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**Title:** Assessment of complex cognition: Commentary on the design and validation of assessments.

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**Strand of work:** Theoretical/Integrative

**Abstract:** The seven papers in this special issue that are the focus of this commentary are concerned with the challenges of assessing complex aspects of cognition in the domains of mathematics, reading, history and science. Each describes the design of assessments and their interpretive use, with a particular focus on assessments closely tied to classroom instruction. Individually and collectively they make valuable contributions, highlighting many conceptual and practical considerations that need to be addressed in designing and validating assessments of key aspects of mathematical, literary, scientific and historical reasoning. The discussion is divided into three parts. Part 1 presents three conceptual frames regarding the nature of assessment and assessment design, providing an interpretive language for discussing the seven papers. Part 2 applies these frames to the papers as a way to interpret the specifics of each case. Part 3 highlights challenges that remain in operationalizing and validating assessments of complex cognition.

**Implications:** Assessment development in any disciplinary domain is a challenging endeavor. The work of these authors to specify key aspects of their respective domains for purposes of assessment, and their articulation of design models and cases deserves recognition. While they share a common goal, it is clear that there is considerable variation in how they have gone about the task of assessing student competence. These cases are instructive and they offer the opportunity for further dialogue about how to meet both conceptual and practical challenges in the assessment of complex reasoning and thinking in the domains of mathematics, literature, science and history.

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