How to Prepare Students for Learning in Times of Uncertainty

The way we introduce college students to research fails to encourage the ethical practice of open-ended curiosity so desperately needed in today's complex information environment. - *Barbara Fister Principled Uncertainty: Why Learning to Ask Good Questions Matters More than Finding Answers*

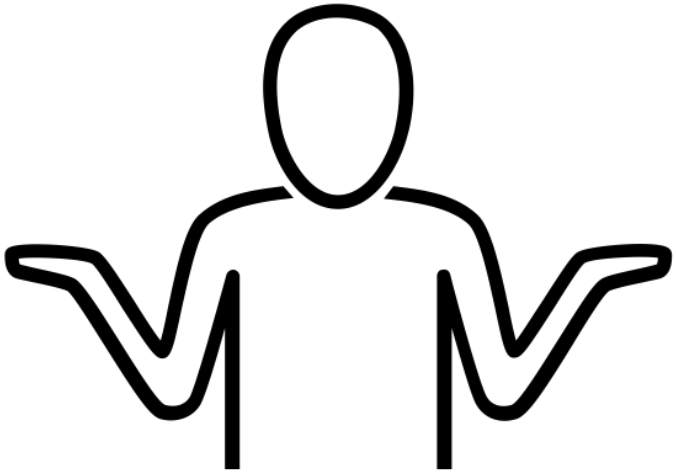
Dave Cormier, UWindsor

How this works

1. Uncertainty
2. Task based education
3. Collaboration for uncertainty
4. Thoughts going forward

https://www.flickr.com/photos/90371939@N00/4344878104

What do we mean by uncertainty?



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https://longviewoneducation.org/field-guide-jobs-dont-exist-yet/

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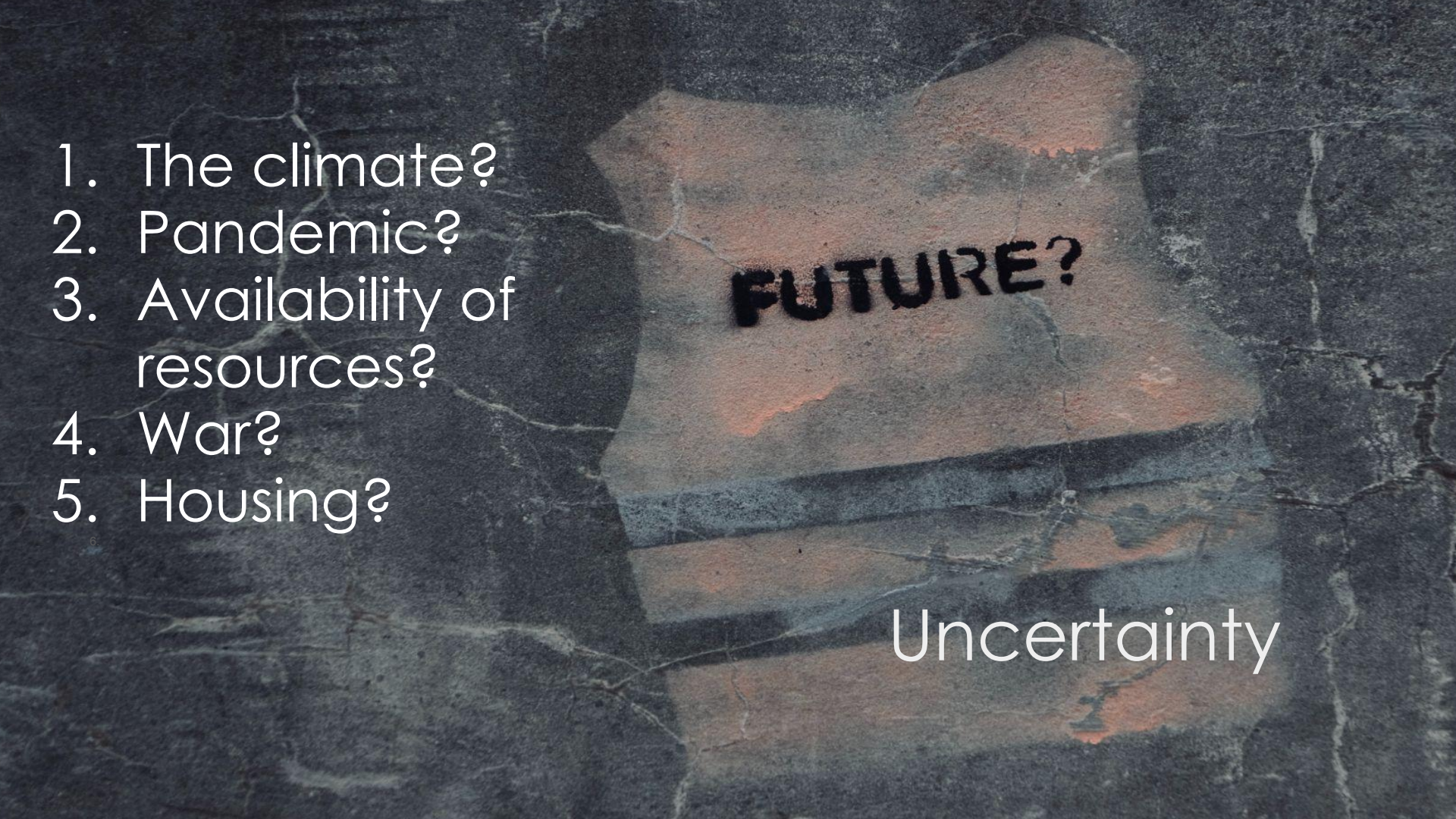
Uncertainty: Not currently known… a solution in waiting.



1. The climate?
2. Pandemic?
3. Availability of resources?
4. War?
5. Housing?

Uncertainty

In 1973 urban planners described the ‘wicked problems’ they were encountering

adapted from: *Dilemmas in a General Theory of Planning*
Horst W.J. Rittel and Melvin M. Webber (*Policy Sciences,* June 1973)

2 of 10 framings of Wicked problems

There is no definite formulation of the problem because it operates in a continuous feedback loop with its environment. It forever adapts in an open system.

There are no criteria for correctness, in that there are no objective criteria for judging whether a criteria is right, wrong, good or bad. New realities simply emerge from the actions taken as a result of the solution concept

Rittel and Webber, 1973

It was 1973. Rittel and Webber had access to a broad range of experiences that most people then had no way of knowing about.

Abundance of information reveals things that once ‘seemed’ certain as actually uncertain.

Ill-structured problems

Problems are called well-structured if the situations, operators and goal tests are all sharply defined; ill-structured, to the extent that they are vaguely defined. (Simon, 1970)

Herbert Simon - Nobel Prize winner. Chess lover.

Chi and Glasser define a ‘classroom style problem’ as a problem where the question, the process and the answer are known to the teacher.

These classroom problems are contrasted with ‘real world problems’. These problems lack one or more of

1. A clear question
2. A clear process for solution
3. A possible answer.

Uncertainty as in ‘not fully knowable’ not ‘~~not currently known~~.’

