The 4 C's of Effective Learning

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Communication

The definition:

The processes by which people exchange thoughts, ideas, and information

One definition of many:

The process<u>es</u> by which <u>people</u> exchange thoughts, ideas, and information

Why Care?

- Self-evident reasons: Nobody works in isolation, so there will always be people you need to explain things to or convince of your ideas.

- Helps to counteract bias against underrepresented groups.

- Poor communication can hurt students' comprehension and self-confidence (and employability?)

The "STEM Paradox"

- While there is more than enough demand to match the supply of STEM students, positions are being left unfilled.

> Employers are often looking for specific technical skills but also soft skills. This is a problem for university graduates. They know about science, but not behaviors needed in the workforce."

- NICK BURNETT, Managing Director, Results for Development InstituteDevelopment, USAID
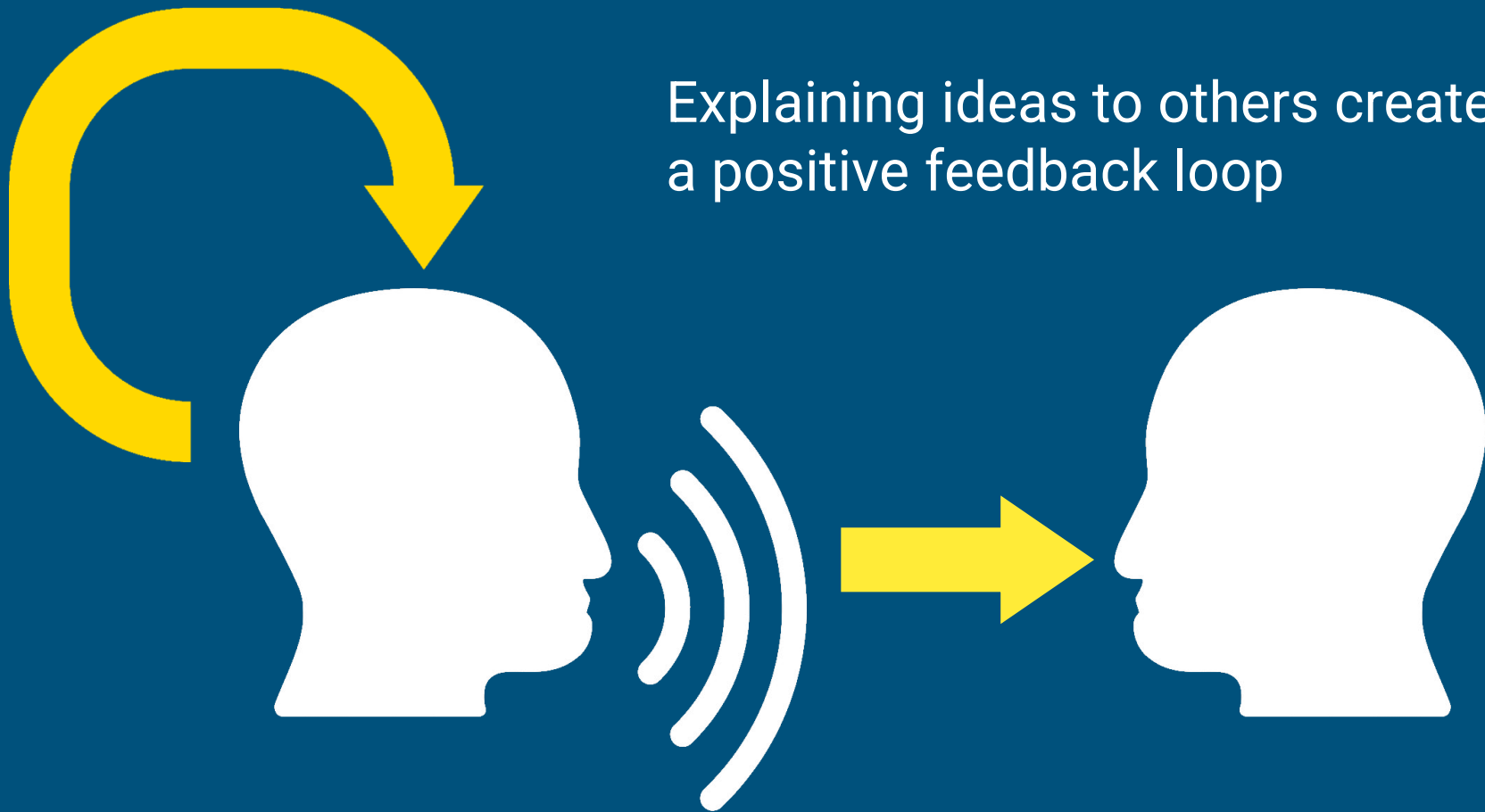
Communication is Complicated!

