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To cite this article: Eleanor Hawe & Helen Dixon (2016): Assessment for learning: a catalyst for student self-regulation, *Assessment & Evaluation in Higher Education*, DOI: [10.1080/02602938.2016.1236360](https://doi.org/10.1080/02602938.2016.1236360)

To link to this article: <http://dx.doi.org/10.1080/02602938.2016.1236360>



Published online: 25 Sep 2016.



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Assessment for learning: a catalyst for student self-regulation

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ABSTRACT

The development of students as lifelong, self-regulating learners is a valued outcome of higher education. To this end, the current project investigated how students in an undergraduate course experienced and responded to a teaching–learning environment where they were expected to take responsibility for their learning. The pedagogic environment of this course was grounded in strategies and activities associated with assessment for learning (AFL). As such, students were expected to participate in activities that provided them with opportunities to exercise control over their learning. Data gathering comprised individual semi-structured interviews and the collection of artefacts. Findings indicated goals helped students know where they were going; exemplars provided insights into what was expected and what constituted quality work; course activities elicited evidence of learning; dialogic interactions around these generated feedback about understandings and progress; the evaluation of exemplars developed evaluative knowledge, skill and expertise; peer review and feedback provided an authentic context for evaluation and monitoring of works-in-progress. It was concluded that, while each of the AFL strategies contributed to student self-regulation, the full impact of AFL as a catalyst for self-regulated learning was realised in the cumulative and recursive effect these strategies had on students' thinking, actions and feelings.

KEYWORDS

Assessment for learning; self-regulation; exemplars; dialogic feedback and peer review

Introduction

Contemporary notions of student learning in higher education reflect, more often than not, a synthesis of ideas from constructivist, socio-cognitive and situated perspectives, where learning is regarded as a process whereby individuals construct knowledge and understandings as they interact with the social environment. Accordingly, the roles of the teacher and learner have changed. Students are no longer 'the objects of their teacher's behavior [but] animators of their own effective teaching and learning processes' (James and Pedder 2006, 28). As a corollary, teachers are charged with the responsibility for creating an environment that develops students' capacity to undertake this role. In this paper, we explore how students in an undergraduate degree course experienced a teaching–learning environment where they were expected to take ownership over and responsibility for their learning. This environment was grounded in and informed by a set of strategies associated with formative assessment or assessment for learning (AFL). Our project responds to two issues identified by Black and McCormick (2010) in relation to research into teaching, learning and assessment in higher education: the need for studies to make more use of findings and theories about formative assessment (AFL) which have emerged from studies in the schooling sector; and the need for innovations to be discussed with a more explicit focus on the

pedagogical strategies that create the conditions for effective learning, in particular how these strategies help students become independent in taking responsibility for their learning.

If students are to develop the capacity to improve their learning and associated task-related work *during* learning, three concomitant conditions must be met. First, they need to possess a concept of quality (what is expected) in relation to a piece of work or task that is ‘broadly consonant with that held by the teacher’ (Sadler 2009b, 48). Second, students need sufficient evaluative knowledge and expertise so they can compare current work with what is expected or desired. Finally, they need to have a range of strategies that enable them to effect improvement and further their learning. To help students meet these conditions, teachers must have the volition and ability to share with students the goal(s) of learning along with their tacitly held evaluative and productive knowledge. Furthermore, the teaching–learning environment needs to provide opportunities for students to generate information about, monitor, regulate and attend to the quality of their work or tasks *during* production. These conditions necessitate significant changes to deeply embedded practices that characterise much of the teaching and learning in higher education (Sadler 2009b).