Classroom style problems are how much of our system is designed. The content is ‘true’ because the teacher says its true.

The game of school - if I figure out the rules I win.

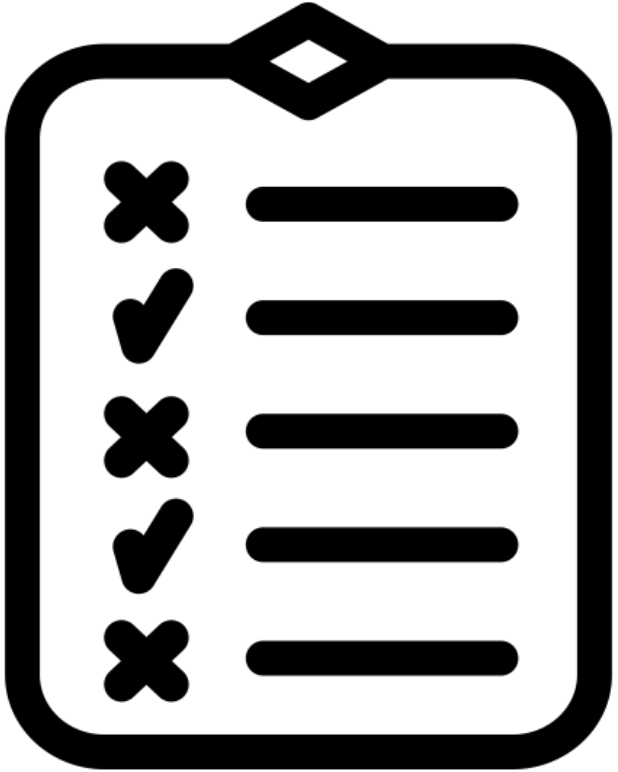
Many of the students I've worked with don't associate 'school' with learning

School is a job. It is full of ‘tasks’. Tasks that are ‘finished’ when the teacher says they are.

That’s how we teach novices Dave. We give them facts now, and context later.

All of us are ‘novices’ at almost everything.

Well-structured (classroom style) questions reinforce the idea that there is one (or few) solutions to problems



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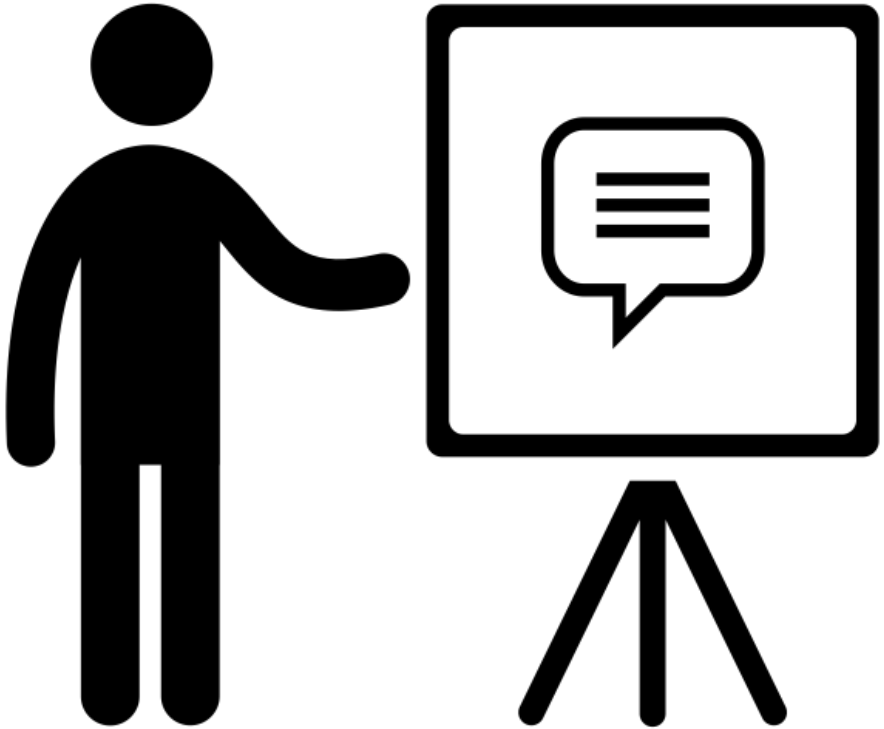
Brandon's apology

No adult has ever asked me a question without already knowing what answer they wanted.



