

Bridging classroom assessment and self-regulated learning

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Bridging classroom assessment and self-regulated learning

Over the past few decades, educational research has made considerable progress in describing activities that promote more effective student learning. Two fields of research that have made significant contributions to this progress have been *self-regulated learning (SRL)* (Panadero, 2017; Schunk & Greene, 2018a) and educational assessment (Brown, 2018; Wiliam, 2017), more specifically *formative assessment* (Black & Wiliam, 1998; Wiliam, 2011). However, fewer researchers have tried to combine theories from these two fields of research or have grounded their empirical work in both camps (for a review see; Panadero et al., 2018). In line with this incipient line of research, we believe the combination of these two fields holds significant potential to help us understand how to better tailor instructional practices to increase students' learning, both with respect to cognitive and non-cognitive learning outcomes.

Our idea of organising this special issue comes from our experience working within both areas of research over the last decades. During this time, there have been several contributions that have made connections between self-regulated learning and various forms of student assessment (e.g., Allal, 2010; Allal & Lopez, 2005; Andrade & Brookhart, 2016; Brown & Harris, 2013; Butler & Winne, 1995; Nicol & MacFarlane-Dick, 2006; Panadero et al., 2018).

Building on this work, we believe that these two fields of research will benefit significantly from being even more connected, and to our knowledge, this is the first special issue on this topic. In this special issue, we publish empirical studies that have integrated self-regulation as part of formative assessment practices, and theoretical concept papers discussing the links between *formative assessment* or *assessment for learning practices (AfL)* and *self-regulation practices* in the classroom. We acknowledge it is a challenging task, partly due to the fact that the history of formative assessment

research has demonstrated less clarity in the use of assessment concepts (Baird et al., 2014; Bennet, 2011; Wiliam, 2011), and self-regulation is a concept with a variety of models and traditions (Boekaerts, 1996, 1997; Brandmo & Berger, 2013; Efklides, 2011; Zimmerman, 1989, 2000; Pintrich, 2000; Winne, 1996; Winne & Hadwin, 1998). Therefore, in the next two sections, we will present an overview of central concepts and perspectives on formative assessment, assessment for learning and self-regulation, including historical developments and recent initiatives.

Formative assessment and assessment for learning

Classroom assessment has been one of the most important research areas in educational literature for decades (Andrade & Cizek, 2010; Biggs, 1998; Boud, 1995; Dwyer, 1998; Lipnevich & Smith, 2018; McMillan, 2013; Hopfenbeck, 2018; Phye, 1997; Sadler, 1989, 2010; Brown, 2018). Natriello (1987) published a model summarising how an evaluation in eight phases could describe teachers' work on assessment through establishing the purpose of the evaluation, assigning tasks to students, setting criteria for student performance, setting standards on student performance, sample information on student performance, appraising student performance, providing feedback to student performance and monitoring outcomes of the evaluation of students. Although the word 'evaluation' was used often, the phases clearly demonstrated how it is related to assessment *for* learning, with only the last phase being the assessment *of* learning.

In another review of classroom-based assessment practices, Crooks (1988) concluded that too much emphasis has been placed on the grading function of assessment, or 'evaluation' as he wrote, and too little focus has been on how to assist students to learn. In other words, much of the early work on evaluation and assessment had focused upon the summative assessment, while formative assessment had been neglected. Additionally,

Crooks mentioned self-regulated learning twice, even if they were only very initial connections (Panadero et al., 2018).

A third and key review for the formative assessment field is Black and Wiliam (1998). This publication is for many considered the inception of the formative assessment field and it has at the moment over 10,000 citations. The authors' aim was to follow up on the just mentioned work by Natriello (1987) and Crooks (1988) exploring what was the accumulated evidence in support of classroom assessment practices that have positive effects on learning. For that, 'they conducted an extensive review of 76 journals from 1987 to 1997 in order to locate relevant publications. Finally, they included 250 articles finding the effects of effective classroom assessment practices on student achievement' (Panadero et al., 2018, p. 18). They delivered a roadmap of what was known at that time and, most importantly, set the foundations for the research that has been conducted in the last two decades. Though the publication has received critiques for its methodology (Bennet, 2011; Dunn & Mulvenon, 2009), its impact and vision are undeniable. One crucial aspect for our special issue is its connection with self-regulated learning: 'SRL does not figure largely in the review; however, it was mentioned several times, especially in relationship to students' self-assessment' (Panadero et al., 2018, p. 18).

