

Constructive feedback as a learning tool to enhance students' self-regulation and performance in higher education

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If feedback is provided in a way that can develop students' self-regulatory skills, it could enhance learning and, consequently, lead to improved performance. To improve teaching and learning in higher education (HE), this study sought to determine whether the feedback to first-year students affords them an opportunity to learn from it. A theoretical framework on constructive feedback, self-regulated learning and the expectations of students was synthesised from literature which formed the basis of the research. This was followed by empirical research using a questionnaire to capture students' perspectives regarding feedback. Students experienced the feedback as not contributing towards improving their performance but are convinced that, if they receive feedback that is focused on the task level, it can improve their performance. Suggestions are provided that emphasise the need to use feedback at both task and process level as a learning tool.

Keywords: constructive feedback, task-related feedback, self-regulated learning, self-assessment

Introduction

The current nature of the feedback given to students does not afford them the opportunity to enhance their learning. Worldwide higher education institutions are facing problems such as increasing numbers of students, heterogeneous student populations, a lack of resources, and considerable teaching pressure on staff, which have resulted in reduced opportunities for feedback (Masiu & De Corte, 2005). Nicol and McFarlane-Dick (2006) reiterate that the lecturers' workload can affect the quality of both feedback and learning in relation to students' progress and academic experience. Students appear to be in greater need of detailed feedback despite the fact that some value the grade more than the feedback and do not necessarily learn from comments on their marked work (Weaver, 2006). This therefore necessitates an investigation into how feedback is provided and how it can be altered to enhance learning.

Irons (2008) regards the utilisation of quality feedback to be a constructive learning tool with which to improve teaching and learning in higher education. He maintains that feedback could empower students as self-regulated learners; thus, encourage their motivational beliefs and develop self-esteem. Extensive literature on the value of self-regulated learning (SRL) and the structure and function of self-regulatory processes confirms that self-regulated behaviour is associated with academic achievement (Zimmerman, 2002). Zimmerman (2002) asserts that "self-regulation is not a mental ability or an academic performance skill but a self-directive process by which learners transform their mental abilities into academic skills". This implies that, if students learn from the feedback they receive and engage in various activities in a "[p]roactive way rather than as a covert event that happens to them as a reaction to teaching", it should improve performance. Garcia and Pintrich (1994) explain that the implementation of this strategy has no significant value if students are unable to integrate feedback with prior knowledge. Students will only be successful if they make meaning of the feedback they receive. Butler and Winne (1995) regard seeking feedback as pivotal to SRL, and it can be assumed that, if opportunities to provide feedback in a way that can develop self-regulatory skills are created and used, it could enhance learning and consequently lead to improved performance.

It is argued that feedback is under-conceptualised, with the focus merely on 'transmitting' to students information about their strengths and weaknesses, which does not portray the active construction of students' own understanding of the feedback message from tutors or lecturers or engaging in a dialogue about their work. Havnes and McDowell (2008) refer to the emergence of an assessment culture and of

an alternative ranking of students that will not focus on a single score. They link this to an envisaged new culture of assessment that will provide multidimensional feedback, which could foster effective learning. Irons (2008) raises the concern that universities are not altering their teaching and learning approaches, and can thus face an uncertain future. A cause for concern in this article is how feedback – as part of a culture of learning – plays out in relation to the enhancement of learning and specifically SRL. Pellegrino (cited in Irons, 2008) views learning as a process of “continuously modifying knowledge and skills and that feedback is essential to guide, test, challenge, or redirect the learner’s thinking”. It is suggested that an altered learning environment will encourage dialogue, motivate students to learn and, ultimately, allow students to take responsibility for and ownership of their learning. However, changes in the learning environment do not guarantee changes in feedback that will enhance learning. This article examines whether the feedback that students receive affords them the opportunity for SRL. The application of SRL skills could be regarded as the impetus behind using feedback as a learning tool that warrants success. This allows students to be actively involved during the feedback process; thus, increasing their sense of being responsible for their own learning.

Quality feedback as a constructive learning tool

Nicol and McFarlane-Dick (2006) capture the importance of providing quality feedback and improved learning in a self-regulated model and place the students in the centre as active role players during the feedback process. They elaborate by adding that students should monitor and regulate their performance through the learning process, which involves the application of a variety of sources, strategies, goal-setting, collaborative groups, as well as internal and external feedback. According to Butler and Winne (1995), feedback is inherent and a prime determiner of processes that contribute to self-regulation, allowing for active engagement. The quality therefore depends on the cognitive processes involved. Sadler (in Nicol & McFarlane-Dick, 2006) and Irons (2008) maintain that feedback can only benefit students if they:

- are certain of what is expected of them and of the level at which they should perform;
- can compare their actual level of performance with the intended level or standard; and
- are actively engaged in a specific action that will improve their situation or close the gap between their current level and the intended level of performance.

