

# Chapter 2

## Assessment as a Generative Dance

### Connecting Teaching, Learning and Curriculum

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**Abstract** This chapter focuses on learning and assessment as social and cultural practices situated within national and international policy contexts of educational change. Classroom assessment was researched using a conceptualization of knowing in action, or the ‘generative dance’. Fine-grained analyses of interactivity between students, and between teacher and student/s, and their patterns of participation in assessment and learning were conducted. The findings offer original insights into how learners draw on explicit and tacit forms of knowing in order to successfully participate in learning. Assessment is re-imagined as a dynamic space in which teachers learn about their students as they learn with their students, and where all students can be empowered to find success.

## 2.1 Introduction

Assessment for Learning (AfL) is promoted internationally as a set of strategies to enhance student learning (Black and Wiliam 1998; OECD 2005). Underpinning the promise of AfL is the assumption that when learners know what they are learning, how well they are learning it and how to improve their learning, they will develop identities as autonomous learners (Willis 2011). What is less well articulated is that learners negotiate this identity through the dynamic interactivity of the curriculum, pedagogy and assessment message systems. Understanding participant perspectives in AfL interactions is essential in supporting teachers who are seeking to develop learner agency, that is ‘the socioculturally mediated capacity to act’ (Ahern 2001, p. 114). This chapter explores how a conceptualization of assessment as a generative dance of knowing might help teachers seeking to develop opportunities to promote learner agency through AfL practices. In this conceptualization, learning, teaching and assessment are represented as cultural practices situated within social contexts,

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from which and within which learners draw upon explicit and tacit forms of knowing in order to successfully participate.

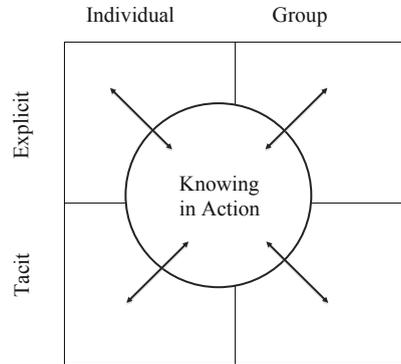
Cook and Brown's (1999) theoretical model of the generative dance of knowing was used to explain how students in one Australian school negotiated their participation in AfL practices within the relationships and practices of middle-school classrooms. When student and teacher interactions were understood as cultural practices negotiated as part of the ongoing dance between learning and its assessment, the complex connections between pedagogy, curriculum and assessment became apparent. Quality assessment practices were seen to be generative movements or routines in the dance of meaning, affording and enabling students to negotiate understanding. Students exercised agency within the moves of classroom learning to choreograph their own learning processes; importantly, appropriating AfL practices and learning in tacit and explicit ways from and with peers. Through sharing an innovative theoretical framework to re-imagine how students negotiate their participation in classroom assessment, it is our hope that we can equip educators with some alternative perspectives that can extend their pedagogical practices to help all students to move toward greater participation in their own learning.

## 2.2 Re-imagining Assessment for Learning

Quality AfL practices in many contexts have been closely aligned with curriculum outcomes. For example, the suggestion is that sharing learning intentions and success criteria from the curriculum documents with students will help students to direct their self-assessment and appreciate feedback designed to move their performance toward meeting curriculum targets (Clarke 2005; Curriculum Corporation 2010). Critical reviews of AfL practices in classrooms have highlighted concerns that when these practices become routines disconnected from the 'spirit' of AfL, students were not observed to develop the desired agency in their learning (Marshall and Drummond 2006; Mansell et al. 2009). Highly atomised curriculum goals may lead to compliance with criteria and greater rather than less dependence on the teacher (Torrance 2007; Sadler 2007). Further, in some contexts formative assessment may have become a reduced form of learning, with extra mini-summative tests being labeled formative (Stobart 2009). In critically responding to these concerns about a reduced form of AfL leading to a curriculum that constrains rather than empowers learners, the connection between AfL and pedagogy is being explored, particularly through observing assessment practices in classrooms.

In this chapter, AfL practices are valued as productive spaces for generative pedagogic and learning interactions between teachers, learners and tasks. Pedagogy is the term that describes the relationships and 'interactions between teachers, students and the learning environment and the learning tasks' (Murphy 2008, p. 35). Pedagogic practices are situated, ambiguous and shaped by the student actions as well as teacher intentions. AfL practices are re-imagined as pedagogic spaces in which learners and teachers generate both explicit and tacit ways of being and knowing.

