

Dynamic Lecturing

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Why
Lecture?



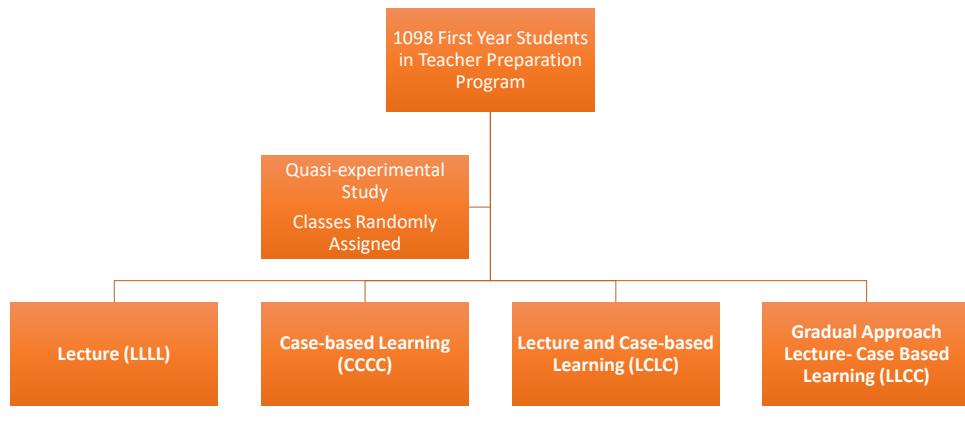
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Exploring the Lecture

The Reality	Fortunately...
<p>The lecture continues to be the most used teaching method</p> <p>(Davidson & Katopodis, 2022)</p>	<ul style="list-style-type: none"> • Meta-analysis of half-century of research (328 studies): Direct instruction, when done well, works! (Stockard et al., 2018) • Combining direct instruction with inquiry-based techniques often works better than either technique alone (Jong et al. 2023)

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A Quasi-Experimental Study with 1st Year College Students



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What is Case-Based Learning?

- Active Involvement- Constructing Knowledge
- Teacher is Facilitator
- Authentic Assignments
- Cooperative Group Work



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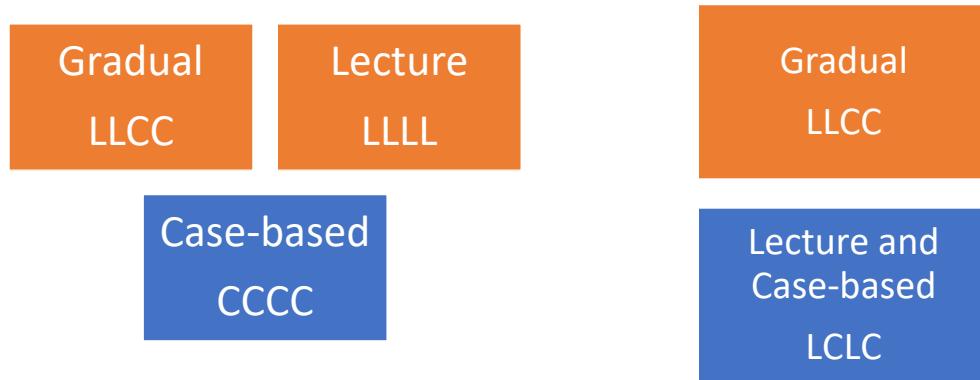
Prediction

Which group did the best?

- Lecture only
- Case-based learning only
- Alternating: Lecture- Case-based- Lecture- Case-based
- Gradual: Lecture- Lecture- Case-based- Case-based

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Direct Instruction with Gradual Introduction of Case-Based Learning Worked Best!

