Developing Learners' Critical Thinking

Advanced Pedagogy Session

Please follow this link or use the above QR code to register your attendance at this session.

Session Objectives

- Define critical thinking
- Explore pedagogies and strategies for developing critical thinking
- Consider how you can support learners to develop independent critical thinking in, and beyond your subject

UG AS

Think-Pair-Share

What is critical thinking?

What does it look like in your discipline?

Why is teaching critical thinking important?

https://padlet.com/sirimansaas/reflection

What Researchers Say…

"reflective thinking involved in evaluating evidence relevant to a claim so that a person can draw a well-reasoned conclusion from that evidence"

"I define it intellectually as argument construction and critique, so particularly critiquing arguments"

"to look at an argument that somebody else is making, an assertion of some kind, and to evaluate the conclusion"

What Scholarship Says…

"Purposeful, self-regulatory judgement which results in **interpretation, analysis, evaluation and inference**, as well as explanation of the evidential, conceptual, methodological, criteriological or contextual considerations upon which that judgement is based" (Facione, 1990)

"A process of **evaluating evidence** for certain claims, determining whether presented conclusions logically follow from the evidence, and considering alternative explanations" (Griggs et al, 1998)

"The kind of thinking that consists of **turning a subject over the mind** and giving consecutive consideration." (Dewey, 1933)

The Pedagogies of Critical Thinking

Research Suggests…

Critical thinking is important, but lecturers lacked confidence in how to teach it

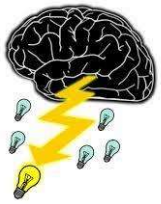
- **Tsui, 2001(US):** Based on a sample of 60, lecturers did not feel that they could successfully teach critical thinking, despite acknowledging its importance
- **Duroet al., 2013 (UK):** Thirty psychology students and lecturers described critical thinking as an intuitive skill that was difficult to explain explicitly, and emphasized the importance of examples, structured activities and social interaction in its development.
- **Bellaera et al., 2021:** Based on a sample of 176 university instructors, 83% reported highlighting the importance of critical thinking.

So what is critical thinking?

Analysis	Creativity	Deductive Reasoning	Description
Evaluation	Explanation	Inductive Reasoning	Inference
	Interpretation	Problem Solving	

Your Turn…Think

Individually, rank the 10 skills in order of importance



In your break out rooms …

In pairs, compare and discuss your top three skills and bottom three skills

- Why did you rank them this way?
- Was your approach general or subject specific?

In your new break out rooms …

- Did you agree? Why or why not?
- Were there any common skills if you didn't agree?
- What can we take away from this to consider how we teach critical thinking?

Key Takeaway: Decide which critical thinking skill(s) will be most important for your subject area

Approaches To Critical Thinking Instruction

General approach	• **Explicitly** teaches critical thinking as a **separate course outside of a specific subject** and examples tend to be about everyday events
Infusion approach	• **Explicitly** teaches both subject content and general critical thinking skills **in the context of a specific subject**
Immersion approach	• **Implicitly** teaches critical thinking **within a specific subject** • Infers that critical thinking will be a consequence of working with the subject matter

(Abrami et al. 2008)

Explicit instruction in context is **key**

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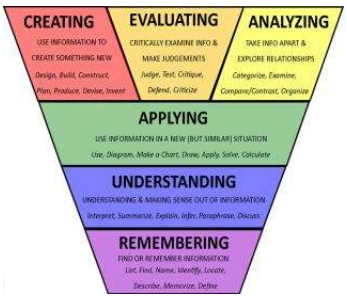
(Abrami et al. 2008)

We get good at what we practice. Incorporate a range of higher order and lower order thinking questions and prompts

Engaging students in higher order retrieval practice, **without building fact knowledge first**, improves their high order learning on a final assessment



(Agarwal. Retrieval Practice and Bloom's Taxonomy: Do Students Need Fact Knowledge Before Higher Order Learning?: Journal of Educational Psychology, 2019)

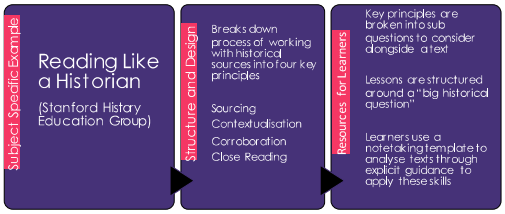
Strategies for Explicitly Teaching Critical Thinking

Strategies to Teach Critical Thinking

- Instructor-led questions and tasks are effective strategies for improving critical thinking
- Collaborative argumentation supports the development of analysis and evaluation skills
- Critical thinking is a process
- Uncertainty is an important part of teaching critical thinking

Instructor-Led Questions and Collaborative Argumentation

Strategy: Explicit instruction of critical thinking rules and principles that are infused into subject content



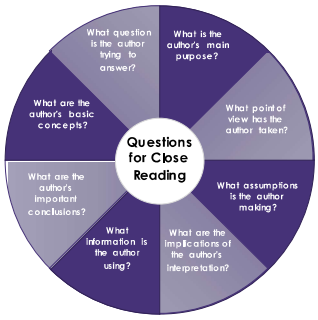
Historical Question: Was appeasement the right policy for England in 1938?

