Self-Regulated Learning: Active Learning on the Inside

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Participant Outcomes

- Explain what self-regulated learning (SRL) is, where it came from, and why it’s important to teach
- Distinguish SRL from metacognition
- Enumerate SRL’s benefits to students
- Get students to practice it
Most students think ...

- Learning “happens” or doesn’t happen to them.
- Learning in college should be easy.
- If it’s not happening:
  - It’s the instructor’s fault, OR
  - It’s hopeless; they weren’t born with the talent.
The Antidote: Self-Regulated Learning

= the conscious planning, monitoring, and evaluation of one’s learning in order to increase it.

Multi-dimensional, multi-stage process
3 Stages

Planning
Self-Monitoring
Self-Evaluating

Forethought
Performance/Volition Control
Self-Reflection

Schraw
Zimmerman
Self Regulated Learning

- Emotional and Motivational Control
- Metacognition
- Control over Physical Environment

3 Dimensions
## The Learner’s Questions

<table>
<thead>
<tr>
<th></th>
<th>Metacognition</th>
<th>Meta-emotional</th>
<th>Environmental</th>
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<tr>
<td><strong>BEFORE</strong></td>
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<tr>
<td>Planning or Forethought</td>
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<td><strong>DURING</strong></td>
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<td>Self-Monitoring or Performance/ Volition Control</td>
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<td><strong>AFTER</strong></td>
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<td>Self-Evaluation or Self-Reflection</td>
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SRL Activity #1

Awareness-raising one-minute paper: How does the material you’ve heard thus far connect or conflict with your prior knowledge, beliefs, or values?
Bandura’s Findings

Self-Efficacy

Self-Regulation

Learning
Benefits to Students

- Learning → performance
- More and deeper thinking
- Conscious focus on learning
- Professionalism
- Motivation
- Adult Success
Hattie’s (2009) meta-meta-analysis

- teacher clarity - effect size of .75
- getting feedback - .73
- spaced v. mass practice - .71
- **metacognitive strategies** - .69

> mastery learning, cooperative learning, time on task, computer-assisted instruction, and teaching students test-taking strategies
% of students passing course and gateway test in traditional versus SRL sections of Developmental Math
% of students passing the summer course and a for-credit fall-semester math course in traditional versus SRL sections of Developmental Math
% of students passing gateway exam and a for-credit fall-semester writing course in traditional versus SRL sections of Developmental Writing
You run SRL class activities, make SRL assignments.

Students don’t mind – short, low-stress, worth a point.

Your don’t mind – P/F-graded assignments; P = complete and proper length.

You and students see results.
SRL Activity #2

Review-and-react one-minute paper:
• What is (are) the most surprising or unexpected idea(s) you encountered this far?
Teaching Your Students to Be Self-Regulated Learners
SRL Activities and Assignments

- Start of Course
- Readings (videos, podcasts) “wrappers”
- Live Lectures “ ”
- Assignments “ ” (“meta-assignments”)
- Quizzes and Exams “ ”
- [Regular and Occasional Activities]
- End of Course
Start of Course

• Reading and discussion on “learning” and “thinking”

• Goal-setting – “How I earned an A in this course” *

• Self-assessment instrument on meta-cognitive skills *
Self-Assessment Instruments on Metacognitive Skills


Start of Course continued

- Reflective writing on nature of subject matter (to activate students’ prior knowledge & reveal misconceptions) *
- Essay questions on course material *
- Knowledge survey *

* Best to repeat at end of course
Knowledge Surveys

• Series of questions/tasks covering knowledge and skills in a course or unit (from old exams, outcomes, exercises, etc.)
• Answer = students’ perceived ability to answer question/perform task
• Activate prior knowledge, reveals misconceptions, generates interest
Knowledge Surveys

Examples of Answers

• a) I do not understand the question, I am not familiar with the terminology, or I doubt I can answer the question well enough to earn a passing grade.

• b) I understand the question and 1) I think I can answer at least half of it correctly, or 2) I think I can find the correct answer within 30 seconds.
• c) I am confident that I can answer the question well enough to earn a passing grade, but no higher.

• d) I am confident that I can answer the question well enough to earn a high grade.
Examples of Answers continued

OR

• a) Very confident
• b) Somewhat confident
• c) Not sure
• d) Not at all confident
Accuracy Warning!

Students overestimate their abilities and knowledge (except possibly the best students) when they know the least.

– Less likely in STEM and health/medical fields because students more likely know they don’t understand terminology.
What will you do to enhance students’ self-regulated learning skills at the start of your courses or the term?
SRL Activity #3

Take the role of a student listening to a lecture: Write down all the important points that you can recall and any questions you have.
Live Lecture Wrappers

• Periodic free-recall (self-testing)
  1. Students listen to lecture for 10-20 mins., then close notebook when you pause.
  2. They write down all important points they can recall and their questions, leaving space between the points.
  3. They pair up to compare, fill in, and fine-tune notes.
“Conceptests” - At end of mini-lecture, display conceptual or application multiple choice item on content.

