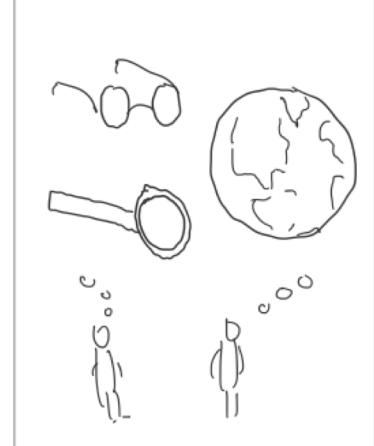
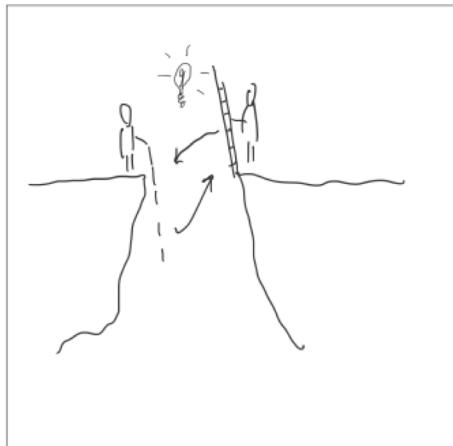
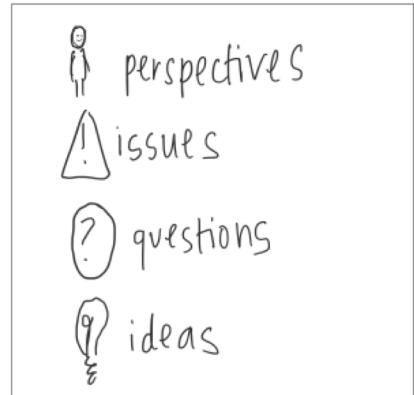


A SKETCHBOOK ON

ESSENTIALS of EFFECTIVE COMMUNICATION



SEEK TO UNDERSTAND



Sketchnotes: A Communication Tool to Strengthen Research and Practice Links

Nicole L. Fonger

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@nmlfonger #progressinpress
#sketchnotes #MTBoS

1
ACTIVE PROCESS
COLLECTIVE
RESPONSIBILITY



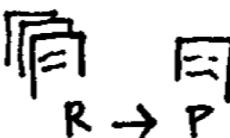
what does it
look like?

MAKE PRACTICES
EXPLICIT

2
CURRENT
STRUCTURES
ARE NOT 1size
fit ALL

💡 NEW COMMUNICATION
MECHANISMS NEEDED

FOCUS → TRANSLATION

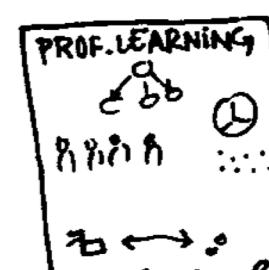
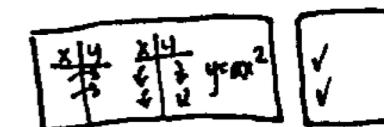
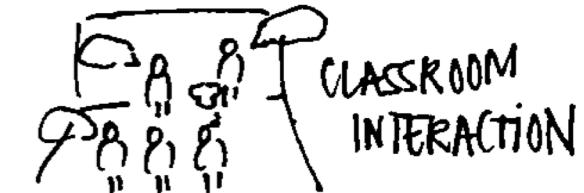


CURRENCY

BRIDGE BUILDING

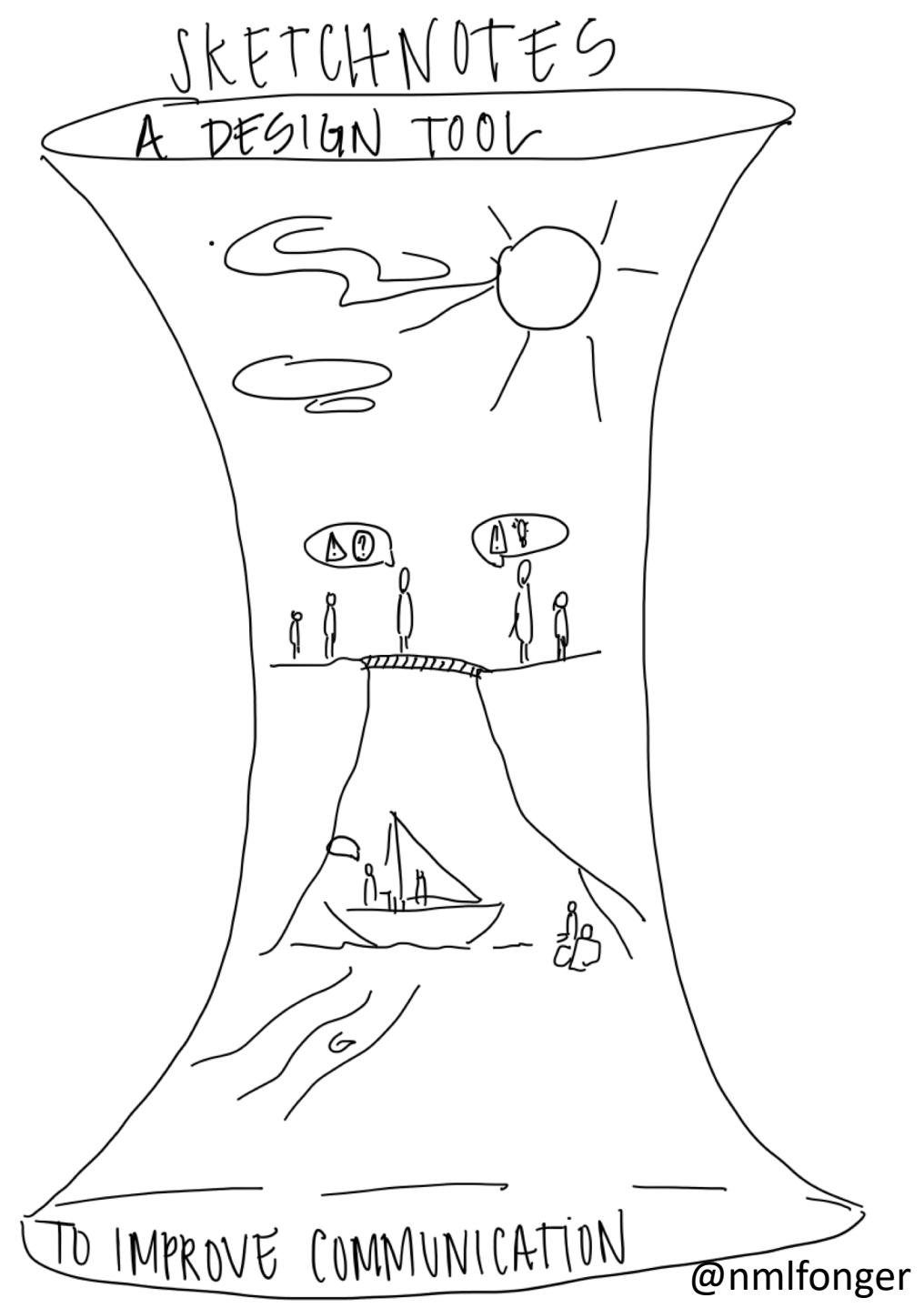


3
* SKETCH NOTES!
ARE A VIABLE TOOL
DUAL CODING
&
REPRESENTATIONS

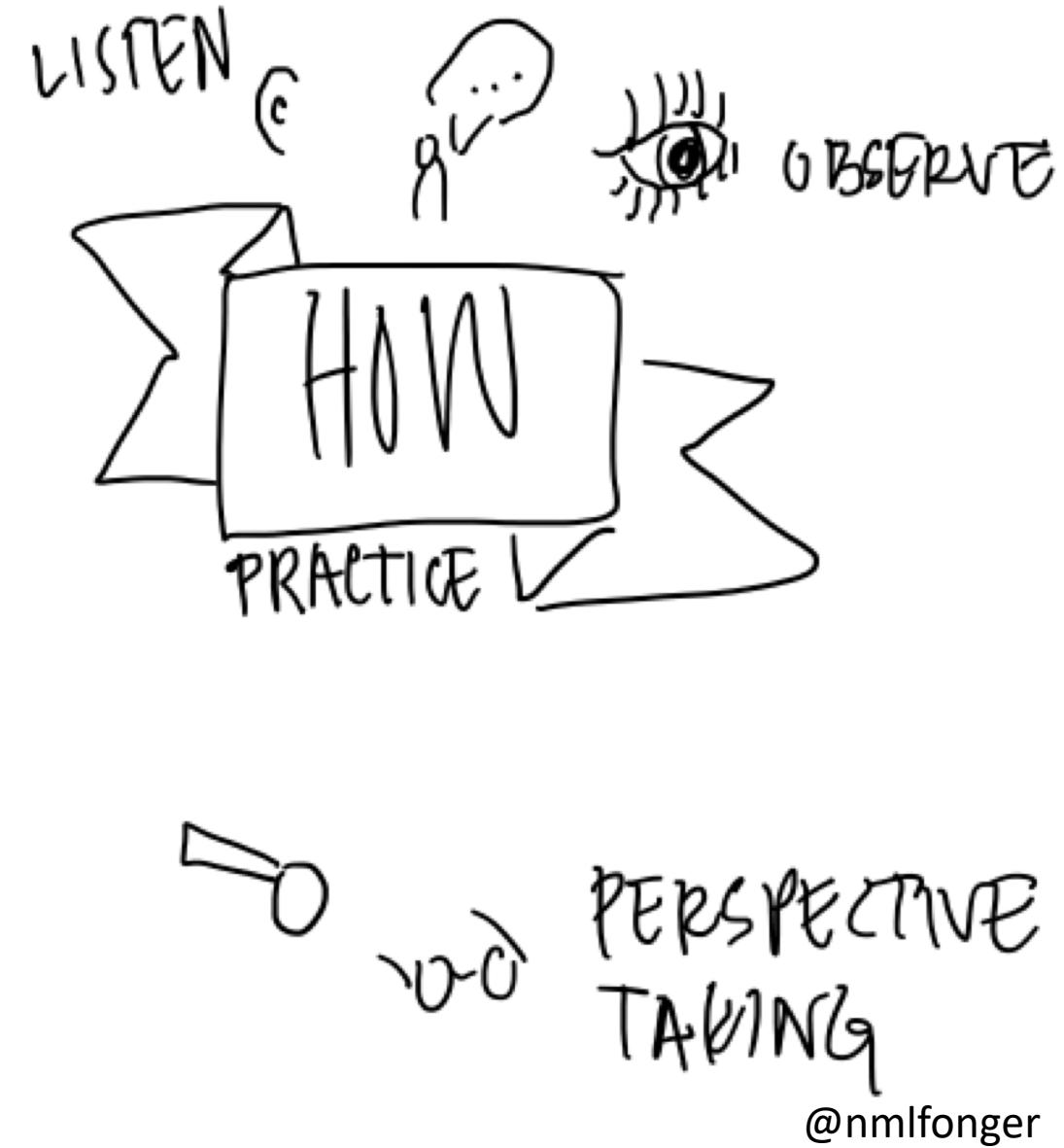
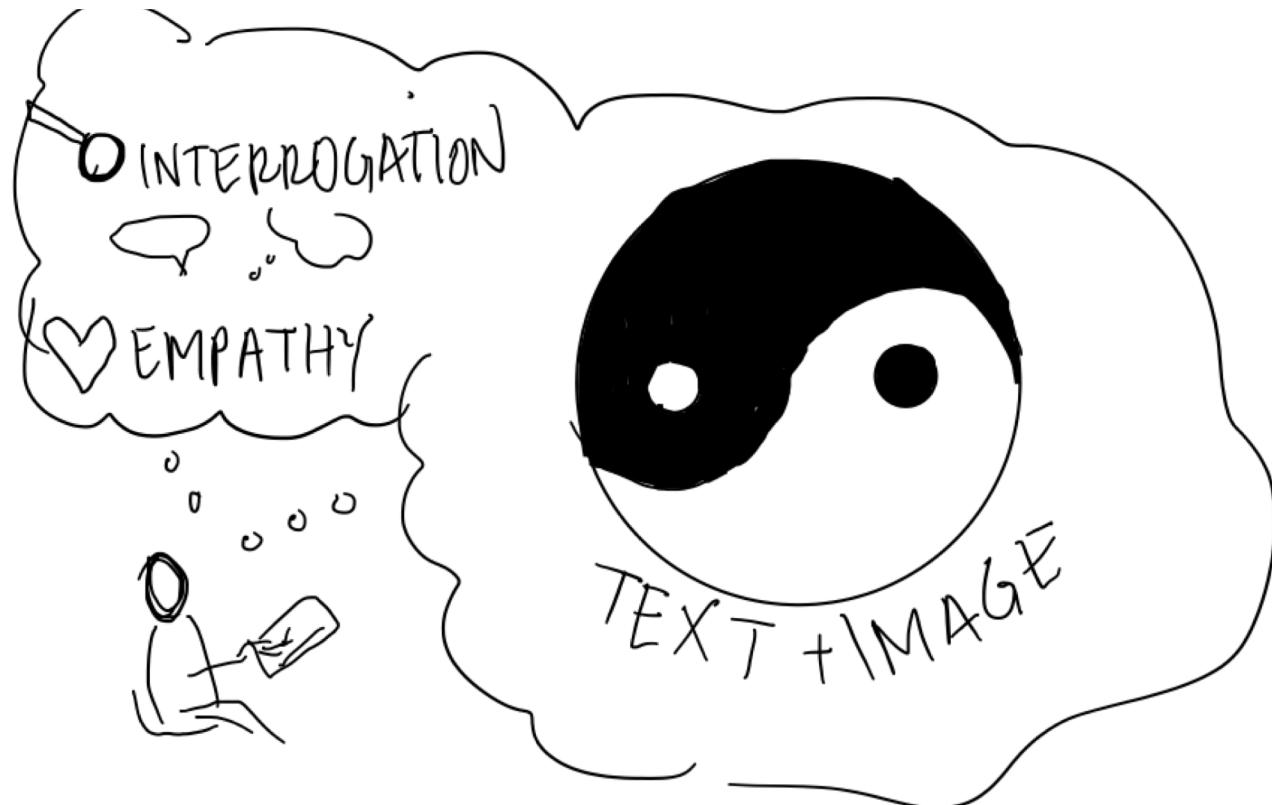