**Fig. 2.1** Knowing as a generative dance. (Source: Cook and Brown 1999, p. 383)



### 2.3 Conceptual Framework

In a sociocultural perspective of learning (Cook and Brown 1999; Elwood 2008; Lave and Wenger 1991; Murphy 2008; Rogoff 2008) students and teachers are studied together as participants in a shared practice. Learning is understood as a negotiation of identity and participation ‘because [as] learning transforms who we are and what we can do, it is an experience of identity’ (Wenger 1998, p. 215). Curriculum, pedagogy and assessment practices can both expand or close down the possibilities of belonging within and becoming a competent and valued learner (Moss 2008). AfL practices can open up these possibilities by developing patterns that can invite learners into greater participation (Cowie 2005; Willis 2009). These patterns are situated within the broader social and cultural interactions within each classroom, so that ‘the social structure of [the] practice, its power relations and its conditions for legitimacy define possibilities for learning’ (Lave and Wenger 1991, p. 98). AfL can then be conceptualized as more than a series of techniques or strategies,; as part of a dialectical and cultural process of increasing understanding and control of the learning process by the learner—that is, exercising agency.

When learning is understood as participation rather than purely cognitive acquisition, conceptions of what counts as evidence of learning also changes. Rather than trying to see ‘inside’ a student’s head to find out what a student is thinking, teachers can note and seek to understand what students do and do not do with the opportunities and resources to which they have access. In this chapter Cook and Brown’s (1999) theory of knowing in action as a generative dance provides a theoretical framework within which to re-imagine how pedagogy, assessment and curriculum enable and constrain learning interactions, and also how learning might be made ‘visible’ in classroom settings.

Critical to Cook and Brown’s theory is that the tacit/explicit dimension and the individual/group dimension intersect to yield four ways of knowing (see Fig. 2.1) that are each distinct, with none subordinate to or made up of any of the others. Cook and Brown (1999, p. 381) note that traditionally, ‘the epistemology assumed in the literature tends to privilege the individual over the group and the explicit over

the tacit'. They argue that it is the interplay between tacit and explicit, and group and individual forms of knowing that creates a dynamic and generative dance of learning, or knowing in action. In this dance, tacit or implicit knowledge and explicit knowledge play different and complementary roles, with implicit knowledge rooted in social practice and unable to be rendered explicit, and explicit knowledge a series of abstractions representing the culturally situated body of knowledge (Brown and Duguid 1996). Whether at the edge of the dance floor or in the center spotlight, through participation learners appropriate these discourses of the learning community. Murphy et al. (2008) identified this appropriation as the intention behind AfL, describing it as a discourse about learning in which 'learners, and their teachers and mentors, engage routinely in negotiating future learning' (p. 100). Practices congruent with the spirit of AfL can thus create spaces for dialogue and agency. These concepts informed the data collection and analytical approach.

To understand the interactions from both the teacher's and the student's points of view, data was collected through qualitative case studies. One case study, the focus of this chapter, featured a middle-school teacher and his class of Year 9 science students in a regional school in Queensland, Australia. The teacher participated with the researcher in a cooperative inquiry (Reason 2003), to investigate the research question, 'What are the qualities of the teacher–student relationship that support student learning autonomy in an AfL context?' Data comprised 12 hours of field notes and video recordings of classroom interactions and individual and focus group interviews with teacher and students, collected throughout the year. Discussions with students were prompted by video-stimulated recall. The Year 9 science students were also invited to draw representations of themselves as science learners, and to interpret their drawings for the researcher.

Analysis began with a close look at the data that were collected from field notes and video recordings. Themes and patterns of interactions were identified through thematic coding using a constant comparative approach (Charmaz 2006). Inductive coding, categorizing and progressive refocusing occurred through the analytical lens of assessment and sociocultural theoretical literature (Simons 2009). Pseudonyms are used throughout the descriptive case study report (Willis 2011).

## 2.4 The Dance of Knowing in a Year 9 Science Classroom

In this Year 9 science classroom, AfL practices were strongly connected to the curriculum and the teachers' pedagogical approach. Year 9 science was a compulsory subject for the students who were turning age 14 that year. Adam Turner, their science teacher, had 30 years of teaching science in various schools. Adam valued AfL practices as an opportunity for students to self-assess their understanding, and then responsively to adjust their performance. His planned AfL practices included sharing goals of learning, checking understanding through strategic questioning and storytelling routines that involved either him or his students checking their understanding by applying the scientific concept to an everyday situation. He also planned for regular, self-assessment quick quizzes and verbal feedback from the teacher and peers

during practical experiments. These AfL practices were integrated into his pedagogy and were not foregrounded as a separate activity. Adam did not claim to be an expert in AfL practices, but valued the opportunity to inquire into his own practice.