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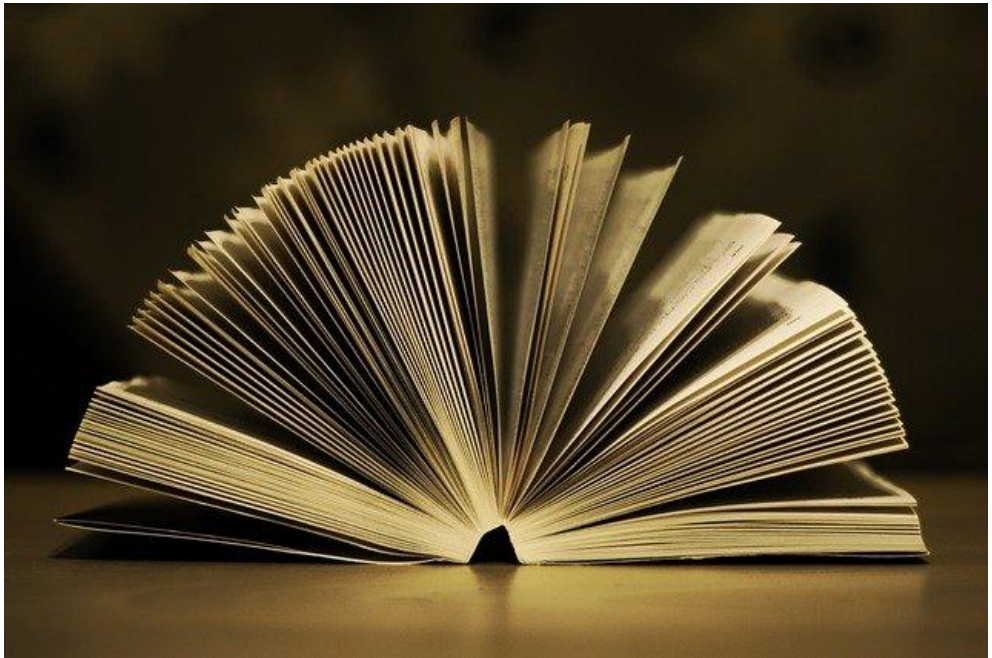
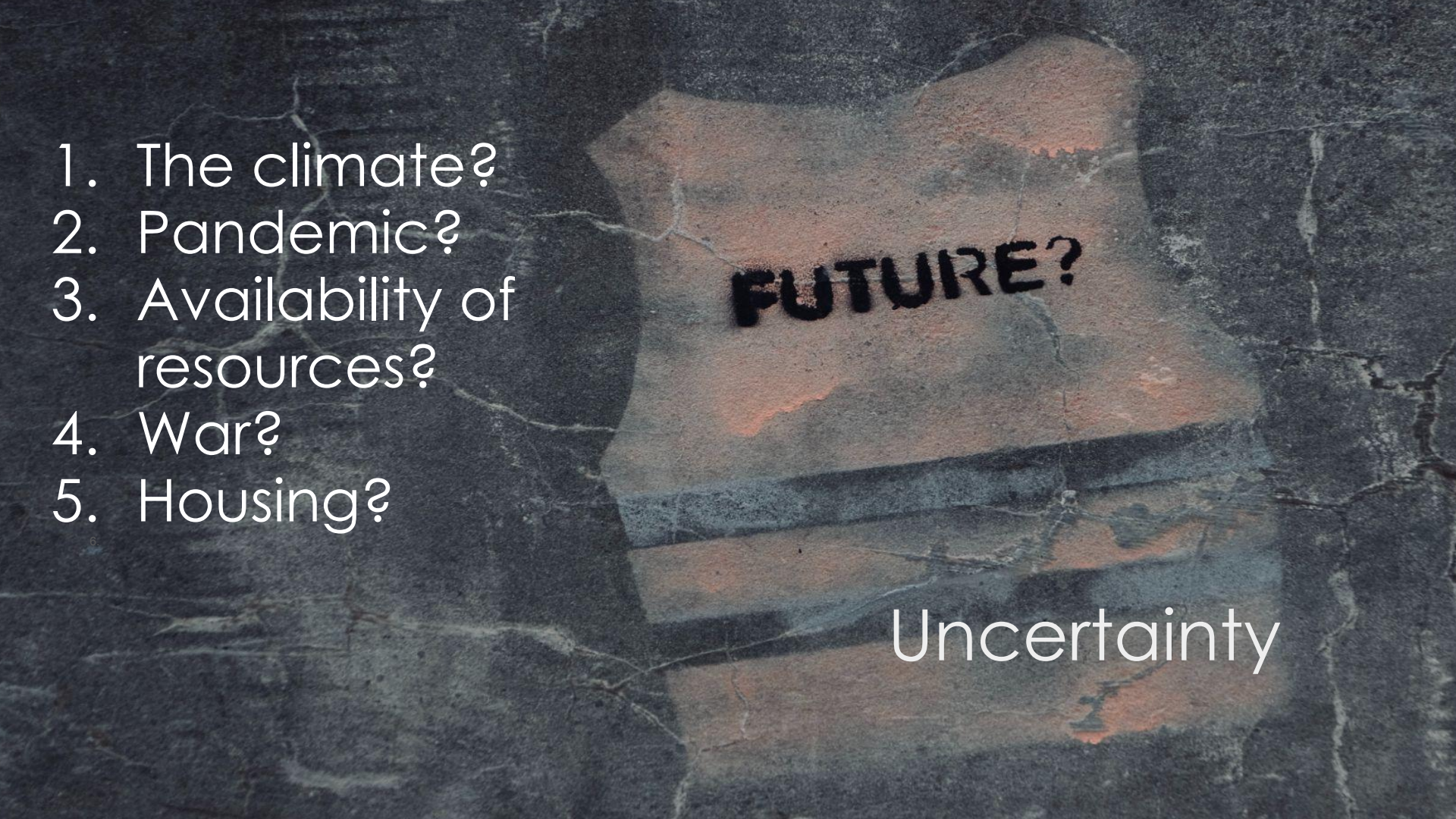
Right answer-itis

Thinking that every question you get asked has one answer that the questioner already knows, and your job is to figure out what it is.





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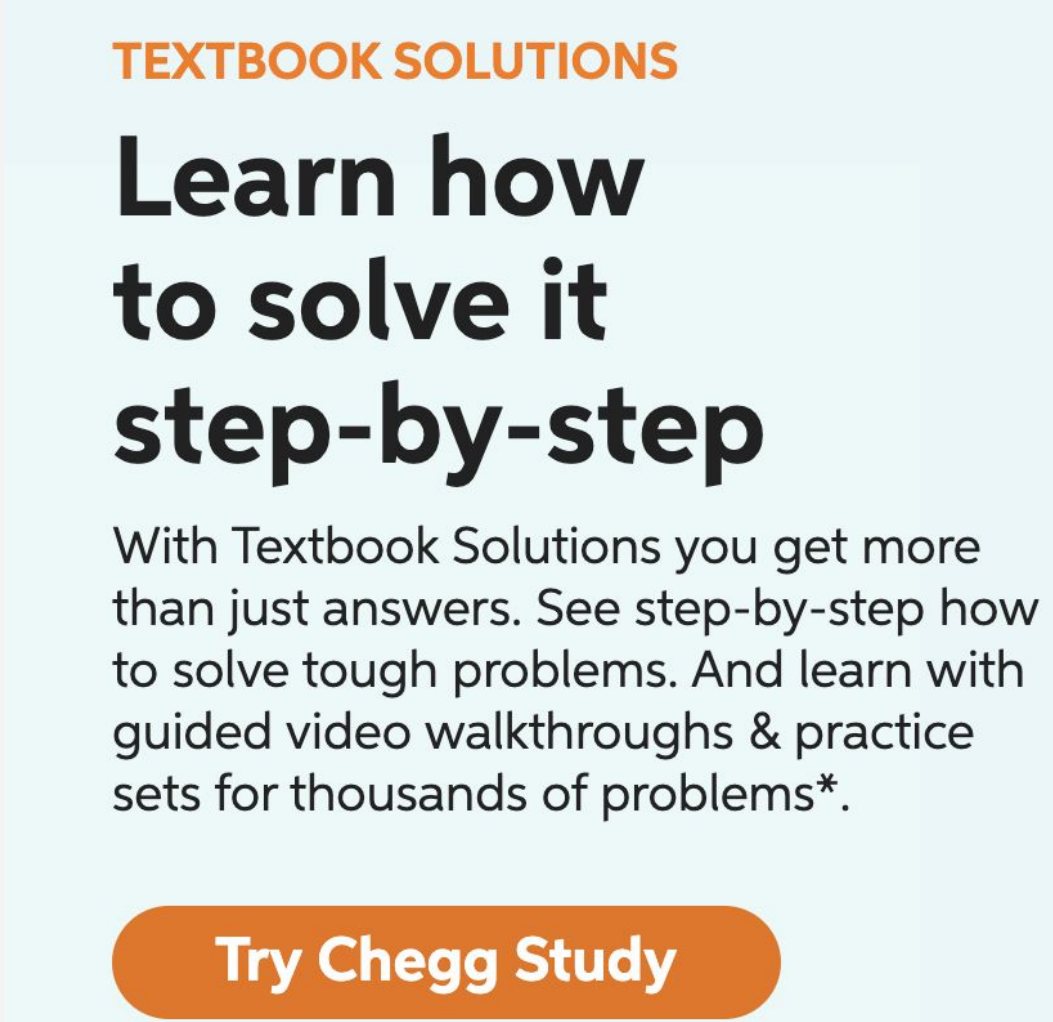
Uncertainty

