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A model formative assessment strategy to promote student-centered self-regulated learning in higher education *

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Abstract: Adult learners are already involved in the process of self-regulation; hence, higher education institutions should focus on strengthening students' self-regulatory skills. Self-regulation can be facilitated through formative assessment. This paper proposes a model formative assessment strategy that would complement existing university teaching, and can be used in higher education to promote student-centered self-regulated learning with minimal effort and time input from teachers. Based on this model, a real-world teaching example on writing an essay as a challenge task has also been developed. This model strategy incorporates Nicol and Macfarlane-Dick's seven principles of good feedback practice that promotes self-regulation.

Key words: formative assessment; feedback; self-regulated learning; essay writing

1. Introduction

Learning is an active process whereby students construct their own knowledge and skills (Barr & Tagg, 1995; DeCorte, 1996) by interacting with subject content, transforming and discussing it with peers, teachers, parents and the public, in order to internalise meaning and make connections with existing knowledge. In this process, there is considerable evidence that feedback has unquestionable influences that lead to better understanding and desired learning outcomes (Black & Wiliam, 1998; Hattie & Timperley, 2007). Most of the researchers concentrated on either the nature of the feedback (e.g., formative vs. summative, time and structure of feedback; Dohrenwend, 2002; Hattie & Timperley, 2007) or a particular feedback strategy (e.g., two-way fast feedback (Bateman, et al., 1995) or web-based peer assessment (LIN, et al., 2001a; 2001b). However, those studies failed to consider formative feedback strategies that could enhance self-regulation in higher education. Hence, the aim of the present paper is to propose a model formative assessment strategy that integrates external (e.g., computer, peer, teacher) and internal feedback (e.g., self-reflection) in order to promote self-regulated learning with minimal time input from teachers.

2. Rationale: Do students consider feedback to be useful?

At the University of Western Australia (UWA), there is a definite mismatch between teaching staff and

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students in their opinion about the adequacy of feedback (UWA NSSE and FSSE surveys, 2005). In fact, one third of students felt that feedback was less than adequate. Similar scenario is common in all higher education institutions (Bienstock, et al., 2007) because of two main reasons:

(1) The workload of the teachers in higher education increases as student numbers and class sizes become larger and students come from a greater variety of backgrounds (Yorke & Longdon, 2004);

(2) The feedback given by a teacher fails to reduce discrepancies between current understanding, performance and desired learning goals of students (Hattie & Timperley, 2007).

Further, higher education teachers feel that giving useful feedback individually for the whole batch of students is time-consuming and often repetitive. Hence, teachers are reluctant to give individual feedback. On the other side, students want more individual feedback because it allows them to gain information about what they do or do not understand, find directions and strategies that they could take to improve their knowledge and skills, and seek assistance to understand the learning goals (Hattie & Timperley, 2007). Differences in the opinions on feedback between teachers and students are further exacerbated by concerns associated with the conventional feedback, such as feedback being too late, of limited value, without explanation, of “one-off” nature, and non-progressive. Moreover, teachers usually do not get regular feedback about their own teaching from students and peers, and thus have little chance to understand and meet students’ expectations. Hence, to enhance student learning, feedback to students from peers and teachers needs to be tailored in a way to generate a basis for self-regulated learning.

3. Formative assessment and self-regulated learning

Self-regulated learning refers to a degree to which students can regulate aspects of their own thinking, motivation and behavior during the learning process (Pintrich & Zusho, 2002). Self-regulated learners set up their own learning goals and form strategies by generating more internal feedback, responding to external feedback, using resources and increasing efforts to achieve learning goals and produce outputs that can be compared and assessed (Nicol & Macfarlane-Dick, 2006). To promote student-centered self-regulation, all the assessments need to be restructured as formative assessments (Sadler, 1989; Nicol & Macfarlane-Dick, 2006). Formative assessments are specifically aimed at generating feedback, both internal and external, on performance to improve and reinforce self-regulated learning (Sadler, 1998).

