Metacognitive Learning And Student Engagement

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Metacognitive learning and student engagement

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Metacognitive learning

• What is Metacognition?
  ✳ "Thinking about thinking", becoming "aware of one's awareness" and higher-order thinking skills. It includes knowledge about when and how to use particular strategies for learning or problem-solving. (Wikipedia 2018)
  ✳ Knowledge about and regulation of one’s thinking. (Wilson 2016)
Metacognitive learning

- **Components of Metacognition** (Dori 2018)
  - **Cognitive knowledge** - what we know about our own cognition
  - **Procedural knowledge**: knowledge a person possesses about strategies, i.e. note-taking, summarizing main ideas, skimming, etc.
  - **Effective reading strategies**: Not only just understanding the words but also understanding the whole concepts.
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Metacognitive learning

- **Components of Metacognition**

  ✷ **Cognitive regulation** - one's procedural knowledge to organize cognitive processes (Sumadyo 2018)

  - **Planning:** appropriate selection of strategies and the correct allocation of resources that affect task performance. (Wikipedia 2018)

  - **Monitoring:** awareness of comprehension and task performance

  - **Evaluating:** appraising the final product of a task and the efficiency at which the task was performed.
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Metacognitive learning

- **Metacognitive skills** (Sumadyo 2018)
  - The ability to question his/herself against self-study resources;
  - The ability to look back at self-checking resources;
  - The ability to monitor self-learning progress (self-monitoring);
  - The ability to explain self-learning materials in the domain of self-explanation;
  - The ability to learn from analogical reasoning.

- **Metacognition emphasizes the focus on the personalization of learning**
How to improve metacognition (Wilson 2016)

- **Practical Optimism**
  - An approach to learning and life that focuses on taking practical positive action to increase the probability of successful outcomes

  🌟 **Factors that influence students respond to challenges:**
  - **Brain chemistry:** neurotransmitters associated with positive and negative moods;
  - **Genetics:** “baseline” feelings of optimism or pessimism is inherited - 50% people;
  - **Their thoughts:** reflections on and cognitive responses to experiences;
  - **Their behaviors:** actions and interactions with others.

  **Three of these four factors are within students’ control**
  -- They can take charge of their thoughts and behaviors to keep rolling in a positive feedback loop to persist until they succeed.
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How to improve metacognition

- Practical Optimism
  - Optimistic mindset links to greater productivity and more effective interactions with colleagues
  - Employees with a positive outlook are
    - 33% more likely to assist their colleagues;
    - 36% more motivated;
    - 31% more likely to achieve their professional goals.
How to improve metacognition

- **Goal Setting and Planning**
  - Establish your clear intent
    -- Formulate a positive, motivating goal that is ambitious, yet achievable.
  - Develop a detailed action plan for progressing in a positive direction
    -- Focus on “when-then” planning to help make your action steps more concrete.
  - Focus on executing the action steps in your plan.
  - Assess, monitor, and adjust your thoughts and actions.
  - Aim for steady gains in a positive direction and look for ways to improve the process.
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How to improve metacognition

- Selective Attention and Working Memory

Selective attention -- the skill of identifying what is important in any given situation and attending to what is necessary with appropriate focus.

Working memory -- the conscious processing of information, or memory used to plan and carry out behavior.

Teaching with Selective Attention and Working Memory (the CRAVE Formula)

- Build curiosity for learning
- Make lessons relevant.
- Ask questions that gauge students’ understanding, pique curiosity, or encourage them to transfer new knowledge to their existing one.
- Remember that variety is the spice of attention. (discussions, activities...)
- Evoke emotions to hold attention
How to improve metacognition

- **Self-Monitoring and Learning with Peers**

  Self-monitoring -- the ability to track one’s thoughts and actions in learning. (Monitoring progress, evaluate understanding of new material, and know when to use fix-up strategies.)

  **Key assets in self-monitoring:**

  - **Cognitive flexibility:**
    The capacity to consider two or more concepts simultaneously to adjust thinking and actions -- Creative problem solving.

  - **Evaluate one’s effectiveness with others:**
    Understanding other perspectives and cultures, evaluate them critically and constructively.
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How to improve metacognition

• Learning from experience and finishing power

Learning from experience -- not just correcting mistakes but also paying attention to what helps you succeed.

To the outcomes of assignments and tests, assess

✦ What strategies were most helpful in achieving learning goals
✦ What might do differently to improve performance in the future.
How to improve metacognition

• Learning from experience and finishing power

**Finishing power** — Appropriate task completion that is sustained over time and in spite of difficulty.

- Establishing clear intent,
- Developing and following a systematic plan,
- Monitoring progress and revising one’s plans along the way when necessary,
- Maintaining practical optimism that success is possible through hard work and persistent effort.
Metacognition in Moodle

- Clear intent in course introduction part
  - Course aim / outcome / expectation
  - Course structure arrangement
  - Resources access
  - Activities style
  - Help arrangement
  - Assessment arrangement
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**Metacognition in Moodle**

- **Maintain a practical optimism learning environment**

  Ask the following questions for yourself:

  ✦ Are my students demonstrating engagement?
  
  ✦ Are the quieter, shyer students contributing?
  
  ✦ Am I honoring students’ backgrounds and experiences by encouraging them to share their ideas and perspectives?
  
  ✦ Am I keeping the process on track?
  
  ✦ Are students analyzing the problem and creating a solution that makes sense in the context of the story?
  
  ✦ Are students feeling a sense of success in the process?
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Metacognition in Moodle

- **Emphasis plan-action-monitor-review-revise procedure**
  - Implement this procedure in each topic and activity.
  - Use formative assessment to evaluate result for both learning and teaching
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Metacognition in Moodle

- Encourage student self-evaluation and peer review

- Quiz
- Questionnaire
- Chat
- Wiki
- Database
- Workshop
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Metacognition in Moodle

- Let the students be involved

  - Discussion
  - Calibration
  - Cooperation
Conclusion

- Always put metacognition in place
- Focus on the personalization of learning
- Maintain a practical optimism environment
- Fully use activities/interactions
- Let the students “pull” knowledge


Questions

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https://www.slideshare.net/yong_liu/metacognitive-learning-and-student-engagement