

Please sir, may I have some more? A comparative study on student satisfaction with assessment feedback methods in an undergraduate unit

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Abstract

There is an ongoing tension between the level and type of assessment feedback that University students' seek and what is actually provided by lecturers. The demand for a learning environment which incorporates appropriate assessment feedback to students has to be balanced by the resources available to lecturers. The aim of this paper is to present a comparative analysis of the satisfaction of first year University of Tasmania Information Systems students with two different assessment feedback methods employed during 2005.

This study compares the level of satisfaction with existing assessment feedback methods that embed comments in the student's work with a semi-automated system, called AssessMate. This semi-automated system utilises analytical rubrics, automatic comments and levels of attainment to generate personalised Web pages for the students. Assessment and feedback were performed entirely online using WebCT VISTA for both methods. The resources required to manage the marking of assessment tasks were also analysed.

Students were provided with feedback using two different methods for the first assignment and with only one feedback method for the second assignment, that being the semi-automated system, AssessMate. The level of satisfaction was then measured and compared. Factors such as access, ease of use, usefulness and attitude (satisfaction) were also considered. However, for the purposes of this paper the focus will be on attitude (satisfaction). The study has shown that there is no significant difference between the levels of attitude (satisfaction) based on the two forms of assessment feedback for particular types of assessment. An important finding was that there was a time saving of at least 25% in the marking process when using the semi-automated method. These findings may influence the assessment feedback methods adopted by lecturers for particular types of assessment as they seek to provide fair, fulsome and fast feedback with limited resources to large numbers of students.

Keywords

assessment, feedback, satisfaction, e-learning

Background

From an educational perspective assessment has been defined as the "collecting of evidence, making judgments on, and reporting on student achievement" (James & Baldwin, 1997, p. 1). It can involve a number of approaches: formal or informal, formative or summative, normative or criterion based. Assessment offers a means for showing how a grade was derived, as well specifically identifying areas that need to be strengthened or that were well done.

Students need feedback on their progress and performance to assist them to engage in a subject (Higgins & Hartley, 2002; Soon, Sook, Jung, & Im, 2000; Thurmond, Wambach, Connors, & Frey, 2002). Assessment feedback can have great impact on a student, as self-efficacy and motivation can be increased by providing personalised assessment feedback rather than generic comments (Allen, Montgomery, Tubman, Frazier, & Escovar, 2003). Feedback should be given with some level of immediacy and constructiveness to increase motivation (Özden, Ertürk, & Sanli, 2004; Blayney & Freeman, 2004). The nature of the assessment task and the type of student learning may influence the form of feedback provided.

Two major issues of concern to students with regard to assessment and feedback are the "lack of fairness in grading and too little feedback from their instructors" (Holmes & Smith, 2003, p. 318). The use of learning objectives, with clearly defined criteria support the alignment of assessment and learning activities and are

integral to fairness and reliability (Biggs, 2003; Walvoord & Anderson, 1998, cited in Holmes & Smith, 2003). The issue of consistency in assessment feedback can be assisted by the use of rubrics that incorporate clearly defined criteria (Moskal, Leydens, & Pavelich, 2002; Allen et al., 2003). Levels of attainment can assist students to gain a better understanding of the requirements of a unit. Rubrics should be constructed in collaboration with students, or at least available to students, and there needs to be an understanding of the context in which the learning, assessment and feedback are occurring. O'Donovan, Price and Rust (2001) indicated that, whilst students value rubrics and similar assessment tools, they still remained concerned about subjectivity and that students still require exemplars and explanation. Knight (2002) and Moskal et al. (2002) considered that the issues of validity and reliability were integral to the assessment process. It can be argued that content-related evidence as used in rubrics and the use of criteria do support validity and thus fairness. Similarly, inter-rater reliability is enhanced by the use of rubrics and similar assessment tools.

However, having fairness in assessment feedback does not negate the need to have fulsome feedback. Large-scale assessment must address the cognitive and constructivist learning theories rather than just the issues of validity and reliability (Brookhart, 2004). Holmes and Smith (2003) differentiated between comments that could be used in conjunction with feedback for essays and rubrics that could be utilised for quantitative problems. However, where assessment incorporates the use of codes or minimalist remarks it can adversely affect the learning process. The capacity to reduce marking loads and increase efficiency is also a major reason for using online learning (McKenna & Bull, 2000).