4. Do students have adequate self-regulatory skills?

Adult students already possess some of the evaluative skills to compare actual performance against standards (Sadler, 1989). Further, research showed that students can learn to be more self-regulated through formative feedback (Pintrich, 1995; Zimmerman & Schunk, 2001). Thus, higher-education teachers should focus on strengthening students’ self-assessment skills (Boud, 2000; Yorke, 2003) in order to enhance their learning. There is support for this view, as self-regulated students are able to produce better feedback internally or are more able to use the feedback they generate to reach their desired goals and become high achievers (Butler & Winne, 1995).

Based on these assumptions, this paper proposes a model formative assessment strategy which can be used in any teaching and learning environment to promote self-regulation among students with minimal effort and time input from the teachers. This paper will evaluate this strategy against seven principles of good feedback practice that develops self-regulated learning (Nicol & Macfarlane-Dick, 2006).

5. The model formative assessment strategy

In general, formative feedback needs to address the task or process of learning that fills a gap between what is understood and what is aimed to be understood (Sadler, 1989). Although students can generate internal feedback through a number of affective processes, such as increased effort, motivation or engagement, they need control over their learning to advance further. To provide formative feedback, teachers should structure their teaching in a way that encourages a number of different cognitive processes, including restructuring the understandings, confirming to students whether they are correct or not, indicating whether more information is available or needed, pointing to directions students could pursue, and/or indicating alternative strategies to understand particular information (Hattie & Timperley, 2007). With this view, a model formative assessment strategy (Figure 1) is proposed in order to amalgamate students' internal and external feedback and promote self-regulation as a student proceeds from large class teaching to teacher's assessment.

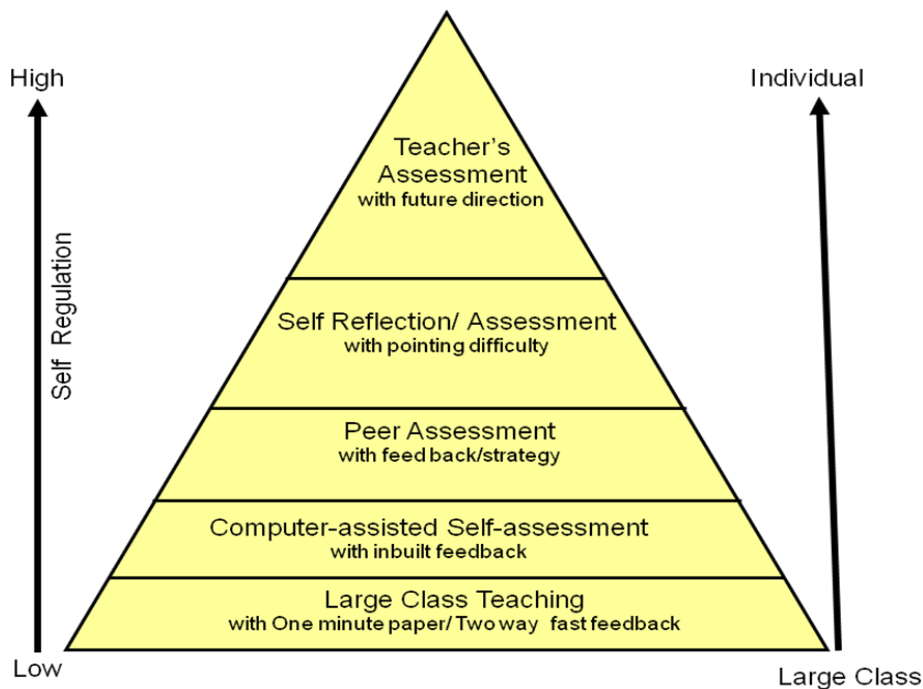


Figure 1 A model formative assessment strategy

5.1 Large class teaching

University teaching tries to promote the growth of the individual students, encouraging them to become independent, creative, self-motivated as well as critical thinkers and learners. Large class teaching in higher education is frequently at odds with the above intention. However, because of growing education needs and a burgeoning number of students in some courses, the universities are forced to continue with large class teaching (Newstead, 2000).