Also. Our task based teaching won't work anymore anyway

photomath

smart camera calculator

They always have the teacher's copy



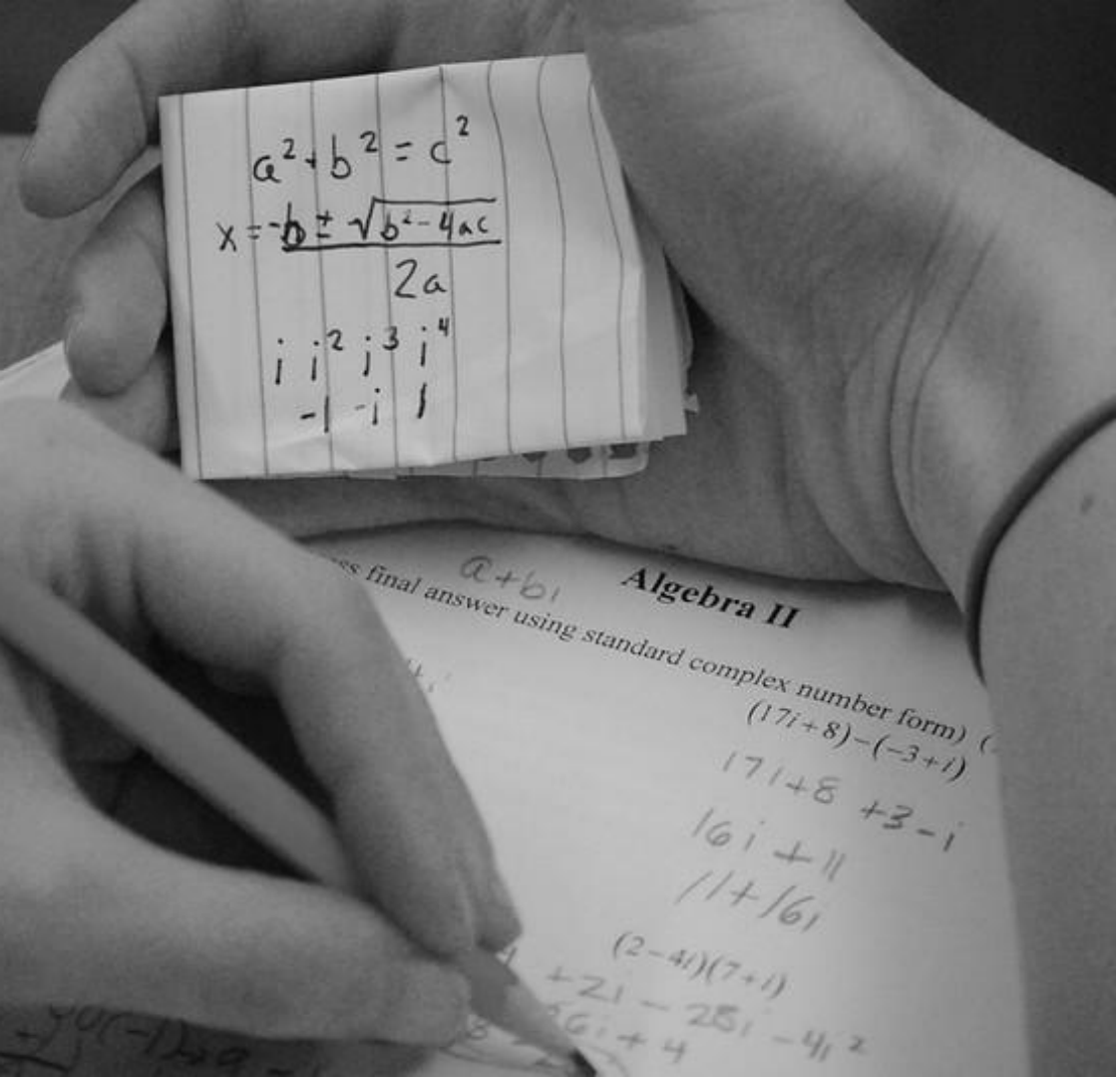
One of my students said they didn't do a single assignment in their degree without 'help'

ChatGPT

Our students are facing a world that is uncertain. We need to help them learn for uncertainty. To be able to deal with a world without ‘solutions’. Uncomfortable for them. Uncomfortable for us.

What does this mean in context?

Let’s think of this in a classroom environment. Consider collaboration.



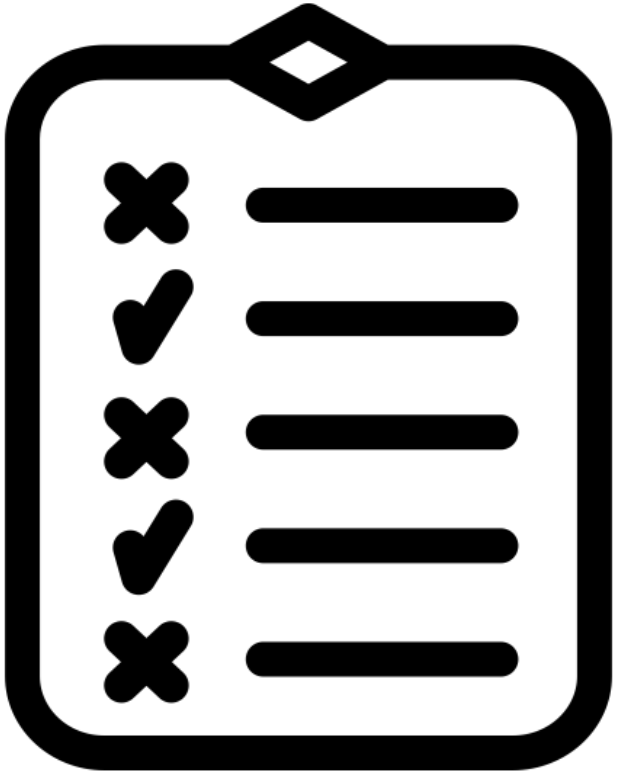
Schlechty

1. **Engaged** – Intrinsically motivated
2. **Strategic Compliance** – Grade motivated for achievement (extrinsic)
3. **Ritual Compliance** – Grade motivated for ‘just enough’ (extrinsic)
4. **Retreatism** – Passively resistant
5. **Rebellion** – Actively resistant

Created by Gan Khoon Lay
from Noun Project

Supporting our students to find their intrinsic motivation is not what our students are often asking us to do.

They both hate and are accustomed to tasks.