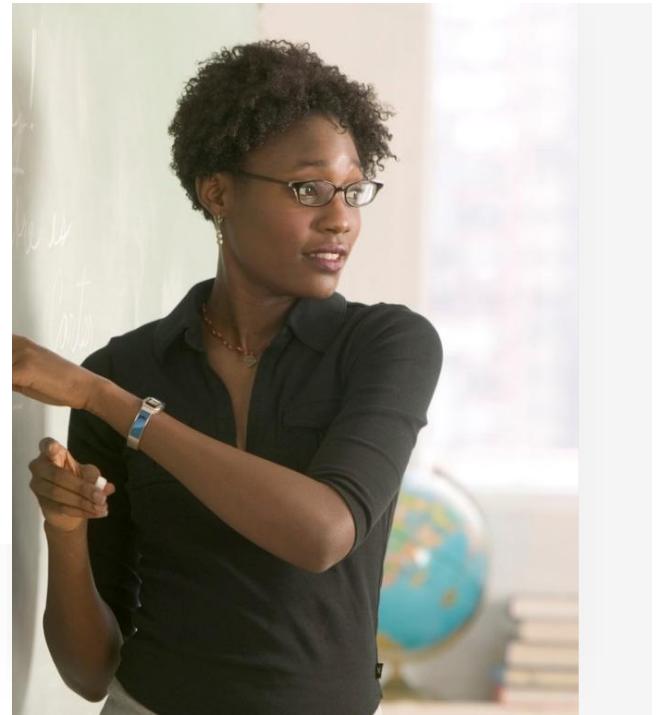


Baeten et al. (2013)

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High-Assistance
Instruction
is BEST
for Novice
Learners

Tetzlaff et al. (2025)



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Expertise Reversal Effect

Tetzlaff et al. (2025);
Castro-Alonso et al. (2021)



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Maximizing Learning via Lecturing



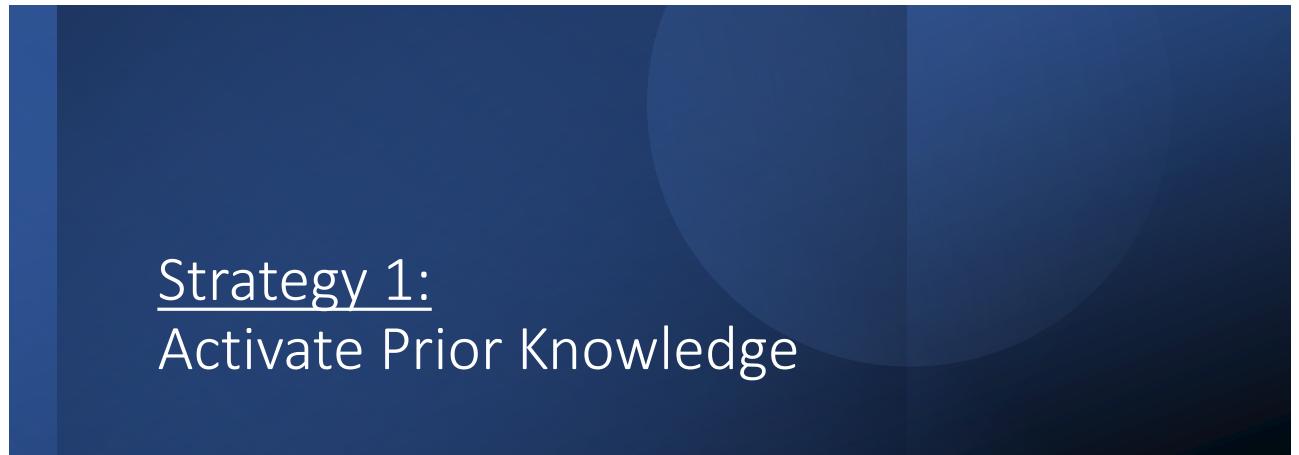
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7 Strategies for Maximizing Learning via Lecturing

1. Activating Prior Knowledge
 2. Capture Attention and Emphasizing Important Points
 3. Effective Multi-Media Use
 4. Elaboration through Examples
 5. Reflection Opportunities
 6. Retrieval Practice
 7. Questioning for Critical Thinking
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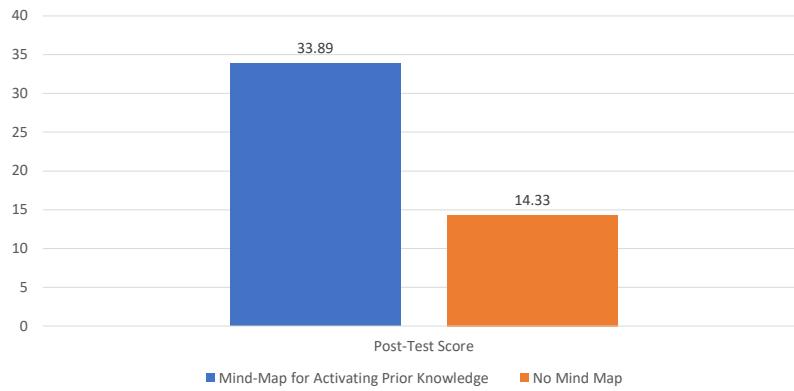