Many Parties Involved

- Teacher to Students

- Teacher to Student

- Student to Student

- Teacher to Teacher

- Student to Self

Varied Mediums

- Verbal
  - Lectures
  - Office Hours
- Textual
  - Slideshows
  - Worksheets
  - Course Notes
- Digital
  - Email
  - Recorded Lectures
  - Discussion Boards

Explaining ideas to others creates a positive feedback loop

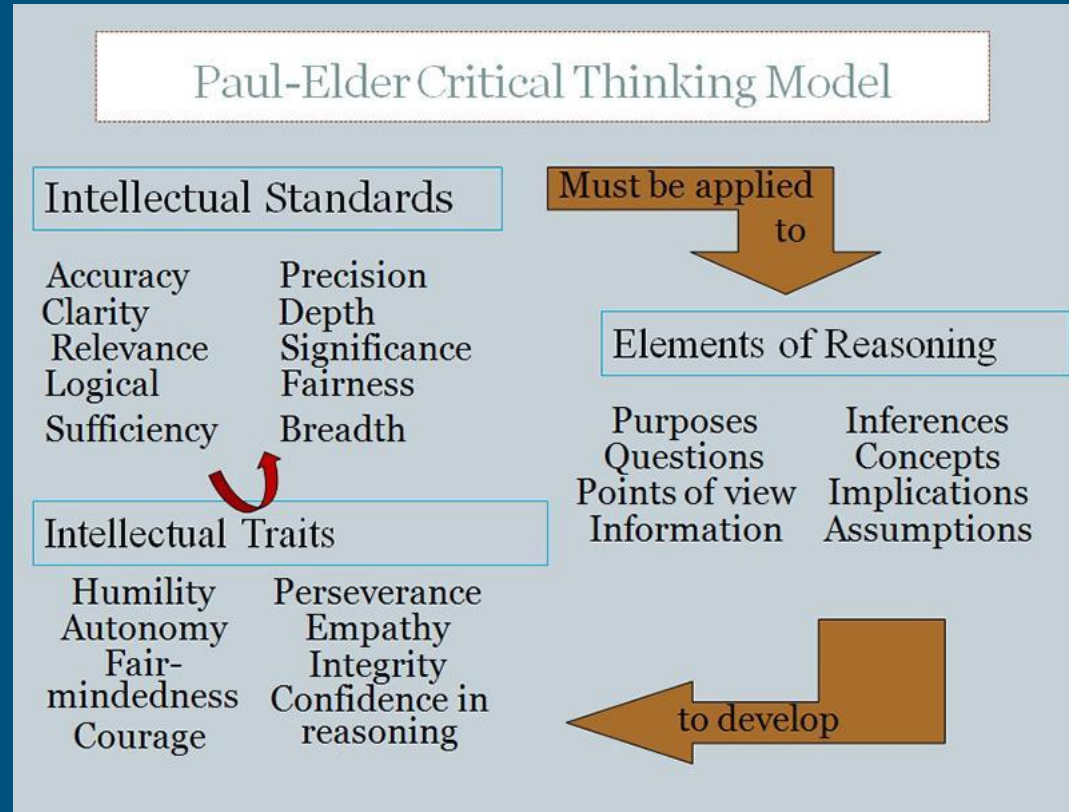# How can we encourage communication?

- Set a good example! Be eager to interact with students and be clear about your expectations with respect to communication.

- Avoid "predicting" what a student will say and completing their sentence.

- Structure classroom activities to encourage communication.

- Remind students that their classmates are partners, not competitors.