Assessment for learning

In recent years, there has been a growing body of scholarship in higher education regarding the positive impact of formative assessment on student learning (e.g. Nicol and Macfarlane-Dick 2006; Carless 2007). While the terms formative assessment and AfL are often used interchangeably in this literature, the discourse of AfL focuses more explicitly on learning and the role of the learner (Klenowski 2009; Swaffield 2011). This focus is emphasised in the second-generation definition of AfL developed by a group of prominent academics at the Third International Conference on Assessment for Learning:

Assessment for learning is part of everyday practice by students, teachers and peers, that seeks, reflects upon and responds to information from dialogue, demonstration and observation in ways that enhance ongoing learning. (Klenowski 2009, 264)

In keeping with this definition and contemporary notions of learning, Pryor and Crossouard (2008) have described AfL as ‘an inter-subjective social process, situated in, and accomplished by, interactions between students and teachers’ (4). Where the terms formative assessment and AfL are used in the sections that follow, this usage reflects the second-generation definition: it is this representation of AfL that underpins the study reported in this paper. Construed in this manner, AfL is an interactive and dialogic pedagogical process that occurs as part of everyday practice. While information about student learning can be elicited through formal assessment events, evidence can also be revealed during teacher–student and student–student interactions and class activities (Klenowski 2009). AfL thus fosters the interdependence of teaching, learning and assessment, and challenges the view of assessment as a peripheral component of pedagogy (Black 2015). At its core, AfL involves the gaining of understandings from learners through a range of tasks and activities, and the formative use of this information with a view to supporting and furthering student learning (Carless 2007).

There is general agreement among members of the academy that formative assessment encompasses the following five strategies:

- promotion of student understanding about the goal(s) of learning and what constitutes expected performance;
- the engineering of effective discussion and activities, including assessment tasks that elicit evidence of learning;
- generation of feedback (external and internal) that moves learning forward;
- activation of students as learning resources for one another including peer review and feedback;
- activation of student ownership over and responsibility for their learning (James and Pedder 2006; Klenowski 2009; Wiliam 2011).

Although itemised individually, these strategies should not be seen as stand-alone entities or sequential steps. Rather, they are inter-dependent, each feeding into and from the others in an iterative manner (Hawe and Parr 2014). The full promise of AfL (Black and Wiliam 1998) can be realised if and when all strategies are incorporated within the learning–teaching programme in a manner that unequivocally places students at the centre of their learning.

Developed in the context of higher education to address ways in which assessment can more effectively focus on enhancing student learning, Carless' (2007, 2015) framework for learning-oriented assessment reflects the spirit and essence of AfL in its three core elements:

- assessment tasks that stimulate sound learning and learning practices among students;
- the active involvement of students in their learning through engagement with criteria, the recognition of quality and evaluating their own and/or peers' performance;
- feedback which is timely and forward-looking so it supports current and future learning.

Carless (2015) argues it is 'the interplay of these three elements' (6), working together as a unified whole, which creates a significant and positive impact on students' learning. By design, students are given a central role to play in their learning, as they engage with quality and develop their self-evaluative capacities through, for example, discussion around assessment criteria, the analysis and evaluation of exemplars and through engagement in peer review and feedback (Carless 2007, 2015). Students are thus provided with substantial evaluative experience. The current project investigated how a group of students in an undergraduate course perceived and responded to a teaching–learning environment where they were expected to take responsibility for and ownership over their learning. More specifically, it addressed the question 'how do students in an undergraduate course experience and respond to learning and teaching within an AfL environment?'

The research context

The study was conducted within a course in an undergraduate programme offered specifically for teachers (early childhood, primary, secondary and tertiary) upgrading their qualification from a diploma to a degree. The course, *AfL*, was taught in 2 blocks by the first author over a 12-week period. The first block culminated in a summative assessment task where students completed three short pieces of writing (500 words per piece) about 3 notions/concepts of central importance to the course. The second block concluded with students submitting for assessment a substantive essay.

The pedagogical environment of the course included a number of interactive, learning-focused activities and tasks. The twelve 150-min class sessions included discussions of set readings and responses to prompts, group brainstorming and reporting back of ideas, in-class reading and jigsawing (Johnson and Johnson 2013) of short extracts from the literature, brief quizzes and concise power point presentations and/or summaries of key ideas. These were complemented by the deliberate infusion into sessions of tasks and activities that reflected the five AfL strategies, with the lecturer taking the mantle of the AfL teacher, working alongside course participants in an interactive and dialogic manner.

