We Work Together to Figure Things Out

- What I say matters - affirmation
- Active Listening
- Conversation (exchange of ideas)
- Respectfully Disagree
- Relevant follow-up questions
- Taking turns speaking
- Adding in to others' ideas
Our Class Model

**Before**
- ingredients separate
  - flour, egg, salt, milk, lemon
  - measured amounts
  - no shell from egg
  - mixed
  - how mixed
  - poured

- oven - pre-heated

**During**
- pans went in oven
- liquid → solid + bubbles formed on top
- changed color
- oven
- 350° / time
  - 55 mins
  - 45 mins
- checked often
  - smaller, pans taken out
  - overflow / big pan on rock

**After**
- individual cakes more smooth
- big cake, more cracked + bumpy
- color changed
  - lighter → darker (after)
  - outer color darker (edges)
  - inside was lighter
- inside locked
  - light a sponge with air pockets / holes
- cooked after removed

I think
- We agree...
- I wonder...
- We changed your minds about...
Related Phenomena

- baking pizza
- pancakes
- brownies
- banana bread
- concrete
- smoothie
- philly cheese steak
- paragraph

- ice cream
- biscuits
- drinks/mixtures
- scrambled eggs
- cookies
- burning wood
- meatloaf
Ideas for Investigations

- ingredients
  - heat them
  - change amount/measure
  - cool
  - mix diff. ingredients
diff. order

- taste it

- hot plate: heat ingredients / sep.

- look @ pans: shapes, size, material

- weigh ingredients

  before, during, after

  mix
Routines

- Anchoring Phenomenon Routine
- Alone Zone/Turn-Talk/Whole Group
- Scientist circle
- Modeling - Indiv-Class
- Notice/Wonder
- Pass the Tray
- Groups - Role #: 5
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<thead>
<tr>
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<th>G1</th>
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What is sensemaking?

"Failing forward" Use "kid terms" to explore academic language
Defending claims using evidence
Kids asking questions
Student-led
Active listening

"Doing" Manipulating materials
Making Observations
Lots of talking
Documenting everything

Alone Cycle of Self-reflection Pair
Group
### What is Sensemaking?

<table>
<thead>
<tr>
<th>Students</th>
<th>Teacher</th>
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<tbody>
<tr>
<td>- Exploring Concepts</td>
<td>- Facilitates Discussion</td>
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<tr>
<td>- Identifying Patterns</td>
<td>- Guiding Perspectives</td>
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<td>- Drawing Conclusions Based on Connections</td>
<td>- Showing Visuals/Anchorecharts</td>
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<td>- Making Claim</td>
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<td>- Finding Evidence</td>
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<td>- Reasoning</td>
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What is Sensemaking?

- exploration
- collaboration in different modalities (writing, speaking, etc)
- writing
- intentional questioning
- making connections
- use of science terminology / academic vocab
- hands on learning
- student centered learning - lots of group work
What is Sensemaking?

- analyzing data from investigations
- hands on
- trial and error
- discussion
- inquiry
- drawing conclusion
- exploration
- using driving 7's
What is sensemaking?

- Autonomy in learning
- Equity: everyone's voice is heard
- Clarification of ideas
- Mastery of concepts through exploration
- Students record their data/findings
- Use data to form ideas/claims
- Teachers facilitate, they don't lecture
- Students do the heavy lifting
- Students do the heavy lifting
What is Sensemaking?

- Using what we know & what we learned
- Exploring a hypothesis through scientific investigations

Interpret Data:
- Find Discrepancies
- Discuss Variables

Explore
Observe

- Making connections between concepts
- Gives all students a voice/power in their learning
- Reaches all students
- Academic Language Use Not Vocabulary based learning

Student-Led
- Discussing how to use the evidence to make a claim
- Collaborating
- Investigating
- Using materials to explore concepts
- Productive struggle
- Inquiry based

Teacher
- Facilitating
- Asking questions/guiding questions

Create Class Data charts
What is Sensemaking?

- Hands-on
- Conversations/Collaboration
- Learners doing the thinking
- Writing/Creating/Documentation
- Exploration/Discovery
- Teacher facilitating & clarifying
- Asking questions
- Students holding each other accountable to evidence
- Guidance towards objective-knowledge framework
What is Sensemaking?

Questions
- Identifying Problems
- Look for Solutions

Exploration
- Making, Critical Thinkers

Understanding
- Student Centered
- Science Words

What is Sensemaking?
- Experiments
- Analysing data
- Preparing routines

Sharing ideas
- Driving questions by students
What is Sensemaking?

Student:
- Using hands on learning to understand the claim.
  - to make sense of things they explore
  - collect data, observation notes, using senses

Teacher:
- Facilitating discussion by questioning student comments
  - conversation about the data
  - build on each lesson
  - using DQB to make sense of questions
Making sense through investigations

What is sensemaking?
What is Sensemaking?

Building on prior knowledge

Drawing conclusions
Making a claim
Using scientific evidence

Talking through observations

Discussions

Using wonderings to create investigations

To drive

Relate to real world

Explorations → practical applications
L3
Figured out:
- Weight was the same before and after
- Change
  - Weight
  - Color
  - Smell

How
- Math
- Investigation
- Wrote Findings/Analyze Data
- Communicated

L4
Figured out:
- Change
  - Bubbles
  - Weight loss
  - Rose
  - Pop/Left

How
L5

Weight of mixing two ingredients increased in closed

What?
In a closed system the weight stays stable

L6

Finding patterns in data

Using prior data to find different patterns

L7

if a change took place
diff. between open/closed systems
temp can change as a result of change

measure temp before and after mixing
What/change

Closed system weight does not change after mixing

Looking to see if a change has occurred

How

Add new variable

How to

- Measure the temp by doing and after mixing I challenge (check and note temp here)

Analyze

Find evidence of change

New behavior data

- Look at data sheet and look for patterns in change
The weight did not change in a closed system.

- Seal bag
- Do a H2O test
- Discuss change in shape or size of bag

Temperature

What: Temperature can increase or decrease as a result of change.

Record temp before during, and after.
Show:
- arrows pointing out to show expansion / bigger
- before / after
- "crackle"

Tell:
- water bottle
- heat source / burner
- hot water
- pot
- air
- cap on bottle
Before

- Hot burner
- On/off switch

After

- Crackle