

Full Paper

Introduction

Self- & peer assessments are activities where learners engage with criteria and standards and apply them to make judgments (Falchikov & Goldfinch, 2000). 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). Self-assessment is a way of increasing the role of students as active participants in their own learning (Boud, 1995). Peer-assessment is the process through which groups of individuals rate their peers (Falchikov, 1995). It is a process where individuals take responsibility for assessing the work of their peers against set assessment criteria. It is a powerful way of acting as an 'assessor' to gain better understanding of the assessment process and criteria.

Self- & peer assessments have been recognized as useful tools in fostering deeper learning (Boud, 1988; Falchikov, 1986). When operated successfully, both self- & peer assessments help learners in taking control of their own learning. Self-assessments help them develop critical reviewing and judgement skills, provide them with the opportunity to reflect on their own contribution, and increase their awareness of the assessment process. More importantly, self-assessment provides an environment to develop meta-cognitive skills that contribute to a range of important capabilities. Peer assessment helps learners in developing; interpersonal, judgement, and constructively critiquing skills and allows them to understand group dynamics. It contributes towards critical thinking, working cooperatively and becoming autonomous, responsible and involved learner. Peer assessment promotes a sense of fairness and makes the learner feel responsible for assessment and learning.

In their self- & peer assessment study Thomas et al, (2011) concluded that the assessment process should be designed to not only measure but also encourage learning. Hence, the use of self- & peer assessments is encouraged for future learning. However, the users respond differently to these assessment tools and the tools themselves act in different ways to reinforce deeper learning. The mechanism on how these tools trigger to deeper learning is not yet fully explained and/or discussed in the literature. Therefore, there has been a need to understand the ways in which learners' interact with self- & peer-assessments and the means of learning that takes place during the assessment processes.

Objectives

This study was conducted to understand the mechanism of the learning that happens during self- & peer assessments. The objectives of the study was to understand students' behaviour and learning approaches during self- and peer-assessments.

Methods

This study was conducted over a period of five years (i.e. from 2009 to 2013) on first year University students studying Geographic Information Systems course in both on-campus and distance modes. Self-assessment was conducted for three years and peer-assessment for two years. The written assignment was one of the summative assessment items for the course and this was used as a subject for self- & peer assessment studies. The assignment was different every year however they all were based on short-answer type questions. The purpose of self- & peer assessments was not to provide assignment marking relief to the teachers. The number of participating students per year varied between 75 and 200. Most of them (i.e. 85-90%) were studying the course in a distance mode. Part marks were allocated for performing self- or peer assessment to motivate students in the process.

In peer assessment students were required to assess the assignment of their fellow students whereas in self-assessment they were required to assess their own work. Assignment grading was part of self- & peer assessment processes however the grades assigned by the

students were not counted towards summative grade for the course. Students were informed in advance about this grading arrangement.

Both self- & peer-assessments were completed and submitted electronically via University learning management platform. The option to participate in the self- and/or peer assessment was voluntary but students were highly encouraged to participate in the process. Students who chose not to participate in the self- and/or peer assessment were provided an equivalent alternate task to enhance their assessment skills.

Self-assessment process

The self-assessment study was conducted on the assignment completed by the student themselves. Self-assessment was commenced soon after the assignment submission due date. Model answers to the assignment questions, self-assessment guidelines, and self-assessment marking rubric were provided to assist students in the assessment process. The self-assessment guidelines detailed on assessment procedure and the quality of assessment required. Students were asked to self-assess their own submitted copy of the assignment. During self-assessment, they were required to award marks for answers to each assignment question and provide full justification for marks awarded on the self-assessment feedback rubric. Students were required to submit self-assessment feedback rubric.

The emphasis of self-assessment was on the comprehensiveness of assessment, accuracy of the awarded marks, appropriateness of the justification for the marks, and the realisation of the strengths and the weaknesses of their own work. The effectiveness of the self-assessment in student learning was evaluated using students' survey feedback as well as the content analysis of students' self-assessment feedback rubric.

Students' behavioural response towards the revelations of the reality during self-assessment was examined using; (a) quantitative analysis of Likert-scale based survey data, and (b) qualitative analysis of survey feedback and self-reflections provided via self-assessment feedback rubric. This paper attempts to link these self-assessment triggered behavioural responses with students' learning.