The first two to three sessions of each block included an overview and informal conversation about the learning goal or 'broad horizon' (Marshall 2004) the class was working towards, alongside students' personal goals. From weeks two to six, annotated exemplars of short pieces of writing about the same and/or similar concepts to those in the first assignment, completed by teachers in previous years, were read, analysed and evaluated during class, with course members identifying what was expected and debating what constituted quality work. Students also brought their assignment-related work-in-progress to class as time was set aside in each session to develop their evaluative knowledge and productive expertise through a comparison of these works to exemplars. In addition, these works were shared with peers for the purposes of peer review and feedback. This process was repeated in the second block of the course.

Design of the study

The study was carried out over 12 weeks during an offering of the course and in the 2 weeks following the end of teaching. Eighteen teachers were enrolled in the course. Consistent with the principles of ethical research, class members were informed about the study by the second author (who was not involved in teaching the course), and they had the opportunity to read participant information sheets and ask questions prior to signing consent forms. To address issues of power and coercion, the first author who taught the class did not have any role in the recruitment of participants and did not know who consented to take part. Nine of the 18 teachers agreed to participate.

Data collection

The assembling of credible evidence, whatever its form or content, must represent the phenomenon under investigation (Ackroyd and Hughes 1992). To this end, two data collection methods were used. The first involved collection of artefacts produced during in-class activities, such as written responses following use of exemplars and peer review experiences and assignments. With the permission of the participants, the second author gathered these artefacts following class sessions. Data were also collected through individual semi-structured interviews of between 40 and 65 min with 5 of the 9 participants. Four of the teachers were unavailable due to work commitments. The interviews took place in the final two weeks of the course and the two weeks following the end of the course. As part of these interviews, respondents were asked to talk about their experience of being a learner in an AfL environment (as a course member), and how they responded to this role. Interviews were transcribed then returned to respondents for verification prior to analysis.

Data analysis

All data-sets were systematically and carefully read, and coded in a manner consistent with the constant comparative method (Strauss and Corbin 1998). In the first analytic sweep, participants' words were induced from the data (e.g. I can achieve; confronting; sit back; motivated; modify my work) and concepts from the literature applied to the data (e.g. goals; feedback; dialogue; self-monitoring) to create open codes. Open codes were then compared and organised to create key categories (axial codes). These categories were informed by the aforementioned strategies of AfL. This framework was considered an appropriate way to integrate data and theory, enabling analysis to move from description to explanation (Ezzy 2002). Axial codes were then cross-cut and linked at both a descriptive and conceptual level to identify patterns and relationships (Strauss and Corbin 1998). While the first author carried out the coding and analysis of all data, the second author coded a sample of randomly selected extracts, and data identified as 'puzzling', as a check on the trustworthiness of interpretations.

Findings

Students' experiences of and responses to teaching, learning and assessment within an AfL environment and associated links to self-regulation are presented under five headings which reflect the strategies of AfL (James and Pedder 2006; William 2011; Howe and Parr 2014). Data from interviews and reflective statements are coded using pseudonyms (e.g. Jenny, Trish); data from anonymised artefacts are coded according to the ordinal number of the artefact.

Promotion of student understanding about the goal(s) of learning and what constitutes expected task related performance

Course members made reference to goals from two sources – personally generated goals and pre-determined course goals. The personal goals mentioned most often were to 'finish my Bachelor of Education'

(Heather) and to 'complet[e] ... another paper towards a BEd' (Jenny). For Heather, this long-term goal gave her the 'motivation to sustain learning and achievement'. Some also had personal goals in the form of course marks or grades. Trish for instance was aiming to 'get a B or B plus'. In contrast, Justine's goal at the start of the course was to complete it [the course], nothing more, nothing less, just another paper on the way to completing my degree', and Margie's initial goal was 'just to gain high enough marks to pass the paper'. Reference was also made to the setting of short-term goals that addressed aspects of the environment and behaviour teachers felt they needed to control and manage, so course activities and assignments could be completed:

making the effort to work through drafts [of assignment one] in stages meant I had short-term goals to work towards and I was able to take action to make the workload manageable and meet deadlines with little difficulty. (Jenny)

Course members were also aware of another set of goals, 'the goals of learning [as] stated in the course booklets' (Heather). Class sessions where the purpose of activities was discussed with reference to learning developed course members' awareness of course learning outcomes or goals:

class, group and pair discussion about readings and power point presentations led us to ... understand what our goal of learning was. (Justine)

As the course proceeded Margie found she no longer wanted 'to just get the grade, I actually want to understand it [course content]'. Understanding the course learning goal(s) in association with class activities and tasks heightened her awareness of and commitment to learning. Ken also observed that his 'understanding and ownership [of the course goals] developed' over time.