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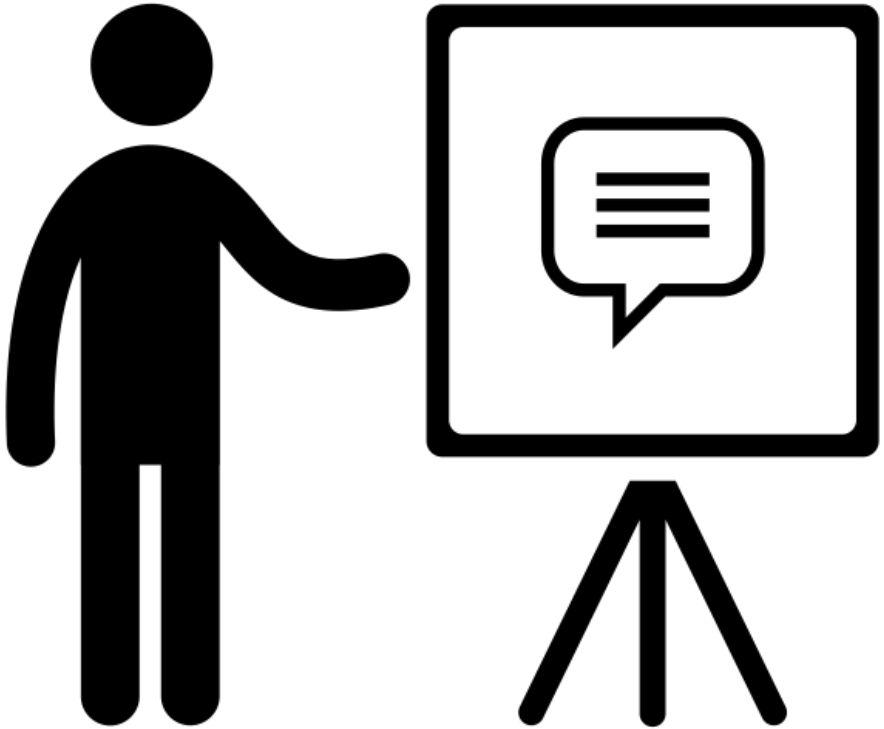
I want to allow students to learn from where they are at, to where they might want to go.

With a little coaching from me.



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A rhizome is made up of a number of semi-independent nodes, each of which is capable of growing and spreading on its own, bounded only by the limits of its habitat

http://www.flickr.com/photos/usfwsnortheast/5951029777/sizes/l/in/photostream/

Rhizomes are difficult to contain

http://www.flickr.com/photos/98857801@N00/2145231725/

They follow their own paths.

http://s0.geograph.org.uk/photos/87/97/879791_d5d8e306.jpg

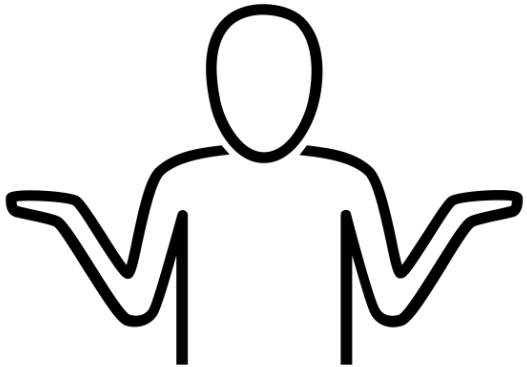
Simple/Complicated Tasks
Clear learning objectives
Student as follower
Easily measured

Ill-structured problems
Learning ‘subjectives’
Student as partner
Not directly measurable

Tree vs. Weeds

Collaboration can make the community the curriculum

We've talked about this, my students hate it



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Why do you want me to do group work?

“My professor looked at me and said ‘not everyone wants an A. When you’re working in a group you’re just going to have to accept that.’”

“just because we’re in groups doesn’t mean we’re talking about what you want us to talk about. If what you ask us isn’t relevant, we’re not going to talk about it”

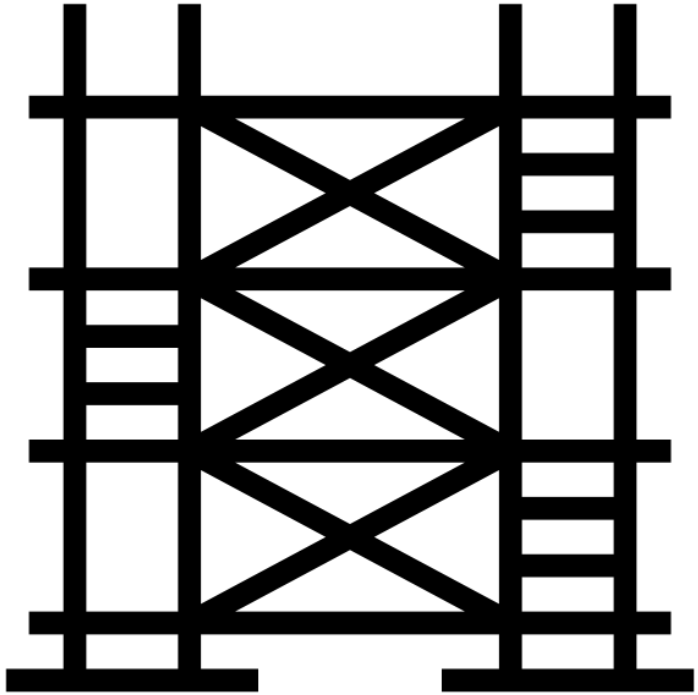
Collaboration, not necessarily group work

https://pixabay.com/photos/startup-meeting-brainstorming-594090/

Unlearning: Be clear about the ground rules for ‘doing the work’.

Just don’t
measure it.

Scaffolding vs. compliance



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Oversight and iterative design

If it's a game, that's how they'll play it.

https://www.flickr.com/photos/calliope/5347237755

Simon, 1973

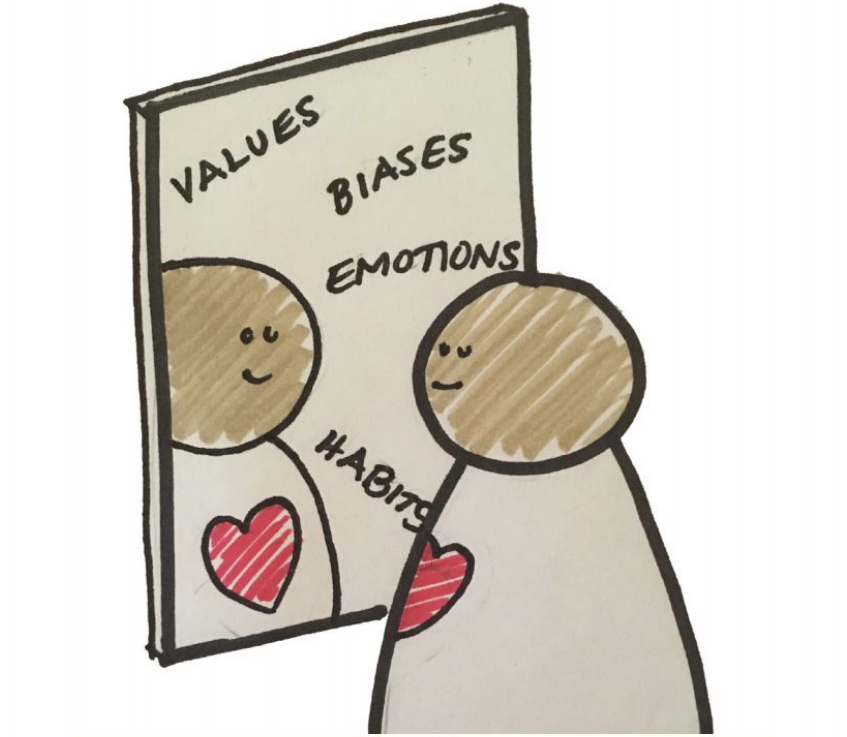
Five things I might recommend…

1. Introducing uncertainty
2. Mixing it in with content/facts
3. Being conscious of what you measure
4. Rewarding creativity
5. Showing care

Introduce uncertainty

(with values)

https://www.nationalequityproject.org/tools/liberatory-design-card-deck



Some of it is about self-awareness

Are you comfortable teaching without answers?