The work of the Assessment Reform Group (ARG) in the UK has also been of importance as they early published principles for assessment for learning, emphasising the need for sharing learning goals with pupils, including peer- and self-assessment, providing feedback pupils can use for their next steps in their learning processes and facilitating a learning environment where both students and teachers can review, reflect and act upon assessment data (Broadfoot et al., 1999). The group preferred the term 'assessment for learning', as they found the term 'formative assessment' less helpful: The term 'formative' itself is open to a variety of interpretations and often means no more than that assessment

is carried out frequently and is planned at the same time as teaching. Such assessment does not necessarily have all the characteristics just identified as helping learning. It may be formative in helping the teacher to identify areas where more explanation or practice is needed. But for the pupils, the marks or remarks on their work may tell them about their success or failure but not about how to make progress towards further learning... (Broadfoot et al., 1999, p. 7)

The UK-based researchers in the ARG stressed the need to have a balanced approach where teachers used more time to look into how students learn, how to motivate and engage students in their own learning process and how they could use assessment practices which would provide information on students' understanding, and adapt teaching instructions based upon collected information. They provided the widely cited definition of assessment for learning as,

‘the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there’. (Broadfoot et al., 2002, pp. 2–3)

The past 10 years the field of formative assessment has increased its influence in education (Andrade & Cizek, 2010; Baird et al., 2014; Hopfenbeck & Stobart, 2015; Wiliam, 2017), with researchers investigating the relationship between summative and formative assessment and its relation to learning (Harlen et al., 2002; Harlen & James, 1997; Baird et al., 2017). Later reviews and research studies have focused upon the concepts around formative assessment and assessment for learning (Swaffield, 2011; Wiliam, 2011), evidence for its impact on achievement (Black & Wiliam, 1998; Hattie, 2009; Wiliam et al., 2004) and critiques of its effect and use of effect sizes (Bennet, 2011). In his paper, *What is assessment for learning?*, Wiliam (2011) outlines the historical development of the terms, different uses of concepts like assessment and evaluation dependent upon different contexts particularly

with respect to the US and UK, as well as suggesting research on assessment for learning should be integrated with more fundamental research on a variety of fields including self-regulation:

While there remains much more work to be done to integrate research on assessment for learning with more fundamental research on instructional design, feedback, *self-regulated learning*, and motivation, there is now a strong body of theoretical and empirical work that suggests that integrating assessment with instruction may well have unprecedented power to increase student engagement and to improve learning outcome. (Wiliam, 2011: 13)

Despite the significant amount of discussion about whether it is better to use the term ‘assessment for learning’ or ‘formative assessment’, in this special issue, the discussion is not specifically on this topic, but rather on how formative assessment and assessment for learning practices are related to self-regulation. The different publications in this special issue use the term the authors consider appropriate.

Finally, the last ten years, we have seen researchers starting to grasp with the mentioned challenges above, and the current issue showcases some of the work, both theoretically and empirically. But first, we outline the concept of self-regulation and its historical development.

Self-regulated learning

Self-regulated learning (SRL) can be described as the process where the learner activates and sustains their cognition, motivation, behaviours and feelings towards the attainment of a learning goal (Schunk & Green, 2018b). In other words, SRL is about students approaching academic tasks in a planned way, while adapting their learning activities/ performance to the context and task in order to achieve progress towards the

learning goal. Moreover, SRL interventions have shown to have a positive effect on students' achievement (Dignath et al., 2008; Jansen et al., 2019).

