Reduce Mind Wandering and Increase Student Engagement in Your Course with Empirically Demonstrated Strategies that Promote Learning

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Mind Wandering Defined

• Cognitive experience –
• How it is studied?
• More vulnerable to mind wandering
  • Youth and young adults
  • People with lower reading skill
  • Domain-specific novice learners
Effects of Mind Wandering

- Working memory
- Lowered performance
  - Sustained tasks
  - Reading (zoning out/mindless reading)
  - Problem solving
  - Academic performance
How We Might Reduce Mind wandering

- Increase student
  - motivation (Seli et al., 2019)
  - standard instructions on completing task
  - reward for performance
  - academic self-efficacy (Desideri et al., 2019)
  - control over when and how to access online videos
- Active learning
1. Activate Prior Knowledge
What We Ask Students To Do

Prior knowledge

New Material

Consider prior knowledge in light of the new material

Student performance
Deliberate activation of prior knowledge

- Explicitly link new information from prior units and courses
- Include minor prompts and reminders
- Use “elaborative interrogation”
- Ask students to generate examples of the concept from their own life
- What do you already know?
2. Make information Personal or Relevant
Slideshow – Multimedia Principles

Personalization Principle, Mayer, 2009
Attitude Change Can Follow Behavior

- **People** hold many cognitions (for example: beliefs, feelings, behavior) about **themselves** and the world around them.

- **People** expect cognitions to be in harmony with one another – that is, that attitudes and behaviors are consistent/compatible.

- Sometimes **people** behave in ways that are inconsistent with **their** attitudes. These conflicting cognitions produce an unpleasant psychological state – cognitive dissonance – that **people** strive to reduce.

- Because **people** cannot change past behavior, one way to reduce the dissonance is by changing **their** attitudes so that they are more in line with **their** behavior.
Attitude Change by Our Own Behavior

• We hold many cognitions (for example: beliefs, feelings, and our behavior) about ourselves and the world around us.

• We expect our cognitions to be in harmony with one another – that is, we expect that our attitudes and our behaviors are consistent/compatible.

• Sometimes we behave in ways that are inconsistent with our attitudes. These conflicting cognitions produce an unpleasant psychological state – cognitive dissonance – that we strive to reduce.

• Because we cannot change our past behavior, one way to reduce the dissonance is by changing our attitudes so that they are more in line with our behavior.
Student Goals?

Classroom Assessments
What You Might Assess

**Learner Attitudes**
- Goals
- Self-confidence

**Course-related Knowledge and Skills**
- Prior Knowledge
- Muddiest point
- Minute paper
3. Prediction-based Learning

Generate Curiosity
Using Predictions

- Pre-test
- Learning objectives
- During reading
- Slideshow outline
- During presentation
- Feedback
Learning is Enhanced When

<table>
<thead>
<tr>
<th>Predictions</th>
<th>Are based on related prior knowledge</th>
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<tbody>
<tr>
<td></td>
<td>Promote active, deep processing</td>
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<td>Focused and direct</td>
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<td>Followed by feedback</td>
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4. Quiz Students on Recently Acquired Material
The Many Ways to Quiz

- Suggestions:
  - After slideshows
  - Clicker (polling) questions while presenting material
  - Embed questions during videos
  - Flashcards

- Most effective when:
  - Low stakes
  - Transfer questions on a later major assessment
  - Give feedback
5. Peer Instruction

Eric Mazur
How Peer Instruction Works

• Learning is a social event
• Active construction of knowledge through dialogue with others
• Teaching expectancy – learning material in preparation for teaching it to others
• Best used when accompanied with other active learning strategies
  • With clicker questions
  • With team-based learning
• Ask students to apply core concepts
• Ask students to explain core concepts to another student
Steps in Peer Discussion

- Teacher presents course material
- Ask a related question
- Students reflect on the question
- Students respond
- Teacher reveals students’ responses
- Students verbalize/justify their own answer to a peer
  - Prior knowledge
  - Prior experiences
  - Generate a common representation of the problem and the answer
    - Boosts retention
    - Identify and rectify gaps in understanding
    - Detect and correct errors
- Students again report on their individual response after peerinstruction
6. Scaffolding Reading

Helping students to attend to relevant information

Guiding Questions
Self-explanation
Guiding Questions

Helping students to

Attend to relevant (versus irrelevant) material through reading

Appreciate the relation between ideas in reading varied sources

Integrate relevant text information
Self-explanation

• Self-monitoring of evolving understanding
  ➢ Activates prior knowledge
  ➢ Review new material
  ➢ Relate information to prior knowledge
  ➢ Generate questions based on new understanding

• Mechanism
  ➢ Identification of gaps in learning
  ➢ Helps modify flawed, existing mental models
Self-Explanation
Student Reading Learning Activity

• Read assigned material

• Respond to prompts after each reading section
  1. Describe the information that is new to you
  2. How do the new ideas work with what you already know?
  3. Provide an example
  4. List two “I wonder (if, whether, why, how, which, where, who, etc.) . . .” questions that you have as a result of reading this section
In Summary

• Mind wandering – a cognitive shift away from task at hand
• Effects - decreased performance
• Strategies to motivate attention to task:
  • Activate prior knowledge
  • Make information personal/relevant
  • Prediction-based learning
  • Quizzing
  • Peer instruction
  • Scaffold reading and other learning activities
    • Guiding questions
    • Self-explanation