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Editorial: Classroom assessment as the co-regulation of learning

Heidi Andrade[1]*† and Kelly Beekman[2]*†

[1]Educational Psychology and Methodology, University at Albany, Albany, NY, United States, [2]Fontys University of Applied Sciences, Eindhoven, Netherlands

Editorial on the Research Topic
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Classroom assessment refers to the process in which teachers and students gather, interpret, and use evidence of student learning "for a variety of purposes, including diagnosing student strengths and weaknesses, monitoring student progress toward meeting desired levels of proficiency, assigning grades, and providing feedback to parents" (McMillan, 2013, p. 4). Various classroom assessment practices differentially shape instruction, learning, and the learning strategies students adopt (Wiliam, 2011; Balloo et al., 2018). Current theories of classroom assessment recognize that the agency for learning resides with the student, and that successful students use assessment as information for learning. For example, assessment information informs students of the standards for specific tasks, and information about their actual level of performance compared to the standards influences actions students take to eventually achieve them. In this way, assessment information supports students' self-regulatory processes. Self-regulated learning (SRL) processes are those by which learners set goals and then plan, execute, and adjust their learning (Zimmerman and Schunk, 2011).

In educational contexts, however, self-regulatory processes often occur under the joint influence of students and other sources of regulation in the learning environment such as teachers, peers, interventions, curriculum materials, and assessment instruments (Allal, 2019). Student learning and teacher practice are both co-regulated by multiple classroom elements acting together. For example, assessment information is used by teachers and students to articulate the learning targets, collect feedback about where students are in relation to those targets, and prompt adjustments to instruction as well as changes to learning processes and revision of student work products (Andrade and Brookhart, 2020). Feedback from teachers and peers plays an especially important role in helping students understand the gap between where they are and where they need to be and encourages active student participation in assessment. Thus, classroom assessment is a process of co-regulating learning, as it involves the interplay between individual and social aspects of regulation.

This special issue of *Frontiers in Education* contains a collection of eight articles that demonstrate how classroom assessment—particularly the formative kind—is related to multiple aspects of the regulation of learning. Andrade et al. provide support for this view by means of a systematic review of 94 studies. The authors conclude that there is ample support for the claim that assessment is associated with most elements of self-regulated learning. Beekman's et al. study of the long-term effects of formative assessment on student self-regulation offers additional support: They found that self-regulation skills developed by engaging in formative peer or self-assessment were maintained as the students transitioned to secondary education. However, Andrade et al. also noted that little research represents the interactive, reciprocal nature of co-regulation. That is, most studies focus on one-way effects of one source on the regulation of learning, such as the effects of teacher feedback on students' SRL. Studies of co-regulation as two-way, interactive, and reciprocal examine the mutual effects of assessment information on all consumers of that information.

Three of the articles in this collection reflect the one-way view of co-regulation but contribute to our understanding of co-regulation by revealing its nuanced mechanisms. Emphasizing the importance of understanding how students process and use feedback to regulate their learning, Lui and Andrade a present a model of the internal mechanisms of feedback processing with hypothesized ways in which initial motivational states drive how students respond to feedback, as well as the cognitive and affective mechanisms of assessment information processing. They also report on an empirical study (Lui and Andrade b) of how students understand and process formative feedback from their teacher and how they plan to use it to inform next steps. Yin et al. focus on learning processes and outcomes of peer and self-assessment by examining students' peer assessment performance, their performance on speaking tasks, and their perceptions of peer assessment. They conclude that the students they studied are capable, if lenient, peer raters, and ready for peer learning.

Gulikers et al. study is about teachers' conceptions of co-regulatory formative assessment. They observe that, although formative assessment is often intended "to stimulate SRL and has the potential to incite co-regulatory activities that foster students' development of self-regulatory skills, not all formative assessment practices are automatically co-regulatory" (p. 3). They found that while teachers initially struggled to describe concrete student behaviors related to self- or co-regulated learning in the context of formative assessment, professional development led to the identification of a variety of concrete student activities, such as setting new learning goals, as well as teacher behaviors that can elicit regulatory student behavior in the classroom, e.g., modeling how to give feedback on a peer's work.

Two studies in the collection (both qualitative, interestingly) focus on "bidirectional, mutually supportive" (Braund et al., p. 1) co-regulation. Braund et al. explored the relationship between formative assessment and co-regulation in Kindergarten classrooms and found that shared purposes between formative assessment and co-regulation resulted in student-centered learning, encouraging agentic behaviors, and scaffolding student thinking. Their findings suggest that student agency is the bridge between classroom assessment and co-regulation. At the university level, Bernard and Kermarrec's qualitative study identifies self-, co-, and socially shared regulatory processes that occurred in oral English as a Foreign Language task. They employed peer assessment using an assessment form paired with video feedback. The results indicate that structuring cooperative regulatory behaviors in that way enabled co- and socially-regulated learning. They also found that psychological safety was important for the development of regulated learning.

Taken together, the eight articles collected for this Research Topic reveal how formative classroom assessment can enable and promote the regulation of learning by teachers, students, instructional materials, and evaluative tools in a variety of contexts. It is our hope that the research reported here informs and inspires new studies of the mechanisms and outcomes of two-way, mutually supportive co-regulation of learning *via* assessment.

Author contributions

Both authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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