AssessMate is a semi-automated tool developed to assist in the assessment and feedback of quantitative assignments. It is electronically based and provides markers with the specific items required in the assignment and the maximum weighting for each in the overall assessment. Based on the mark given, the grade and specific comments are automatically generated. AssessMate allows the specific comments to be overwritten and provides a section where further comments can be given. When completed, assessment and feedback for each individual student can be uploaded as a personalised webpage to WebCT VISTA and the tool reset to allow assessment of the next student assignment. WebCT VISTA is a content management learning system.

It is proposed that AssessMate addresses issues of fairness and consistency and, because the marking schema is based on the use of rubrics it is an appropriate tool to support the assessment process. Should a large number of assignments be involved it can also support the goal of immediacy.

Based on student experiences the objective of the research presented in this paper is to determine the attitude (satisfaction) of students to the application of AssessMate in their assignment assessment compared with the use of embedded comments.

The hypothesis to be tested is:

H₀1: There is no difference in the level of attitude (satisfaction) with assessment feedback method for embedded comments compared to the semi automated AssessMate.

The hypothesis will be tested in two ways:

Firstly for the first assessment, we will consider the difference in the level of attitude (satisfaction) between students who received feedback from embedded comments and those who received feedback from the semi automated system.

Secondly, we will consider the comparative level of satisfaction between the feedback for the second assessment task (given entirely by AssessMate) compared to the first assessment task received (be it embedded comments or semi automated).

Methodology and data collection

This research is based on a quantitative approach to examine the extent of attitude (satisfaction) with two types of assessment feedback methods among a group of first year undergraduates at the University of Tasmania. It involved two rounds of data collection. The focus was on those enrolled in Information Systems during Semester 1, 2005. While the potential sample population is 320 students, only those attending lectures at the Hobart campus were invited to take part in this research.

In the first year Information Systems course the students are required to use WebCT VISTA to submit and receive feedback for all their assignments. In semester 1 these students needed to complete two assignments. The first task involved a business report/essay that is generally qualitative in nature whilst the second task used an Excel test that is essentially quantitative and hence assessment can be more quantifiable. Feedback for the first task was provided using either embedded comments in the electronically submitted assignment

Word document (59% of students) or the semi automated method, AssessMate (41% of students). Assessment and feedback for the second task was provided entirely using the semi automated system (100%).

Data were collected using a questionnaire that was partially adapted from Wang (2003) and based on an instrument used previously by Doll and Torkzadeh (1988). The revised questionnaire, apart from a brief demographic section, contained sections related to attitudes to the two different forms of assessment for access, ease of use, usefulness and attitude. In these last four sections responses were based on a 5-point Likert scale where 1 indicated strongly disagree and 5 strongly agree. A copy of the questionnaire is included as Appendix A. For the purposes of this paper the focus is on the last aspect, attitude (satisfaction).

The questionnaire for the first assessment task was piloted on a group of 34 students and minor modifications were made. While validity of the instrument had been established by Wang (2003), because minor changes had been implemented this pilot served to confirm the validity of the revised questionnaire.

Round 1 of data collection focussed on the first assessment task of writing a business report/essay. Questionnaires were distributed to a group of 103 students who were present at a scheduled first year Information Systems lecture. To facilitate participation the lecture was shortened to allow students to complete the questionnaire in the normal allocated time of 50 minutes. Students were required to hand back the questionnaire when leaving the lecture theatre.

Round 2 of data collection was conducted after assessment had been returned to students for the second assessment task where questionnaires were distributed to a group of 42 students attending a scheduled Information Systems lecture who had not participated as a group in Round 1. Again the actual lecture time was adjusted to accommodate completion of the questionnaire for collection at the end of the lecture. To enable comparison the questionnaire included an additional question on what assessment feedback method they had previously experienced for the first assessment task and their comparative satisfaction with the new semi-automated system AssessMate. The additional question was:

I am satisfied with the assessment feedback system for the Practical test compared to the Business Report.