Strategy 1: Activate Prior Knowledge

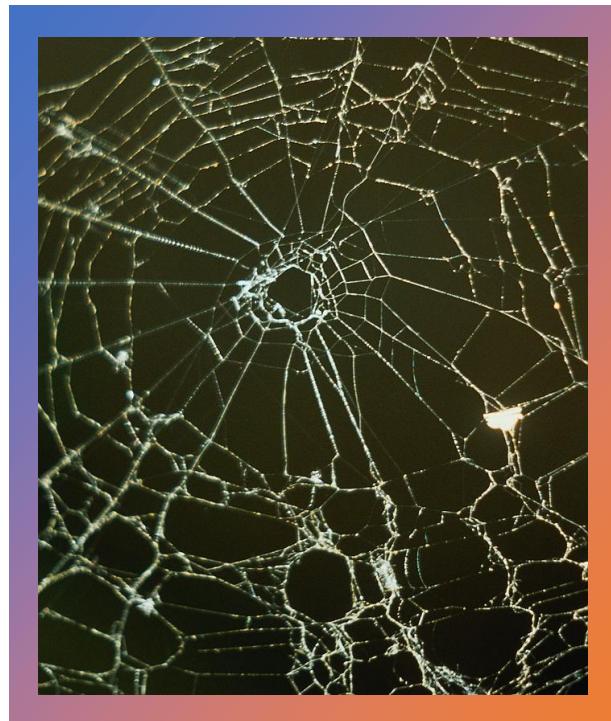
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Importance of Activating Prior Knowledge

Subaie (2025)



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Dusting Off the Cobwebs

- No Notes- What did you learn from our last class?
- Look at Notes- Fill in any information gaps
- Large Group Discussion

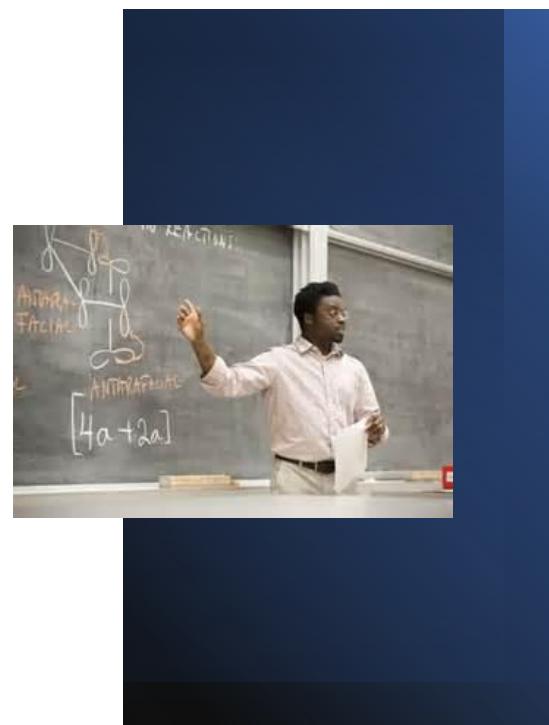
(Harrington & Zakrajsek, 2017)

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Strategy 2: Capturing Attention and Emphasizing Important Points

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How long can
students pay
attention during a
lecture?



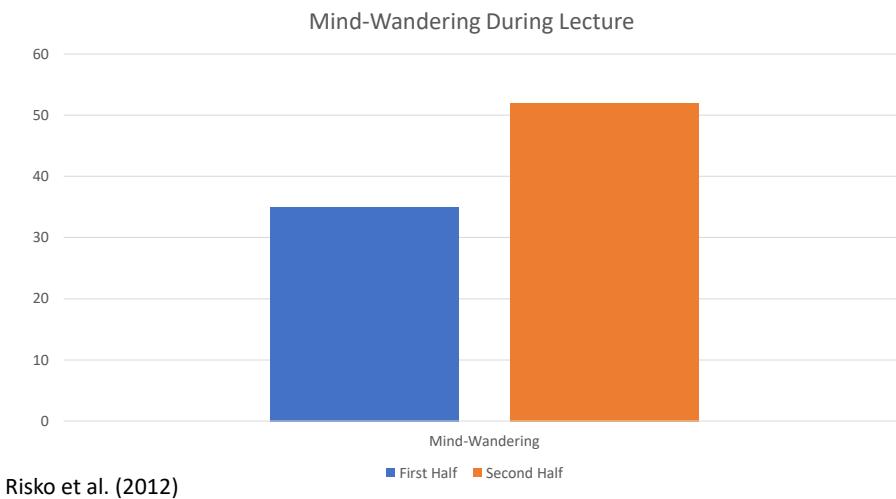
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How long can
students pay
attention when
reading?