Some of it is about building trust…

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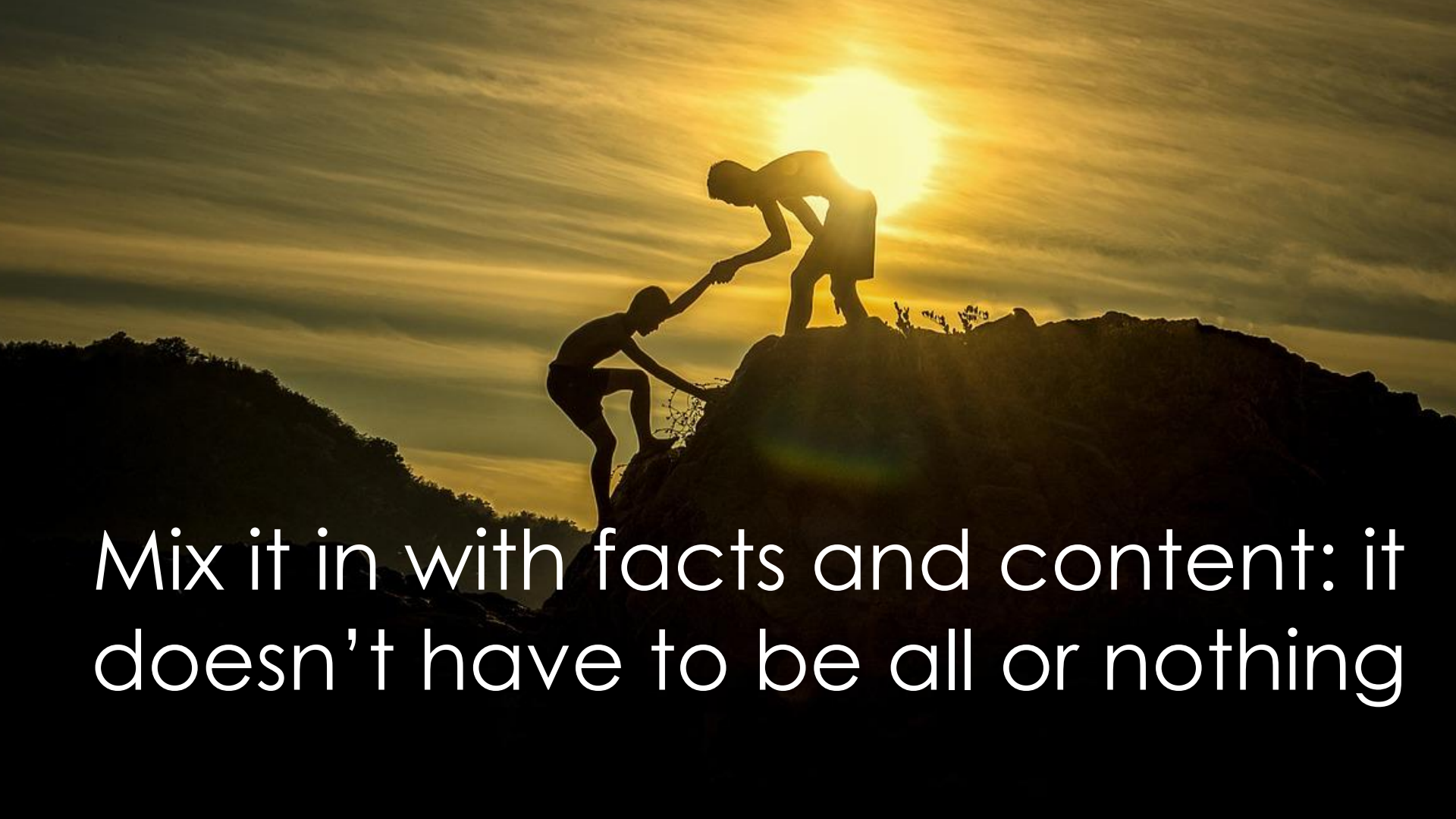
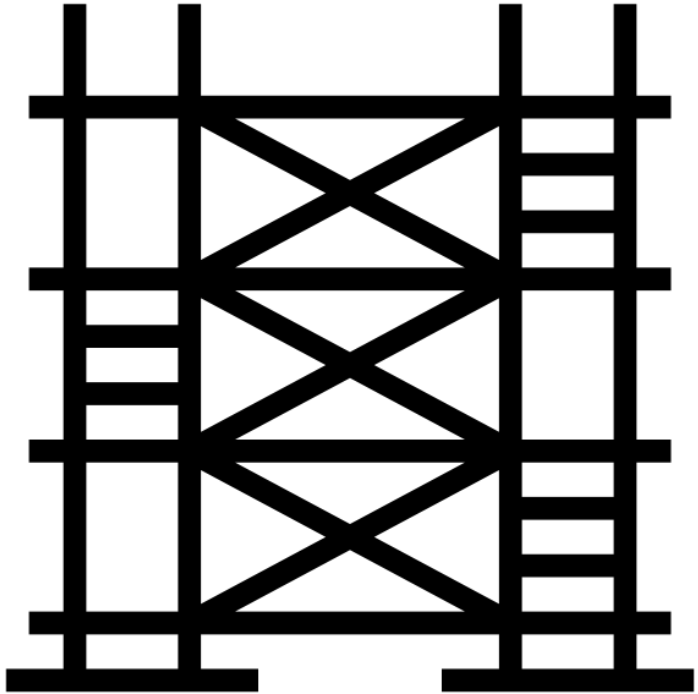

Mix it in with facts and content: it doesn’t have to be all or nothing

Scaffolding is great… and a little compliance never hurt anyone… as long as it isn't the goal.



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Encourage Ill-structured Problems

1. Not directly measurable
2. Does not have a solution or even a clear problem
3. Can only work on part of the problem

Reward creativity. You don't need to frame it as 'productive' failure.

https://flickr.com/photos/howard_roark/4362115027

Collaboration is very different outside the game of school. Like real life.

https://pixabay.com/photos/conversation-talk-bird-blue-tit-3513843/

care

You can't pour from an empty cup.

Take care of yourselves.