Introducing Sketchnotes

- “sketchnotes are visual maps built from meaningful thoughts and ideas” (Rhode, 2013, p. 10).
- Meaningful \leftrightarrow creating, interpreting, connecting representations (Lesh, Post, Behr, 1987; Dreyfus, 1991; Duval, 1999)



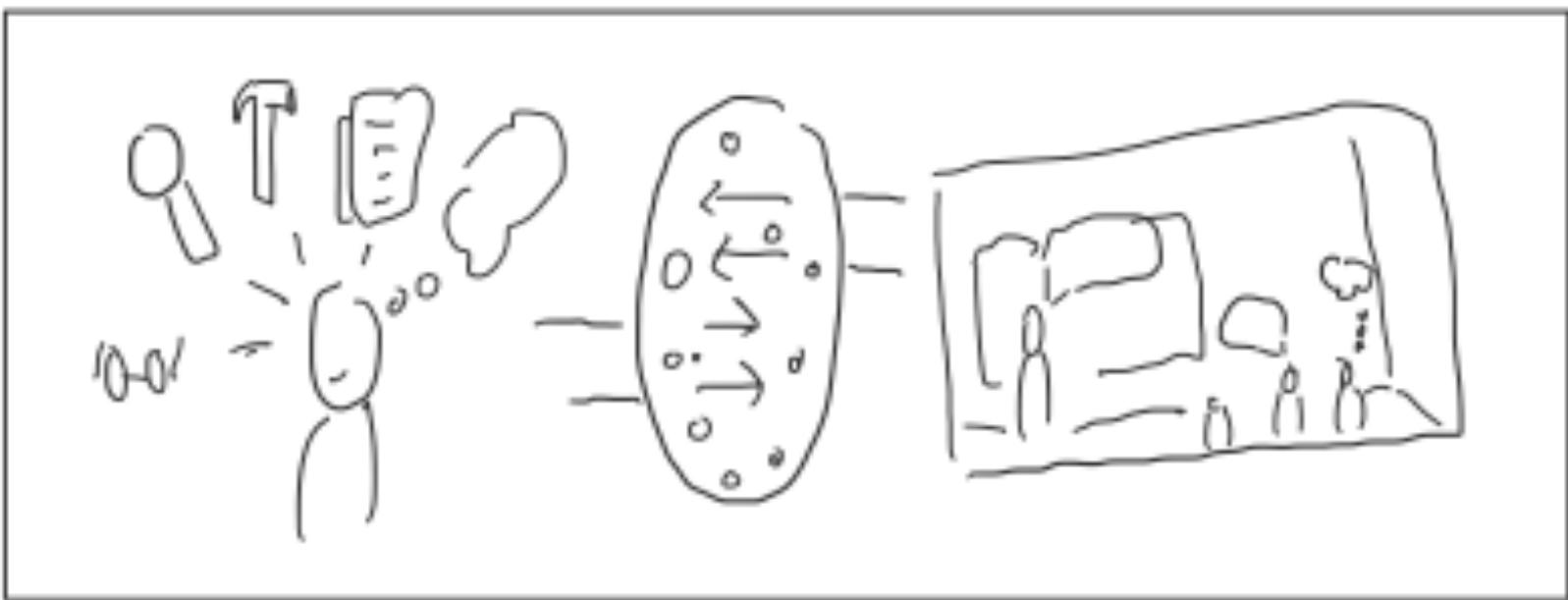
Engage: Practice Sketching!



@nmlfonger

Audio recording of reading the following blog on Translating theories

<https://bold.expert/how-can-educational-research-translate-to-the-classroom/>



FILTER
RESEARCH & PRACTICE
KNOWLEDGE, TOOLS, EXPERIENCES

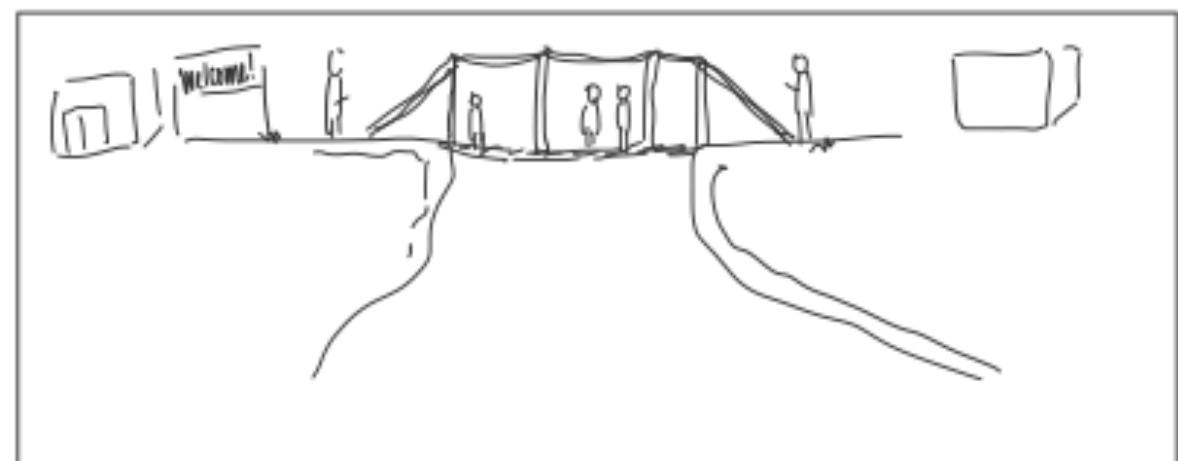
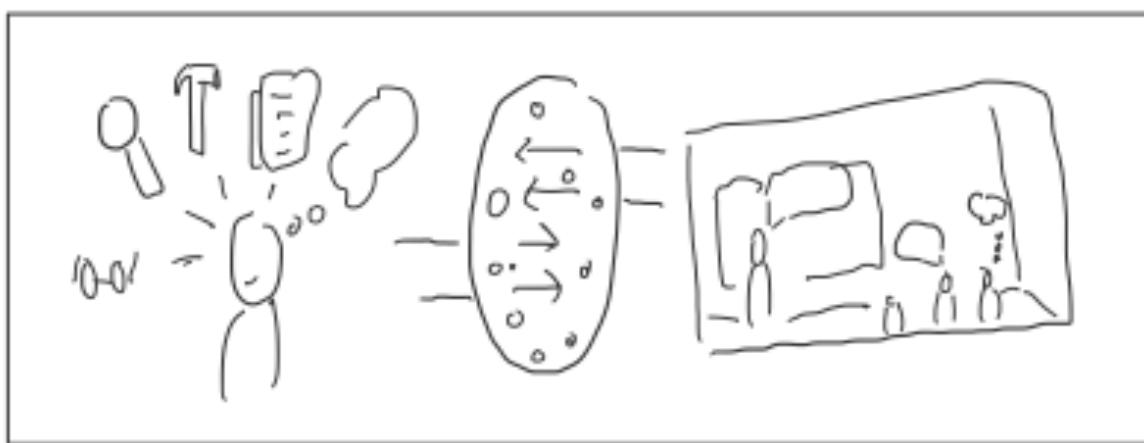
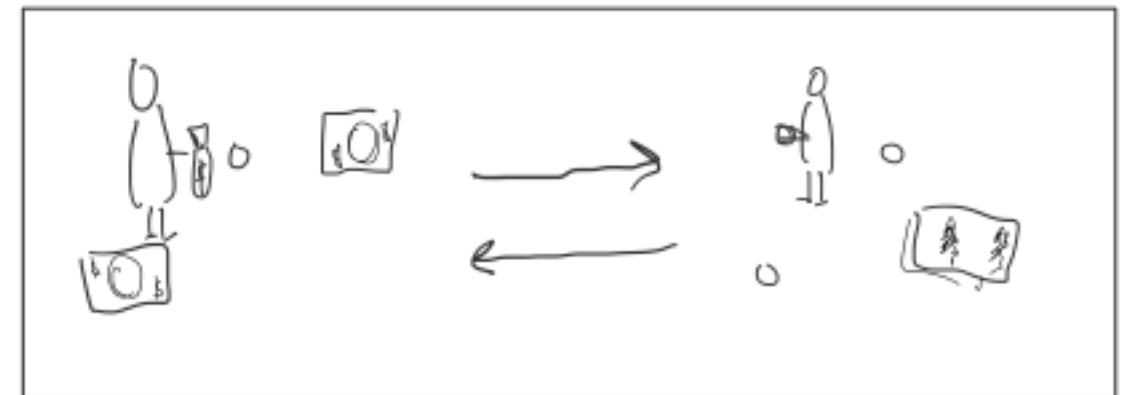
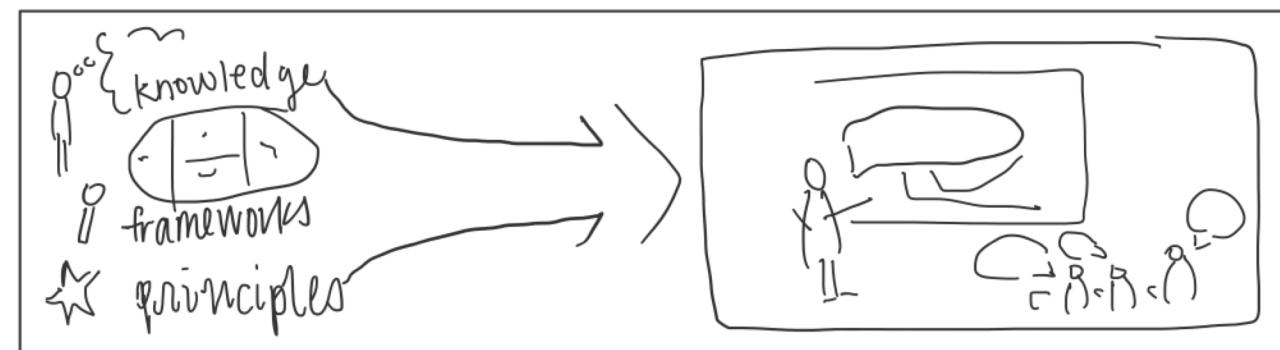
1. Linking research and practice is an active process; a collective professional responsibility; an imperative for the advancement of the field.