Adam created a sense of belonging to a science learning community of practice through his enthusiasm for science, his calm and witty approach and by making the class a safe place in which to experiment with new ideas. Yet, for this highly motivated, experienced science teacher, AfL did not seem to immediately fulfill the promise of significantly increased learner agency. While it was seen that many of his students did appropriate the routines and discourse of school science learning as represented by their teacher, at the end of the year, Adam noted that the students were ‘not anywhere close’ to his goal. He pondered, ‘if they know what is expected, why aren’t they doing it more for themselves?’ (Adam, final teacher interview). He was puzzled, as he had hoped that students would no longer need him to guide the learning once he had shared the routines for science learning and investigations with his students many times. While students were showing some of the characteristics he had expected, those of asking questions and checking for understanding through experimentation and contextualized explanations, these demonstrations were occurring in small moments, and had yet to develop into a fluent, whole-of-class, shared understanding and responsibility for learning. For Adam, this unresolved question, coming after a year of focusing on AfL practices as routines to develop learner agency, was significant. It was the beginning of his recognition that it was not enough to establish routines and provide confirmatory feedback. He began to pay attention to the way that the students participated and negotiated understanding together as a classroom community. His understanding of learning as the acquisition of science knowledge and skills was challenged and he began to shift his gaze to observe and evaluate the patterns of social participation associated with knowing in action. This became his planned focus for the year following data collection.

### ***2.4.1 Learning Together***

Students experienced the rhythms and patterns of the AfL routines and engaged in the dance of learning in different ways, which in turn shaped the patterns of participation of the class. Student understandings of these patterns, both tacit and explicit, were sought through their drawings. At mid-year, Adam’s students were asked to draw pictures of themselves as science learners, a form of reflective self-assessment (Tucker-Raymond et al. 2007). Then, in individual interviews, students were asked to interpret these pictures as representations of their learner identity. Cook and Brown’s (1999) model was used to classify these representations. Despite the limitation of students only being invited to represent themselves in one way as science learners, the illustrations were valuable in that they revealed the variety of learner understandings and preferences in the one classroom.

**Fig. 2.2** Cameron, preferring opportunities for individual, explicit learning



### 2.4.2 *Dancing Center Stage*

When asked to draw himself as a Year 9 science learner, Cameron drew himself seated at a single desk with an open book, in which he had recorded the class notes and was writing a report on his experiments (see Fig. 2.2). Through this self-portrait Cameron indicated that he valued Adam's explicit help and feedback as a form of knowing. In his drawing Cameron is raising his hand to signal to Adam that he would like clarification and help.

Raising a hand is an accepted social tool that students use to attract a teacher's attention. This, coupled with Cameron's observed regular habit of seating himself at the front of the classroom, suggests that he not only understood 'the rules of the game' for how to get help but also that he appreciated the strategic value in being seated close to the teacher. Informal, opportunistic and semi-private conversations with Adam often took place with those seated at the front of the class. Cameron was frequently observed asking public and private questions of Adam, and Adam's replies would build on the question to extend the learning. While the raised hand was an accepted signal requesting permission to speak in the classroom discourse, Cameron sometimes would call out answers or ask a question during a whole-class discussion without raising his hand and without being censured by Adam. The implication here was that Adam recognized that Cameron's contributions would often contribute to the class's collective learning in some way. The boys seated at Cameron's table group often looked to him and his work for ideas and affirmation—sometimes openly, sometimes surreptitiously. At times, when the table groups were working on experiments, other students would visit Cameron's group to seek advice and compare notes. If there was uncertainty, Cameron would show Adam his book and ask for feedback. Another example of how Cameron was able to meet his own needs, and also meet the needs of others who were not as fluent or confident in the classroom

cultural norms, was when Cameron came to the front of the classroom, took the whiteboard pen and drew a diagram to illustrate an explanation. This action was a direct appropriation of Adam's way of providing a science explanation, something that Cameron had learned through tacit rather than explicit instruction. Thus, there was ample evidence that Cameron could read the social signals of the classroom and knew how and when to interact in both group and whole-class activities without disrupting the flow of the lesson. He strategically used the established class AfL routines as resources to evaluate and progress his own learning, but his participation also played a significant role in encouraging the participation and supporting the learning of others, as illustrated next.