The roots of SRL can be traced back to research with various foci conducted during the 1960s, 1970s and 1980s (Zimmerman & Schunk, 2011). This included research on students' motivation and cognitive processes as well as research on social, behavioural and developmental issues related to students' learning and regulation. According to Zimmerman and Schunk (2011; see also Zimmerman, 2008, 2013), two events were particularly important in defining SRL as a research area; two symposia held at the annual meeting of the American Educational Research Association (AERA) in 1986 and 1990, which brought together scholars with slightly different perspectives and research-foci to discuss issues related to the self-regulation of learning. These events, which were followed by special issues in *Contemporary Educational Psychology* (1986) and *Educational Psychologist* (1990), respectively, were according to Zimmerman & Schunk important in establishing an inclusive definition: '... the degree to which students are metacognitively, motivationally, and behaviorally active participants in their own learning process' (Zimmerman & Schunk, 2011, p. 4).

During the 1990s, SRL received increased research attention from numerous researchers and many theoretical models of SRL were developed (Boekaerts et al., 2000; Hacker et al., 1998; Schraw & Impara, 2000; see also Puustinen & Pulkkinen, 2001; Panadero, 2017 for reviews). Several of those models that became most prominent are inspired by Bandura's social cognitive theory (Bandura, 1986), viewing self-regulation as an interaction between personal (e.g., cognition and affect), behavioural and environmental (e.g., social influences from parents, peers and teachers) processes (e.g., Pintrich's model, Pintrich, 2000, and Zimmerman's model; Zimmerman, 2000). In this perspective, human agency, goals, motivation and affective processes receive much attention, and self-regulation is viewed as individual activities, though affected by contextual variables (Bandura, 1986; Usher & Schunk, 2018; Zimmerman, 2000). However,

sociocultural or situated perspectives on students' regulation of learning (Brown, 1987; Volet et al., 2009; see also discussion by Allal, this issue) also exist. Such a perspective has been further developed by Hadwin et al. (2011), who distinguishes between three modes of regulation of learning: self-regulation, co-regulation and socially shared regulation, and where the latter two can be designated as social forms of regulation. Co-regulation is described as a process in which the social environment supports the emergence of regulation, while socially shared regulation is described as a reactive, independent and transactional process in which a group negotiates agreement related to goals, plans, monitoring and evaluation of learning (Hadwin, 2018). We have particularly mentioned these perspectives because they are used as a theoretical fundament in several of the articles, and furthermore, they are combined. We further suggest these perspectives could be helpful to achieve the goal of *peer assessment*, an important part of the assessment for learning practices and support students to act upon the feedback they receive from their teacher and peers (Kleij & Adie, 2020; Hopfenbeck, 2020).

Three reasons why classroom assessment and self-regulated learning should be further linked

We suggest that there are several reasons why the research area of classroom assessment and SRL should be further connected. First, the fields of assessment and self-regulated learning discuss issues that concern connected phenomenon though they are informed from different theoretical perspectives and conceptualised differently (also see Panadero et al., 2018). One example is *standards of learning and outcome* which are important for assessing whether the learning goal is reached or not. From the SRL perspective, this type of standard is internal/personal and related to internal feedback of whether a chosen strategy is beneficial (concerns progress) and when the learning goal is reached (Pintrich, 2000). Internal and personal standards are not necessarily independent of external feedback and standards: From an assessment perspective, this type of standard is external/ environmental

and related external feedback of criteria for success (Black & Wiliam, 2009). Consequently, one of the intentions with the formative assessment is to internalise external/environmental standards, so they become internal/personal and available for self-regulated learning. Another example is *student activation*. Self-regulated learning presupposes that the learner is an active, constructive, meaning maker in his/her own learning process (Pintrich, 2000). In the assessment literature, a parallel concept is ‘activating students as owner of their own learning’ (Black & Wiliam, 2009, p. 8). A third example is related to the concept of *learning intention* in the assessment literature (Black & Wiliam, 2009), which can be considered as parallel to value components in the motivation and self-regulated learning literature (Pintrich, 2000; Wigfield et al., 2011).