Arbaugh et al (2010); Boerst et al., (2010); Heid et al. (2006); Herbel-Eisenmann, et al. (2016).

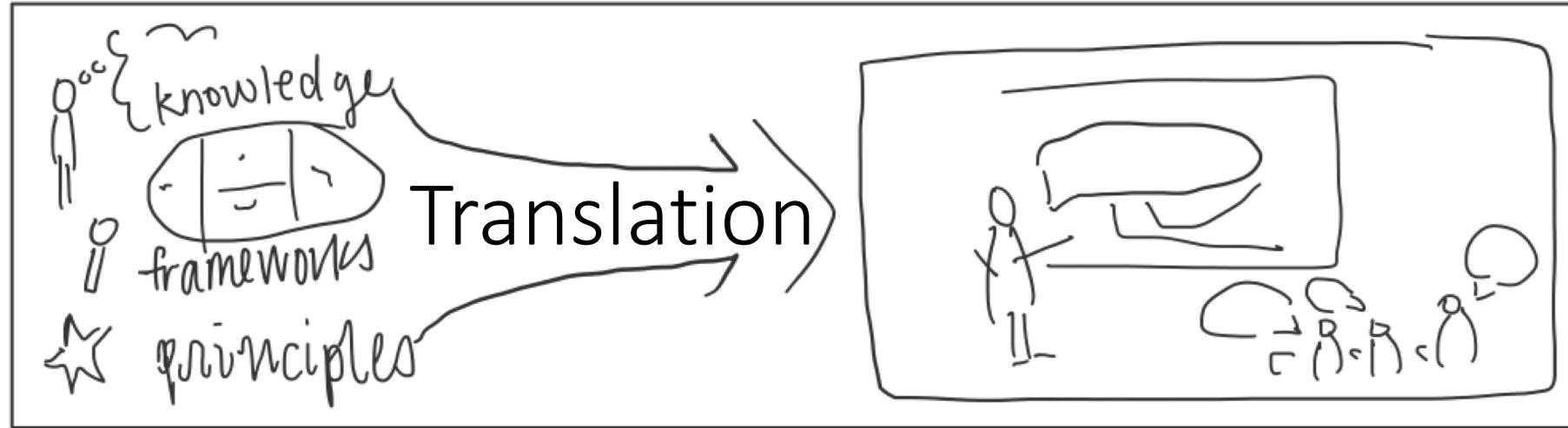
Kieran et al.. (2012); Langrall (2014); Silver (2003); Silver & Lunsford (2017).

Cai et al. (2017a, 2017b, 2017c, 2017d, 2018a, 2018b, 2019)

Metaphors for Linking Research and Practice



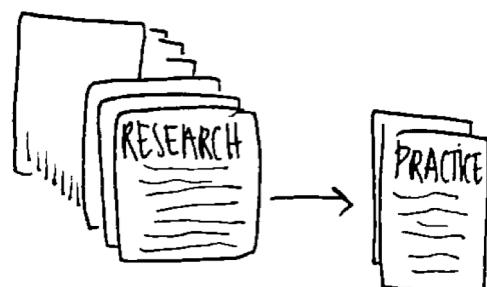
Metaphor: Lakoff (1993); Research and Practice: Silver & Lunsford (2017); #Sketchnotes @nmlfonger



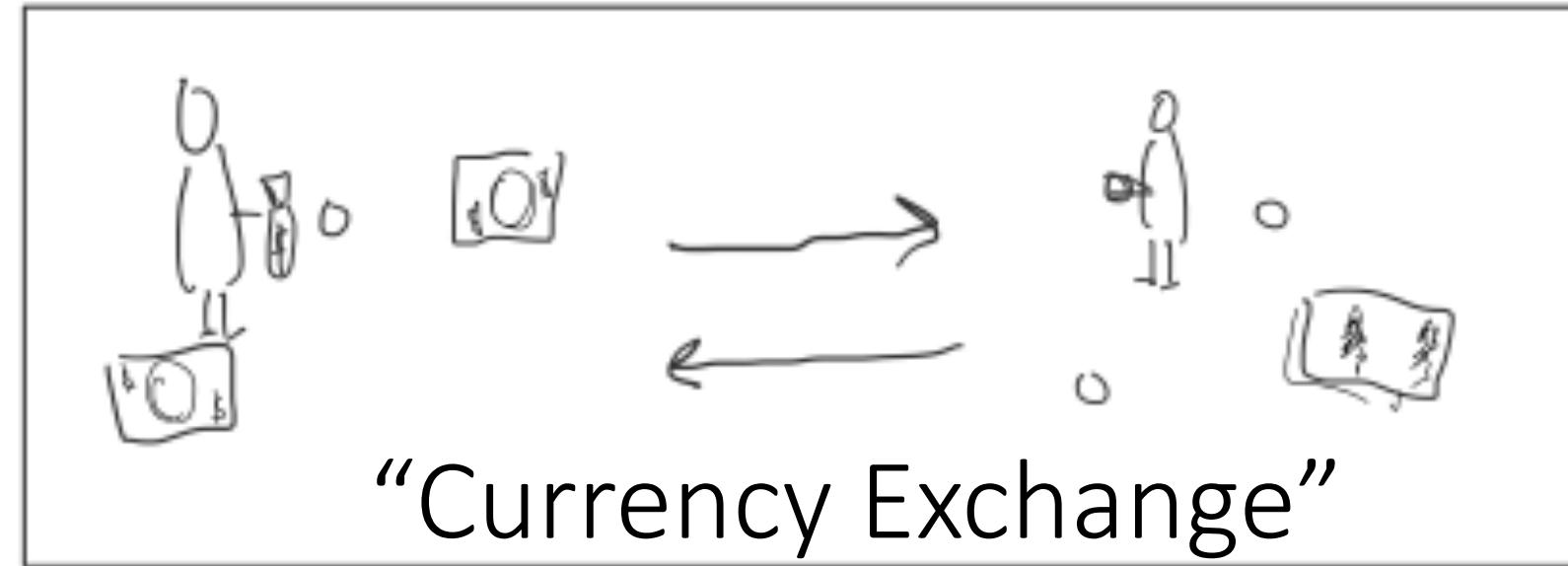
“change of language may be needed to enhance communication”
(Silver & Lunsford, 2017, p. 35)

Clips/briefs not useful for classroom challenges (Burkhardt & Schoenfeld, 2003)

⚠ Dominant: Text only



⚠ Access:  MEMBERS ONLY



(Silver, 2003)

Researchers' Currencies:

- ✓ Theories
- ✓ Methods

Teachers' Currencies:

- ✓ Experience, Insight
- ✓ Problems of Practice, Passion

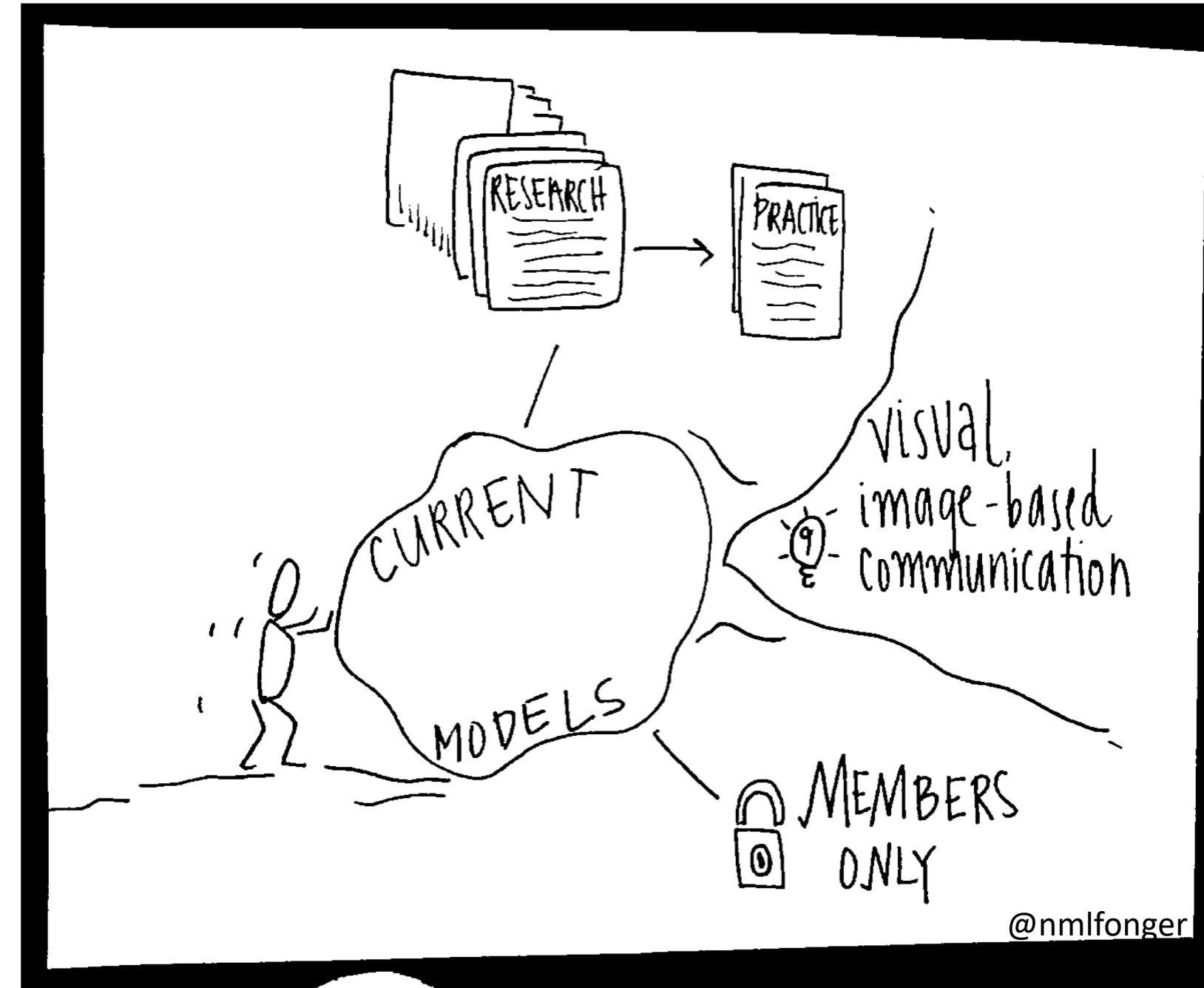


Invisible Communication Acts

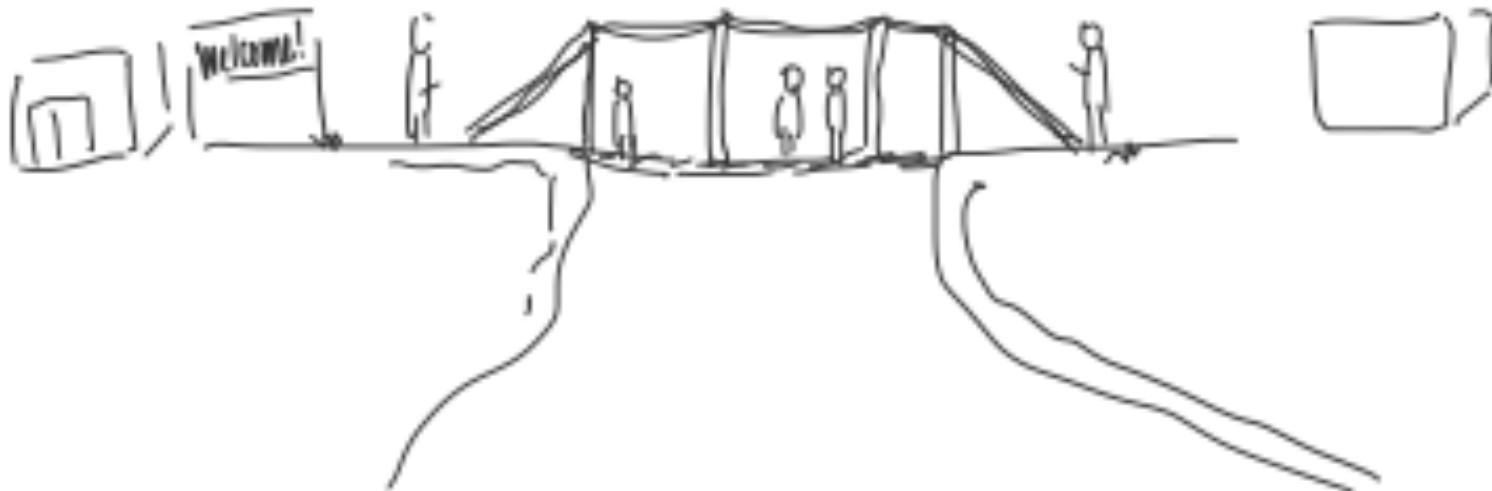


? Need for exchange

*challenge
current
structures
and
strategies for
pushing the
field forward*

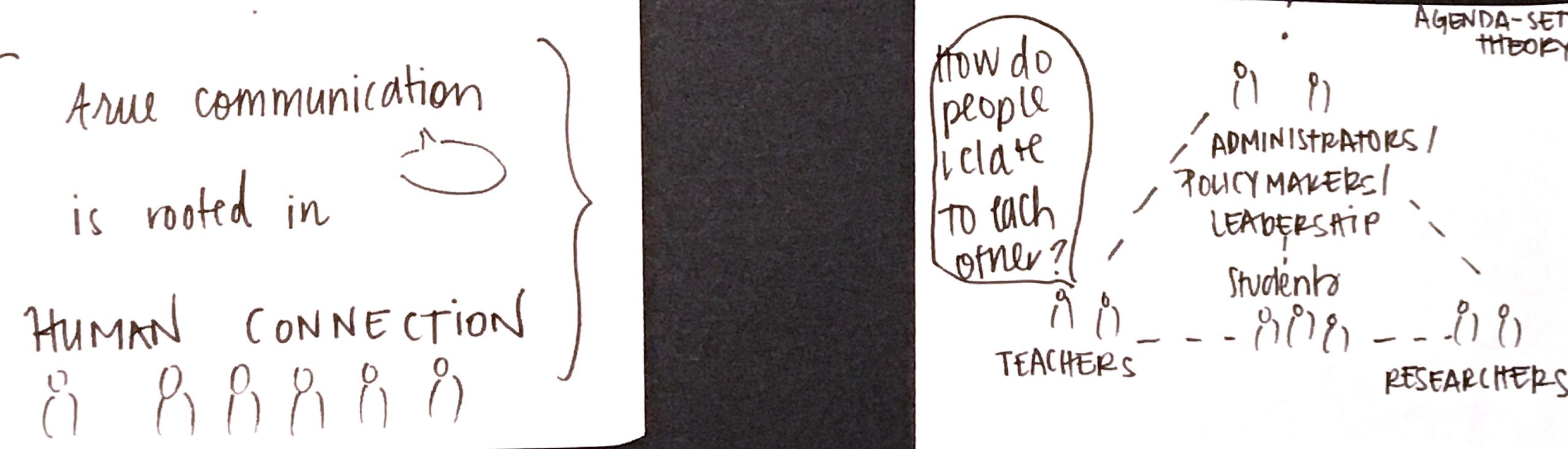


2. New communication mechanisms are needed to bridge communities and improve access and visibility of ideas and practices.

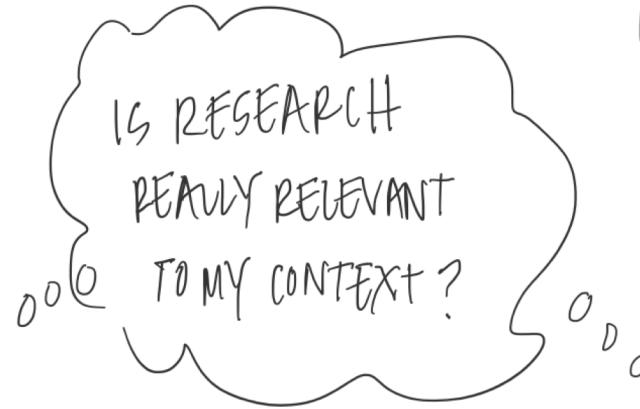
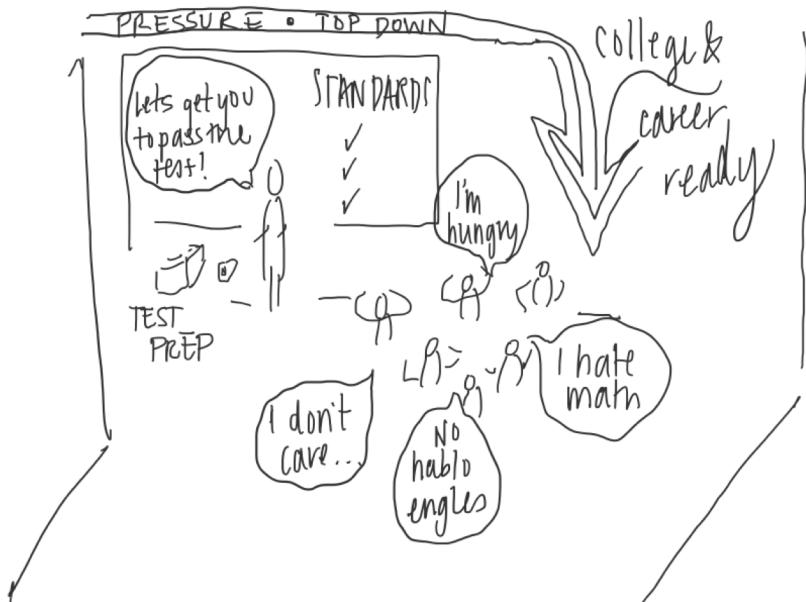
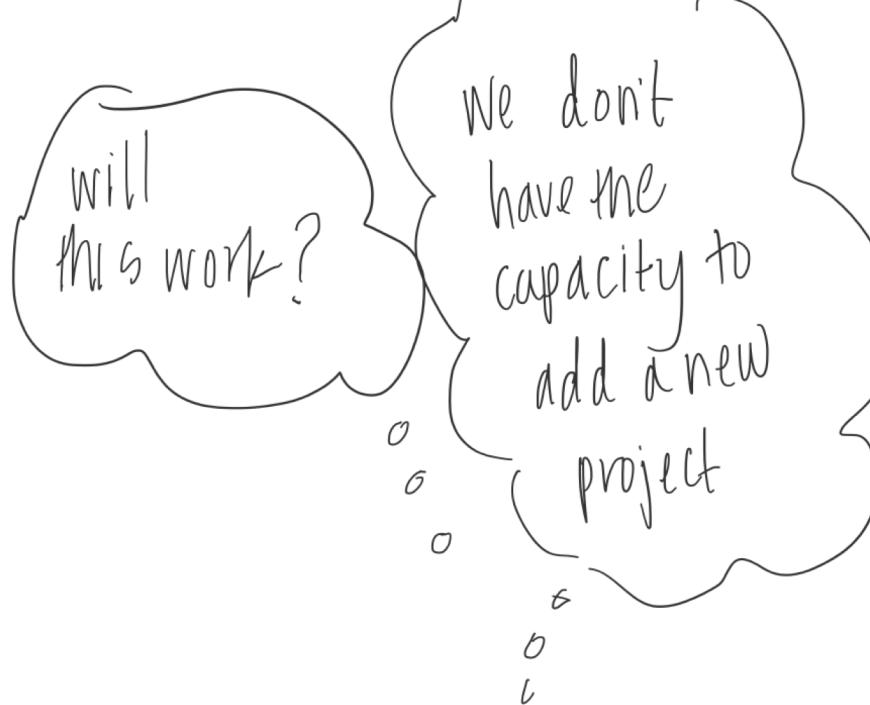
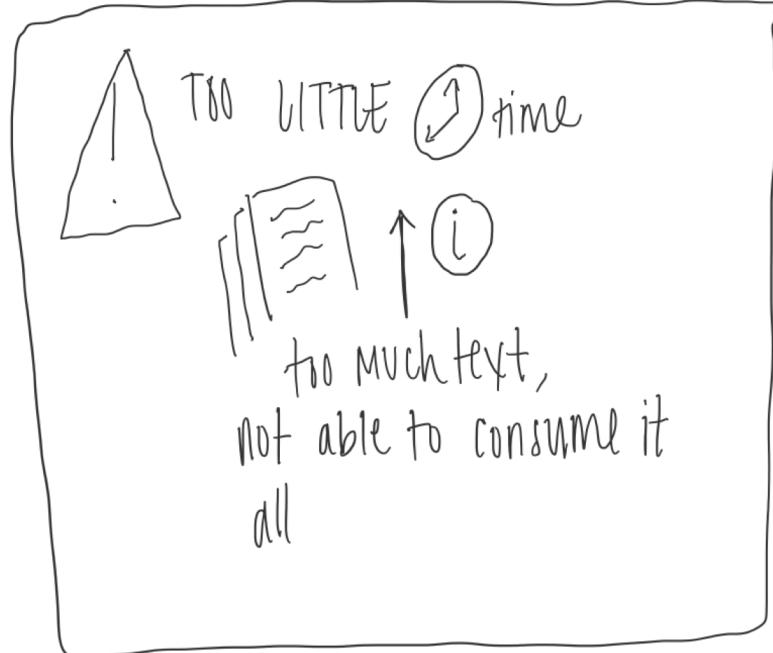


Herbel-Eisenmann et al. (2016); #sketchnotes @nmlfonger

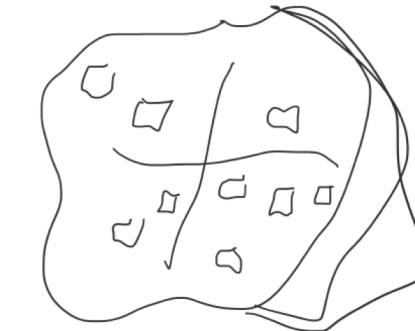
 THE WORK
OF LINKING
RESEARCH &
PRACTICE
REQUIRES EFFECTIVE
COMMUNICATION
AMONG & ACROSS STAKEHOLDER
COMMUNITIES



multiple mediums of communication are necessary for effective dissemination of information, especially across stakeholder groups (Hutchinson & Huberman, 1993).