(and each other)

- There is no definite formulation of the problem because it operates in a continuous feedback loop with its environment. It forever adapts in an open system.
- Curiosity and Tasks and solutions - the bane of our existence
- The place of uncertainty… not solving problems, but living in a world where we only approach problems.
- Teaching as communications - Planning for 2031
- Who are the owners of the challenge?
- When we confront uncertainty we need to constantly return to values because money is not going to be the counting noun that is going to help you make decisions
- What does success look like for you?
-

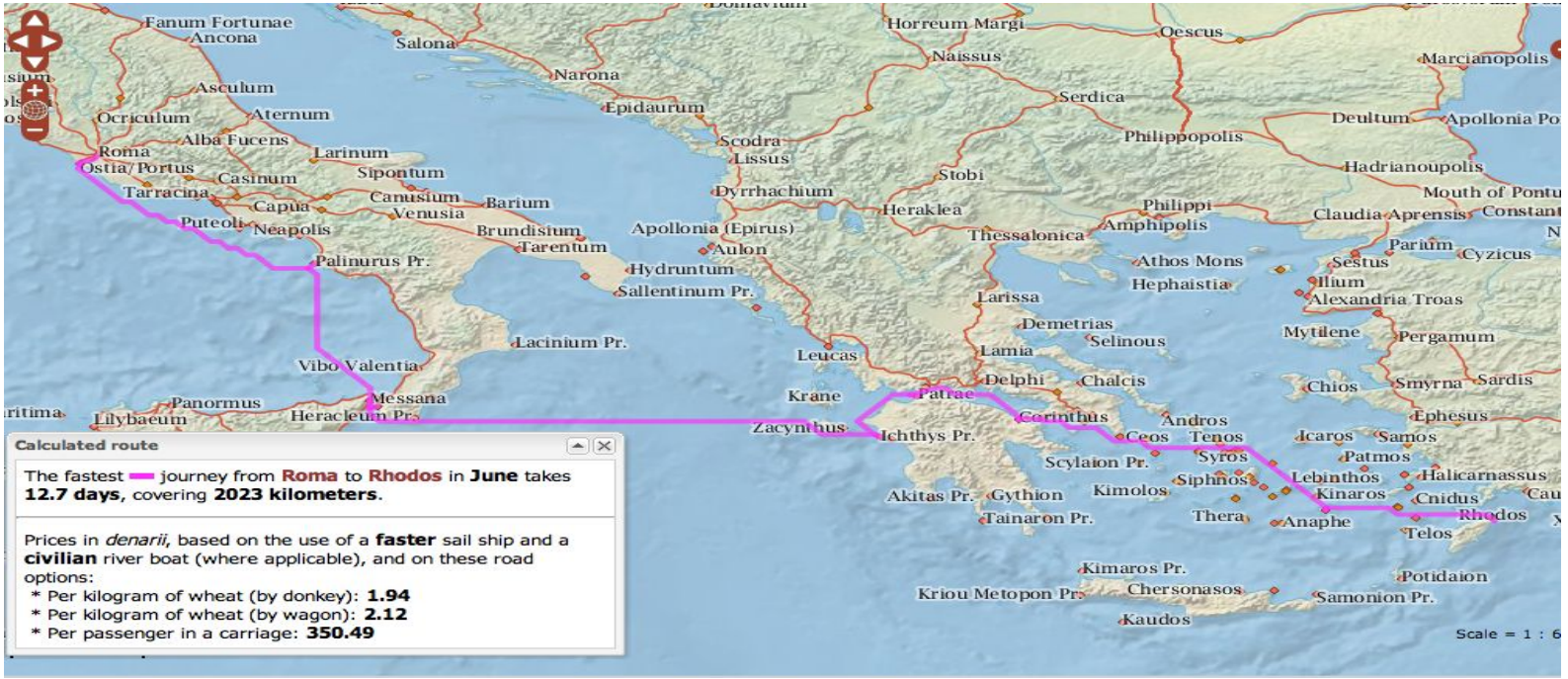
My students do not have the skills necessary to deal with this abundance

We have not always been learning for the same thing

http://upload.wikimedia.org/wikipedia/commons/0/04/Telemachus_and_Mentor1.JPG

Remember (1700 BCE)

Debates (62 BCE)



It's pirates!

Access to the conversation (1229 CE)

"Those who wish to scrutinize the bosom of nature to the inmost can hear [at the University of Toulouse] the books of Aristotle which were forbidden at Paris."

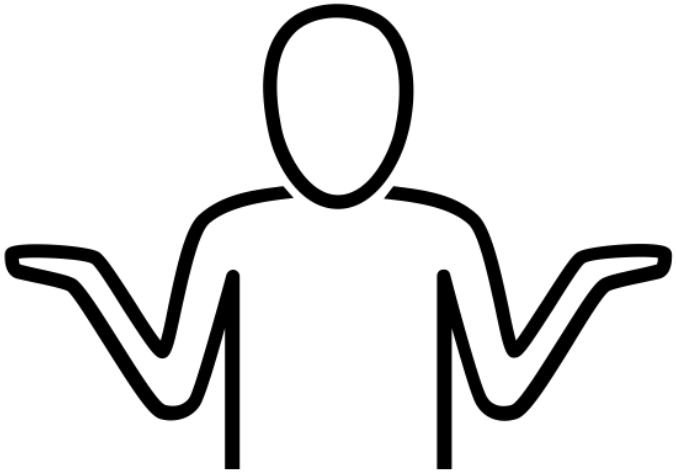
- University of Tolouse Flyer, 1229 (Translated by Lynn Thorndike)

I can read (1798 CE)

"I assert definitely, that a school-book is only good when an uninstructed schoolmaster can use it at need, [almost as well as an instructed and talented one]."

- Pestalozzi, 1801, *How Gertrude Teaches her Children*.

How do we learn to confront uncertainty?