Findings and discussion

Demographic results

In this section an overview of the characteristics of the students who took part in this research will be reported. Table 1 provides details of the age range of the participants according to the round of data collection. It shows that in Round 1 the bulk (84.5%) of students were in the 18–25 years age group, while a further 11.7% were aged between 26 and 35 years. In Round 2 a majority (81%) of students were aged between 18 and 25 while 14.3% were between the ages of 26 to 35 years.

Table 1: Age of participants by round

	Round 1	Round 2
	% (n= 103)	% (n=42)
Less than 18 years	1.0	2.4
18 to 25 years	84.5	81.0
26-35 years	11.7	14.3
36-45 years	1.9	
Over 45 years	1.0	2.4

Participants were asked to indicate their level of computer competency. The results are shown in Table 2. Generally the percentage of responses follows a similar pattern between the two rounds of data collection. That is, the larger proportions of respondents indicated they were intermediate users, followed by novice, advanced and expert.

Table 2: Self-perceived computer competency of participants by round

	Round 1	Round 2
	% (n= 103)	% (n=42)
Novice	17.5	18.4
Intermediate	53.4	63.2
Advanced	19.4	15.8
Expert	4.9	2.6

Table 3 shows how long the participants have been studying at University. Again, with one exception the results follow a similar pattern. In both rounds of data collection, a majority have only been at university for less than 1 year, a smaller percentage have been there for 1 year. Slightly smaller percentages of students have studied at university for 2 years or 4 or more years. Students who have been here for 3 years are only represented in the Round 1 dataset.

Table 3: How long studying at university

	Round 1	Round 2
	% (n= 103)	% (n=42)
Less than 1 year	77.7	76.2
1 year	8.7	11.9
2 years	4.9	7.1
3 years	3.9	
4 or more years	4.9	4.8

Main results

Round 1

Because only minor changes were made as a result of the pilot test, a χ^2 test was conducted to determine whether the data could be included in the results from the first questionnaire. This was based on three demographic characteristics of the students: age, length of time at university and computer experience. As some cells contravened the requirement of having a minimum of 5 counts in each cell, the Fisher exact test was used. The results showed that for age, at df 4, $p=.347$, $> .05$, length of time at university, at df 4, $p=.165$, $> .05$ and for computer experience, at df 3, $p=.327$, $> .05$. On this basis, the data from the pilot and first round of data collection were combined.

From the potential sample population of 320, 103 responses were received. Nine of these proved to be unusable and so were eliminated from the dataset. This made a total of 94 valid responses making an overall response rate of 29%. Within this, 58 students received embedded feedback while 36 were assessed using AssessMate.

Prior to conducting independent sample t -tests the data were tested in order check whether the required assumptions of normality of distribution and item reliability were met. The skewness and kurtosis were checked for the six items within the attitude section of the questionnaire and found to be within the acceptable range of + or - 2.

Reliability refers to the extent to which the items a measure are consistent. Table 4 shows the result of the Cronbach's Alpha where it can be seen that the reliability was greater than 0.6, which, according to Nunnally (1978, cited in Cavana, Delahaye, & Sekaran, 2001), indicated that the data was reliable for initial investigations. Accordingly all six items were retained. Therefore, since the data have fulfilled the assumptions of normality and reliability, independent sample t tests were applied in this research.

Table 4: Reliability Round 1

Item	Corrected item–Total correlation
Satisfaction	.625
Successful	.669
Enhances tertiary experiences	.843
Valuable to tertiary experiences	.746
Positive learning experience	.797
Central to learning experience	.764

Table 5 reports the means and standard deviations as well as the results from independent sample *t* tests conducted to determine the level of satisfaction between students who received feedback from their first assignment either via embedded comments or the semi automated system. Overall from the mean results it is apparent that students tended to have a positive attitude to their feedback regardless of the type of assessment method used. However, it is also evident from the standard deviation results that, generally, there were higher levels of disagreement in the results from those who received feedback via embedded comments.