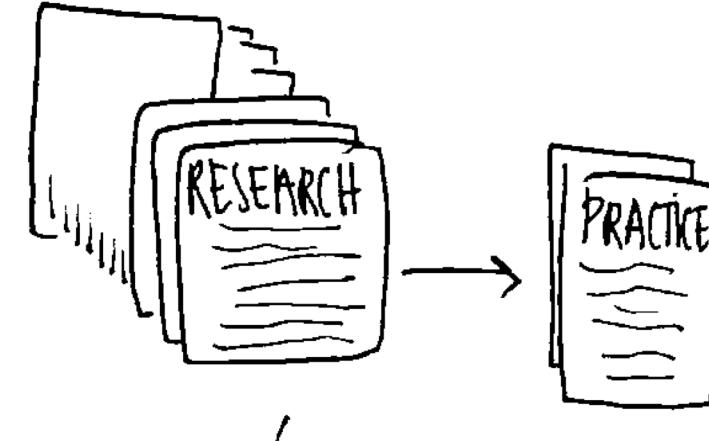


OUR DISTRICT

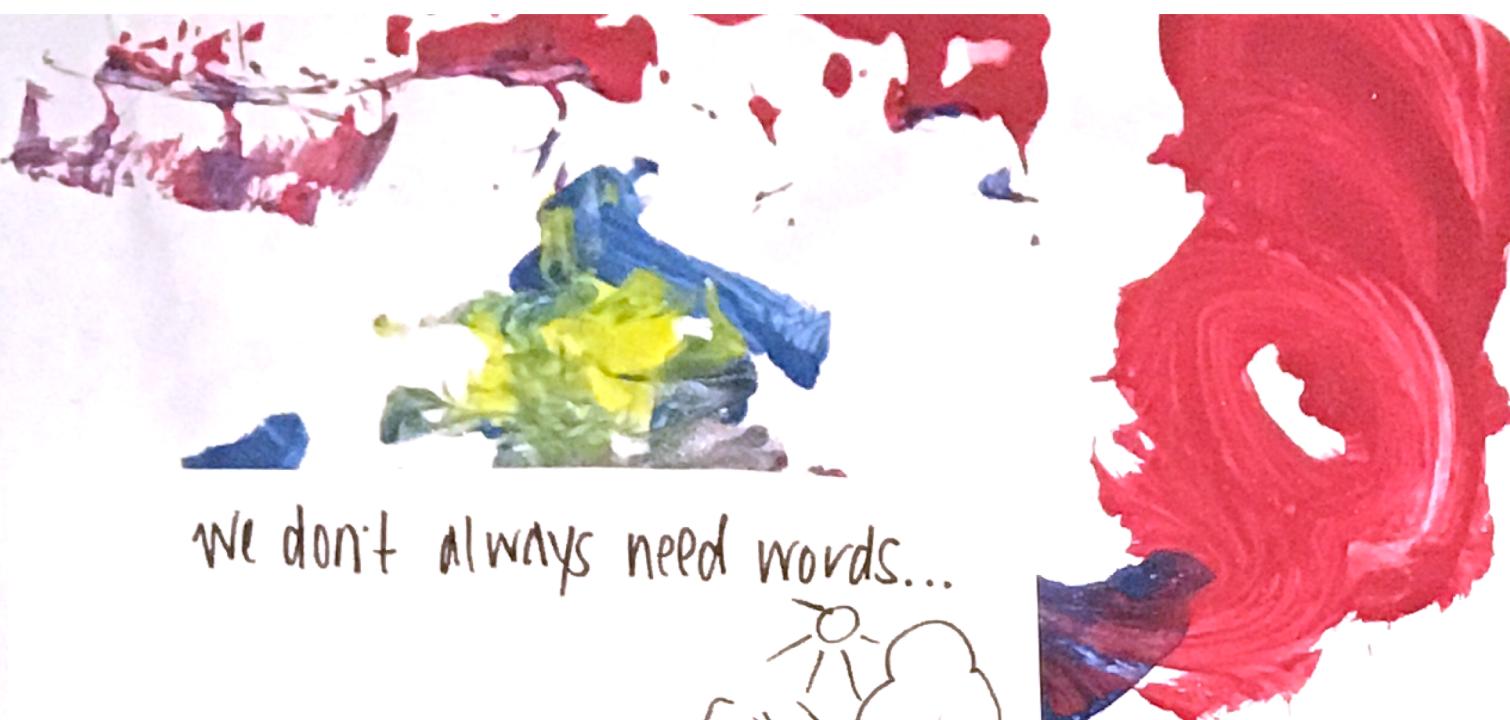




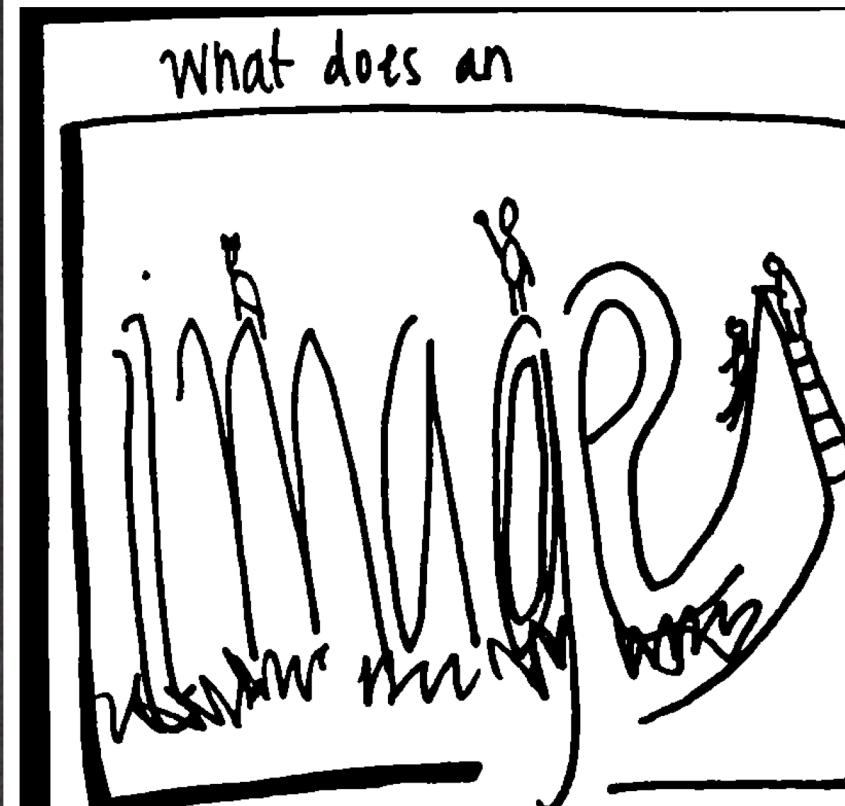
Not a 1-size fits all model



Equity is not about giving everyone the exact same thing, it's about hearing someone's voice about what they need, and providing them with that (Emdin, 2012).



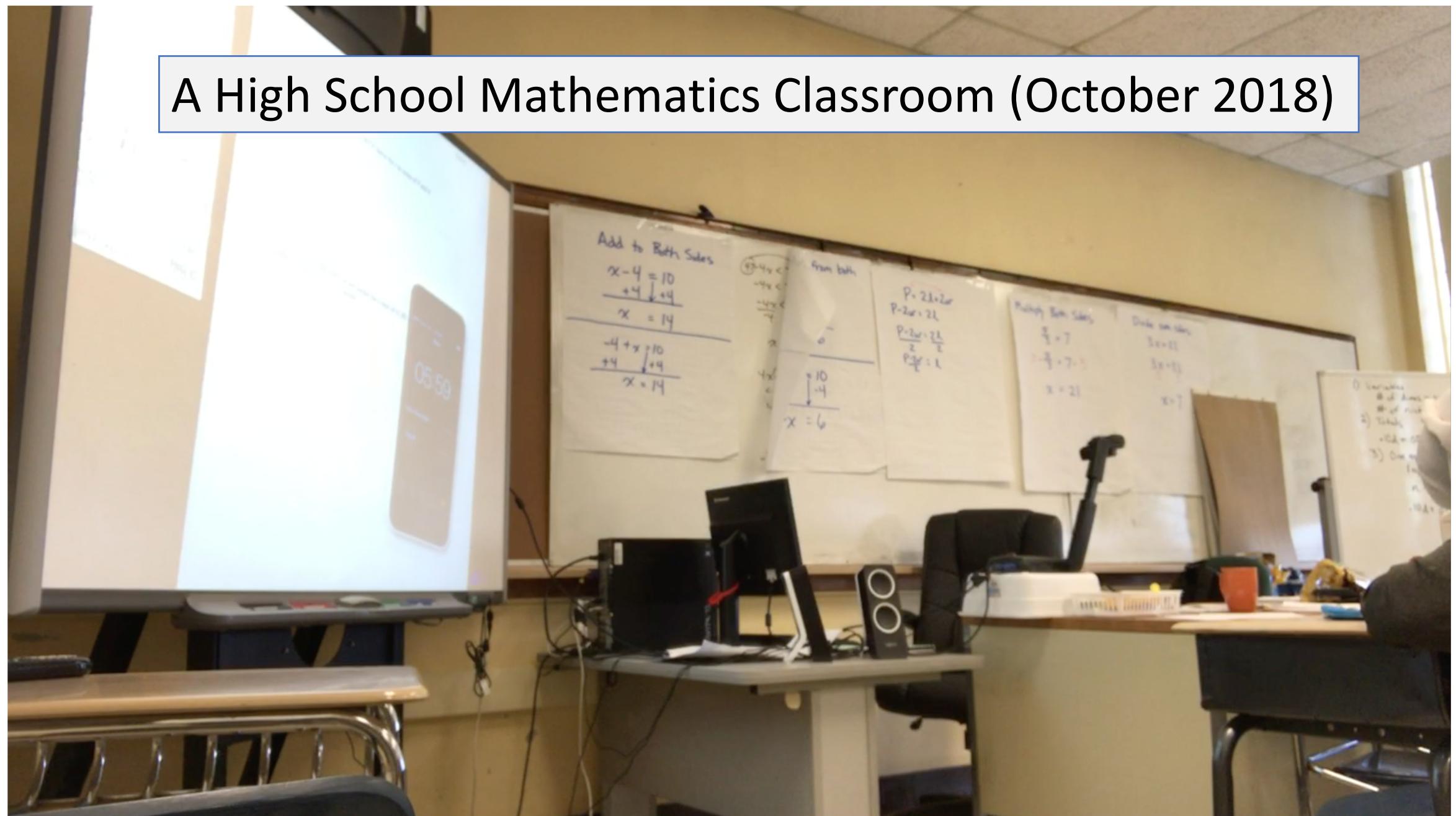
We don't always need words...



What does an

do that text alone cannot?