Peer-assessment process

The peer assessment study was conducted using a Turnitin-based electronic peer review system. Prior to the start of the assessment, a number of steps including; removal of personal identification from the submitted assignment, and random selection and distribution of assignments to fellow students were undertaken. Model answers to the assignment questions, peer-assessment guidelines, and a peer-assessment marking rubric were provided. The peer-assessment guidelines detailed on assessment procedure and the quality of assessment required. Each student was given the opportunity to access three anonymous assignments of their peers.

Peer-assessing students were asked to provide detailed written assessment feedback to their peers. Peer-assessed assignments, with the grade and feedback from their anonymous peers, were returned to the respective owners of the assignment for review. The quality of students' peer assessment feedback was screened by the instructor prior to returning to their owners. No further action was required from the assignment owners except their voluntary contribution to the survey.

Voluntary survey was conducted towards the end of each assessment period to find out the usefulness of the peer-assessment system in terms of student learning, and to learn about students' personal experience during peer-assessment. Five-point based Likert-scale based survey questions, with provision for descriptive feedbacks, were employed in the survey.

Students' understanding of peer assessment and their behavioural response towards their peers' assignment were examined using; (a) quantitative analysis of Likert-scale based survey data, and (b) qualitative analysis of written survey feedbacks and the comments

provided by students on peer-assessment marking rubric. This paper attempts to link these peer assessment triggered behavioural responses with students' learning.

Results

Majority of the students participating in self- or peer assessment process, during the five years study period, were generally satisfied in making use of these assessment tools despite occasional technical challenges during the implementation process. About one-quarter of the students were unable to clearly visualise the learning benefits and/or otherwise of self- or peer assessment while a minor percentage (less than 5%) remained vigorously opposed to using any such tools. Students' responses were different for each of the assessment types. Their responses to self-assessment provided insight into a number of different information and observable behaviours. These responses are grouped into two dominant response (i.e. expressed, & reflected) categories and summarised below.

Expressed views: In response to survey question most students were able to recognise the benefits of self-assessment as seen in Figure 1. However, almost one-quarter of the participating students were not in agreement with the perceived benefits of self-assessment. Students provided comments in support of their survey response irrespective of whether their response was in favour or against self-assessment.

Self-reflection: In response to self-assessment of their own assignment, almost all students identified deficiencies in submitted work. Some highlighted the deficiencies substantially and some others did it superficially. But, it was clear that they all became self-aware of the situation. Never the less, they differ in the way they analysed and interpreted these 'identified' deficiencies. Reluctance to accept deficiencies was clearly visible in some instances of students' self-assessment. The focus of this study was to find out how learning takes place under such circumstances. Hence, the analytical discussion follows this aspect of self-assessment.

Students' responses to peer-assessment provided some insight into their unique behavioural patterns that are grouped into three dominant response categories (i.e. expressed, observed and reasoned) and summarised below.

Expressed views: Students' survey responses revealed that most (more than 65%) students have experienced direct learning benefit of peer assessment (refer Figure 2). The remaining (i.e. 35%) students were either unable to clearly express their opinion with regards to learning benefits and/or reluctant to accept its usefulness as a learning tool. The anecdotal evidences however suggest that the class result for the course was improved in those years when peer assessments were performed. However, this may or may not be attributed to the peer-assessment.

Observed style of feedback: One of the important observations made from peer assessment feedback was the non-offending behaviour of comments provided by a substantial number (i.e. 35-40%) of participating students. Many of them were hesitant to openly criticize their peers' work. They were careful in choosing words and making comments that could potentially affront their peers. There was however no shortage of exceptions to this. In some cases, there

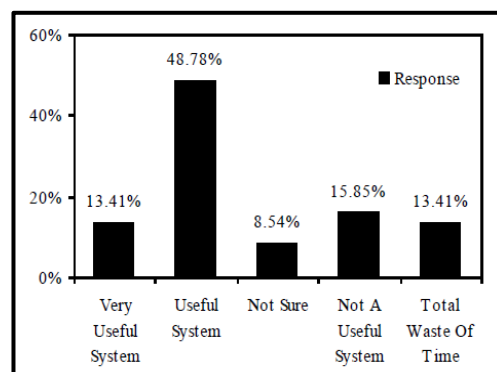


Figure 2: Usefulness of peer-assessment in learning

was a need to remove feedback comments provided by fellow students.

