Students' self-assessment of assignments - is it worth it?

Badri Basnet, Marita Basson, Carola Hobohm and Sandra Cochrane
The University of Southern Queensland, Toowoomba, QLD4350
Corresponding Author Email: basnetb@usq.edu.au

BACKGROUND

Self-assessment refers to the involvement of learners in making judgements about their own learning, particularly about their achievements and the outcomes of their learning (Boud & Falchikov, 1989). Enhanced learning and professional development are the desirable end effect of self-assessment. However, questions are often raised about the reliability (i.e. accuracy and consistency) of students' self-assessment. Recent studies have revealed substantial discrepancies in students' self-assessment performance in terms of accuracy and consistency, potentially leading to the rejection of self-assessment. Hence, understanding the scope and limitations of students' self-assessment is critical.

PURPOSE

This study was intended to examine the reliability and importance of self-assessment, and uncover other significant learning and professional development benefits of students' self-assessment.

DESIGN/METHOD

Over the last three years, a longitudinal study of self-assessment of an assignment was conducted of successive first year university student cohorts, comprising of more than 75 per cent distance students. Students were asked to self-assess their assignments with the help of self-assessment guidelines and model answers. On the self-assessment feedback rubric provided, they allocated marks and provided justification for the marks for each assignment answer. Feedback from students' self-assessment was analysed quantitatively to examine the accuracy and consistency of self-assessment with respect to tutor's assessment, and qualitatively to understand the impact of self-assessment in their learning and professional development.

RESULTS

A comparison of students' self-assessment marks with the tutor's assessment marks showed that the majority of the students (~ 47%) overestimated their performance, while a significant proportion (~39%) remained within ±10 per cent of the tutor's assessment marks, and the remaining (~14%) undervalued their work. Correlations between students' self-assessment and tutor assessment marks ranged between -0.14 to 0.8 for various on campus and distance student cohorts. The accuracy of students' self-assessment was less than promising when considering tutor's marks as the benchmark (or expert judgement). These results are consistent with the findings of many other researchers including Boud & Falchikov (1989) and Lew et al. (2010). A wide range of correlations between various student cohorts also showed the lack of assessment consistencies. Therefore, students' self-assessment may not be a reliable (i.e. accurate and consistent) assessment technique even though some researchers have reported improved reliability under specific circumstances (e.g. Ross, 2006; Ward et al., 2002; and Rolheiser & Ross, 2006). The study has revealed that the major contributor to learning during students' self-assessment is not the accuracy or consistency of students' self-assessment. Instead it is the change in students' psychological perspectives when they go through the process of self-assessment. In this study metacognition, constructivist learning, and self-efficacy have been identified as triggers to students' learning and professional development during self-assessment.

CONCLUSIONS

The study has demonstrated that students vary considerably in assessing their own work. Hence, the learning gained during students' self-assessment may not come from the accuracy and consistency of self-assessment. Instead, it is triggered by the change in students' psychological perspectives resulting in metacognitive knowledge, learning constructivism and development of self-efficacy.

KEYWORDS

Students' self-assessment; accuracy; consistency; metacognition; constructivist learning; self-efficacy.

Introduction

Self-assessment is a process of judging the quality of one's own work (e.g. students assessing their own assignments) based on evidence and explicit criteria in an attempt to improve future works (Rolheiser & Ross, 2000). Self-assessment has been shown to have a number of benefits including awareness of ability, goal-oriented motivation, learning promotion, knowledge of assessment techniques, sharing of the assessment role, increased responsibility for own learning, enhanced critical thinking and improved student behaviour (Oscarsson, 1997; Cyboran, 2006; Rolheiser & Ross, 2000). The Canadian Ministry of Education (2007) pointed out that in general greater self-awareness and understanding of oneself as a learner can be achieved due to self-assessment. For these reasons, self-assessment has been considered as a useful learning tool for quite some time.