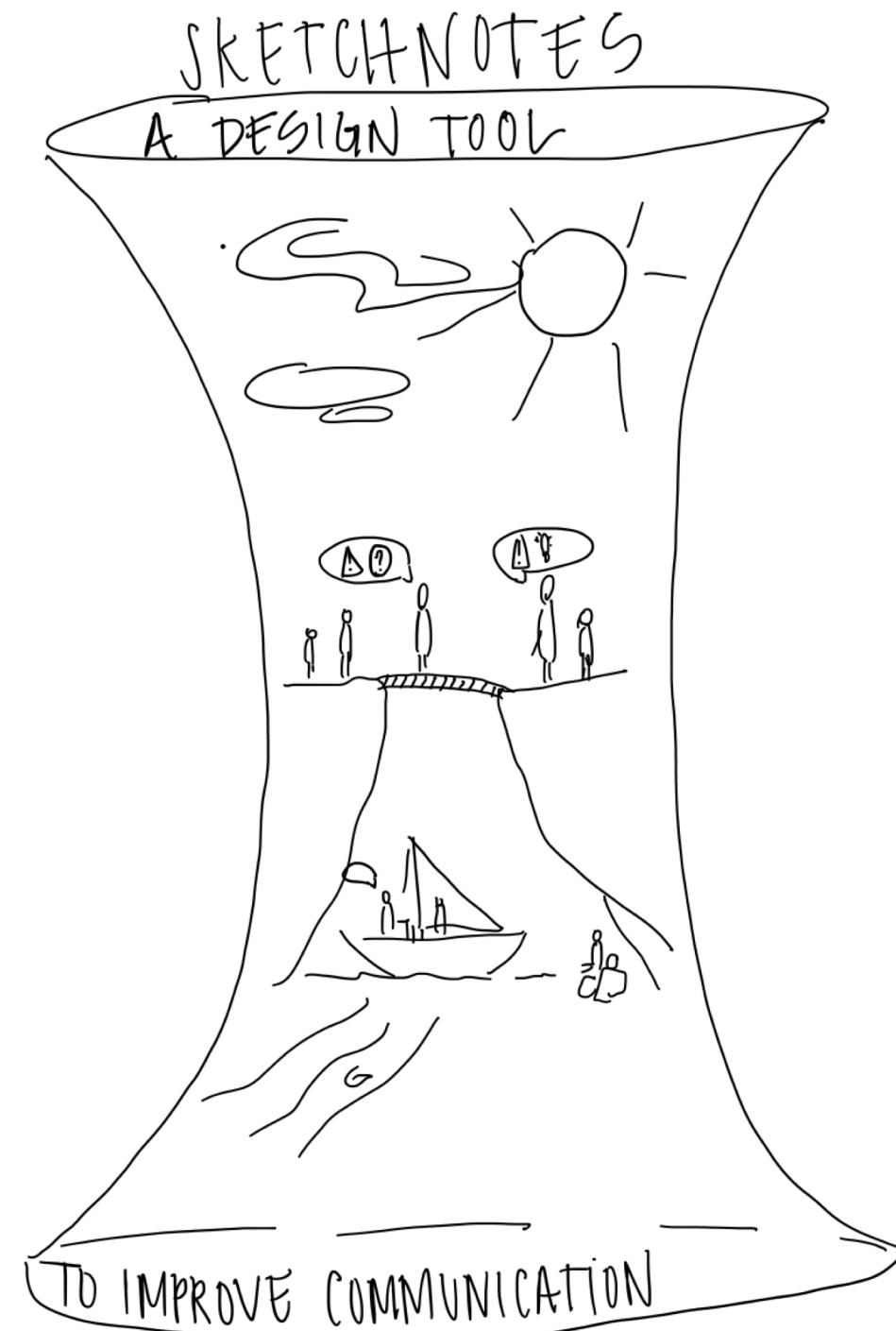
A High School Mathematics Classroom (October 2018)





The Same High School Mathematics Classroom (March 2018)

3. Sketchnotes have potential to improve engagement in meaningful communication acts among mathematics education stakeholders, effectively strengthening links between research and practice. [@nmlfonger](#)

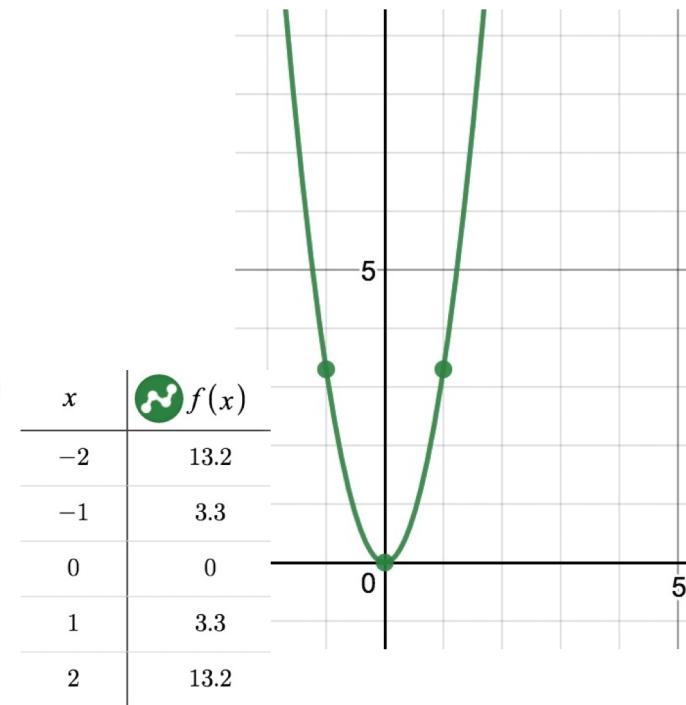
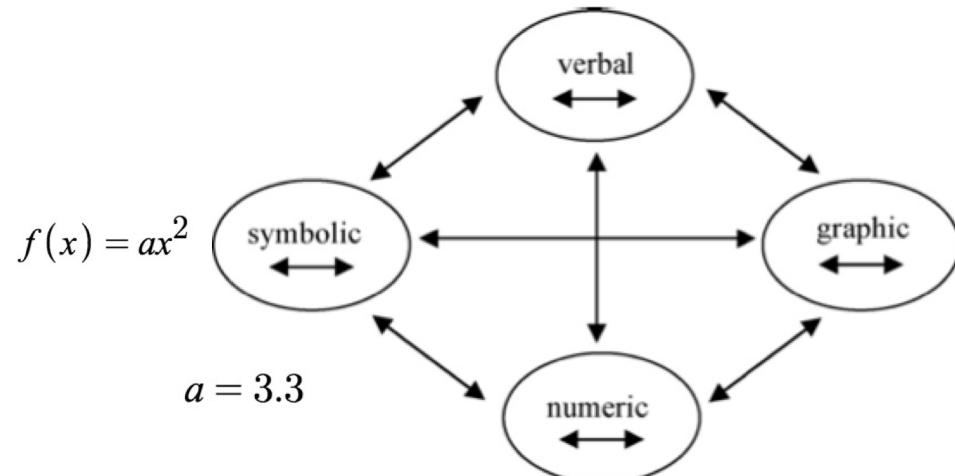


Conceptual Framework

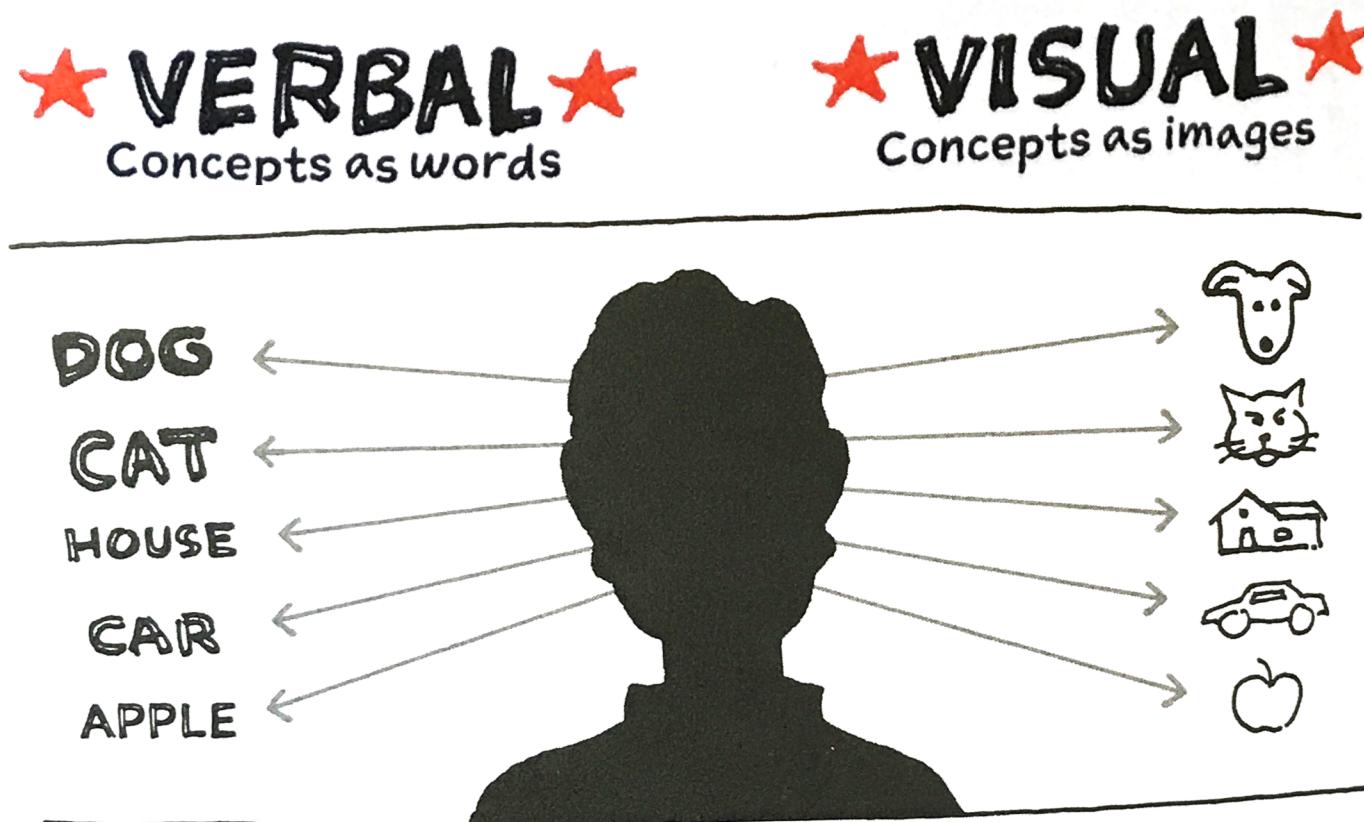
Why Sketchnotes?

Theories of Communication in Support of Sketchnotes

- All communication occurs through representations (Herbst, Bieda, Chazan, Gonzalez, n.d.)
- Multiple representations provide opportunities to extend meaning-making and understanding (Boaler, 2016; Duval, 1999; Dreyfus, 1991; Fonger, 2019; Huntley et al., 2007; Lesh, Post. & Behr, 1987; Lobato, 2012; NCTM, 2000, 2014; Selling, 2015)

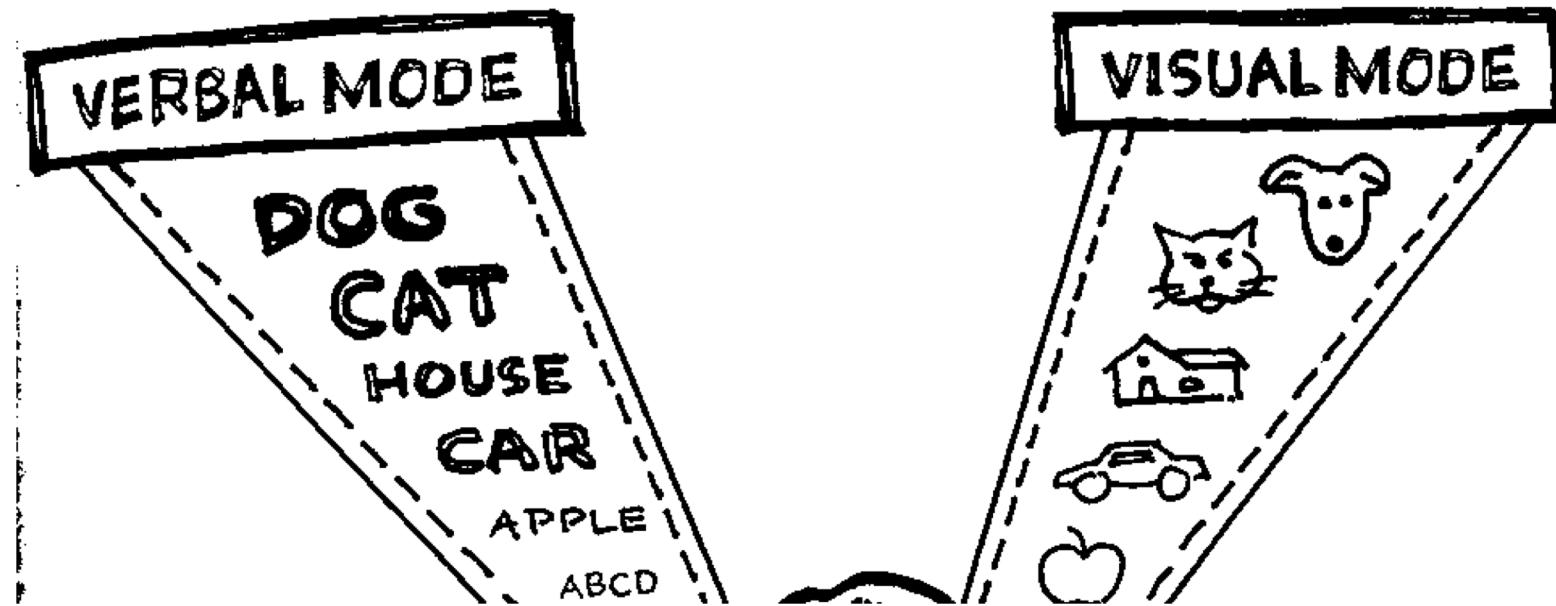


THE DUAL CODING THEORY,
proposed in the 1970s by Allan Paivio,
suggests that the brain processes information
using two primary channels: verbal and visual.