It is imperative that students make sense of the acquired knowledge and use feedback information constructively. The appropriateness of effective feedback also affects the quality of learning and student achievement. Quinton and Smallbone (2010) support this view, adding that feedback is a “socially constructed process affected by the conditions in which it was produced”.

Students need support in linking the feedback they received and in ways to use the feedback in order to improve their performance. Black and William (1999) and McMillan (2011) refer to this as the facilitation of the development of self-assessment. Nicol and MacFarlane-Dick (2006) argue that providing students with self-assessment tasks can improve their capacity for self-regulation if “formal and structured” opportunities are created to monitor themselves, judge their own progress towards goals, and encourage them to reflect on their processes. As an aspect of self-assessment, self-appraisal refers to a person’s capacity to review and evaluate his/her ability, knowledge and cognitive strategies by means of a variety of self-monitoring processes. As another aspect of learning, self-management refers to a person monitoring and regulating his/her own ongoing performances by planning, correcting mistakes, and using the correct strategies (Hattie & Timperley, 2007; Paris & Winograd, 2001). Therefore, in managing self-assessment, Nicol and McFarlane-Dick (2006) propose that facilitation can be strengthened if structured opportunities are provided to monitor the gaps between current and intended performance and if, according to Frey, Kettering and Marshall (2009), peers are involved in the reflection process.

Hattie and Timperley (2007) claim that when students have the meta-cognitive skills of self-assessment, “they can evaluate their levels of understanding, their effort and strategies used on tasks, their attributions and opinions of others about their performance, and their improvement in relation to their goals and expectations ... [m]ost important, students know how and when to seek and receive

feedback from others". Sadler (1983) concurs that the goal of many instructional systems is to "facilitate the transition from feedback to self-monitoring". Nicol and McFarlane-Dick (2006) concur with De Corte (2000) that there should be a good balance between external regulation and self-regulation. This implies that students must be actively involved in controlling and managing their own learning, independently assessing themselves to correct their own mistakes, and monitoring the gaps between internally set tasks and intended goals.

Black and William (1999) attest that learning can be enhanced if students recognise their desired goal and have evidence about their present position. They postulate that the implementation of the mentioned aspects can produce some understanding of closing the gap between achieving the desired goal and the present position. Attaining the goal should follow once feedback has been provided in response to students' performance and attempts to demonstrate mastery of a learning goal. Information should thus be provided on attaining goals and competencies and on correcting misconceptions by giving students "specific corrective information" (Thalheimer, 2008). Feedback should explicitly describe what the student did and did not do, based on what was communicated. Clark (in Black & William, 1999) refers to this as "closing the gaps" to improve learning by means of reminders, suggestions and questions to aid the student. Feedback should support students to develop "mental models" of the concepts they have learnt. Quality feedback is beneficial, especially when students are developing an understanding of complex tasks. The correct response, together with an explanation of why it is correct, will support the student in further learning (Thalheimer, 2008). Students should not only learn from feedback, but also be able to evaluate their progress and compare it with their goals (Nicol & McFarlane-Dick, 2006). McDowell (2008) states that there should be a mutual understanding between the outcomes set by both the lecturer and the student before assessment procedures are instituted. Nicol and McFarlane-Dick (2006) allude that students do not always understand the feedback provided by tutors because of discrepancies between the various parties' intended goals. The emphasis is too often on what the lecturer expects rather than on trying to understand how the student thinks (Chambers, 1993).

Feedback should be transmitted in a way that enables students to engage actively with a view to improving their learning and communicating their understanding. Black and William (1998) as well as Hattie and Timperley (2007) capture this aim in challenging tasks that provide the opportunity for students to gain understanding of the intended goal, be committed to achieving it, be confident that they will succeed in improving their learning, be able to seek alternative strategies to complete the task, and display their willingness to enhance their learning. Thalheimer (2008) refers to the timing of feedback that should allow for opportunities to engage in cognitive processes and develop additional retrieval routes to store information. If feedback is directed at task level, immediate feedback can result in faster rates of acquisition. However, feedback at the processing level can develop a variety of learning strategies that can be utilised and that will improve future learning (Hattie & Timperley, 2007).

