Her outfit was on point! She got SWAG!

Student 2: (*Matter of fact)* No! It's always about the physical characteristics with you! Here I am thinking there's chemistry between us and all you can think about is Halle Berry! Humph!

Just then they see something moving very fast across the night sky.

Student 1: (*Astonished)* Hey did you see that!?

Student 2: (*Curious)* No I was just staring into your eyes. What did I miss?

Student 1: I'm not sure, I think it was a star but…let's go check it out!

They walk toward the woods where it landed. An old woman (INSERT NAME) also heard the crash near her house. They arrive just as she pokes it with a stick. It breaks open to and gas seeps out along with a small jelly-like substance.

Student 1: (*asking the old woman)* What is that?!!!

Student 2: Yeah what it is I'm scared!

This substance, a living creature, crawls up the stick and attaches itself to the old woman's hand. The creature – now an enormous mass – engulfs the woman.

Woman: (*Screams)* AHRGG!!! It was so thick like a solid when it touched my hand but when I tried to shake it off, it began to flow down my arm like a liquid!

Student 1: It has a certain mass and it's taking up space in this meteor.

Student 2: Those properties remind me of a ball my sister's physical therapist gave her after her hand injury.

The Ultimate Merger: Scene 2

Student 1: Let's go to my house, my mom is making a big dinner tonight.

Student 2: Okay, sound good!

At his house student 1 turned on the television and switches the station from MTV Jams to the Food Network.

Student 2: Hey! Why did you turn the channel? I was watching that!

Student 1: Because my favorite show is on Emril Live! He's the best chef in the world!

On the television Emril announces the items he's going to prepare.

Emril: Today I'm making Jell-O, and Pizza sounds nice huh! Let's start with the Jell-O. First add your gelatin then your flavorings and finally your sugar or artificial sweeteners. Mix! Mix! Mix until it dissolves and BAM mixture!!! There goes your Jell-O mixture! Now just place it in the refrigerator for 30 minutes.

Student 1: Hmm that looks good! Except I don't like artificial sweeteners but it's all dissolve in the mix. Bummer.

Emril: Okay folks; let's get to the Pizza, Mama Mia!! Now my dough has been prepared a few hours earlier to cut back on some time. Now, take the dough out add your sauce, then your cheese, and on the top add your pepperoni. Place it in the oven like this and BAM compound!!! You've got yourself a classic Italian dish!

Student 1: I'm going to make Pizza tomorrow!

Student 2: Ewwe! I don't do the Swine!! If you make it with pepperoni I'll have to pick it out!

Box Chart A

Big Idea *(Main Idea)* **:**

Facts: *(Information found in the Scene)*	**Learning Issues:** *(Things you need to look up or research)*

Next Steps:
(What you plan to do to find out information about your leaning issues. Who's going to do what in your group? Group roles? Learning Issue assignments?)

Box Chart B

New Terms and Definitions:
(Words you do not know the meaning of from the Scene)

Facts:
(Information found in the Scene)

Learning Issues:
(Things you need to look up or research)

Next Steps:
(What you plan to do to find out information about your leaning issues. Who's going to do what in your group? Group roles? Learning Issue assignments?)

Box Chart C

Facts: *(Information found in the Scene)*	**Questions:** *(Things you want to ask the characters)*
Hypothesis: *(What you think will happen)*	**Learning Issues:** *(Things you need to look up or research)*
Next Steps: *(What you plan to do to find out information about your leaning issues. Who's going to do what in your group? Group roles? Learning Issue assignments?)*	

Self/Group Evaluation

Your Name: _____ Date: _____ Period: _____
Group #_____

Instructions: *Please circle the response with which you agree the most. This evaluation will only be read by your teacher and will* ***not*** *be shown to other students.*

1. How would you rate your participation in group discussion and group work?

   5- Excellent 4- Very Good 3- Good 2- Fair 1- Poor

2. How would you rate your effort in completing the case:

   5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

3. Did you complete the assigned homework? Yes No

If no, explain why: If yes, explain what you learned:

_____

_____

4. How well did you work with everyone in your group:

   5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

5. Overall, how would you rate your performance in this case? Explain why and use specific examples.

   5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor

_____

_____

6. Your total score (add values from question 1,2,4 & 5) _____

7. Rate each group member on a scale of 1-5.

Participation in group discussion	Completed assigned task	Worked well within the group	Overall Performance	Total

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OOBLECK Lab

Standard/Goal:

Background: Determine the properties of solids, liquids and gases.

Question: Using your senses can you determine if the substance that formed is a solid, liquid or gas?

