Models of self-regulated learning

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Activating prior knowledge

What is your current understanding of SRL?
Definitions

- Metacognitive, motivational, and behavioral **active** participation of students in their own learning processes (Zimmerman, 1989).

- A learner’s **intentional** monitoring and managing of cognitive and motivational strategies and the learning environment to advance towards goals of instructional tasks (Winne & Perry, 1994).

- Learner’s **deliberate** planning, monitoring, and regulating of cognitive, behavioral, and motivational/emotional processes towards completion of an academic task/goal (Hadwin, Järvelä, & Miller, 2011).

Agency: capacity to intentionally plan for, control, and reflect upon our actions (Bandura, 1986)
Activating prior knowledge

What is a model?
SRL models

- Models identify and organize key factors at play in a process (Winne, 2015)
- Multiple models have been proposed (given SRL’s wide scope)
- The SRL models form an integrative and coherent framework from which to conduct research and on which students can be taught to be more strategic and successful (Panadero, 2017)
Triadic view model

(Person (self))

Environment

Behavior

ENVIRONMENTAL SELF-REGULATION

COVERT SELF-REGULATION

BEHAVIORAL SELF-REGULATION

STRATEGY USE

ENACTIVE FEEDBACK

(Zimmerman, 1989)
Cyclical phases model

Forethought Phase
- Task Analysis
  - Goal setting
  - Strategic planning
- Self-Motivation Beliefs
  - Self-efficacy
  - Outcome expectations
  - Intrinsic interest/value
  - Goal orientation

Performance Phase
- Self-Control
  - Self-instruction
  - Imagery
  - Attention focusing
  - Task strategies
- Self-observation
  - Self-recording
  - Self-experimentation

Self-Reflection Phase
- Self-Judgment
  - Self-evaluation
  - Causal attribution
- Self-Reaction
  - Self-satisfaction/affect
  - Adaptive/defensive

(Zimmerman & Moylan, 2009)
Multi-level model

- Represents the four stages in which students acquire their self-regulatory competency (Zimmerman, 2000)

<table>
<thead>
<tr>
<th>Level</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Observation</td>
<td>Vicarious induction of a skill from a proficient model</td>
</tr>
<tr>
<td>2</td>
<td>Emulation</td>
<td>Imitative performance of the general pattern or style of a model’s skill with social assistance</td>
</tr>
<tr>
<td>3</td>
<td>Self-control</td>
<td>Independent display of the model’s skill under structured conditions</td>
</tr>
<tr>
<td>4</td>
<td>Self-regulation</td>
<td>Adaptive use of skill across changing personal and environmental conditions</td>
</tr>
</tbody>
</table>
### COPES model

COPES (Winne, 1996, 1997; Winne & Hadwin, 1998): can characterize any learner's engagement with any task

<table>
<thead>
<tr>
<th>Conditions</th>
<th>that affect how the task will be engaged, including environmental factors and individual differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>[SMART] Operations</td>
<td>cognitive processes, tactics, and strategies the student engages to address the task</td>
</tr>
<tr>
<td>Products</td>
<td>information created by operations (e.g., new knowledge)</td>
</tr>
<tr>
<td>Evaluations (of products)</td>
<td>feedback about products, internal or external (e.g., teacher or peer feedback)</td>
</tr>
<tr>
<td>Standards (for products)</td>
<td>criteria against which products are monitored (e.g., assessment criteria)</td>
</tr>
</tbody>
</table>
COPES model: SMART operations

S Searching
M Monitoring
A Assembling
R Rehearsing
T Translating

(Winne, 2004)
COPES model

(Winne & Hadwin, 1998)
Adaptable learning model

Phases in a learning episode

1. Identify conditions
2. Interpret conditions
3. Appraise conditions
4. Set goals
5. Engage with the task

(Boekaerts, 1996)
Dual processing self-regulation model

(Boekaerts, 2011)
### Pintrich model

<table>
<thead>
<tr>
<th>Areas for regulation → Phases ↓</th>
<th>Cognition</th>
<th>Motivation/affect</th>
<th>Behavior</th>
<th>Context</th>
</tr>
</thead>
</table>
| 1. Forethought, planning and activation | Target goal setting  
Prior content knowledge activation  
Metacognitive knowledge activation | Goal orientation  
Efficacy judgments  
Ease of learning (EOL) judgements; perceptions of task difficulty  
Task value activation  
Interest activation | [Time and effort planning]  
[Planning for self-observations of behavior] | [Perceptions of task]  
[Perceptions of context] |
| 2. Monitoring | Metacognitive awareness and monitoring of cognition (Feeling of Knowing, FOK; Judgement of Learning, JOL) | Awareness and monitoring of motivation and affect | Awareness and monitoring of effort, time use, need for help  
Self-observation of behavior | Monitoring changing task and context conditions |
| 3. Control | Selection and adaptation of cognitive strategies for learning, thinking | Selection and adaptation of strategies for managing motivation and affect | Increase/decrease effort  
Persist, give up  
Help-seeking behavior | Change or renegotiate task  
Change or leave context |
| 4. Reaction and reflection | Cognitive judgements  
Attributions | Affective reactions  
Attributions | Choice behavior | Evaluation of task  
Evaluation of context |
MASRL model

Metacognitive and affective model of SRL

- (Efklides, 2011)
- ME: Metacognitive experiences
- MK: Metacognitive knowledge
- MS: Metacognitive skills

Two levels

Three phases
SRL models: common ground

It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change.