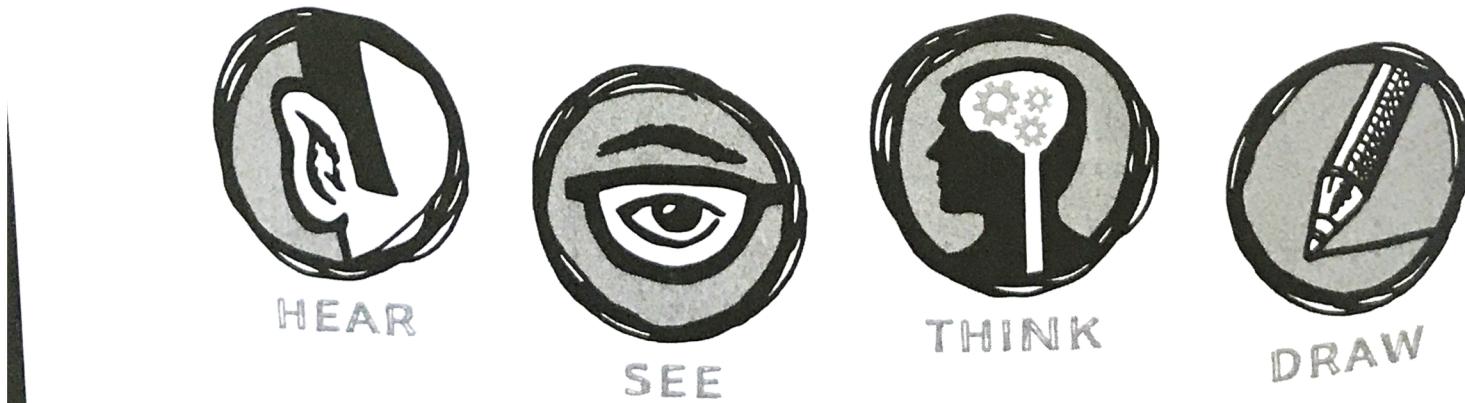
Images from Rohde (2013, p. 27-28)

SKETCHNOTING Engages → YOUR WHOLE MIND ←



- Dual Coding Theory: verbal and visual processing (Clark & Paivio, 1986)
- Picture superiority effect: images > words alone (Hockley, 2008)
- Sketchnotes help create meaningful connections (Rohde, 2013)

The use of sketchnotes as a communication act is rooted in the assumption that learners need both text and visual to effectively communicate, learn, and recall information @nmlfonger

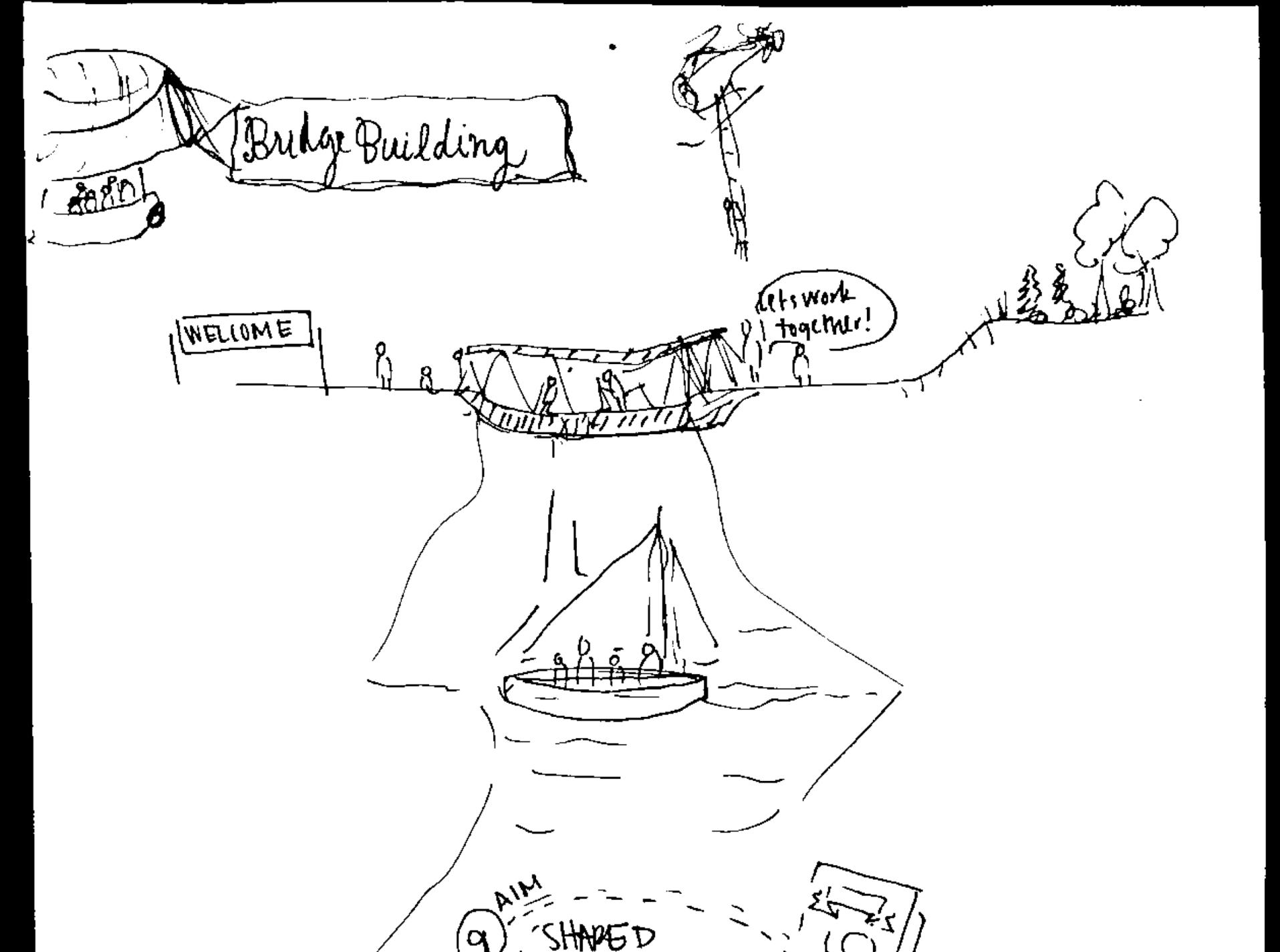


Images from Rohde (2013, p. 28)

What Might This Look Like?

Examples of Sketchnotes Across Phases of Linking Research and Practice

*Conceptualizing problem spaces, building
shared agendas, moving toward action*



WORD PROBLEM

STUDENT

Area

H	L	A
1	1.5	1.5
3	4.5	13.5
5	7.5	37.5

h ?

How fast is area changing? How do you see it table diagram graph symbols?

DESIGN • TEACH • REFLECT • REFINER

#MathEd #repeat #EdResearch

THEMES: effective supports?

LESS HELPFUL → MORE HELPFUL

CHANGE in ONE

H	L	A
1	1	1
2	2	4
3	3	9
h		$A = 2h^2$

COORDINATED CHANGE in TWO

H	L	A
1	1	1
1	2	2
1	3	3
h		$A = \frac{1}{2}h^2$

MAPPING between TWO

IN $\xrightarrow{\quad} x^2/2$

OUT: $y = 2x^2$

RESEARCHER

cool!

TEACHER

What do I do with this?

MULTIPLE MEANINGS & FLEXIBLE THINKING

FUNCTION UNDERSTANDING

① GIVE TASKS STUDENTS CAN MEASURE

② SEQUENCE REPRESENTATIONS & ASK STUDENTS:

show do you "see" change? relationships?

H	L	A
1	1	1
1	2	2
1	3	3
h		$A = h^2$

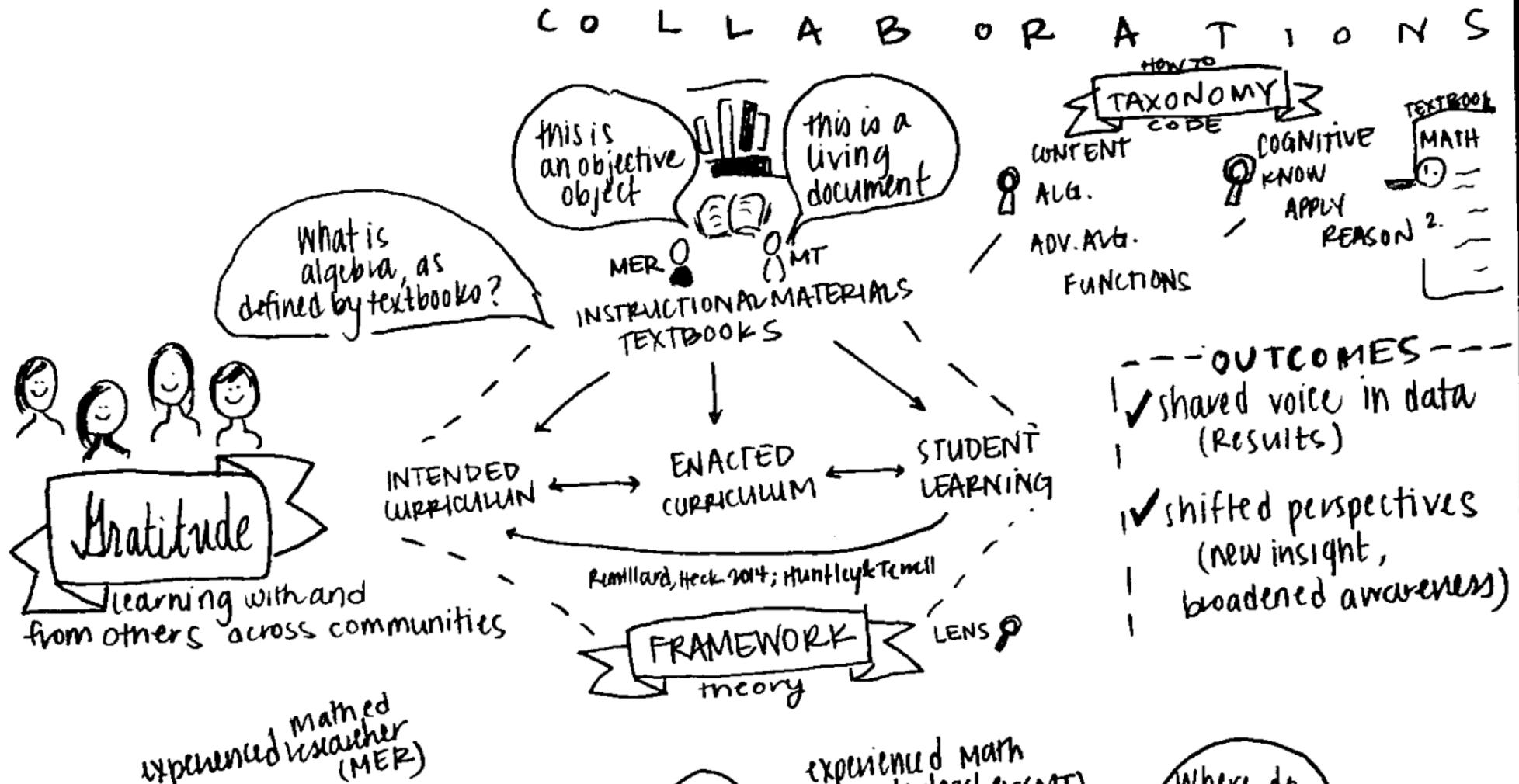
What does this mean?