Critical Thinking & Creativity

Critical Thinking

Definition: Critical thinking is that mode of thinking – about any subject, content, or problem — in which the thinker improves the quality of their thinking by taking charge of the elements of reasoning and imposing intellectual standards upon them. (Paul and Elder, 2001)

https://louisville.edu/ideastoaction/about/criticalthinking/framework

Paul-Elder Critical Thinking Model

Intellectual Standards

Accuracy
Clarity
Relevance
Logical
Sufficiency

Precision
Depth
Significance
Fairness
Breadth

Must be applied to

Elements of Reasoning

Purposes
Questions
Points of view
Information

Inferences
Concepts
Implications
Assumptions

Intellectual Traits

Humility
Autonomy
Fair-mindedness
Courage

Perseverance
Empathy
Integrity
Confidence in reasoning

to develop

Critical Thinking

Elements of Reason

- Purpose (why?)
- Assumptions
- Point of View/Positionality (who?)
- Evidence (what?)
- Conceptual framework (why/how)
- Inferences/Interpretations (how)
- Implications/Consequences (application/create)

Intellectual Standards

- Clarity
- Accuracy
- Precision
- Breadth/Perspective
- Depth/Complexity
- Logic
- Significance
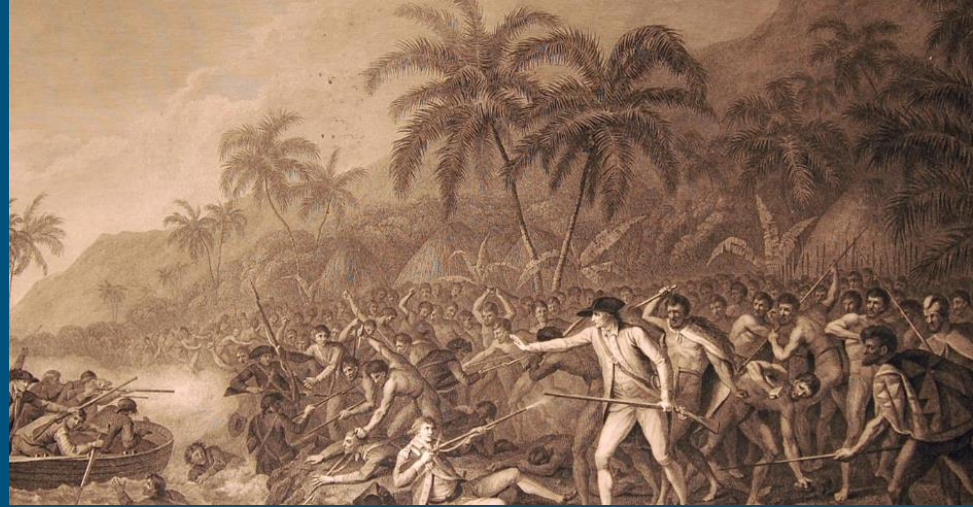- Relevance
- Fairness

Intellectual Traits

- Humility
- Courage
- Empathy
- Autonomy
- Integrity
- Perseverance
- Confidence
- Fair-mindedness

Practice

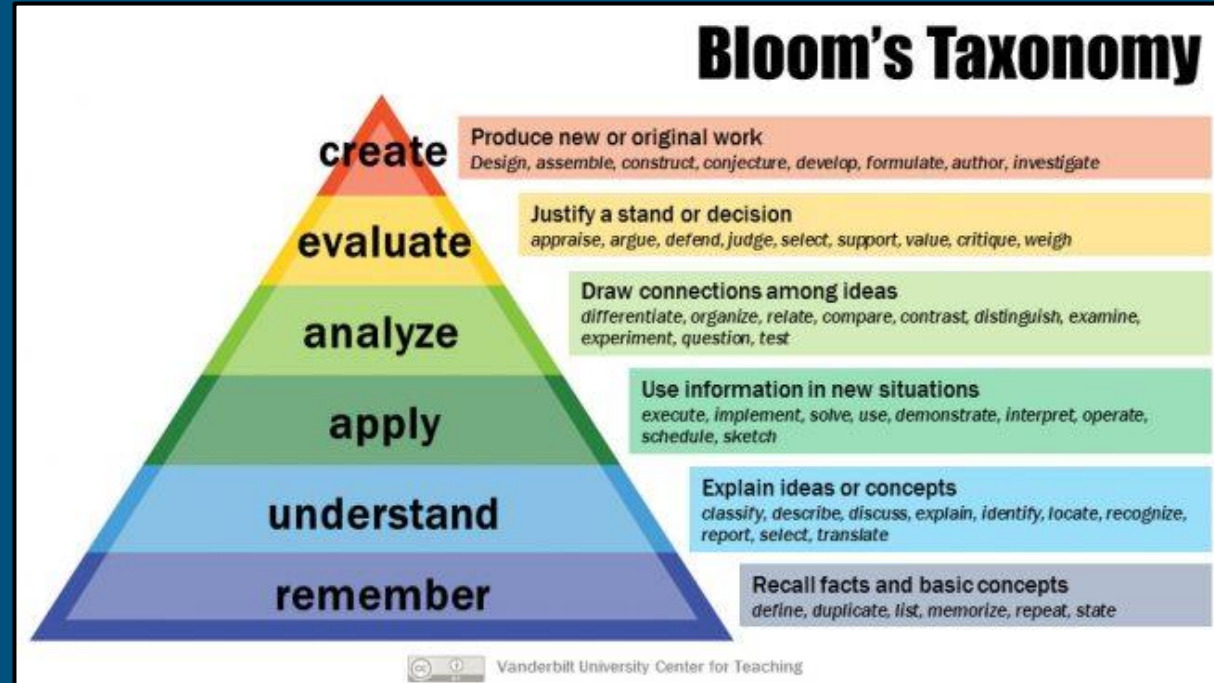John Clevely "Captain Cook's Death"