Promoting student understanding about the nature of the two assignments, what constituted expected performance and quality work was addressed through reading and discussion around the assignment requirements and criteria for marking, alongside the dialogic analysis and evaluation of exemplars. These exemplars were authentic anonymised pieces of work from students who had completed the course in previous years. For each of the concepts that constituted the first assignment, a single exemplar was initially analysed and evaluated by the class as a whole, under the guidance of the teacher, prior to the introduction of further exemplars. A similar process was used for the second assignment.

Initial responses to the use of exemplars were mixed. Justine for instance found the 'viewing and assessing the [exemplars] confusing and somewhat intimidating ... [as] I did not consider that I was able to produce work to the standard on display'. On the other hand, working with exemplars enhanced Jenny's confidence as she was able to 'gain a full understanding of requirements'. Once the class was familiar with the processes of analysis and evaluation, additional exemplars 'of differing quality [were] discussed ... with both the lecturer and [in small groups with] our peers' (Heather). These processes, coupled with group and class discussions, helped course members to 'identify what constitutes quality work' (Heather), 'gave me some structure ... and [served] as a guide' (Lupe), 'reassured me as to what was required' (Art#2) and 'show[ed] us the ... expectations in [the teacher's] head' (Trish).

Through careful reading across a range of exemplars Sally was able 'to make judgments around the ones that represented "excellent" quality work'. Despite her early misgivings, Justine found, as she 'gained more subject knowledge and had multiple opportunities to view and discuss the exemplars', her confidence in analysing these increased to the point where she acquired 'valuable insights into the many and varied ways it was possible to successfully achieve the end goal'. Margie also realised that, as she became conversant with a range of exemplars from across the spectrum of achievement, she started to think 'I can do better than that' and 'felt I could achieve'. From the perspective of the students, analysis and evaluation of exemplars contributed to the development of both their confidence and their evaluative knowledge and skill. They came to understand what was required, what counted as quality and how to evaluate work in relation to these elements.

The engineering of effective discussion and activities including assessment tasks that elicit evidence of learning

While course members participated in a range of activities and tasks designed to elicit evidence of learning, three stood out in terms of promoting discussion about learning and the promotion of skills associated with self-regulation. Of these, the comparison of exemplars to works-in-progress and the use of weekly prompt sheets to guide reading of key articles and papers and in-class discussion are addressed in this section. Peer review of works-in-progress and peer feedback are discussed in the following section.

At the end of session two, course members brought their assignment works-in-progress (the first 500-word short essay) to the next two class sessions so they could consider their drafts alongside a range of exemplars. This activity helped '[to] see if I was on the right track ...' (Art#4), and was repeated over ensuing weeks with the other short essays and assignment two. Through these opportunities students found they could 'identify inaccuracies in my own thinking' (Sally), 'see what was good work and where my gaps were' (Margie), 'identify gaps in my learning and make changes as needed' (Justine). The comparison of exemplars to works-in-progress highlighted for students areas where they had succeeded, areas where they needed to improve and ways in which they could make changes to produce quality work. This activity seemed to function as a stimulus for self-monitoring.

Each week students completed one or two set readings and responded to a series of prompts. Responses to these prompts were brought to the next session where students engaged in 'group and lecturer discussions about our understandings and interpretations' (Heather). Marama would prepare for class by asking herself a series of questions to check if she was ready to share her ideas and 'ready for learning':

had I done the readings; were there words or concepts I needed clarification on; what was I confident that I could share with my peers and what was I needing [help with].