Active involvement during feedback

To improve performance after feedback, close communication between lecturers, tutors, peers and the students is necessary in order to develop the students' capacity for self-assessment (McDowell, 2008). Without this communication students might not be able to either internalise the feedback they receive or identify the gap between intended goals and their performance. In conceptualising the feedback dialogue or questioning, it is necessary to provoke both reflection and action. Learning environments that provide for structured discussions directly or via technology (Irons, 2008) and for peer assessment expose students to a variety of alternative perspectives that enable them to make objective judgements about their performance and thus motivate them. With increasing student numbers at tertiary institutions dialogue as a means of feedback can be difficult. However, Nicol and McFarlane-Dick (2006) propose that students divide into small groups to discuss feedback. Dialogue with peers was also found to enhance a sense of self-control and persistence because students find it easier to accept criticism from peers than from tutors (Irons 2008).

Based on the premise that feedback has as its purpose the engagement of the student in both a formal and an informal way, Yorke (2003) states that feedback is under-conceptualised and that the “disciplinary epistemology theories of intellectual and moral development, stages of development and the psychology of giving and receiving feedback” should be taken into account. Feedback should remain focused on enhanced learning that will facilitate self-assessment by:

- clarifying, informing or describing to students regarding their performance;
- identifying students' strengths and weaknesses by diagnosing, differentiating and remediation;
- supporting students by motivating and empowering them;
- indicating to the students their level of competence and predicting their personal outcome; and
- assisting students with the evaluation and monitoring of the programme.

Active involvement allows students to make sense of the “diagnostic prescription” of the lecture (Black & William, 1999). This equips students gradually with the evaluative skills they need to make them less dependent on others, develop the ability to assess themselves, and monitor the gaps between internally set tasks and personal goals. McDonald and Boud (2003) affirm that self-assessment and the provision of frequent opportunities to reflect on goals, strategies and outcomes are highly effective in enhancing learning and achievement. Nicol and McFarlane-Dick (2006) regard feedback to be a holistic process with coherent arguments supporting the evidence. Frey *et al.* (2009) concur, adding that the online provision of prioritising areas of improvement by means of personal response systems to provide immediate feedback can enhance learning.

Hattie and Timperley (2007) and Stiggins (2002) refer to the powerful influence of feedback on learning and achievement which can either be positive or negative. Leathwood (2005) links progress to performance and goal setting, and warns that constant exposure to low marks can have a negative impact on students' motivation to learn. On the other hand, Frey *et al.* (2009) allude that positive written feedback can create a climate to promote self-esteem, which could lead to improved performance.

Research methodology

The positivistic paradigm was chosen to capture the perceptions of first-year students at the University of the Free State regarding the feedback they receive and to explore the practice of feedback. A questionnaire with closed-ended questions was used (Pietersen & Maree, 2007). The data was collected from a sample of 92 first-year students in the Faculty of Education who participated voluntarily. The questionnaire focused on their perceptions of the feedback they receive in this Faculty. The quantitative data is presented by means of descriptive statistics, in terms of the mean (\bar{x}), standard deviation (s), aggregate mean (\bar{x}_c) and aggregate standard deviation (s_c) of the items per category (Pietersen & Maree, 2007).

The measurement content validity was strengthened by means of the disciplinary epistemology of good feedback as suggested by the literature presented earlier. Questions in the questionnaire were categorised as follows to determine whether the feedback that students receive:

- will enhance their performance if they set goals and are provided with criteria;
- supports the facilitation and development of self-assessment;
- provides students with high-quality information about their learning;
- encourages peer and lecturer dialogue;
- encourages motivational beliefs and self-esteem; and
- provides opportunities to close the gap between their current and desired performance.

Thirty-two questions were formulated to address these categories. Respondents rated themselves on their perceptions regarding feedback using a 4-point Likert scale, with 1 indicating *very positive*, 2 indicating *positive*, 3 indicating *negative* and 4 indicating *very negative*. Statistical evidence in terms of the mean

value \bar{x} can be classified as being very positive to positive (i.e. $\bar{x} \leq 2.0$), and negative to very negative (i.e. $\bar{x} > 2.0$). A standard deviation (s) ranging from 0.708 to 1.124 gives an indication of the distribution of variance around the mean if the majority of the students answered in either a positive or a negative manner. Because no single item is a perfect measure of concept the researcher relied on a series of measures to assess internal consistency. The first measure is item-to-total correlation which is effected by the number of test items in each construct as well as the intercorrelation among these items (Murphy & Davidshofer, 2004; Hair, Black, Babin, Anderson & Tatham, 2005). The second measure is the reliability coefficient that assesses the consistency of the entire scale, with Cronbach's alpha being the most widely used. Hair *et al.* (2005) refer to Cronbach's alpha of 0.7 as reliable, which can decrease to 0.6 in exploratory research. In this research a total reliability of 0.828 was obtained for the total questionnaire, which indicates the internal consistency of the responses and makes the data reliable. It is worth mentioning that individual constructs were affected by the low number of items and the degree of intercorrelation between the items (Hair *et al.*, 2005). The Cronbach's alpha reliability value in table 3 depicts a value of 0.79 with nine items and 0.6 for table 2 with four items.