As the table also shows, only one statistically significant difference was found. This relates to *Satisfaction*, where $p=.039, <.05$. This implies that students who had received assessment and comments embedded in a Microsoft Word™ document were generally more positive about their satisfaction with WebCT VISTA than those where the semi-automated tool had been used. The *p* value for the remaining five items was $>.05$. As noted with respect to *enhances tertiary experiences* since the Levene test of equality of variance was significant, the *t* test probability is based on inequality of variance. Based on the results of the *t* tests we can accept the null hypothesis and state there is no difference between the two assessment feedback methods.

Table 5: Attitude to feedback based on assessment method

	Embedded	Semi-automated	Independent <i>t</i> test
	Mean (SD)	Mean (SD)	Sig. (2-tailed)
Satisfaction	3.47 (0.96)	3.06 (0.86)	.039*
Successful	3.42 (1.07)	3.42 (0.81)	.983
Enhances tertiary experiences	3.22 (1.20)	3.14 (0.88)	.729+
Valuable to tertiary experiences	3.44 (0.98)	3.26 (0.78)	.356
Positive learning experience	3.49 (0.98)	3.42 (0.84)	.708
Central to learning experience	3.30 (1.06)	3.25 (0.93)	.805

* Significant at *p* .05

+ Equal variances not assumed

Round 2

There were 42 responses to the second questionnaire, ten of which were unusable and eliminated from the dataset. As noted earlier the group of students taking part in this round did not participate in the previous round of data collection. Based on the potential sample population of 320 students this represents a response rate of 10%. The second questionnaire surveyed students on their comparative level of satisfaction for the second assessment task (via AssessMate) compared to their first assessment (via embedded comments or AssessMate).

The normality of distribution of the data was again found to fall within the acceptable range of + or – 2.

Table 6 shows the results when the second dataset was tested for reliability. In this instance one item, *Satisfaction*, failed to meet the required reliability level of .6 or above and so has been deleted. As a consequence this portion of the results will be based on five items with respect to the attitude of the students.

Table 6: Reliability Round 2

Item	Corrected item–Total correlation
Successful	.797
Enhances tertiary experiences	.605
Valuable to tertiary experiences	.832
Positive learning experience	.856
Central to learning experience	.871

For those students who had received feedback by embedded comments for the first assessment task their comparative level of satisfaction with the semi-automated system, AssessMate, for the second assignment can be seen in Table 7. Based on the mean and standard deviation results, it appears students who had received embedded feedback were more positive about the semi-automated assessment and generally, based on the standard deviations, there was a high level of agreement in these responses. As also shown, no statistically significant differences were found as a result of the independent *t* tests. Again since there were significant differences for two items from the Levene test, the probability is based on inequality of variances results. On the basis of the independent *t* tests for Round 2, the null hypothesis was retained.

Table 7: Attitude to feedback based on previous assessment method

	Embedded	Semi-automated	Independent <i>t</i> test
	Mean (SD)	Mean (SD)	Sig. (2-tailed)
Successful	3.58 (0.51)	3.62 (0.87)	.893+
Enhances tertiary experiences	3.37 (0.60)	3.23 (0.93)	.612
Valuable to tertiary experiences	3.37 (0.60)	3.23 (0.93)	.642+
Positive learning experience	3.37 (0.60)	3.62 (0.87)	.347
Central to learning experience	3.32 (0.82)	3.00 (1.16)	.372

+ Equal variances not assumed

On the basis of the results the null hypothesis proposed in this research was retained. That is, from the first round of data collection in only one item, *Satisfaction*, was found to be statistically significant at *p* .05. For the remaining five items no statistically significant differences were found in the levels of satisfaction with assessment feedback method using embedded comments compared to the semi-automated AssessMate. Further, this was also the case in the second round of data collection when assessment was based solely on the use of AssessMate. This round differentiated between students on the basis whether their assessment was embedded in a WORD™ document in the previous assignment or AssessMate was used. However, in this round, since it failed to meet the assumption of reliability at the 0.6 level or above, the item *Satisfaction* was deleted from this portion of the dataset.

In relation to the results from the first round of data collection there is an implication that the use of a semi-automated tool is acceptable for students even when a qualitative assessment is involved. However, it needs to be pointed out that a majority of these students were in their first semester in their initial year of university study and so may not have yet formed any firm expectations about what they require in terms of assessment and feedback.