Justine explained how, with the group sharing and discussion 'there [is] an expectation that you are all going to be involved, nobody is going to sit back'. While at first she found this expectation 'very confronting [she] quickly realised that to be an active participant in [her] own learning required [her] to ... make [her] thinking visible'. Lupe also found it somewhat daunting to share ideas with her peers – she preferred to 'sit back, listen, rather than offer a view'. However, as this activity was integral to all class sessions, Lupe gradually gained confidence 'in talking about my view'. Discussions around the prompts not only helped students identify key areas of understanding; the sharing of ideas also highlighted misunderstandings and gaps, and promoted *individual* and *group* monitoring of thinking and understandings:

I have monitored my thinking when I have been in discussion with my peers about course readings. The prompt sheets were helpful ... when in discussion with my peers I was able to monitor if my thinking was similar to theirs ... it also helped us identify any gaps and misunderstandings we may have had. Together we were able to develop a shared understanding and support each other with aspects we may have struggled with. (Jenny)

Discussion in small groups and as a class provided:

the opportunity to really nut out any areas that you were all confused about, or somebody would have actually got a handle on [the area] and then they will be able to put it in ... a different [way] and, all of a sudden, okay, now I get it because somebody else had processed it differently. (Margie)

Generation of feedback (external and internal) that moves learning forward

As discussions were taking place 'the lecturer would move around the groups listening and participating giving feedback; she affirmed us when it was obvious we were on the right track, sometimes asking questions to make us think more deeply' (Margie). This approach was new to some course members, as they were accustomed to feedback in the form of lecturer comments and marks on completed assignments. It took them some time to become accustomed to being 'asked a specific question or [to] express an area of misconception about my learning [for feedback]' (Justine). Central to the process of

dialogic feedback was the creation of 'an environment of trust ... [where] I could safely risk sharing my ideas about learning, talking about what was going on in my head, sharing confusions or uncertainties and seeking information and explanations from [others]' (Sally).

Feedback that engaged students in a dialogue with the teacher and/or each other was integrated into every session. Together the teacher and students constructed information about what was understood or achieved and which aspects of learning needed further attention. As time went on Margie found that she would:

actually say things to [the teacher] and it doesn't matter so much if I haven't got it because she'll get me to talk about it or she'll sort of say have you thought about it from this point of view.

She, like Trish, was 'initiating my need for learning and recognizing what I needed to know, rather than it [feedback] being teacher led'. As Justine became comfortable with sharing her ideas and thoughts, she started to:

feel more confident to independently seek feedback [from the teacher] about specific areas of misconception in my work as it progresses, and I view this as a strength in my learning processes instead of an indication of failure or lack of ability.

Activation of students as learning resources for one another including peer review and feedback

As students' assignment-related works-in-progress started to take shape they brought these to class so they could 'engage in dialogue with ... peers about drafts of each section' (Justine). Some course members were nervous and a little 'intimidated' (Justine) when it came to sharing their work, as they feared it might raise questions about the state of their intellect:

it's the peer ... thing and I would have never engaged in that before, I would try and do it [writing assignments] all by myself ... I didn't want anyone to think I was dumb. Whereas now it's not because you're dumb, it's because I don't fully understand and I'm getting there, to use other people whereas before ... I wouldn't let them know what I thought. (Margie)

With support and experience they came to realise peers were valid and valuable learning resources.

Jenny, like many of her colleagues, considered the process of providing feedback 'challenging as [she originally] did not feel confident'. However, as course members gained content knowledge and experience in the evaluation of others' work and ideas, they felt able to make a contribution to the learning of their peers:

[It is] an exciting experience ... to discuss what someone else had written or included and be able to say 'I like how you put that ... or the quote you used was really pertinent', [and] even more motivating was when looking at one example I felt able to say 'I don't agree with what you said here ... I think you should have explained it further ... use this quote as it is more to the point'. (Margie)

Sally was also motivated by the experience of providing feedback as it had 'pay-back' in terms of her engagement and learning:

it was in my best interests to [provide feedback]; by helping my peers I supported my group [and] I deepened my understanding ... I was forced to think through ideas I was going to share so that I could do so with clarity ... for me this led to a high level of engagement.

The process of peer review and feedback stimulated students' reflection on their own work. Trish found 'as [she] gave feedback to others in [her] group [she] was clarifying in [her] mind what success looked like and therefore looked more critically at [her] own essay and the changes [she] needed to make'.