Discussions of findings

Data in table 1 indicates that the majority of the students (s_c of 0.886) were negative ($\bar{x}_c = 2.27$) on the aspects of feedback they receive. However, students were positive ($\bar{x} = 1.70$) that the feedback they receive covers some aspects of their work. They returned a response of negative in respect of whether the feedback provided information to enhance their performance if it covers all aspects of their work and relates to the assessment criteria. The findings concur with McDowell (2008) who states that, for students to enhance their learning, there should be a mutual understanding between outcomes and criteria set by the lecturer and the student because different conceptions can exist among students and lecturers when ranking assessment criteria for a specific task. This could have an effect on the outcomes of feedback, influence performance, and inhibit the encouragement of self-assessment.

All the students, as indicated in table 2, responded negatively with regard to aspects of facilitation and development of self-assessment. In support of enhancing learning, an environment that allows students to develop the capacity for self-assessment and opportunities to monitor themselves as well as reflect on their own processes can result in improved performance. In this regard, Stiggins (2008) refers to the active involvement of a variety of cognitive processes. McDowell (2008) emphasises the importance of conceptualising and internalising what has been learnt from the feedback so that it can develop self-regulation skills and result in improved performance.

Concerning the items relating to whether the feedback provides high-quality information during feedback to students about learning (see table 3), the majority of the students (s_c of 0.878 and an s that varies from 0.708 to 1.024 and $\bar{x}_c = 2.25$) responded negatively. Inappropriate feedback that students received strengthens Thalheimer's (2008) argument that "specific corrective information" cannot only eliminate misconceptions, but will also allow for opportunities to develop an understanding of the task at hand and enable students to monitor and evaluate their progress that can result in improved performance. The findings in table 4 indicate that the majority of the students ($s_c = 0.849$) required tutorial support and verbal discussions that would improve their performance. By contrast, most ($s = 0.895$ and $\bar{x} = 2.25$) of the students indicated that they do ask for tutorial help but are of the opinion ($\bar{x} = 1.67$) that a discussion after feedback can enhance their learning. Hattie and Timperley (2007) affirm that understanding what is expected in relation to a specific task, is a crucial requirement for self-regulation.

Black and William (1998) allude that feedback can have either a negative or a positive influence on students, and can affect their performance. It is clear from the findings in table 5 that students experience the feedback negatively regarding their marks, the critique and the written comments. However, they feel positive ($\bar{x} = 1.79$) that constructive criticism, which focuses on the mistakes and clarifies their misconceptions, will improve their learning. The students were also positive ($\bar{x} = 1.84$) that a balance between formative and summative assessment will guide them through the learning process.

As indicated in table 6, students responded negatively with regard to the timely aspect that will improve their performance but were positive that, if the feedback focused on the outcomes, it will enhance their learning. This is an indication that students are eager to rectify the mistakes if the misconceptions have been identified, and that they want to strengthen their weaknesses. Feedback directed at misconceptions about the task, as Hattie and Timperley (2007) argue, will not leave incorrect “mental traces” but instead provide the opportunity for students to engage in cognitive processes to improve their learning. The majority ($s_c = 0905$) of the students feel positive ($\bar{x}_c = 1.97$) that, if opportunities are provided to close the gap between current and desired performance, it can enhance learning.

Conclusion

The literature consulted revealed that learning can be enhanced by means of constructive feedback that focuses on both the task and the process. However, the findings indicated that the feedback students receive does not allow for the opportunity to develop their self-regulation skills and does not always improve their performance. As pointed out in the findings, students feel positive that feedback, which focuses on closing the gap between current and desired performance that affords the opportunity to monitor and regulate their learning, can contribute towards improving their performance. The role of feedback is to inform students about their strengths and weaknesses and for them to actively engage with the information they receive. Several challenges confront the lecturers if they want to ensure improvement in students' performances that will result in effective learning and, most likely, increase the throughput rate of students. The main aim of tertiary institutions is to ensure that students progress. Providing effective task- and process-related feedback can support students in becoming more independent learners who know how to use their mental abilities to develop their academic skills. While feedback is viewed as the pivot around which self-regulation turns, it can be assumed that constructive feedback, which relates to both the task and the process, could enhance self-regulatory skills that will ultimately lead to improved performance.