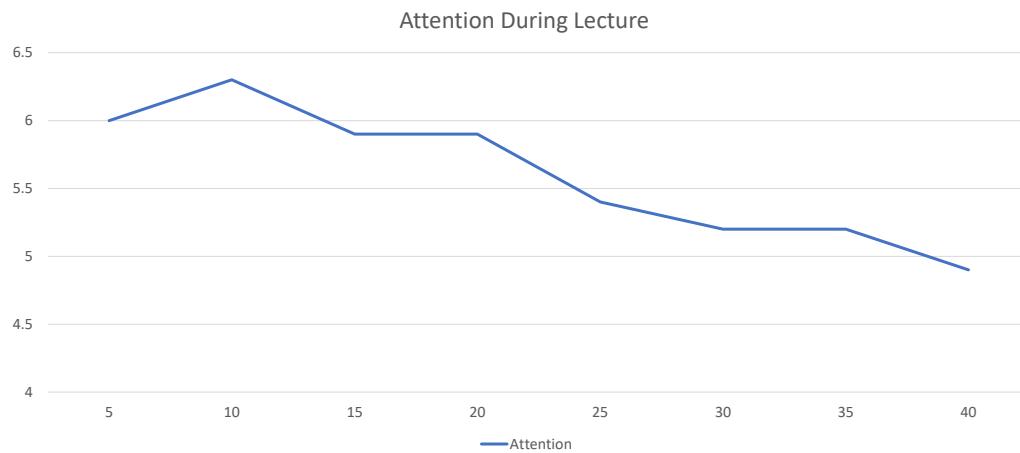
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Attention and Length of Lecture



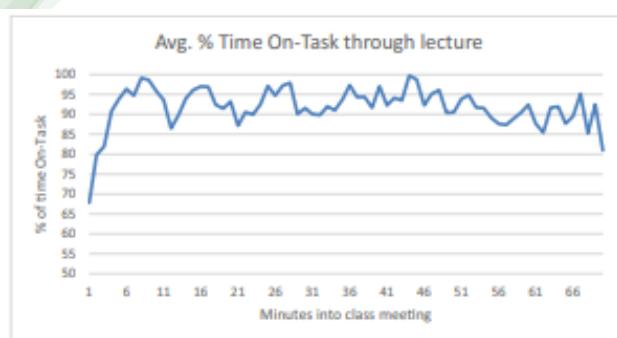
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Attention and Length of Lecture



Farley et al. (2013)

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Sustained
Attention
throughout
Lecture with Use
of Student-
Student and
Instructor-Student
Interactions
Rosengrant et al. (2021)

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Identify and Introduce the 3 Big Ideas

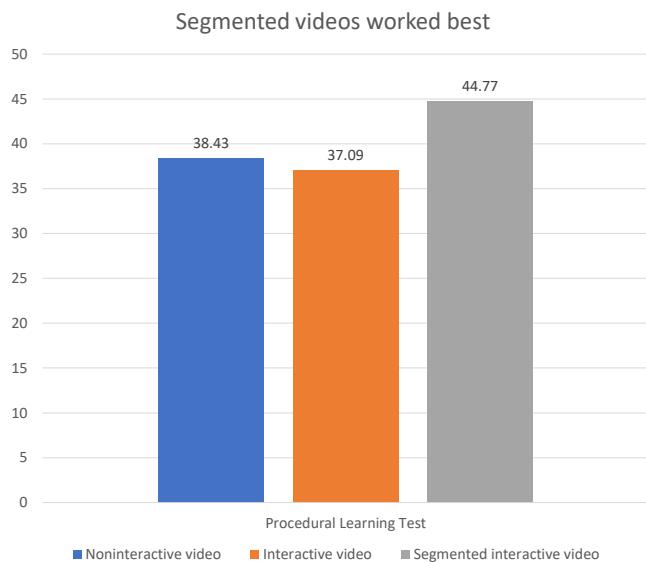


- Chunking Content Improves Memory (Thalmann et al., 2019)
- Knowing main concepts before the lesson increases learning (Mayer, 2020)

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Segmenting
Lectures
Improves
Learning

Biard et al. (2018)



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Strategy 3: Using Multi-Media Effectively

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What makes
PowerPoint
slides
effective?