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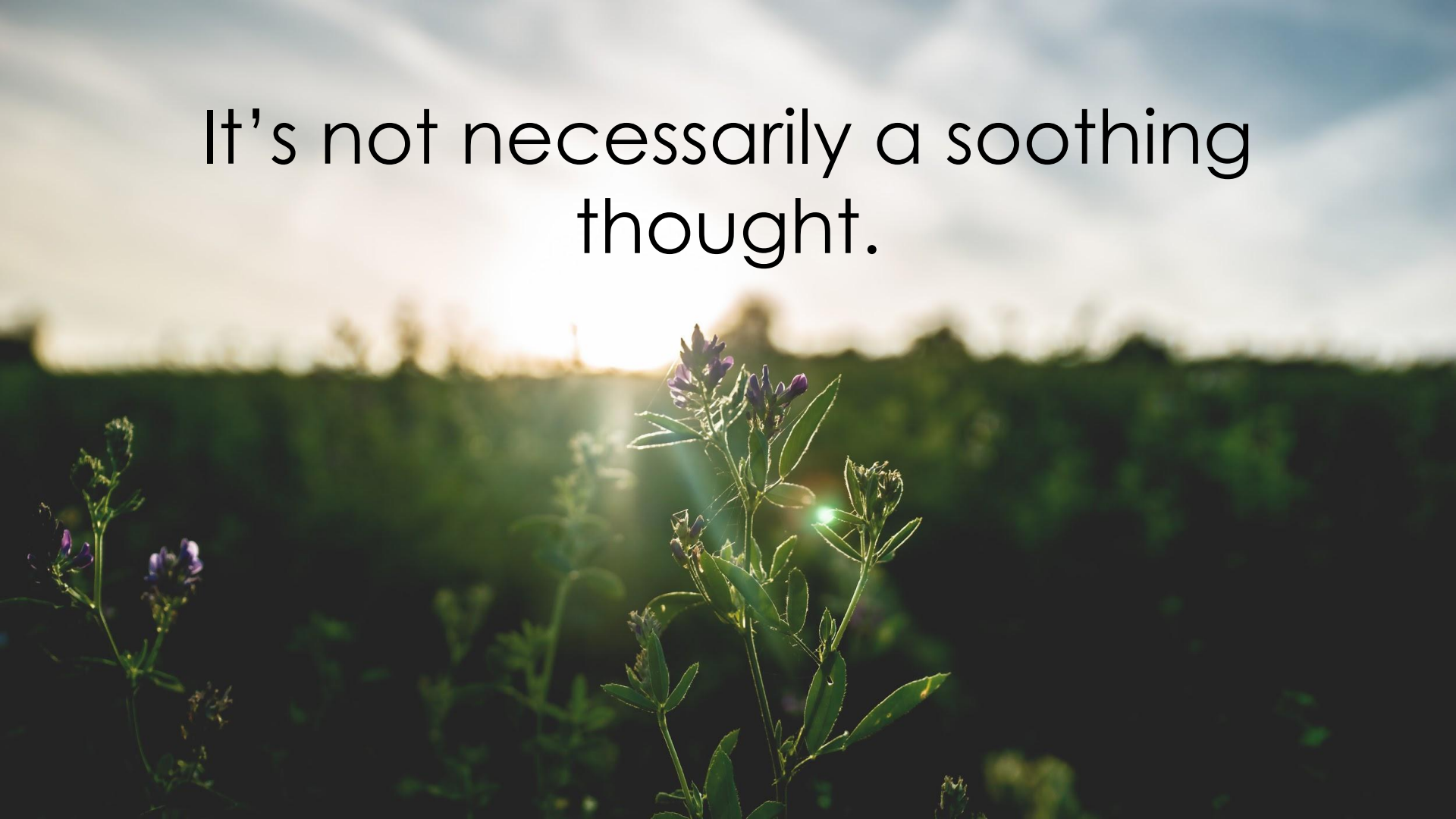
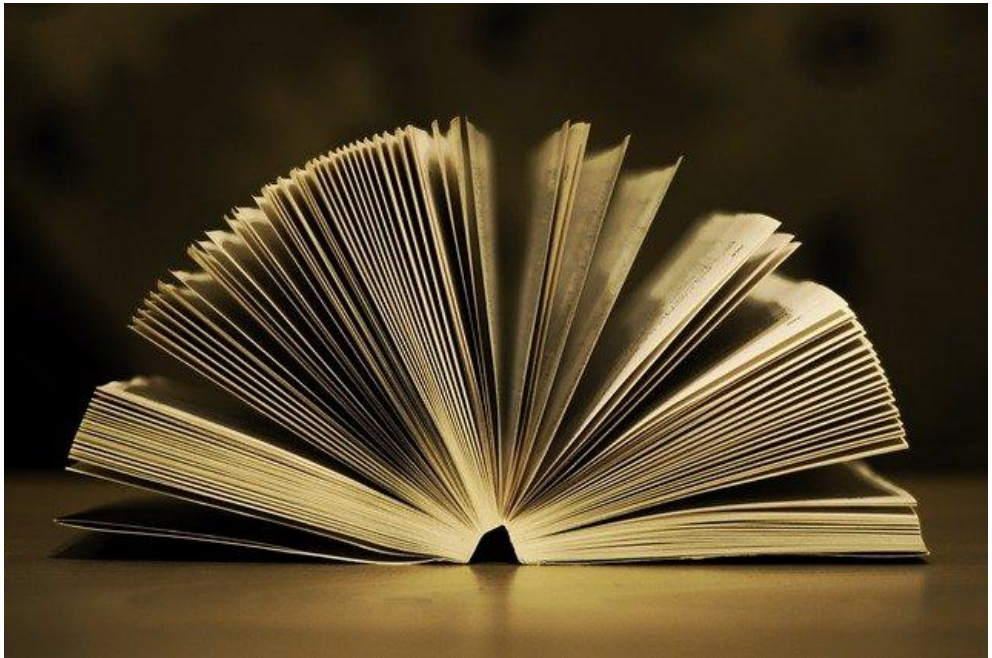

It’s not necessarily a soothing thought.

What's wrong with 'right answer-itis'

If you think that everytime you see a problem it has an 'answer' and that someone else knows it… a few things happen



You get frustrated when you don’t ever solve your problem

You are more susceptible to people offering ‘answers’ when you’re uncertain

In order to ‘solve’ a problem, you find something else to solve and leave aside your actual uncertain problem

Got anything burning in your brain right now?

Quick check in

Questions/comments (use mentimeter)

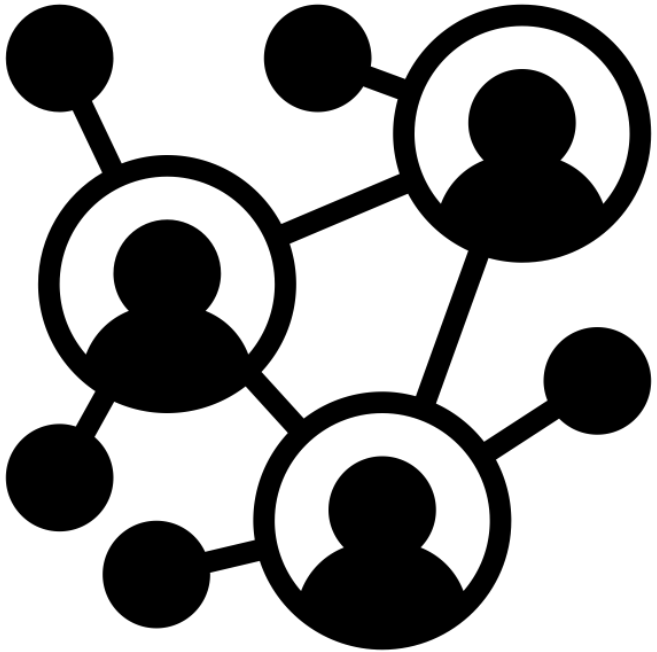
Today

1. Why collaboration
2. Rhizomatic Learning
3. Thoughts about technology
4. Exemplars

https://www.flickr.com/photos/90371939@N00/4344878104

Can we make collaboration
Relevant and engaging using technology?

Technology reinforces pedagogy.



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And… sometimes it affects pedagogy

1. Teams was not built with a native hierarchy similar to a teaching classroom
2. Teams is not designed to be attached to the class-hour, the unit or the week-based model
3. Teams is designed to be public to the course

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