In one observed lesson halfway through the year, Adam told the class they needed to design their own experiment. He also explained that to help them learn the scientific skill of asking questions he would answer questions, rather than give specific instructions. Students were, at first, uncertain about this new lesson routine and began to treat it like a test, silently copying the aim of the experiment from the whiteboard. When some girls started talking quietly, others asked them to 'Sssshhh'. It was Cameron who asked the first question about an independent variable. Adam then told Lachlan to stop whistling by saying, 'Stop enjoying yourself.' Cameron joined in with, 'Yeah, it is school.' It was after this tension-breaking, good-natured exchange that other students began asking questions. In changing his practice, Adam's intention had been to provide students with an opportunity to independently use some of the scientific routines they had learned, as a way to self-assess their mastery of these skills. It was not until Cameron acted as a broker, helping to make explicit some of the tacit rules of this new kind of activity, that more students were confident enough to participate. AfL routines had created a fluency of the expected moves within the classroom and the new pattern of participation needed some of the more centrally participating students like Cameron to take the lead and show how the new moves could be merged with past patterns of participation. While Cameron indicated in his drawing that he valued explicit forms of knowing, by being a central participant in negotiation of new norms within the classroom community of practice, he was also learning from, and contributing toward, new tacit cultural norms.

Cameron was a typical 'target student' (Tobin and Gallagher 1987) as he was male and seated within close proximity to the front to gain eye contact with the teacher and access informal opportunities for interaction. He demonstrated a high level of congruence with the teacher's expectations for an autonomous science learner, by being someone who could ask questions and confidently contribute. He responded frequently to teacher questions and his answers shaped the way the classroom curriculum evolved through their influence on the teacher's ongoing evaluation of what students understood and when they needed more help. When learning is viewed as an individual activity, this dominance of one student might be seen as inequitable and unfair to other students. However, when considered from the perspective of the generative dance, Cameron's participation can be understood as a contribution to the knowledge-making activities of the whole class. Cameron's asking and answering behaviors shaped and, in some cases, opened up new patterns of interaction for the class as a whole, including how other students were able to go about accessing help.



Fig. 2.3 Emma preferring group tacit learning

When Adam engaged with Cameron, he also engaged with an informal network of his peers, and there was an implicit acknowledgement that this was creating a collective agency. This perspective can be an enabling factor as teachers can see themselves as working in partnership with students in the generative dance of knowing.

### 2.4.3 *Dancing in the Crowd*

While Cameron felt confident to let the teacher know when he did not understand something, as indicated in the speech bubble in his drawing, ‘I need some help’, other students indicated that they were not as confident in asking questions or asking for help. Nevertheless, these students managed their interactions and demonstrated agency through their decisions about how and when to participate. For instance, Shari deliberately sat at the back as she recognized that Adam asked questions most frequently of those students who sat at the front. She wanted to avoid answering questions, and in this way managed to limit her interactions with the teacher. Emma also positioned herself strategically within the class to adjust the quality of her participation, sharing, ‘After I got my test results back, I kind of moved up the front and listened more. I sat more on the side of Mr Turner so it made me do the right thing more and then on my second science exam I got an A—.’ These students demonstrated their agency by choosing when to engage in the explicit group learning through public questions and answers and when to engage in individual learning. While Emma’s comment indicated an individual approach to her learning, Emma’s self-portrait in Fig. 2.3 indicated a strong preference for group ways of knowing. She confirmed this preference in her explanation about her drawing, saying that she felt she learned best with her peers as part of group work.

Emma sat at the table group that was on the opposite side of the room to Cameron, towards the middle of the room. The students at her table were observed to talk

quietly together and to pass each other scissors and rulers and other equipment. Emma explained how her table group worked:

We all work together, and we all get along, so that is good. We all kind of take turns to sit there. It is a friendship group, like we are friends outside of class too. It depends on who gets into class first but me, M and J always sit there and the other person swaps. We've got happy faces because we like science. I drew the writing part because at the start of the lesson we always write and then we go off and have fun.

In this comment Emma highlighted the importance of sitting with friends to enhance her learning. This observation and her portrait showed that the members of this group were comfortable learning together, and trusted one another. In her drawing, Emma represented the learning environment as one in which the students negotiated and pursued multiple agendas, managing relationships with peers and learning relationships at the same time.