**TURN
AND
TALK**

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Multi-Media: We are all Visual Learners

Mayer (2020)



Picture Superiority Effect (Higdon et al., 2025)

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Less is More!



Mayer (2020)

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Draw Attention to Important Concepts



Mayer (2020)

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The “Be Quiet” Principle (also known as the Redundancy Principle)

Mayer (2020) brings attention to the fact that when you have a visual aid such as a PowerPoint slide that contains a lot of words (like this one!), it makes it difficult for the student to process the information. There are competing channels fighting for attention. You want to listen and you want to read. You end up trying to do both and not doing either one very well. He argues that because images are so powerful, it is often best to use an image as a back drop to your narration. If you need to use a lot of words on a slide, then “be quiet” (these are my words not Mayer’s words!) and let them read it. Then, you can explain it more once they are finished reading.

More Learning with Narration versus Text

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Use Conversational
Language rather
than Formal
Language

Mayer (2020)



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Strategy 4:
Elaboration via Examples

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Examples Improve Knowledge Retention and Transfer

Krause-Wichmann et al. (2025)

Student Created Examples

Instructor Shared Examples

No Examples

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Power of Worked Examples...

Miller & Schraeder (2022)

Students in a college algebra course who completed worksheets that had worked examples outperformed students in a Q & A session.

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Strategy 5: Brief Reflection Opportunities

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Brief Reflection Opportunities

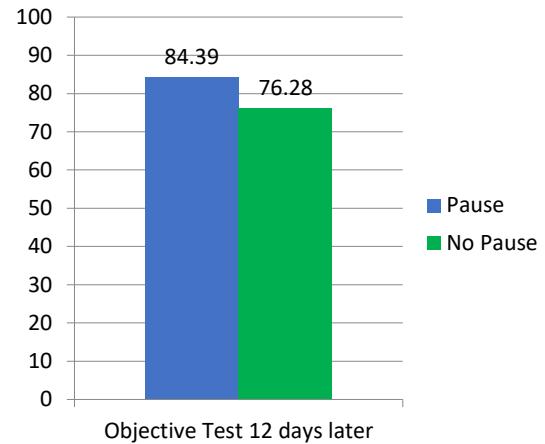
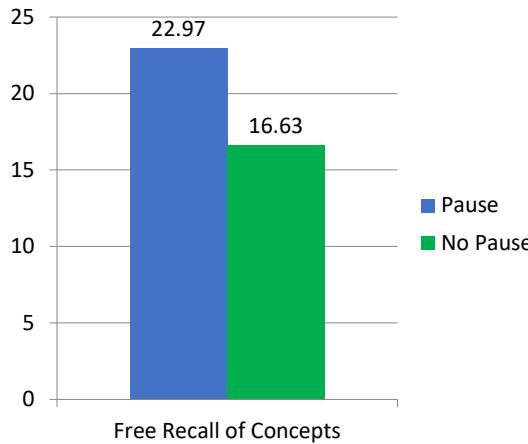
- One Minute Papers
- Turn and Talk or Think Pair Share
- Compare Notes
- Quick Quizzes
- 5 Paper Fast Pass