Demonstrated reasoning: With regards to benefit or otherwise of peer assessment, a significant proportion of students were in the view that the main benefit was due to their exposure to different ways of doing things (e.g. answering questions). Some were pleased to note that their own work appeared to be better than that of their peers. This may have helped them in developing self-confidence. A handful of students were reluctant to admit any benefits of peer assessment. They seem to believe on didactic learning where the teacher is the primary agent in assessment and learning. This reasoning needs to be discussed further in the context of awareness and learning brought about by the peer-assessment.

Discussions

Many early researchers reported self- & peer assessments as useful tools to encourage active learning (Falchikov & Goldfinch, 2000; Thomas et al., 2011; Kulkarni et al, 2013). For this study, self- & peer assessments were implemented for a number of years (Basnet et al, 2009; Basnet et al., 2010; Basnet et al., 2011; Basnet et al, 2012; and Basnet, 2013) on first year University students studying in both on-campus and distance modes. Their observed and demonstrated behaviors during the implementations were recorded. The purpose was to link students' behavioural patterns with learning. The objective was to find out whether (or not) learning takes place when there is a substantial variation in students' behavioural patterns and the type of assessment (i.e. self-assessment or peer assessment) being used. The discussion below examines the aspects of students' learning for each assessment type with regards to awareness and learning. Here, awareness refers to knowledge or perception of a situation or fact.

Discussions on self-assessment

Through this study it was found that almost all students were able to identify deficiencies in their submitted assignment during self-assessment. However, the way they interpreted and presented these deficiencies varied substantially. Some highlighted the deficiencies and suggested possible solutions towards its remedy in their future works. Some others highlighted only good things about their work and discussed as little as possible about those deficiencies. A number of them have addressed the deficiencies trivially and moved on. And, some others vigorously defended their work using less relevant arguments.

In all these instances, students have attempted to overcome with the conflicting beliefs that may have come about when their seemingly 'perfect' assignments fell short in standard and were not perfect. Festinger (1957) introduced the concept of 'cognitive dissonance' to describe this conflicting beliefs situation and explained it as a psychological state in which an individual's cognitions are at odds. According to Festinger's theory, individuals, when presented with evidence contrary to their worldview, experience cognitive dissonance. Two aspects of cognitive dissonance conceptualised are; (a) dissonance as psychological discomfort (Festinger, 1957), and (b) dissonance as a bodily condition similar to tension (Elliot & Devine, 1994). In either case, individuals try to apply various methods to quell the dissonance and seek consonance.

In this study, students have attempted to reach to consonance by using the 'explanation' methods presented in the preceding paragraph. So, the self-assessment has been successful in making students aware of the reality and bringing about the cognitive dissonance that led them seek for consonance. However the main question about the usefulness of self-assessment in learning remains unanswered. How is self-assessment going to help in students' learning? The notion that "self-assessment brings about awareness and awareness opens the door to learning" has been introduced and discussed in this paper in answer to this question.

It can be safely assumed that most self-assessing students would not have enjoyed discovering their seemingly perfect assignment was not really perfect. The awareness of this

new situation must have led them to a state of psychological discomfort as described by Festinger (1957) and bodily tension as explained by Elliot & Devine (1994). Hence, they responded with various explanations to reach to consonance with the new situation.

So, the responses were there, irrespective of whether it was to; embrace the new conflicting beliefs and move on, or to try hard to resist against the conflicting beliefs. Obviously, if they were not 'aware' of this new situation of conflicting beliefs they would not have responded. This means, students were able to spot the differences and become aware of the conflicting situation during self-assessment. Therefore, self-assessment has provided the opportunity to become aware and this awareness has led them to respond.

Depending on their inherent personal characteristics and circumstantial factors, each student responded differently to cope with these new challenges (i.e. cognitive dissonance). Consequently, some students highlighted the uncovered deficiencies and proposed a solution to it, some others accepted the deficiencies and moved on, some others kept quiet on the issue, and a few of them argued against it. The reality is that they had to work through the problems, understand the issues, and find out suitable arguments to respond to the situation. None of these responses would have been possible without thinking through the problems, exploring new things and expressing new ideas in words. Hence, the learning has been an inevitable part of self-assessment. Thus, the argument "self-assessment brings about awareness and awareness opens the door to learning" holds true for self-assessment.