Activation of student ownership over and responsibility for their learning

Course readings and prompt sheets, the analysis and evaluation of exemplars, group discussions, and feedback from the teacher and peers provided students with the tools for reflection on their own learning and task-related work. As such, these activities encouraged student ownership over and

responsibility for their learning. In short, participation in group discussions ‘strengthened [Justine’s] knowledge and understanding of the content ... and resulted in [her] being able to identify how [she] could modify [her] work’; the prompt sheets resulted in Jenny ‘learning how to create [her] own subconscious prompt sheet’ so she could monitor her understanding when reading more widely; exemplars helped Trish see ‘how other students constructed their essays’ and as a consequence she ‘was able to make changes to [her] draft and retain the parts [she] had done successfully ... and make changes to raise the quality of [her] essay’; and, when Sally was ‘involved in the process of reviewing the draft of a peer there were times when [she] realised that [she] could make improvements to [her] own drafts as a result of having to provide feedback to someone else’.

More specifically, Jenny commented on how, over time, she ‘became less dependent on the lecturer and ... peers in understanding [course content] and took responsibility for [her] own learning by identifying [her] own weaknesses and taking [her] own steps to address them’. Trish managed her learning in a similar manner, putting in place strategies to address areas of frailty. She was aware of the need to manage her time in ways that kept study and work commitments in check. In addition, she was mindful of her propensity to get emotional and stressed when faced with obstacles so used verbal ‘cues’ to put things into perspective:

I have become aware of my weaknesses and strategies I need to use ... this included note taking in class, downloading readings and prompts onto my computer for greater efficiency, creating folders to keep different aspects of the course more easily accessible ... I’ve learned to manage those [emotional reactions] so you know things like when I think ‘oh gosh this is too hard’ ... I do little things like ‘there is an end to this’ ... [and] being systematic, you know not leaving things to the last minute.

Sally also had strategies that she activated to overcome obstacles when writing her second assignment. The first step was ‘knowing when you’re stuck that it’s okay to be stuck but what do you do to get unstuck ... so for me there was some of that self-talk around like okay I don’t really get this’. After some deliberation she developed ‘smaller more specific goals [setting] ... a goal for the week of asking my peers about whether the introduction to my essay was clear and had impact’. Sally then emailed her peers, requesting feedback on the draft of her introduction. From her perspective, having a goal and putting strategies in place to achieve it helped ‘improve my introduction and [I could] move forward in my work’.

Discussion

Students in the current study were immersed in an AfL environment, where they were expected to participate in a range of activities that provided them with opportunities to exercise agency and control over their learning. The prospect of sharing ideas and understandings, engaging in dialogic feedback with the teacher, reviewing the work of peers and providing feedback was initially intimidating and a little threatening, as by their own admission a number were more accustomed to keeping a low profile and assuming a relatively passive role during class sessions. They were reluctant to contribute for fear of being wrong and/or appearing to lack necessary knowledge. It seemed that for these students participation posed a threat to their sense of self-worth and, as a result, they distanced themselves from situations where their ability could be called into question. Disengagement, over time, can have an impact on one’s will to learn (Covington 1984).

If students are to take control of and regulate their learning, they need to take advantage of opportunities to identify and discuss areas of uncertainty and confusion, as these are important aids to increase knowledge and improve understanding (Black and Wiliam 1998). Students who fear exposure, loss of face or humiliation when participating in public activities need ‘reassurance that just starting on this path is likely to be the hardest part [for] once they become accustomed to it, they typically find it highly rewarding and their learning improves’ (Sadler 2009b, 61). This seemed to be borne out in the present study, as once course members became aware of the learning benefits that could be accrued from partaking in discussions and activities, initial fears were allayed and they became more engaged and motivated, taking a proactive role in their learning.

Students take ownership over their learning when they have clear goals and understand ‘where they are going’ (Hattie and Timperley 2007). Goals enhance self-regulation through their influence on motivation, learning, self-efficacy and self-monitoring (Schunk 1995; Zimmerman 2008). While much has been written about the differential impact of performance (ego-driven) or task completion goals and learning (mastery) goals on student behaviour (e.g. Dweck 1986), with learning goals considered preferable, there is evidence both can make a contribution to students’ learning (Zimmerman and Kitsantas 1999). Although performance goals exert powerful motivational effects, learning goals are particularly effective in enhancing self-efficacy and self-regulation (Schunk 1995). Students do not adopt only one type of goal; rather, according to the situation, they endorse learning and/or performance goals (Butler and Winne 1995; Zimmerman 2008).