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The Power of Pausing

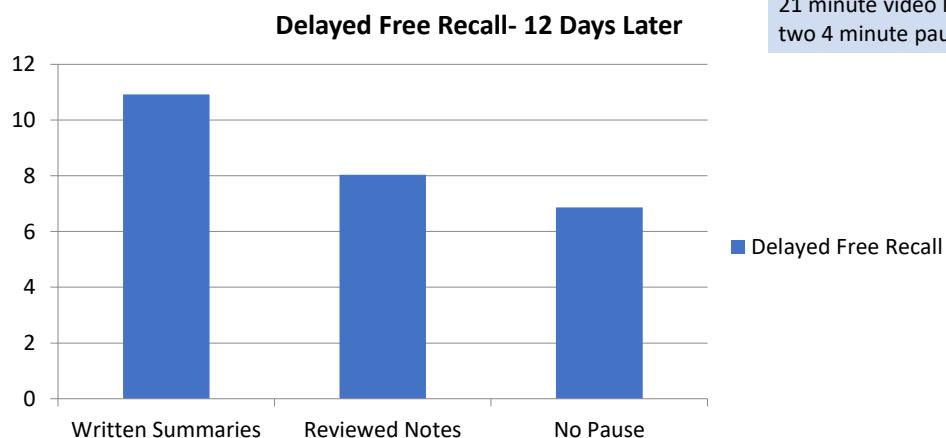
Three 2-minute Pauses to Review Concepts and Share Notes



Ruhl et al. (1987)

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The Power of Writing Summaries During Class



79 Students randomly assigned 21 minute video lecture with two 4 minute pauses

Davis & Hult (1997)

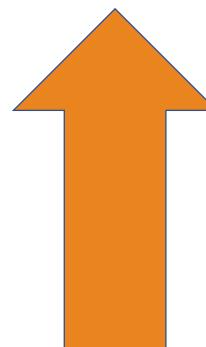
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Pausing and Revising Notes

Luo et al. (2016)

Revising notes DURING lecture vs. after lecture

Revising WITH A PARTNER vs. revising alone



- Concepts in Notes
- Higher Test Scores

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Benefits of Pausing

Chaudhry et al. (2024)

Variable	Pause	No Pause
Improvement in Multiple Choice Items	66.6%	40%
Perceived Achievement of Learning Outcomes	73.3%	43.3%
Clarity of Topic	86.7%	43.3%
Maintained Attention Until End of Lecture	80%	26.7%

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Value of Pausing: Student Perspective

Siddique & Harrington (2025)

Peer engagement

- “Helps students with engagement and lets students understand a topic better from a different point of view.”

Better understanding

- “Thinking about the question and trying to do it ourselves helped us understand the material better.”

Reflection

- “It is helpful to see what exactly we need help with.”

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What did you learn about the power of pausing during a lecture?



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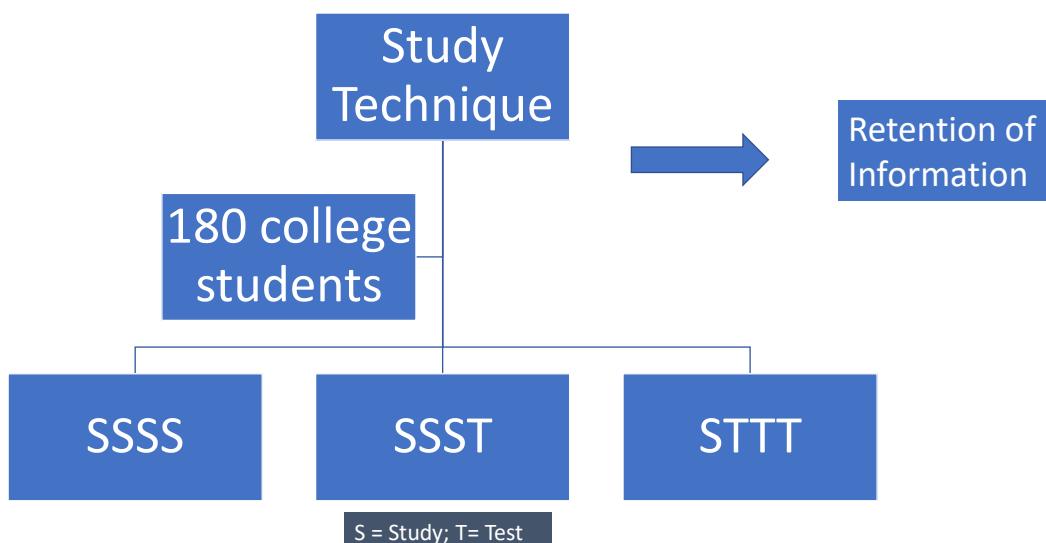
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Strategy 6: Using Practice Retrieval Techniques