Discussions on peer-assessment

In this study it was found that most students were able to visualise the benefits of peer assessment in the form of exposure to new ways of doing things. Some were able to compare their own work with others and establish their position in the class. A handful of others believed on teacher-centred learning. Nevertheless, every one of them went through the process of peer assessment and provided comments about their peers' works. But the main question about the usefulness of peer assessment in learning remains unanswered. How is peer assessment going to help in students' learning? The notion that "peer assessment brings about awareness and awareness opens the door to learning" has been introduced and discussed in this paper in answer this question.

Judging from the peer assessment feedbacks provided, it appeared that many students were careful in making comments. They were choosing the words to use and demonstrating 'non-offending' behaviours. Some others were direct in their comments. Unfortunately, a few were too harsh in comments and required some intervention from teaching staff. Irrespective of their expression of comments, one thing was common. All of them have read peers' assignments and found deficiencies warranting comments. So, the peer assessment has allowed them to develop awareness about their peers' works. It has also made them think through the answers presented by their peers and comment about those answers. These actions would not eventuate without proper thinking through the problems, exploring new things and expressing new ideas in words. Hence, the learning has been inevitable part of peer assessment. Thus, the argument "peer assessment brings about awareness and awareness opens the door to learning" hold true for peer assessment.

Conclusions

Both self- & peer assessments provided awareness. Self-assessment provided awareness of the deficiencies or sufficiencies of student's own work when compared with the required standards. Peer assessment provided awareness of the deficiencies or sufficiencies of their peers' work when compared with the required standards and with their own. In either case, awareness was the inevitable outcome. Awareness prompted for actions such as thinking through the problems, addressing issues, suggesting solutions for correcting problems, answering questions, making comments etc. For these actions, deeper learning, learning

new things and widening the knowledge has been essential. Hence deeper learning was inevitable.

Therefore, this study concludes that self- & peer assessments can be used safely as learning tools. Since, these tool act differently in bringing about awareness, it is recommended that the combination of self- & peer assessment be used in reinforcing deeper learning.

References

- Basnet, B., Brodie, L., & Worden, J. (2009). *Peer assessment of assignment – The USQ experience*. Proceedings of the 2009 AAEE Conference, Adelaide.
- Basnet, B., Brodie, L., & Worden, J. (2010). *Enhanced feedback – Does peer assessment achieve this goal?* Proceedings of the 2010 AAEE Conference, Sydney.
- Basnet, B., Basson, M., Devine, J., Hobohm, C. & Cochrane, S. (2011). *Is self-assessment effective in enhancing student learning?* Proceedings of the 2011 AAEE Conference, Fremantle.
- Basnet, B., Basson, M., Hobohm, C. & Cochrane, S. (2012). *Students' self-assessment of assignments - Is it worth it?* Proceedings of the 2012 AAEE Conference, Melbourne.
- Basnet, B. (2013). *Cognitive dissonance in student self-assessment*. Proceedings of the 2013 AAEE Conference, Gold Coast.
- Boud, David. (2003). *Enhancing learning through self-assessment*. RoutledgeFalmer, Taylor & Francis Group, New York.
- Boud, D., & Falchikov, N. (1989). Quantitative studies of student self-assessment in higher education: a critical analysis of findings. *Higher Education*, 18, 529-549.
- Falchikov, N., & Goldfinch, J. (2000). Student peer assessment in higher education: A meta-analysis comparing peer & teacher marks. *Review of Educational Research*, 70(3), 2000.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press, Stanford, California.
- Elliot, A. J., & Devine, P. G. (1994). On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort. *Journal of Personality and Social Psychology*, 67(2), 382-394.
- Kulkarni, C., Wei, K., Le, H., Chia, D., Papadopoulos, K., Cheng, J., Koller, D., & Klemmer, S. (2013). Peer & self-assessment in massive online courses, *ACM Transactions on Computer-Human Interaction*, 9(4), 2013.
- Thomas, G., Martin, D., & Pleasants, K. (2011). Using self- & peer-assessment to enhance students' future-learning in higher education. *Journal of University Teaching & Learning Practice*, 8(1), 2011.

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