It is therefore not entirely unexpected that, on entry to the course, students held and were motivated by a range of performance goals related to completion of their degree and papers within the degree. Discussion around course learning outcomes and assignments in association with class activities, however, heightened awareness of goals focused on mastery of new knowledge and skills. Although not set by students, these learning goals were understood and accepted, and there were indications students used them as a point of reference during the course when monitoring understandings. In addition, individuals set a number of short-term, task-specific goals so they could manage their time, workload and resources more effectively with a view to successful completion of course tasks. Skilful self-regulators set focused, proximal goals that are oriented towards task completion and learning, and linked to longer term priorities (Zimmerman 2008).

The use of assignment exemplars from previous cohorts also helped course members to understand ‘where they were going’, as they provided a concrete representation of what was required. Exemplars play a key role in furthering students’ understanding about task criteria and standards, and as a corollary, the nature of quality work (Hendry and Anderson 2013; Carless 2015). This understanding places students in a position to target their efforts more effectively (Zimmerman 2008). Students attested to these benefits and a number of additional advantages that ensued from their work with exemplars, such as gaining content knowledge and realising there were multiple pathways to successful achievement. When used judiciously exemplars also have the facility to foster positive motivational beliefs and enhance learners’ self-efficacy – when students see how counterparts from previous cohorts have achieved, they believe they too can succeed (Hendry and Anderson 2013). It was evident that, as the course progressed and students engaged in dialogue around exemplars, they gained confidence in their ability to produce work of a standard similar to or better than that in the exemplars.

Exemplars were also used in the course to develop students’ evaluative knowledge, skill and expertise. The appraisal of exemplars in domains comparable to or the same as those in which they are working, accompanied by discussion, provides students with access to standards and notions of quality embedded in the teacher’s head, and gives them direct experience of the evaluation process (Sadler 2009b). A key factor in mediating students’ engagement with this process, and the gaining of evaluative knowledge, is the quality of dialogue between the teacher and students, and amongst students, as they work with exemplars (Carless 2015). It is through dialogue and direct evaluative experience that students come to understand and adopt the standards for themselves. As a result, they become members of the community of knowers ‘which is simply a group of people who share sufficient tacit knowledge for them to be able to recognize, judge and, to a considerable extent, explain quality when they see it’ (Sadler 2009a, 822).

Inducting students into the art of making appraisals in a substantive and comprehensive way enables them to draw implications from the experience for their own work (Carless 2015). Building on this, the bringing to class of works-in-progress for comparison to exemplars and discussion with peers placed course members in a position where, at the very least, they reflected on progress and at best engaged in meta-cognitive self-monitoring. Course members were thus encouraged to generate feedback that enabled them ‘to notice discrepancies between their present proficiency level and the expected one; this can prompt them to self-regulate their work and deploy learning strategies to narrow the gap’ (Carless 2015, 143).

Feedback is one of the most powerful influences on learning and achievement (Hattie and Timperley 2007), and is an inherent catalyst for all self-regulated activities. Skilled self-regulators seek feedback from external sources such as teachers and peers, and construct information themselves (Butler and Winne 1995). Teachers are a valuable source of information against which students 'can evaluate progress ... check out their own internal constructions of goals, criteria, [and] standards' (Nicol and Macfarlane-Dick 2006, 208), and clarify understandings of course content. In contrast to the more conventional notion of feedback as teacher-telling or monologue (Carless 2015), feedback in the current study was grounded in the dialogic interactions that occurred between the teacher and student(s), and amongst students. Dialogic feedback is an 'iterative process in which interpretations are shared, meanings negotiated and expectations clarified in order to promote student uptake of feedback' (Carless 2015, 196). The process of dialogic feedback was embedded into all class sessions, as together the teacher and students checked assignment requirements, debated the nature of quality and standards in relation to exemplars and their own works-in-progress, clarified understandings of course readings and identified 'gaps' or misunderstandings in each other's learning.