A second reason for why these research areas should be further connected is that they explore similar constructs from different traditions and methodologies and a shared vision will strengthen our interventions (Allal & Lopez, 2005; Panadero & Alonso-Tapia, 2013). Based on different disciplines of psychology, the research area of self-regulated learning has been strong on basic research, theory development and research designs, which is illustrated by the many models and detailed descriptions of various processes (e.g., cognitive, affective and behavioural). Furthermore, over the last two decades, there has been an increased focus on development and testing of various interventions (e.g., Graham et al., 2013; see also Perry et al., this issue), which certainly is a strength of the field. The research area of formative assessment, on the other hand, is more closely related to the classroom, teachers, practice and the teaching subjects (Crooks, 1988; Dwyer, 2008). Moreover, the AfL field has a stronger tradition historically for interventions where researchers and teachers have collaborated on the implementation of new practices (Hopfenbeck & Stobart, 2015) and the development of teacher networks as a resource (Wiliam, 2011). Consequently, from our perspective, it appears that the two research areas possess different qualities, which is natural, given their

origin and history. Moreover, we believe that a closer connection and collaboration across the research areas may generate synergies beneficial for students' learning.

The third and last reason we want to highlight is partly linked to the previous argument and concerns implementation into regular practice. A key component for high-quality teaching practice is teachers' professional knowledge (Darling-Hammond et al., 2017). According to results from Teaching and Learning International Survey (TALIS), in the period between 2013 and 2018, there was an overall increase in the proportion of teachers who report that they frequently use formative assessment practices (OECD, 2019). However, in TALIS 2018 observing students when working on a particular task and providing immediate feedback was the most popular feedback method while letting students evaluate their own progress, known as self-assessment in formative assessment practices, was least popular. There was also a relatively low proportion of teachers (approx. 40%) who reported that they were using teaching methods related to cognitive activation, which includes teaching approaches related to self-regulated learning (OECD, 2019). In general, studies have shown that personal factors like attitudes, learning beliefs and teacher self-efficacy are more important for the implementation of SRL-promoting practices than contextual factors (De Smul et al., 2019; Steinbach & Stoeger, 2016). Though some research suggests that teachers may lack sufficient knowledge to implement good practices (Dignath-van Ewijk & Van der Werf, 2012; Perry et al., 2007), the research evidence is still weak, simply because few studies are measuring teacher knowledge and the need for more empirical large-scale studies is still evident (Hopfenbeck & Stobart, 2015). Considering what we currently know from previous studies, collaboration between school leaders, teachers and researchers holds promises of practices which could benefit students learning and create sustainable practices across schools and contexts. In the next section, we will present papers that can support the design and planning of such new studies.

Introducing the articles in this special issue

The first paper of this special issue, Allal (this issue) is a theoretical contribution written by one of the earliest scholars exploring the intersection of SRL and formative assessment. For example, Allal and Lopez's study (2005) was the first publication translating the French literature conceptualisation that classroom assessment is a mean for regulation. In her own model, she uses more blurred lines distinctions among types of regulation as she claims it has done in the English-speaking community; though she proposes three modes of regulation: retroactive, proactive and interactive. Additionally, her framework is 'an overarching construct that integrates the social and the individual planes of regulation in classroom settings' with three sources of regulation: the structure of the teaching/learning situation, the teacher's interventions and interactions with students and the interactions between students. Her contribution to the special issue is capital for two main reasons. First, it anchors historically the intersection of classroom assessment and regulation of learning and, by providing a different perspective of the evolution of the field from the French-speaking research community, it offers insights of aspects the English-based community might need to reconceptualise models. Secondly, her personal co-regulation in classroom setting model is comprehensive and focuses on the pedagogy and the classroom environment, more than creating constructs to differentiate among different types of regulation (e.g., personal vs. co-regulation vs. socially shared). In that sense, her view can be even refreshing.

In the second paper, Andrade & Brookhart (this issue) offer a timely overview of the classroom assessment literature emphasising the recent development in research around students' role in assessment and learning, and the complex interactions between teachers, students and the learning context. Drawing upon a version of Pintrich and Zusho (2002) theory of self-regulation phases, expanded to include co-regulation of learning, the authors demonstrate how classroom assessment is related to all aspects of the regulation of learning.