Despite numerous potential benefits, shortcomings in self-assessment exist and can lead to misconceptions. A common misconception among assessors is that self-assessment is about students grading themselves and it cannot be taken seriously (Andrade & Du, 2007). Some students seem to believe that assessment is a teacher's responsibility and they should not be doing it. Unfortunately, some findings in the literature are open to misinterpretation and strengthen these arguments. For instance, Eva & Regher (2005) reviewed several studies and found limited usefulness of self-assessment, as doubts were cast on the ability of students to rate themselves and/or to rate their own strengths and weaknesses. Lew et al (2010) reported weak to moderate accuracy of student self-assessment. Such studies may confirm the misgivings as opposed to other studies that clearly show the benefits (e.g. Cyboran, 2006; Rolheiser & Ross, 2000). Hence misconceptions about self-assessment continue to exist.

When it comes to students assessing their own work, concerns are being raised about the accuracy (i.e. agreement between self and teacher marks) and consistency (i.e. scores being produced repeatedly) of the assessment results. Unfortunately, these expectations are hard to meet. Students' assessments vary substantially resulting in weak to moderate correlations between self and teacher marks (e.g. Ross, 2006; Lew et al., 2010; Eva & Regehr, 2005). Lew et al. (2010) averaged four years of self-assessment and found no improvement in students' self-assessment accuracy. In most cases, either over- or underestimation of performance contributed towards inaccuracy (e.g. Sundström, 2005; Ross, 2006; Lew et al., 2010). Assessments seem to vary widely depending on age groups, tasks, subjects and time periods. Blatchford (1997) found that self-assessment success was dependent on subject and student age groups. Ross (2006) reported inconsistencies between self-assessments when they were conducted at different times. Hence, the reliability of self-assessment in terms of accuracy and consistency remains doubtful. Yet, failing to self-assess is considered as missed opportunities for improvement (Willey & Gardner, 2010).

In a nutshell, the benefit of students' self-assessment may not be realised through accuracy and consistency of assessment. In this context, the self-assessment literature agrees that assessment accuracy and consistency are not the critical attributes to students' learning (Eva & Regehr (2005). Instead, it is the process that forces students to review their own work critically with an eye for improvement (Andrade & Du, 2007), which contributes to learning (Willey & Gardner, 2010). Despite these reports in the literature, the expectation of reliable (i.e. accurate and consistent) self-assessment continues to exist as a misconception. Therefore, there is a need to clear the misconceptions about students' self-assessment and pinpoint the factors that contribute to student learning. In this study, we attempt to achieve this outcome. Therefore, the research questions for this study were:

1. Are students accurate and consistent in their self-assessments? And, in terms of assessment reliability and learning, is it critical that they are?

2. If students vary substantially in the accuracy and consistency of assessments, can they still benefit from self-assessment?

Methodology

A longitudinal study of self-assessment of an assignment was conducted in a Geographic Information Systems (GIS) course over the last three years. The class size of this first year university course ranged between 120 and 160 students, and every year more than 75 per cent of students were enrolled externally.

Students were given an assignment comprising of 10 short answer type composite questions at the beginning of the semester. Assignment preparation guidelines and a marking rubric were provided with the assignment questions. Once students had completed and submitted the assignment online, they were asked to independently self-assess their own assignment with the help of self-assessment guidelines, a self-assessment feedback rubric and model answers provided. They were required to allocate marks and provide justification for the marks for each answer on the self-assessment feedback rubric which they submitted for the assessment.