Charles Darwin?
# Models comparison

## TABLE 1 | Number of citations of the different SRL models main publication.

<table>
<thead>
<tr>
<th>Model</th>
<th>Publication</th>
<th>Total citations</th>
<th>Citations year*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boekaerts</td>
<td>Boekaerts and Corno, 2005</td>
<td>1011</td>
<td>84.25</td>
</tr>
<tr>
<td>Efklides</td>
<td>Efklides, 2011</td>
<td>251</td>
<td>41.83</td>
</tr>
<tr>
<td>Hadwin et al.</td>
<td>Hadwin et al., 2011</td>
<td>196</td>
<td>32.67</td>
</tr>
<tr>
<td>Pintrich</td>
<td>Pintrich, 2000</td>
<td>3416</td>
<td>200.94</td>
</tr>
<tr>
<td>Winne and Hadwin</td>
<td>Winne and Hadwin, 1998</td>
<td>1037</td>
<td>54.58</td>
</tr>
<tr>
<td>Zimmerman</td>
<td>Zimmerman, 2000</td>
<td>4169</td>
<td>245.24</td>
</tr>
</tbody>
</table>

*Data as in 20th of March 2017. Search performed via Google Scholar. *The average citation per year was calculated dividing the total number of citation by the resulting number of subtracting to 2017 -the current year- the year of publication of the reference.*

(Panadero, 2017)
## Models comparison

<table>
<thead>
<tr>
<th>Models</th>
<th>Preparatory phase</th>
<th>Performance phase</th>
<th>Appraisal phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boekaerts</td>
<td>Identification, interpretation, primary and secondary appraisal, goal setting</td>
<td>Goal striving</td>
<td>Performance feedback</td>
</tr>
<tr>
<td>Efklides</td>
<td>Task representation</td>
<td>Cognitive processing, performance</td>
<td>Regulating</td>
</tr>
<tr>
<td>Hadwin et al., 2011</td>
<td>Planning</td>
<td>Monitoring, control</td>
<td>Adaptation</td>
</tr>
<tr>
<td><em>Hadwin et al. (in press)</em></td>
<td><em>Negotiating and awareness of the task</em></td>
<td><em>Strategic task engagement</em></td>
<td>Reaction and reflection</td>
</tr>
<tr>
<td>Pintrich</td>
<td>Forethought, planning, activation</td>
<td>Monitoring, control</td>
<td>Adapting metacognition</td>
</tr>
<tr>
<td>Winne and Hadwin</td>
<td>Task definition, goal setting and planning</td>
<td>Applying tactics and strategies</td>
<td>Self-reflection (self-judgment, self-reaction)</td>
</tr>
<tr>
<td>Zimmerman</td>
<td>Forethought (task analysis, self-motivation)</td>
<td>Performance (self-control self-observation)</td>
<td></td>
</tr>
</tbody>
</table>

(Panadero, 2017)
# Models comparison

**TABLE 3 | Models figures comparison on cognition, motivation, and emotion.**

<table>
<thead>
<tr>
<th>Levels of relevance</th>
<th>Cognition</th>
<th>Motivation</th>
<th>Emotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>First (more emphasis)</td>
<td>Winne Efklides</td>
<td>Zimmerman</td>
<td>Boekaerts</td>
</tr>
<tr>
<td></td>
<td>SSRL</td>
<td>Boekaerts</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pinrich</td>
<td></td>
</tr>
<tr>
<td>Second</td>
<td>Pinrich</td>
<td>SSRL Efklides</td>
<td>Zimmerman</td>
</tr>
<tr>
<td></td>
<td>Zimmerman</td>
<td>Winne</td>
<td>Pinrich SSRL</td>
</tr>
<tr>
<td>Third (less emphasis)</td>
<td>Boekaerts</td>
<td></td>
<td>Efklides Winne</td>
</tr>
</tbody>
</table>
Conclusions

- SRL is a powerful umbrella to anchor crucial variables that affect learning
- Several SRL models have been proposed
- The models are not static but evolving
- SRL is cyclical, composed of different phases and subprocesses
- SRL models share a high number of processes
- Different models work better at different educational levels (Dignath and Büttner, 2008)
References 1/2


Thank you
Gracias
Asante
Kiitos
Köszönöm

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UNIVERSITY
OF OULU