They also discuss how practices of formative assessment, is well aligned with the four phases of self-regulation, (1) forethought (planning and activation), (2) monitoring, (3) control and (4) reaction and reflection. The authors also provide a detailed elaboration of each of the phases, including literature from both the field of self-regulation theory and formative and summative assessment studies. We agree with the authors' their overview should serve as a starting point for future studies of classroom assessment which aims to integrate self-regulation as part of the design, as the article clearly demonstrates how these two fields can mutually benefit each other.

The third article by Chen and Bonner (this issue) outlines a conceptual framework (CA:SRL) that describes how various forms of assessment and SRL and can be integrated during four stages of an instructional circle. The authors see classroom assessment as a continuous and iterative process, but the assessment forms and methods, and the student–teacher interactions are differentiated within each stage in a way suitable to stimulate the development of SRL-knowledge and skills. Their work is important because it combines and integrates processes of teaching and learning that are rarely discussed together, building upon scholars in SRL such as Pintrich and Winne and in particular models developed by Zimmerman, and formative assessment researchers such as Shute, Hattie and Timperley, Gipps, Black and Wiliam.

In the fourth paper, DeLuca et al. (this issue) explore SRL and assessment practices in kindergarten, an educational level that needs more research in both fields. Twenty teachers were interviewed and observed to investigate their conceptions of SRL and the type of assessment practices they implemented. Their results show that most of their participants hold simplistic views on SRL with only a few having more comprehensive conceptualisations. Indeed, some of the participants did not share their assessment of the students' skills with them, which might have benefited the learners, while others did consider the students as

agents and offered the students more active roles on their own learning processes. While exploring the assessment practices and the reasons behind them, the authors also found different ends of a continuum: some teachers were using more formative assessment practices than others. Two lines of future work can be extracted from this study. First, we need to make a bigger emphasis on how to support teachers to better develop their knowledge about SRL and formative assessment practices. While we have been claiming this is important for decades, we seem to still be falling behind

In the fifth paper, Perry and colleagues (this issue) present results from longitudinal mixed method study of grade 3 classrooms where researchers and teachers' have been collaborating on the design and implementation of assessments for learning practices to support self-regulated learning during classroom writing activities. Data included detailed descriptions of classroom emphasis on SRL, students' self-assessments of SRL, data related to students' writing processes and products. Initially in the analyses, the classrooms were enrolled in groups with high and low emphasis on SRL, and the results show that classroom environments that give more opportunities for SRL are related do more sophisticated self-assessment, higher scores on motivation and SRL, and better quality on writing products. Beside its results, the study is one of the few studies that outlines how the researcher and teachers can collaborate to enhance students' self-regulatory skills through formative assessment practices. The classification system of classrooms they present does also give a very absorbable insight of how instructional practices can be organised to support students' learning and SRL. We would encourage researchers to further seek opportunities to replicate the current and similar studies, where researchers and teachers exchange knowledge and collaborate on best practices in the classroom.

In the sixth paper, Baas et al.'s study (this issue) investigates the effects of an assessment for learning (AfL) intervention, with portfolios on the students' motivation,

using the self-determination theory framework. In addition, they worked with elementary education students, which is not the most usual population of this type of study, collecting large sample sizes of self-report and exploring two different explanatory models. The authors did not find their expected influence of the portfolios on the students' motivation (to increase it) but instead demonstrated that the relationship is mediated by the students' perceptions of AfL. This result was probably a more reasonable expectation to hope for due to the lack of control in how the different schools were implementing the portfolios or even whether the portfolio was being used for AfL aims. The study, nevertheless, opens venues in aspects that future researchers in the intersection should pay careful attention to. The study also is a reminder of having fidelity measures included, to make sure we know more about how practices are actually implemented in the classrooms.

The final paper in this issue is a commentary by Jeff Greene (2020, this issue) who is an expert in the field of regulation of learning to which he has contributed with key publications (e.g., Schunk & Greene, 2018a). In his thoughtful commentary he explores connections among the articles in different four key areas: (1) Conceptualisations of SRL and Formative Assessment, (2) The Role of Teachers' SRL in Formative Assessment, (3) Proactive Recipience in SRL and Formative Assessment, and (4) SRL as a Curricular Outcome. Our belief is that this commentary helps to bridge classroom assessment and self-regulated learning offering essential recommendations for the future research.

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