Independent Variable:

Dependent Variable:

Hypothesis: (I think … because…) OR (If …then…)

Materials: Borax, white glue, water, 2 glass jars with lids, 2 plastic bags, cup and liquid starch

Procedure: To make the Oobleck, pour 1 cup of the Borax solution in a cup, add 1/4 of the glue solution. Stir it with your finger. Remove the substance from the solution and knead it to get the finished texture. Place in Bag A and wash your hands.

Mix 1 cup of white glue and 1 cup of liquid starch and place in Bag B and wash your hands.

Data/Observations: (create a data table and record your observations)

What are some physical properties of Oobleck? What types of changes took place when you made Oobleck? How did Oobleck in bag A differ from bag B? How were they similar?

Data Analysis: Oobleck is made by combining what? Do you think Oobleck is an element, compound or mixture? Explain why.

Conclusions: Include the following in complete sentences.

1. Explain how your hypothesis was supported (or not) by your data from the experiment.
2. Explain what the experiment demonstrates, investigates, and proves using your organized data.
3. What state of matter is Oobleck?
4. Identify any possible sources of error in your experiment and describe how you would minimize those errors in the future (if you repeated the experiment).
5. Discuss what you might do differently in the experiment next time.
6. State what you learned about the standard/goal for the lab.

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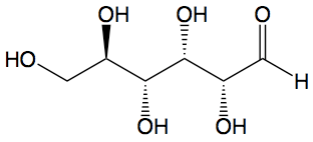
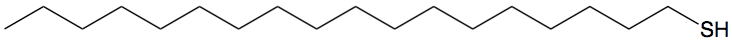
Octadecanethiol Monolayer on Silver LAB

Procedure developed by George Lisensky based on the Tollens' Test and the well-known self-assembly of thiol monolayers (SAM) on gold surfaces.

The aldehyde group in glucose, 

, reduces $Ag(NH_3)_2^+$ to Ag metal. The silver is then coated with a self-assembled monolayer of octadecanethiol, 

, making a non-polar surface on which water beads up.

Procedure

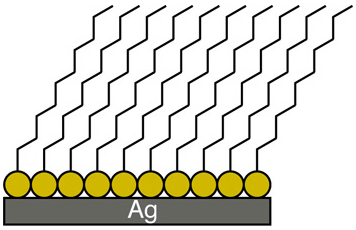

Wear eye protection


Chemical gloves recommended

Place a clean microscope slide in a Petri dish. Place 4 large drops (left) or 8 small drops (right) of a 0.5 M glucose solution on the microscope slide. Add 12 large drops (left) or 25 small drops (right) of an active silver ion solution (see below) to the glucose solution. Gently agitate to mix the solution. Wait several minutes while the solution darkens and a grayish precipitate forms.

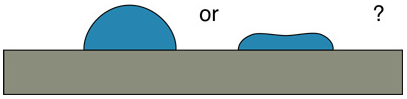
A silver mirror is also forming on the slide, though it may be obscured by the precipitate. Use water from a wash bottle to wash off the precipitate and reveal the silver mirror. Avoid contact with the solution since it will stain your hands. Without touching the silver solution, remove the slide from the Petri dish and rinse the silver mirror with water.

Wait for the surface to appear dry. (For faster drying use a hair dryer.)

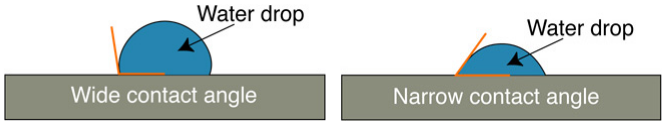


Cover only part of the silver with a few drops of a long chain alkanethiol solution in ethanol (see below). One way to cover only part of the silver is to rest the slide at an angle. Allow the ethanol to evaporate, leaving behind an alkanethiol monolayer with the sulfur atoms bound to the silver and the hydrocarbon tails pointing away. This effectively coats the surface with hydrocarbons.

How attracted are the water drops to the monolayer coated surface? To the silver surface? To the glass? Do water drops spread out or bead up? Like attracts like. Is the water attracted more to the plain glass, to the silver, or to the alkanethiol monolayer-coated silver?



The contact angle is between the side of a drop and the slide. Is the contact angle wide (small attraction to the surface) or narrow (large attraction to the surface) for each surface?