The submission of assignments by students, assessment by the tutor, students' self-assessment, assessment of students' self-assessment, and marks releases were performed as shown in the flow chart diagram (Figure 1) below. It is to be noted that students' self-assessment marks were not counted towards their summative assessment to avoid possible 'marks sharks' behaviour described by Ross (2006). Instead, the quality of students' self-assessment feedbacks was assessed separately by the tutor.
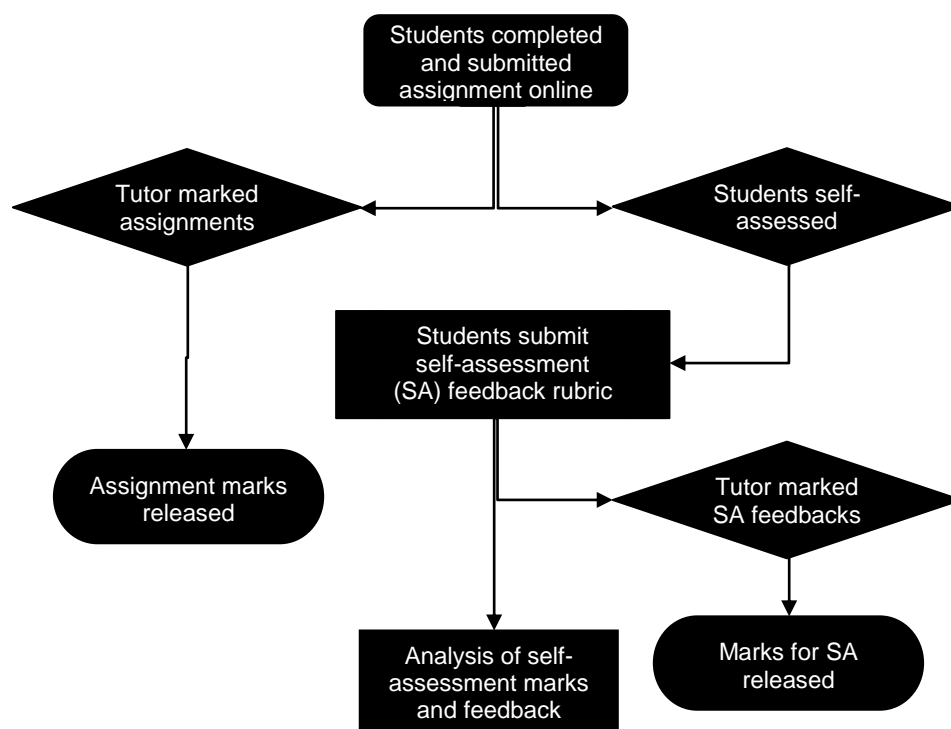

Figure 1: Assessment, self-assessment and analysis process

To determine the accuracy of students' assessment, students' self-assessment marks for the assignment were compared with the tutor's assessment marks. Tutor assessment marks were taken as 'gold standard' or expert judgement (Ward et al., 2002) for this comparison. Self-assessment marks of various student groups were also compared to each other to determine self-assessment consistency.

Students' descriptive self-assessment feedbacks were analysed qualitatively to determine students' abilities to identify strengths and weaknesses of their work, detect their reflective and self-realisation behaviours, and appreciate their learning gain in general.

Results and Discussions

Students' self-assessment marks varied substantially with respect to tutor's assessment marks, as shown in Table 1. The comparison of self- versus tutor's assessment marks have revealed that the majority of the students (~47 %) overestimated their performance, while a significant proportion (~39 %) remained within ±10 per cent of tutor's marks and the remaining (~14%) undervalued their work.

Table 1: Accuracy of students' self-assessment based on assessment error of ± 10 % within tutor's assessment marks

Students' assessment	Under-estimated	Over-estimated	Within + 10 %	No. of students	Mode of study
Semester 2, 2010	12% (1)	75% (6)	13% (1)	8	On campus
Semester 2, 2010	17% (20)	37% (44)	46% (54)	118	External
Semester 1, 2011	4% (1)	64% (18)	32% (9)	28	On campus
Semester 1, 2011	15% (18)	41% (49)	44% (52)	119	External
Semester 1, 2012	0% (0)	73% (11)	27 % (4)	15	On campus
Semester 1, 2012	13% (18)	53% (75)	34% (47)	140	External
Overall	14% (58)	47% (203)	39% (167)	428	

The overestimating students may have done so due to their high self-efficacy beliefs leading to high expectations (McMillan & Hearn, 2008). This group of self-assessors appear to have suffered from cognitive dissonance as they were required to choose between two incompatible beliefs (i.e. high expectation and lower performance). They generally attempted to ignore the weaknesses and overemphasised the strengths in the self-assessment feedback. The other reason for overestimation could be due to their desire to present themselves more favourably than accurately (Sundström, 2005).