Knowing how to enact the curriculum, and evaluating what quality of work was expected, was informed by tacit group ways of working. With her friends at their table group, Emma had ample opportunity to observe the quality of work by her peers. She commented on the value of evaluating the quality of her work against the standard of work in the group saying, 'When we work in groups, we all like have the same stuff and we all work together, and we see other people's work and so we are like "we should do like this person's"'. In this comment Emma signals that this is a critical, comparative process of negotiating to a shared understanding of quality. Learning in a group of friends provided Emma with a socially safe way to participate and negotiate meaning in curriculum and assessment activities. Even though Emma was respected as a science expert by her peers, and was often consulted by them, she needed to feel safe before she took the risk of answering a question in front of the class. She shared that 'I'm like scared I will get it wrong and everyone expects me to get it right. I could write it but I can't speak it.' Writing her answer allowed her to check her understanding privately, whereas speaking made her thinking more public and she believed her identity as a competent student might be at risk. Emma was often observed talking quietly with her peers or answering their questions, to check that they all had a similar understanding of the task or the concept prior to offering a suggestion in the whole-class discussion. While Emma's actions differed from Cameron's, both of these learners were exercising agency. They each used the resources within the community of practice to evaluate their understanding and negotiate improved understanding, as well as to shape the understandings of peers, with Emma more often observed using tacit group resources.

In one lesson, Adam was demonstrating equipment that was to be used in an electricity experiment when he indicated that he was not happy with the level of noise in the classroom. He called for attention from the class, saying, 'We are dealing with two dangerous things this afternoon, electricity and ignorance. You will break equipment if you don't know what you are doing. Ready? So why aren't you looking this way?' He then asked students to check their understanding by asking him questions. There was tension in the classroom as students looked at each other. Emma quickly wrote a question to ask and passed the note to Fiona, who put her hand

up and asked the question. When Adam asked Fiona a follow-up question, she was not able to answer; instead, she quickly looked at Emma. Adam expressed his frustration to the class that they were not all asking questions, restating that asking questions was an important foundational skill in scientific inquiry. When Emma then put up her hand to ask a question, she got a nod from Adam, who turned to write the question on the whiteboard. Peter, a student seated across the room, gave Emma a thumbs-up signal and a smile. Peter recognized that volunteering to ask a question on behalf of the class to break the tension had been a difficult but important role for Emma to play. What is interesting in this sequence is that both Adam and a fellow student provided Emma with acknowledgement on the value of her contribution in the questioning routine, suggesting both were well aware of the importance of maintaining a positive social dynamic for collective learning. Questioning was an AfL routine frequently used by Adam, yet the nature of effective and valued participation in a questioning interaction could not be taken for granted. It involved complex accommodating and reciprocating moves, particularly when the fluency of an established routine was disrupted.

#### ***2.4.4 Choreography and Improvisation***

As shown in this case study, routines were choreographed steps in the generative dance of AfL. Adam anticipated that these steps would develop learner agency. They were designed to provide the patterns for interactions, supporting the teacher and students to become fluent and confident in their participation in the collective construction of knowledge. Within sociocultural theories, reifications or routines are valued as a way to scaffold a novice's development towards expertise. However, students often made their own arrangements and improvised within the routines, as is evident in the following conversation between students about how they engaged in the quick quizzes that featured at the start of each lesson:

Steve said: 'It is good [the quiz] because it refreshes your memory from last week.'  
 Michelle nodded: 'Plus it shows you, if you do it properly, it shows you where you are at. I try not to look at my word page, but if I really don't know what it's about then I look at my word page . . . Sometimes I don't look at my word list on purpose. I can get it wrong and—'  
 Lachlan interrupted: '—Learn from that.'  
 Michelle finished: 'Study that.'  
 Lachlan agreed: 'You learn from your mistakes. You don't from what you get right.'  
 Zeph explained: 'That's what I do most of the time, then sometimes I'm really slack and I just turn back and look at it (laughs). That's not marked on your report card, so it's not really a bad kind of copying.'  
 I [researcher] queried: 'But Mr Turner is saying you can look at your word list.'  
 Jordan clarified: 'Yeah, but I don't look at my word list. I see that as cheating.'  
 Mid-year student focus group discussion

For Michelle and Lachlan, self-evaluation and making mistakes were valued as helpful aspects of learning from the quizzes. They were strategic in choosing whether or not to look at their books during a quick quiz, and considered making mistakes



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