Lack of information about effectiveness of students' learning and teachers' teaching is the primary concern in large class teaching. The "one-minute paper" (Angelo & Cross, 1993) or "two-way fast feedback" (Bateman, et al., 1995) are useful approaches in this situation to maintain teaching standards by knowing more about the students' level of learning and clarifying their misunderstandings. Both methods use simple timesaving surveys to get

immediate feedback from students about the effectiveness of teaching. Then, the students' feedback can be used by the teacher to respond (orally or in writing) to the students' need. The advantages are that the teachers gain knowledge about what should be considered while teaching; it encourages the students to recollect what was taught in a particular session; moreover, it establishes communication between students and the teacher, it saves time on individual feedback and ultimately leads to continuous improvement of teaching and learning (Bateman, et al., 1995).

5.2 Computer-assisted self-assessment

In large classes, it is often difficult to provide feedback to individual students. However, it is not always necessary for a teacher to give feedback individually if another option is available, for example online self-assessment (Ramsden, 1982). Once the web based self-assessment is created, it can be used continuously over the years with minimum updates. The online self-assessment materials should be structured (Gibbs & Simpson, 2004) in a way to offer students various opportunities to test their understanding and to identify their cognitive working levels, without the need to seek face-to-face assistance from the teacher (Edwards, 1989; Zakrzewski & Bull, 1998). This approach is particularly useful to the students who need extra opportunities to enhance their sense of control over their learning. Further, it provides feedback immediately after the performance, can be accessed any time or place, and as often as students wish (Nicol & Macfarlane-Dick, 2006).

5.3 Peer assessment

Peer assessment has been widely practiced across diverse fields of higher education (Falchikov, 1995; Freeman, 1995; Strachan & Wilcox, 1996; Rada, 1998). Most students benefit from formative peer assessment because of two important reasons. Firstly, students are taking the teachers' role of an assessor and feedback provider, in addition to being active learners (Roth, 1997; LIN, et al., 2001b). This feedback demands a series of cognitive activities like reviewing, summarising, clarifying, giving feedback, error diagnosing, and identification of missing knowledge in comparison to ideal standards (LIN, et al., 2001b) and paves the way for actively constructing and refining students' own knowledge on a desired learning outcome. Secondly, just learned students are often far better than teachers in providing alternative strategies and tactics to their classmates in an accessible language (Nicol & Macfarlane-Dick, 2006).

There are some studies (LIN, et al., 2001a) that have documented the negative effects of peer assessment, such as competitor view and ego-related issues, if it prompts marks/grades from peers. Thus, peer assessment should focus on lower order assessment criteria without marks/grades. Peer reviewing has to be monitored by the teachers.

5.4 Self-reflection/self-assessment

Self-reflection is the heart of self-regulation. Students are less likely to be defensive if they judge themselves. Hence, an effective way to impart self-regulation among students is to provide them opportunities to reflect on their own performance (Boud, 1995; McDonald & Boud, 2003). Further, it gives the teacher insight into weaknesses that students have realised, as well as those that students have not yet recognised (Bienstock, et al., 2007). By knowing students' strengths and weaknesses, teachers can offer specific feedback against the learning outcomes.

5.5 Teacher's assessment

Teachers by virtue of their discipline knowledge and experience are more effective in identifying errors or misconceptions in students' work compared with peers or the students themselves. Usually, students believe that only teachers have the ability and knowledge to assess and provide critical feedback about their performance

(ZHAO, 1998). Without feedback from teachers, students' mistakes go uncorrected and good performances are not reinforced, and this might adversely affect student motivation. Hence, teachers form a crucial source of external feedback and play a central role in developing self-regulation among students (Nicol & Macfarlane-Dick, 2006).

Adult learners welcome task-specific feedback from teachers when it is based on their performance and tailored to their learning goals (Hewson & Little, 1998). Further, teachers should consider the "feedback sandwich" technique which begins with positive feedback, then focuses on problematic behaviour and provides suggestions or strategies for improvement, and closes with a positive note in order to maximise the students' performance overall (Dohrenwend, 2002).

(1) How does the model formative assessment strategy incorporate Nicol and Macfarlane-Dick's (2006) seven principles (listed in Table 1) of good feedback practice?