Students assessing their work within approximately 10 per cent of the tutor's assessment marks were mostly able to acknowledge the strengths and the weaknesses of their answers. In some cases, they suggested measures for future improvements. Students failing to appreciate their own effort could have been due to low perceived levels of self-efficacy beliefs leading to undervaluation (Eva & Regehr, 2005). However, most of these students were performing better than average in their study. Hence, the results of this study match the findings of Boud & Falchikov (1989) which suggests that high achieving students tend to be realistic and perhaps underestimate their performance. In general, a higher proportion of students have overestimated their work in this study and this aligns with the findings of Boud & Falchikov (1989) and Ross (2006).

Correlations between students' self-assessment and tutor's marks ranged between -0.14 to 0.8 (Table 2). In most cases there was a positive correlation between students' and tutor's marks. The accuracy of students' self-assessment was poor to moderate when compared with the tutor's marks as majority of the students overestimated their performance. This result is consistent with the findings of many other researchers including Boud & Falchikov (1989), Dochy et al. (1999) and Lew et al. (2010).

The consistency of students' self-assessment was also examined over a period of three years for both on-campus (ONC) and external (EXT) students. The correlations between students' self-assessment marks and their actual assignment marks (i.e. tutor's assessment marks) for various student cohorts are given in Table 2. The variations in correlations between study modes (i.e. on campus and external) and different years (i.e. 2010, 2011 and 2012) clearly show inconsistencies between students' self-assessments. A number of factors including age group and experience of students (e.g. on-campus students being

younger and less experienced) may have contributed to these variations. Ross (2006) reported that student self-assessment is generally higher than teacher ratings and overestimates are more likely to occur by younger students due to lack of cognitive skills. Similar findings were reported by Lew et al. (2010). Hence, students' self-assessments remain inconsistent.

Table 2: Correlations between students' self-assessment marks and their actual assignment marks (i.e. tutor's assessment marks)

Year Study mode	2010 (ONC)	2010 (EXT)	2011 (ONC)	2011 (EXT)	2012 (ONC)	2012 (EXT)
No of students	8	118	28	119	15	140
Corr. Coefficient (r)	0.09	0.69	0.8	0.67	- 0.14	0.43

Evaluating the significance of assessment accuracy in students' learning was not the focus of this study. However, Eva & Regehr (2005) pointed out that assessment accuracy is not the critical component of students' learning and it is not always linked with improved performance. Observations made in this study indicate that the assessment inaccuracy may have triggered some learning gain. For example, inconsistencies between students' self-assessment marks and tutor's assessment marks has been the stimulus for further inquiry and this could have potentially lead to improved performance despite possible short term disappointment to the concerned students. However, this needs to be examined further.

On the whole, the answer to the Research Question 1 is that students' self-assessment accuracy is not promising and consistency between assessments is poor. Therefore, students' self- assessment may not be considered as a reliable assessment tool. There is also no clear indication of positive impacts on students' learning due to accurate students' self-assessment (e.g. Eva & Regehr, 2005; Andrade & Du, 2007). Therefore, the accuracy and consistency of students' self-assessment cannot be considered as critical. Students' self-assessment may however contribute towards students' learning in a different way.

In an effort to examine other learning and professional development benefits of student' self-assessment and to answer the Research Question 2, the feedbacks received from self-assessing students were analysed qualitatively. The summary of the analysis from a randomly sampled 82 students are presented in Table 3.

Table 3 : Categorised summary of students' self-assessment feedbacks

Cat.	Students' acknowledgements category	Respondents
1	Unsatisfactory answer (unclear, incomplete, incorrect, lacking illustrations)	82 out of 82
2	Referencing problem (missing and/or incorrect in-text use and/or listing)	52 out of 82
3	Missing answer (forgotten, missed or unable to answer)	19 out of 82
4	Misinterpretation of question (question interpreted/understood incorrectly)	12 out of 82
5	Acknowledged inadequacy and suggest future actions for improvement	7 out of 82
6	Ignored assessment criteria (failed to refer marking guideline/marking rubric)	1 out of 82

The categorised summary of students' feedback (Table 3) shows that they became aware of various deficiencies as they compared their own answers with the expected answers during the process of self-assessment. Students may not have detected such deficiencies in absence of self-assessment. Once self-assessing students identified deficiencies in their answers, they reflected on these and expressed their willingness to change. This is apparent from some of the student's self-reflective comments presented in Table 4.