This study indicated that the manner in which feedback is provided to students does not afford students the opportunity to actively engage in and regulate their learning or to engage in self-assessment activities. By constructive feedback we have realised that we will have to understand not only the “technical structure of feedback such as accuracy, comprehensiveness and appropriateness, but also the accessibility to the student's thinking processes” (Sadler, 1983). This can only be achieved by discussions with students after feedback has been provided. To improve the students' performance, lecturers will have to constantly reflect on their own assessment and feedback practices to seek causes as to why students in many cases are not utilising the feedback they receive and are not progressing as they should.

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Table 1: Aspects of good feedback

Question	Indicator	N		s
1	When I am being assessed on work done, I understand what it is that I am expected to do	90	2.47	0.864
3	The feedback I receive is easy to understand	90	2.34	0.938
4	The feedback I receive covers all aspects of my work	89	2.25	0.816
5	The feedback I receive relates to the assessment criteria	90	2.21	0.910
15	The feedback focuses on the outcomes not achieved	90	2.66	0.863
32	The feedback I receive covers some aspects of my work	89	1.70	0.922
		\bar{x}_c	2.27	
			s_c	0.886

\bar{x}_c – aggregate average mean; s_c – aggregate average standard deviation

Table 2: Aspects of facilitation and development of self-assessment

Question	Indicator	N		s
8	The feedback I receive tells me how I can improve next time	90	2.06	1.032
16	The feedback is constructive and tailored to meet my needs	85	2.33	0.905
18	The feedback provides opportunities for me to reflect on the feedback and develop action plans for recovery or for future work	87	2.29	0.834
21	When self-assessment is used does it provide opportunities for you to validate/verify your assessment?	89	2.11	0.804
		\bar{x}_c	2.2	
			s_c	0.894

Table 3: Promoting high-quality information to students about learning

Question	Indicator	N		S
2	The feedback I receive is easy to read	90	2.26	0.881
6	The feedback I receive tells me what I have done well	90	2.16	0.935
7	The feedback I receive tells me how I can improve next time	90	2.32	0.918
10	The feedback I receive highlights action points for future development	89	2.21	0.859
11	The feedback I receive offers an explanation of where I have gone wrong	90	2.12	0.859
12	The feedback gives me clear guidance on how I can improve my work	90	2.13	1.024
19	The feedback indicates the essential or priority aspects where there is much to be improved	90	2.12	0.872
22	Are some of the comments considered during feedback referred to a database of comments?	88	2.64	0.847
23	Is feedback given via e-mail or generated by computer, for example, after a computer-delivered test?	75	2.28	0.708
		\bar{x}_c	2.25	
			s_c	0.878

Table 4: Peer and teacher dialogue

Question	Indicator	N		S
14	I ask the tutor for further guidance on the module	89	2.25	0.895
20	When peer assessment is used, it is clearly defined in what way the grades are used to inform the final mark awarded and to ensure consistent practice	90	2.21	0.807
29	If I receive tutorial support after feedback, it will enhance my learning	90	1.67	0.807
31	Verbal discussion with markers can help you identify your mistakes and way of thinking	92	1.96	0.886
		\bar{x}_c	2.02	
			s_c	0.849

Table 5: Encouraging positive motivational beliefs and build self-esteem

Question	Indicator	N		s
13	I feel that the mark I receive is fair and appropriate	90	2.30	0.958
17	The feedback is an appropriate balance between criticism and advice	89	2.28	0.754
24	Is the feedback provided legible and expressed in such a way that the student will understand and be motivated by it?	90	2.92	1.124
27	Constructive criticism during feedback helps me learn from my mistakes	90	1.79	0.906
30	A balance between the feedback for formative and summative assessment will guide me during the learning process	90	1.84	0.847
		\bar{x}_c	2.23	
			s_c	0.918

Table 6: Providing opportunities to close the gap between current and desired performance

Question	Indicator	N		s
9	If I get the feedback in time, I will correct my mistakes before the next tests and/or assignments	90	2.28	0.924
25	If I receive feedback from tests and/or assignments in time, it will improve my learning	90	2.21	1.022
26	Focusing on the outcomes during feedback will enhance my learning	90	1.66	0.889
28	I compare my assignments and/or tests with the feedback received and then correct the mistakes	89	1.71	0.786
		\bar{x}_c	1.97	
			s_c	0.905