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Power of Retrieval Practice

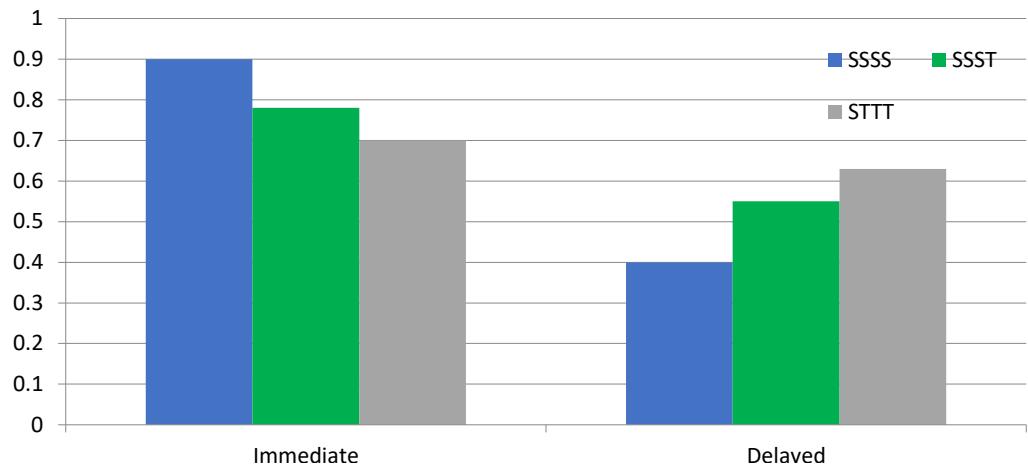
Roediger & Karpicke (2006)



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Retrieval is a MEMORY tool!!!

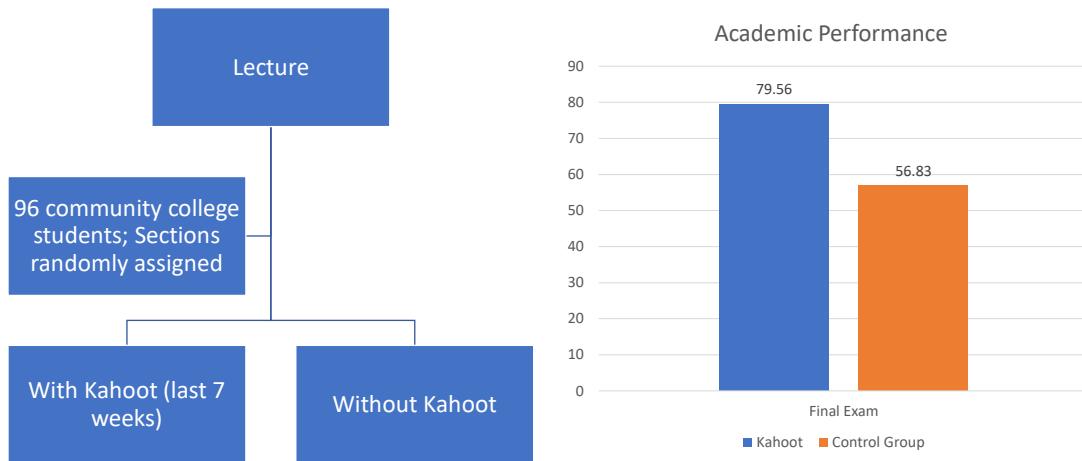
Roediger & Karpicke (2006)



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Kahoot Improves Learning

Bawa (2019)



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Quick Quiz

True or False

Written summaries improved retention of information and exam performance.

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Quick Quiz

True or False

Revising notes during class with a partner improved academic performance.

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Strategy 7:

Questioning for Critical Thinking

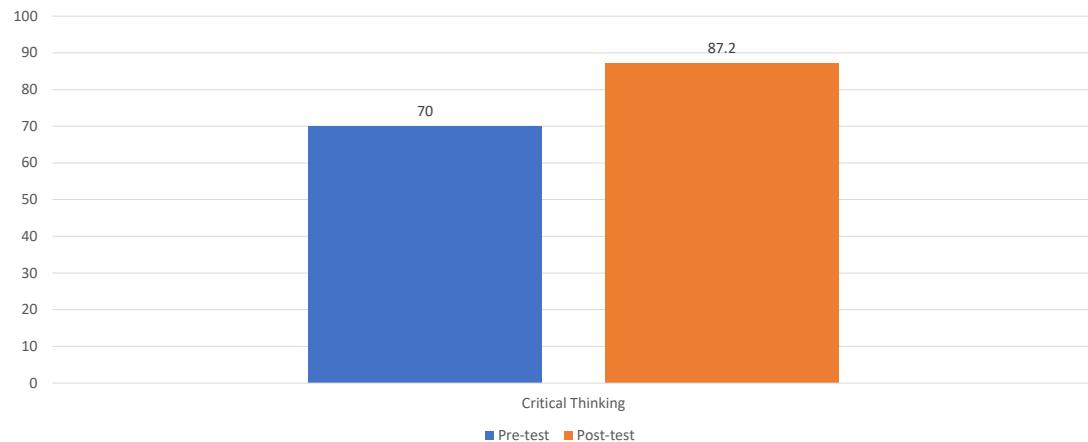
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Learning Purpose	Socratic Questions
Clarifying Explanations	What do you mean by....? Provide an additional example of.... How does this compare and/or contrast to....? What are the potential advantages and disadvantages of... ?
Questioning Assumptions	What other explanations might account for this? What are the assumptions behind this statement?
Exploring Additional Evidence	How can we find out more about this topic? How does this connect to the concepts we've discussed previously? What additional evidence can you find to support or refute this idea?
Multiple Perspectives	What would someone who disagrees say? What are the cultural implications?
Real World Implications	What are potential consequences or implications of this? Provide a real world example of....
Self-Reflective Processes	Why should this issue matter? What is the importance of learning about this issue? What other questions do you now want to explore?

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Socratic Questions Increase Critical Thinking

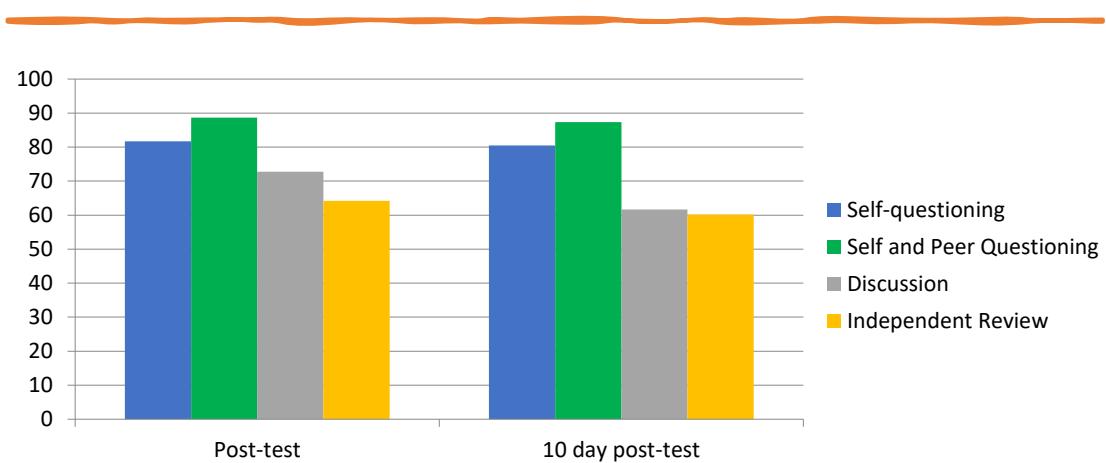
Rahmawati et al. (2022)



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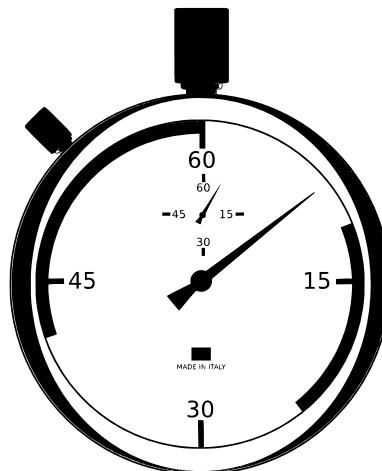
Questioning leads to Higher Achievement

King (1991)



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One Minute Reflection: What Lecture Strategies Do You Recall?



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Let's Summarize ...



Prior Knowledge



Attention and Importance



Multi-Media



Examples



Reflection



Practice Retrieval



Questioning

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What was your main take-away from today's session?

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