Materials for 25 students

- 0.8 M KOH (Dissolve 0.22 g KOH in 5 mL of water.)
- 0.1 M silver nitrate (Dissolve 0.17 g $AgNO_3$ in 10 mL of water.)
- 15 M ammonia (Concentrated aqueous ammonium hydroxide.)
- Active silver ion solution, $Ag(NH_3)_2^+$

Add concentrated ammonia dropwise to 10 mL of 0.1 M silver nitrate solution until the initial precipitate just dissolves. Mix with a glass stir rod. Add 5 mL of 0.8 M KOH

solution; a dark precipitate will form. Add more ammonia dropwise until the precipitate just redissolves. This "active silver" solution should be used within an hour of preparation. Dispense from a dropper bottle. To avoid the formation of explosive silver nitride, **discard any remaining active solution** by washing down the drain with plenty of water.

- 0.5 M glucose or dextrose (Dissolve 0.90 g in 10 mL of water. Dispense from a dropper bottle.) Sugar or sucrose does not work.
- Alkanethiol solution. Add a very small amount (just barely visible) of a long-chain alkanethiol, such as octadecanethiol, to 20 mL of absolute ethanol. Dispense from a dropper bottle.

Equipment

- Petri dish
- Microscope slide (75 x 25 x 1 mm)
- Droppers or dropping bottles
- Wash bottle (water)

- Hair dryer (recommended)

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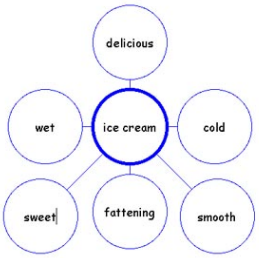
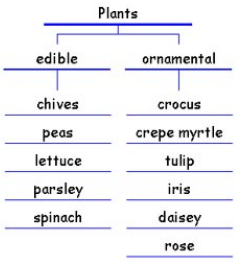
Thinking Maps© integrate thinking skills and mapping techniques. Learning to use these strategies helps students develop good writing skills. These techniques also help students become better learners as they develop life-long skills that help them to study. Thinking Maps© uses basic mental operations involved in perceiving, processing and evaluating information.

Different types of Thinking Maps© are designed to address certain strategies from describing, classifying and even synthesizing.

More information about Thinking Maps© can be found at www.thinkingmaps.com

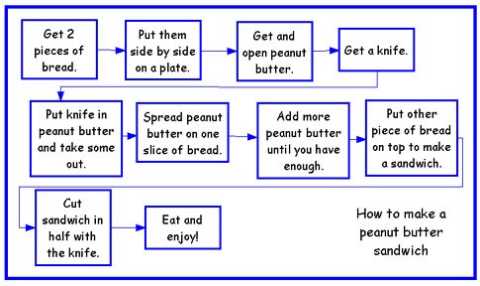
Below are some examples of how Thinking Maps© can be used in the classroom.

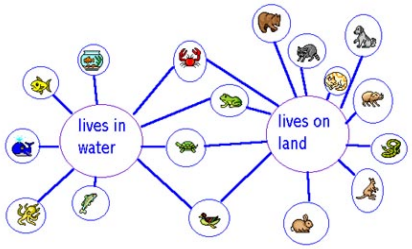


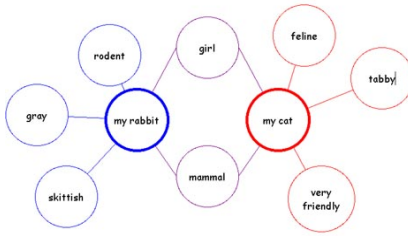


Bubble Map©

Tree Map©







Flow Map©

Double-Bubble Map©

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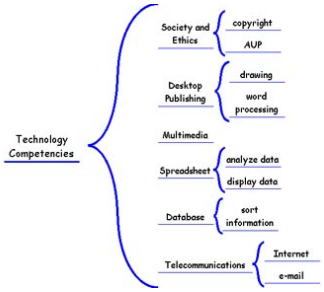
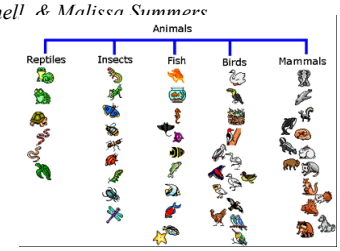
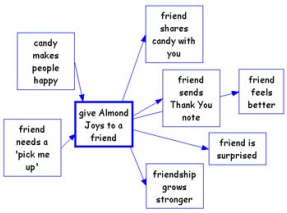


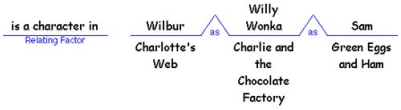
Brace Map©



Tree Map©



Multi-Flow Map©



Bridge Map©