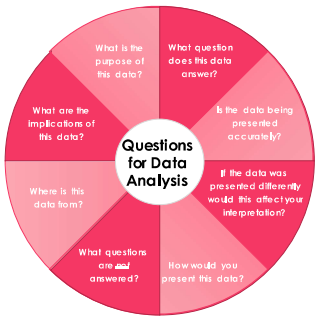
Document C: Bartlett

1) (Sourcing) When was this document written? What was Bartlett's purpose in writing it?

2) (Close reading) What did Bartlett claim Hitler would have done if Chamberlain had "stood firm" and not pursued appeasement? What, if any, evidence did Bartlett offer to support this claim?

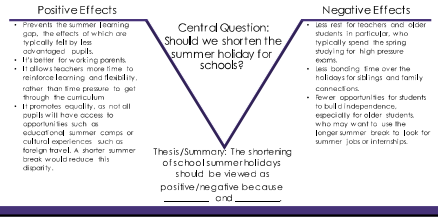
3) (Context) What point did Bartlett make about the British and Czechoslovakian armies?

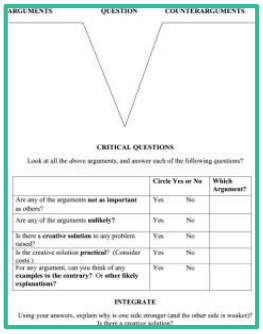




Argumentation Vee Diagrams

- Nussbaum (2009) used this to help students compose arguments on both sides of a controversial issue and develop an integrated conclusion





In your break out rooms, discuss …

What critical thinking rules and principles would you identify in your subject area?

How can you adapt something you've delivered previously/will deliver to build critical thinking skills?

Critical Thinking is a process and uncertainty is key

Make this process visible

- Model critical thinking skills using examples and then get students to practice these skills in context
- Explain the process behind reaching an answer to make your thinking visible, rather than focusing on the answer
- Break down barriers and assumptions that experts are some how "just naturally smarter" than others by revealing the ways you think about your subject and the questions you ask

Modelling and dialogue

- Practice v.worked examples
- Think aloud

Quick Win!: Acknowledge that learning is an on-going process and that being a researcher doesn't mean you know everything there is to know, but that you continue to think critically about the knowledge you are working with

Think Aloud to Make Critical Thinking Transparent

Strategy: normalize dialogue about progress and challenges we face in thinking critically
Technique: Verbalising all the thoughts you have while approaching a critical thinking task

What do you notice about the **pace and tone** of the speaker's reflections?

How does this strategy make a range of **critical thinking skills** visible to learners?

How does this strategy make **challenges** around critical thinking visible?

Spaced learning

- Spaced learning is where, when reviewing previously learned material, you distribute or 'space' study across multiple sessions.
- Research suggests that spaced learning was more effective in developing critical thinking than massed learning (consecutive days of learning) (Foot-Seymour et al. 2019; Kapler, Weston and Wiseheart (2015))
- **Strategy:** Stagger the review process, revisiting content and building on it across multiple sessions

Develop Metacognition

Strategy: normalize dialogue about progress and challenges we face in thinking critically

Analysis			Evaluation		
I can... • include a point of view or position in response to the title or question • develop and explain my point of view • analyse key ideas, arguments or information rather than just describe them			I can... • evaluate key ideas, information, arguments and evidence • decide on the credibility of key arguments and statements • draw convincing conclusions		
I feel...			I feel...		
Confident	Partially confident	Not confident	Confident	Partially confident	Not confident
☐	☐	☐	☐	☐	☐

Your Turn

Consider one activity or tutorial you will be delivering that will develop pupils' critical thinking

What question(s) is/are at the centre of the critical thinking students are asked to do?

Remember your 3 Ps

- What will you **plan** into the session?
- What will pupils do to **participate** and engage?
- How will you know students have made **progress?**

Looking at your TBC Tutor Journey...

- How can you incorporate one of these pedagogies into your ***tutorial delivery plans***?
- What is one action you will takeaway for ***future*** teaching beyond the Brilliant Club?

Key Takeaways

- Critical thinking is defined by a range of skills that may vary by discipline
- Critical thinking is more effectively developed when taught explicitly and in the context of a specific subject
- Making critical thinking visible can help build learner independence and make their skills transferrable to other contexts

Further Reading

- HOT or NOT: How to develop critical thinking , Learning Scientist Blog, https://www.learningscientists.org/blog/2017/8/30-1
- Kapler V., Weston, T., & Wiseheart, M. (2015). Spacing in a simulated undergraduate classroom: Long-term benefits for factual and higher-level learning. *Learning and Instruction, 36*, 38-45.
- Agarwal, Retrieval Practice and Bloom's Taxonomy: Do Students Need Fact Knowledge Before Higher Order Learning?: Journal of Educational Psychology, 2019)
- Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2015). Strategies for teaching students to think critically: a meta-analysis. *Review of Educational Research, 85*, 275-314.

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