NICOLE L. FONGER
@NMLFONGER

Mayer, J., Huntley, M. A., Terrell, M., & Fonger, N. L. (2019). Professional learning through a teacher-researcher collaboration: I never felt like “just a teacher”. *Mathematics Teacher*.

Professional Learning through

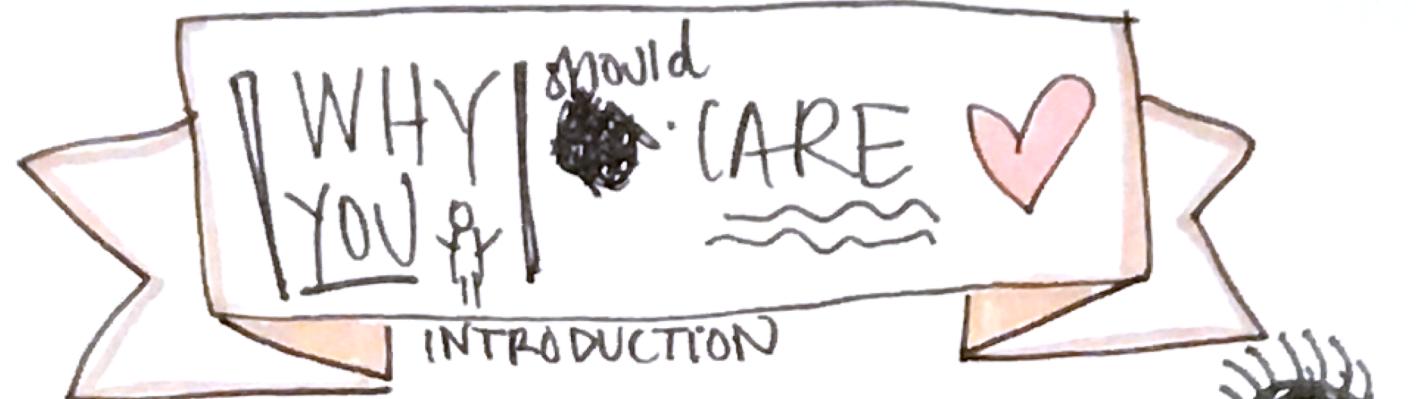
.....TEACHER-RESEARCHER.....



Sketchnote by Nicole Fonger based on Thanheiser, E., Ellis, A., & Herbel-Eisenmann, B. (2012). From dissertation to publication in *JRME. Journal for Research in Mathematics Education*, 43(2), 144-158.



Concluding Remarks

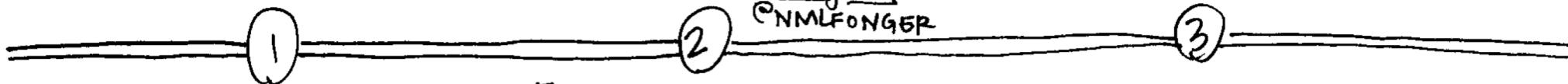


visibility
of PRACTICES



SKETCHNOTES AS A COMMUNICATION TOOL TO STRENGTHEN RESEARCH & PRACTICE LINKS

Nicole L. Jonger
©NMLFONGER



ACTIVE PROCESS
COLLECTIVE
RESPONSIBILITY



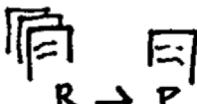
FOCUS → TRANSLATION

What does it
look like?

MAKE PRACTICES
EXPLICIT

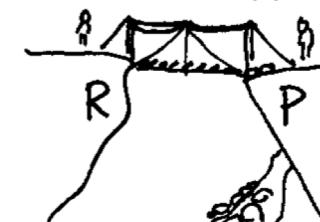
EQUITY
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NEW COMMUNICATION
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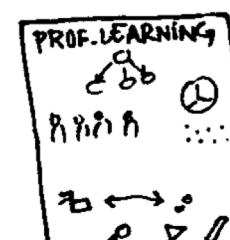
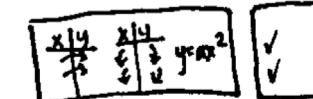
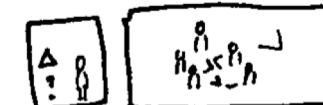
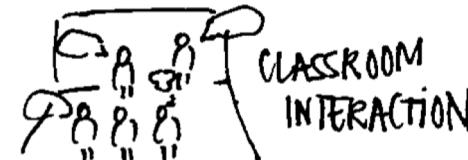


CURRENCY

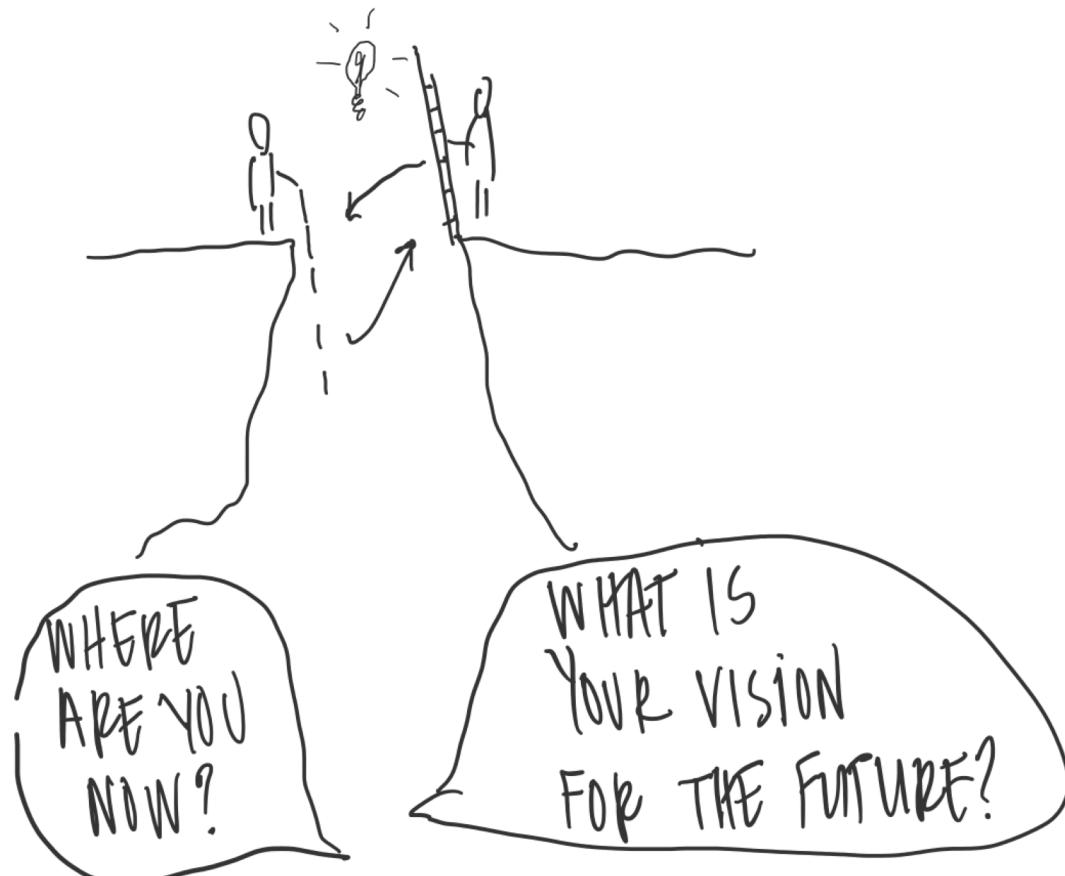
BRIDGE BUILDING



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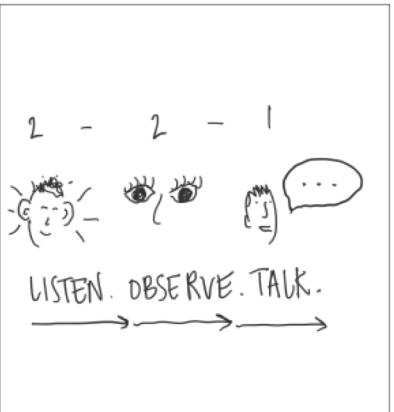


How might sketchnotes promote equitable access to ideas, tools, and resources?

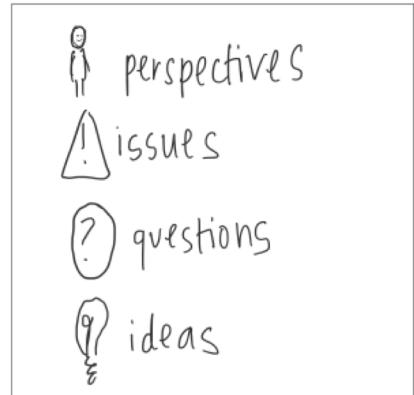


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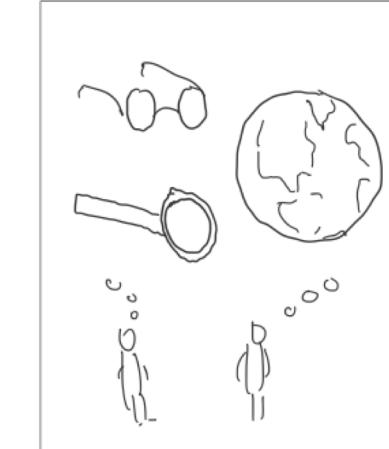
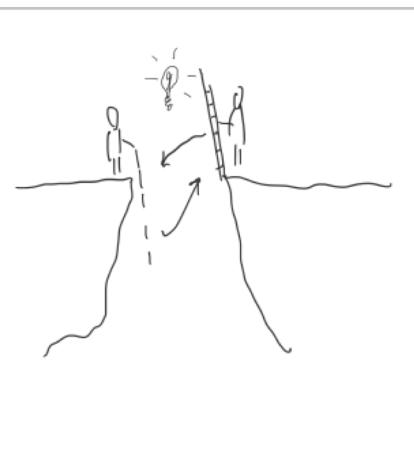
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SEEK TO UNDERSTAND



FOCUS



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@nmlfonger #progressinpress
#sketchnotes #MTBoS

Select References

Arbaugh, F., Herbel-Eisenmann, B., Ramirez, N., Knuth, E., Kranendonk, H., & Quander, J. R. (2010). *Linking research and practice: The NCTM research agenda conference report*.

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Mayer, J., Huntley, M. A., Terrell, M., & Fonger, N. L. (in press). Professional learning through a teacher-researcher collaboration: I never felt like "just a teacher". *Mathematics Teacher*.

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