1. Students “click in” their answers.
2. They try to convince neighbors of their answer.
3. Repeat step 1. more correct answers and higher confidence
• Active listening checks
  1. Students listen to 10-20-min lecture for key points (may take notes).
  2. They write 3 most important points, turn in.
  3. You reveal 3 most important points.
  4. Students self-assess their listening.

Improve listening skills: \(1^{st} \rightarrow 3^{rd}\) time: 45%→75% of students get points correct \(\text{(Lovett, 2008)}\)
• Minute paper(s) on day’s class:
  – Most useful or valuable thing you learned?
  – Most important point or central concept?
  – Most surprising/unexpected idea?
  – What idea(s) struck you as things you could/should put into practice now?
  – What stands out in your mind?
  – What helped or hindered your understanding?
  – How does the content connect or conflict with your prior knowledge, beliefs, or values?
Reading (Video, Podcast) Wrappers

• Reflective study Qs
  – most important concepts/principles and what you don’t understand clearly
  – comparisons/connections to prior learning, preconceptions, existing knowledge framework, other courses
  – affective reactions: attitudes, values, beliefs, emotions
  – one-minute paper(s)
• Self-Testing: Read * Recall * Review

1. Read, then put away book and notes.
2. Recall all you can, and recite it aloud or write it down.
3. Review for what you misunderstood or forgot – and recall it.
– Better immediate and delayed free recall of fact-based passages than rereading and equal to note-taking
– Less time than note taking
– Gives learner “deliberate practice,” “retrieval practice,” and “elaborative rehearsal.”

(McDaniel, Howard, & Einstein, 2009; Roediger & Karpicke, 2006)
• Visual Study Tools (also lecture wrappers)

– When students make visuals, they actively integrate, organize, and structure knowledge → deeper learning, better conceptual understanding, longer-term retention, and easier retrieval.
— Just *using* visuals
  
  • Lowers cognitive load; requires less working memory and fewer cognitive transformations than text, so students can *think* about the material (e.g., make inferences, comparisons, etc.)
  
  • Cues text and details; helps retrieval
  
  • Cross-cultural
Common Visuals/“Maps”

Flowchart – sequence of events or operations; causal or procedural process
Concept Circle or Venn Diagrams – relationships among concepts, categories, equations, topics, principles
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<thead>
<tr>
<th></th>
<th>Duration (Years or Months)</th>
<th>Causes</th>
<th>How Started</th>
<th>Positive Effects for U.S.</th>
<th>Negative Effects for U.S.</th>
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<td>World War I</td>
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**Matrix** – classify or compare-and-contrast types of X
Stage 1 (and 6)

Stage 5

Stage 4

Stage 2

Stage 3

Cycle
Concept Map – hierarchy
from most inclusive/general/broad/abstract (at center or top) to more exclusive/specific/narrow/concrete concepts, categories, equations, topics, principles, etc.
Mind Map – hierarchy or free association
What will you do to enhance your students’ self-regulated learning skills in readings and lectures?
Meta-Assignments

• Math-Based Problems
  – “Think aloud” to prepare students for HW: Partners “talk through” and guide solutions.
  – Learn from problem w/ incorrect answer: Write an error analysis and solve similar problem.
• Papers & Projects – as applicable:
  – Process followed
  – Reasoning used to solve problem
  – Self-evaluation of work, progress
  – Paraphrase of your written feedback
  – Revision goals, strategies
  – Value of assignment; skills gained, improved
  – Advice on assignment for next year’s students
• Experiential Learning: S-L, field work, simulation, role play (Grade with rubric.)
  – Connect to course outcomes and content
  – Explain and evaluate goals, strategies, decisions, responses to other players.
  – Evaluate goal achievement, strategies, performance.
Post-Quiz & Exam Wrappers

• Reflection on graded exam (Barkley, 2009)
  1. Compare your expected and actual performance.
  2. How do you feel about your grade?
  3. How many hours did you study – enough?
  4. How did you study?
  5. Why did you lose points? Any patterns?
  6. For next exam, set goal and design study game plan. What will you do differently?
• Students re-solve incorrect or similar problems and write out error analysis and/or correct strategy.

• “Test Autopsy”— error analysis form; OK to add reflection probes
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<tr>
<th>Question Profile</th>
<th>Reason Answer Was Incorrect</th>
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<tbody>
<tr>
<td>Question Missed</td>
<td>Carelessness</td>
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<td>Unfamiliar Material</td>
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<td>Points Lost</td>
<td>Misinterpreted Question</td>
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<td>Type of Question</td>
<td>Did not finish</td>
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What will you do to enhance your students’ self-regulated learning skills in assignments and exams?
End-of-Course

• Letter to next cohort of students
  – How to succeed in course
  – Highlights of course content and skills

• Self-evaluation “How I earned an A – or not”

• Repeat self-assessment instrument on meta-cognitive skills
• Repeat reflective writing on nature of subject matter and compare/correct.

• Re-write and/or correct errors, poor reasoning, misconceptions, etc. in first-week essays (final exam; grade with rubric.)

• Repeat knowledge survey and compare
SRL Activity #4

Wrap-up one-minute paper:
• What is (are) the most useful or valuable thing(s) you learned this morning?