Table 1 Seven principles of good feedback practice

Good feedback practice: 1. Helps clarify what good performance is (goals, criteria, expected standards); 2. Facilitates the development of self-assessment (reflection) in learning; 3. Delivers high quality information to students about their learning; 4. Encourages teacher and peer dialogue around learning; 5. Encourages positive motivational beliefs and self-esteem; 6. Provides opportunities to close the gap between current and desired performance; 7. Provides information to teachers that can help in shaping the teaching.

Source: Nicol and Macfarlane-Dick (2006).

Principle 1: One-minute paper or two-way feedback in large class teaching help the students to recollect what is taught; computer-assisted self-assessment and peer assessment help students to clarify what good performance is by clarifying goals, criteria and expected standards.

Principle 2: As students progress from a large class to self-assessment or reflection stage, they get gradually progressing through various levels of assessment, thus to be more familiar with the link between the assessment and learning. By doing this, students have been trained to self-assess their own work, as well as peers' work.

Principle 3: Almost in all the stages of this model strategy, students can get high quality information either from a teacher or a computer or peers to shape up the cognitive process.

Principle 4: Large class teaching, peer assessment and teacher's assessment stages of this model encourage the teacher and peer dialogue around the learning.

Principle 5: This model provides adequate support to understand the expected standards and enough opportunities to close the gap between current performance and the expected standards. This helps the students to build positive motivational beliefs and self-esteem.

Principle 6: Each step of this model increases students' understanding of their current learning level, thus making the gap between the current and desired performance obvious, at last translating into clear goals to be achieved to reach the desired performance.

Principle 7: One-minute paper and a student's self-reflection provide information to the teacher that can be used to help shape the teaching.

(2) How would the model formative assessment strategy work in the real-world teaching and learning situations?

Table 2 demonstrates how this model formative assessment strategy may work in real teaching using the example of an essay writing task.

Table 2 Example of how the proposed formative assessment model may work in a real-world and teaching situation

Large-class teaching The teacher delivers lectures about essay writing, covering topics such as length, structure, critical thinking, use of evidence, problem analysis, information synthesis, referencing and plagiarism—any misunderstanding on learning can be addressed using one minute paper/two-way fast feedback strategy.		
Computer-assisted self assessment Online learning modules covering topics such as essay structure, referencing and plagiarism, with self-assessment using information and communication technologies like WebCT—to clarify the elements of good practice in essay writing.		
Peer assessment Peers who learned essay writing during the lecture and through computer-assisted self-assessment can correct low-order assessment criteria by sharing explanations, alternative tactics and strategies.		
Assessment criteria		Feedback
<input type="checkbox"/> Length 1000 words <input type="checkbox"/> Structure (abstract, introduction, etc.) <input type="checkbox"/> Clear argument <input type="checkbox"/> Referencing		e.g., Structure, referencing and argument are clear. Long sentences can be simplified to improve the clarity. There are a few spelling errors which can be easily corrected by using a SPELL CHECKER.
Self reflection/Assessment and teacher feedback These two steps can be combined to evaluate higher order assessment criteria		
Assessment Criteria	Student's self reflection	Teacher's feedback
<input type="checkbox"/> Analytical /Reasoning skills <input type="checkbox"/> Clarity of presentation <input type="checkbox"/> Factual accuracy	e.g., I struggled to find reasons to support my arguments	e.g., I am pleased with your clear presentation skills. You can improve your reasoning skills if you read the handouts/ reference materials against essay questions. I like your factual accuracy.

6. Summary

Formative assessment is the key component in promoting self-regulated learning. The proposed model strategy takes into account existing university teaching practices like large class teaching, computer aided self-assessment, peer assessment, self-reflection and teacher's assessment with specific formative feedback strategies. This model strategy allows students to clarify their learning goals, encourages learning conversation among teachers, peers and students, helps teachers modify their teaching approaches, actively involves students in their own learning, and finally provides timely formative feedback in order to hone students' learning skills. All the specific feedback strategies (one-minute paper or two-way fast feedback, computer-assisted self-assessment peer assessment and self assessment) are less time consuming from teachers' point of view, and will bring beneficial outcomes when these feedback strategies tailored together. Thus, teachers are encouraged to focus on restructuring their teaching/assessments to fit in this model strategy.

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