Panel 4: Key Intrapersonal Competencies

Self-regulation of Science Learning in the Context of Educational Game Creation: A Study of Middle School Students with Learning Disabilities

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Self-Regulated Learning Framework
(Social Cognitive Theory)


Forethought Phase:
- Goal setting
- Strategic planning

Self-Motivation Beliefs:
- Self-efficacy
- Intrinsic interest/value

Performance Phase:
- Self-Control
- Attention focusing
- Task Strategies
- Self-Instruction
- Monitoring

Self-Reflection Phase:
- Self-evaluation
- Causal attributions
Although **highly capable**, limited numbers of students with learning disabilities (LD) are pursuing careers in STEM fields, even though many work-related opportunities are available to these individuals (Basham & Marino, 2013).

Because acquisition, retention, and demonstration of science knowledge can pose multiple challenges for students with LD, researchers have noted a critical need to foster students’ ability to self-regulate their own learning (e.g., Brigham, Scruggs, & Mastropieri, 2011).

**Students with LD** are an ideal sample for this type of work precisely because

- these students characteristically display **inappropriate causal attributions for learning** (e.g., Baird, Scott, Dearing, Hamill, 2009; Tabassam & Grainger, 2001), and
- **these attributions are malleable** (e.g., Berkeley, Mastropieri, & Scruggs, 2011; Miranda, Villaescusa, & Vidal-Abarca, 1997).
Learning Context: Creation of Serious Education Games

From: Annetta (2008)
Existing self-regulated learning (SRL) work primarily focuses on well-defined and/or discreet tasks, while less is known about the role of self-regulation in complex, long-term learning tasks (Schunk & Zimmerman, 2003; Bernacki, Nokes-Malach, & Aleven, 2015).
Self-Regulation of Engagement

Are we measuring self-regulation of science learning (rather than strategy use or some other cognitive behavior)?
How do we measure self-regulation in a meaningful way?

- When students are not reflective (or are not accurate in their reflections)?
- Using data collection procedures that do not influence the self-regulation process?
- When goals and related tasks are complex and variable?
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Small group focus:
Self-regulation, motivational beliefs, and other factors affecting student learning and persistence in science and STEM