John Webber "The Death of Captain Cook"

Critical Thinking Questions

- Who made this? **(Point of View)**
- What is the creator's positionality? **(Point of View)**
  - What is the creator's role in society?
  - What are the key aspects of their identity (gender? sexuality? political leanings? religion? where they live?)
  - How/who from is their work funded?
  - How are they related to the subject at hand?
- Why did the creator make this, and with what goals? **(Purpose)**
  - Did the creator have any "axes to grind?" Bones to pick? Something they're upset about or want to push back against? **(Purpose)**
- What sources does the creator use? **(Evidence)**
  - Evidence, data
- Why did the creator choose this format, and what does that format do for them? **(Conceptual Framework)**
- What methodologies does the creator use? **(Conceptual Framework)**
  - Scientific methods? Artistic/musical devices? Philosophical schools of thought?
- What does the creator expect their audience to already know/be familiar with? **(Assumptions)**
  - Social or cultural norms?
  - Certain scientific knowledge?
  - A piece of art they're referencing?
- How does this fit with other sources/info I know? **(Implications/Consequences)**
- How can I put this to use? **(Implications/Consequences)**

Critical Thinking

- Learning how to **level up**
- Critical thinking questions
  - Learning how to formulate questions to find answers
  - Also leads to more questions, more learning
- End goal: create!

Bloom's Taxonomy

create — Produce new or original work
Design, assemble, construct, conjecture, develop, formulate, author, investigate

evaluate — Justify a stand or decision
appraise, argue, defend, judge, select, support, value, critique, weigh

analyze — Draw connections among ideas
differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

apply — Use information in new situations
execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

understand — Explain ideas or concepts
classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

remember — Recall facts and basic concepts
define, duplicate, list, memorize, repeat, state

Vanderbilt University Center for Teaching

Creativity

Definition: Produce new or original work

- Design, assemble, construct, develop, formulate, investigate

Tools for students:

- Keep a creative idea notebook/file
- Start with your own hobbies, interests, skills
  - incorporate them in where you can
- Build on what is already familiar/comfortable
- Extend your comfort zone

Collaboration

Definition

Is Directed

Involves People

Collaboration is a working practice whereby individuals

work together to a common purpose to achieve business benefit.

Requires effort

Has a reason or need

Why care?

Could collaboration get us from 'good' to 'great'?

- An essential life skill
- Assists in connections with other students (experiences, ideas, people)
- Helps you to plan, review, and change strategies
- Engagement together can provide a feeling of empowerment and influence (confidence)
- Been shown that students achieve more when they develop and practice collaborative skills

What skills will help us collaborate?

1. Communication
   a. We need to listen openly and converse, share information and ask for feedback
2. Relationship building
   a. Effective networking, sharing resources, and helping others
3. Negotiation
   a. Resolve differences through compromise or agreement
4. Flexibility
   a. Willing to move from a position, adapt to new situation, improvise, and shift strategies to meet different kinds of challenges
5. Proactivity
   a. Being aware of others' needs, anticipate, inquire and being proactive compared to reactive

success!

collaborative behaviour

Compassion

Definition

- **Compassion is empathy in action, the capacity to read another person's emotional state, identify a need and take positive action.**
- Empathy
  - Recognize feelings of other students
- A gage of emotional intelligence
  - Be aware of, control, and express one's emotions to other students
  - Emotional intelligence rated one of the top 6 things searched for in a workplace environment in 2020
- Positive Action

Why should you care?

- Collaboration hinges on the capacity for each member to interact with compassion for the needs of their collaborators

- Students are natural learners and instinctively creative, when they feel safe and nurtured they are far more willing to try something new or challenging without fear of failure

Any Questions?

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