Table 4: Students' self-reflecting comments (generalised)

I somehow forgot to answer the question.	I did not put enough effort.
I need to read questions carefully next time.	I need to consult marking guidelines in future
I should not have ignored the marking rubric.	I found it hard to assess my own assignment
In future I need to proofread assignment before	Assessment task was not easy. I found it hard to

| *submission so I do not miss critical answers.* | *accurately self-assess my assignment.* |

Students' acknowledgements of deficiencies (Table 3) and self-reflection (Table 4) are the indications that students are obtaining insight into the way they have performed, the knowledge gap they have encountered, and the state of self-confidence they have experienced. In this context, McMillan & Hearn (2008) identified three learning theories (i.e. metacognition, constructivist learning and self-efficacy) as the underlying theoretical bases of learning during students' self-assessment. Metacognition has been defined as thinking about one's own thinking. Metacognition comes into play when cognition (i.e. learning process) becomes problematic and tasks become more challenging (Holton and Clarke 2004). In this context, the summary of students' feedback (Table 3) shows the cognition problems (e.g. misunderstood question, forgot to answer, ignored marking guidelines). Many students have not revealed the action they will undertake to solve the cognition problem while others have explicitly outlined the way they will resolve the issue (Table 4) in the future (e.g. proof read before submission, read questions carefully next time). This is an example of metacognition in action. Self-knowledge is an important part of metacognitive knowledge and includes knowledge of one's strengths and weaknesses (Sundström, 2005). Self-assessment helps students to gain self-knowledge as they actively engage in the learning process, identify strengths and weaknesses of their work, and become more connected and committed to the learning outcomes. The acknowledgements (Table 3) and self-reflections (Table 4) are evidence of metacognitive knowledge development by students.

Constructivism is an educational theory fundamental to learning through self-assessment. It is based on the key concept that learners develop their own knowledge by actively considering new things which create disequilibrium that must be accommodated by adjustments to existing beliefs, attitudes, understandings and knowledge (Dimitriadis, 2006). These characteristics can be seen operating in effective self-assessment. For example, during self-assessment, the required assignment answers offered a guide to students, showing what was important to the learning. Students actively considered those requirements to obtain insights into the knowledge and skills that were to be demonstrated in the assignment. This led to constructivist learning as students were involved in constructing new knowledge based on a foundation of existing knowledge. The actual measurement of this phenomenon was beyond the scope of this study. However, future works must take this into account.

Self-efficacy is defined as people's beliefs about their capabilities (Bandura, 1994). Self-efficacy beliefs determine how people feel, think, motivate themselves and behave (Bandura, 1994). Self-efficacy beliefs help develop self-perceptions that lead to motivation. Self-assessment contributes to the development of self-efficacy beliefs (Ross, 2006). For example, through self-assessment students find out when they are learning, how much effort they must invest for success, when they are successful, when they are wrong, and which learning strategy works for them (McMillan & Hearn, 2008). This knowledge is vital for students to develop self-efficacy for future performance in similar tasks. In this study, most students overestimated their performance as they were less aware of their capabilities. Many students commented about self-assessment difficulties as they were lacking assessment skills. When these students go through frequent self-assessment, they develop more realistic self-perceptions and hence become more competent self-assessors. Thus, self-assessment is helping students to develop both self-efficacy beliefs and assessment skills.

Conclusions

The expectations of accuracy and consistency may not be easily achieved through self-assessment as students' judgements of their own work vary substantially. However, this does not mean that self-assessment provides no value in learning processes. Students who engage in self-assessment activities can improve their learning outcomes through improved metacognitive processes that accrue by greater awareness in knowledge construction and

improved understandings of self-efficacy (i.e. learning about how they learn and what they have learnt). Thus, the answer to the title of this paper is affirmative and future research work on students' self-assessment should focus on metacognitive knowledge, self-efficacy and constructivist learning processes.

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