Dialogue has the potential to serve a formative, learning function when students are comfortable about revealing understandings and do not try to hide areas of confusion (Carless 2013). The building of communication trust between the teacher and students, and amongst students, facilitated 'buy-in' to the process of dialogic feedback. Communication trust, which includes willingness to share information, admit mistakes, maintain confidentiality and give and receive feedback, promotes development of 'an atmosphere that fosters engagement, risk taking and a willingness to take part in sustained and challenging dialogues around both subject matter and the learning process' (Carless 2013, 100). As demonstrated in the present study, interactions between the teacher and peers and with peers prompted students to think more deeply about their learning and task-related work, and to take action in ways that reduced the gap between current and desired or expected performance.

Course members also gained information about the quality of their understanding and task-related performances through the process of peer review in relation to works-in-progress. Students have two complementary roles within this process – they act as reviewers of peer's work and receive feedback from peers. While students appreciate feedback from peers (Falchikov 2005) and as a consequence make revisions to their work (Cho and MacArthur 2010), Nicol (2013) argues that having students review and give feedback is a more powerful and effective learning process, as it:

requires that students make evaluative judgements ... and justify those judgements, thus directly calling on high levels of cognitive processing ... [and it] exposes students to different approaches to the same assignment, which helps them appreciate that in complex tasks quality can be produced in different ways. (43)

As students review the work of peers they 'actively monitor, evaluate and rehearse their own understanding' (Nicol 2013, 43), using this information to both inform their review and feed forward into their own work. The latter was evident in the current study where students commented on the learning benefits they accrued from evaluating the work of peers.

Conclusion

The development of students' proficiency as lifelong, self-regulating learners is recognised as a 'fundamental goal of education' (Bandura 1997, 174) and a valued outcome of higher education. According to Clark (2012), a relational dynamic exists between self-regulation and AfL (formative assessment). This dynamic was evident in the current study, where the strategies and activities associated with AfL contributed to the promotion of meta-cognitive self-monitoring and self-regulation. As these strategies and activities were introduced and implemented, they were referenced to and built on those that had come before, producing a snowballing effect. Goals helped students know where they were going; exemplars provided insights into what was expected and what constituted quality work; course activities and tasks elicited evidence of learning; dialogic interactions around these activities and tasks generated feedback about current understandings and task-related progress; the evaluation of exemplars

developed students' evaluative knowledge, skill and expertise; peer review and feedback provided an authentic context for evaluation and monitoring of works-in-progress. Students were thus equipped with the self-regulatory tools and strategies that 'sustain stable motivation ... improve attainment ... and precipitate the inner drive for life-long learning' (Clark 2012, 241). While each strategy provided students with knowledge, skills and/or expertise necessary for self-monitoring and self-regulation, the full impact of AfL as a catalyst for self-regulated learning was realised in the cumulative and recursive effect the strategies had on students' thinking, motivation and actions.

The findings from this study should be considered in the light of the following caveats. Although generally typical of those upskilling to an undergraduate degree and/or pursuing postgraduate qualifications in an education faculty, the participants (teachers) in the current study cannot be considered representative of the archetypal student body in higher education. Further, the course size is relatively small and the focus on AfL, while opportune, is unusual. These factors are however contextual and should not be seen as reasons why others cannot successfully integrate AfL into their higher education courses in a similar manner. Moreover, there is a growing body of evidence that the strategies associated with AfL (James and Pedder 2006; Klenowski 2009; William 2011) and learning-oriented assessment (Carless 2007, 2015) can be successfully enacted across a range of disciplines and contexts, with a view to supporting and furthering students' learning (see e.g. Hendry, Bromberger, and Armstrong 2011; Carless 2013, 2015; Hendry and Anderson 2013; Nicol 2013; To and Carless 2015). The point of difference between previous studies and the current project is that each of the five AfL strategies was deliberately and strategically embedded into the teaching design of each class session, resulting in a recursive, coherent and robust representation of AfL. Infusing AfL into the teaching-learning programme in this manner is challenging, as it necessitates significant changes to approaches that have become deeply embedded in practice over many years (Sadler 2009b). If, however, we are serious about affording students a central role in their learning and supporting their development as self-regulating learners, we cannot afford to ignore the potential and possibilities offered through AfL.

Disclosure statement

No potential conflict of interest was reported by the authors.

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