The 4 C's of Effective Learning

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Communication
The definition:
The processes by which people exchange thoughts, ideas, and information
The definition:

One definition of many:

The processes by which people 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 Institute, 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
## 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”

https://docs.google.com/document/d/1c8BT5FymBjBp-BR9mLcz6P9EvYwjRCTZC5qf4kSXI/edit?usp=sharing
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](https://www.vanderbilt.edu/curriculumcenter/learning/teachingresources/Bloom.html)
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
Collaboration is a working practice whereby individuals work together to a common purpose to achieve business benefit.

- **Is Directed**
- **Involves People**
- **Requires effort**
- **Has a reason or need**
Why care?

- 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
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 gauge 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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