It can be seen from the second round of data collection, albeit with limited sample size, that those students who received embedded comments for the first assessment task were slightly more satisfied with the feedback from the semi automated system for the second assignment. However, for those who experienced the semi automated for both the first and second assessment tasks there was no change in satisfaction with the feedback. These findings may be explained in part to the small number sampled but also to the nature of assessment tasks, the first being more qualitative in nature whilst the second being more quantitative. Certainly the literature supports idea that not all feedback methods should utilise rubrics (O'Donovan et al., 2001; Holmes & Smith, 2003).

In the second round results while there were no significant differences on the basis of the mean results, an interesting outcome was noted from the standard deviation results. It became apparent from examining these results that students who previously had received embedded comments were more in agreement in their positive attitudes to AssessMate. Perhaps because of the semi-automated form of assessment, students felt more confident that the mark and feedback were consistent. It could also be that first year students, in particular, are still adjusting to meeting multiple assignment deadlines and are not all that concerned in reading and implementing the comments provided to improve their subsequent assignments.

Since the bulk of respondents in both rounds of data collection were either in the 18 to 25 years age group or to a lesser extent in the 26 to 35 years age group, some may have an immature attitude to their studies. This could imply they are not prepared to consider and implement recommendations to improve their educational performance. However, because mature age students were in the minority in this sampling, it is not possible to support this view by making comparisons on the basis of age.

Overall a positive aspect of this research was that when the marking time was also calculated on the first assessment task, for the two assessment feedback methods, there was an average reduction from 12 to 9 minutes. This implies an increase in efficiency of 25%. An implication of this outcome is that AssessMate can assist in meeting the goal of immediacy even when a large number of assignments are involved.

Conclusions

Hisham (2004), Soon et al. (2000); Thurmond et al. (2002) found personalised feedback to be an important factor in the learning process. Students require personalised feedback on their learning and it is a critical component of a successful e-learning environment. There are a number of different ways feedback can be provided to students using existing tools. This research has found there is no statistical difference in the level of attitude (satisfaction) between feedback that embeds comments in the student's work and one that automatically generates comments and outputs them into a personalised webpage for quantitative type assessments. It is important to note that:

- markers are able to override the suggested comments and create personalised comments (Hisham et al., 2004)
- the increase in efficiency in marking is translated into faster feedback to students (Blayney & Freeman, 2004)
- the nature of the assessment task is considered.

However, there are significant issues that need to be addressed and researched particularly when employing semi automated assessment feedback systems such as AssessMate. These include:

- rubrics and comments created by the lecturer or designer are done so in a meaning, fair and transparent manner (Holmes & Smith, 2003, Allen et al., 2003).
- exemplars and assessment rubrics are available to students prior to the submission of assignments (O'Donovan et al., 2001).

There is a need to conduct further research to clearly determine the factors affecting satisfaction with assessment feedback methods and which assessment feedback methods can be effectively utilised for a specific type of assessment.

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Appendix A: Questionnaire

Demographic data

1. How long have you been studying at this university?

(Please circle the appropriate box)

 Less than 1 year 1 year 2 years 3 years 4 years or more

2. What is your age range?

(Please circle the appropriate box)

 Below 18 years 18 – 25 years 26 – 35 year 36 – 45 years Above 45 years

3. What is your highest level of education?

(Please circle the appropriate box)

 High School Secondary College Undergraduate Master Degree PhD Other

If other, please state _____

4. How do you assess your level of computer experience?

(Please circle the appropriate box)

 Novice Intermediate Advanced Expert

5. How often do you use VISTA in your first year courses?

(Please circle the appropriate box)

 Never Less than 1 hour a day 1 to 2 hours a day 2 to 3 hours a day More than 3 hours a day

6. Within VISTA how has feedback been provided for your BSA 101 Business Report?

Marks only
 Webpage with comments and marks
 Word document with embedded comments
 None of the above

7. I am satisfied with the assessment feedback system for the Practical test compared to the Business Report

Access

1. The assessment feedback system is difficult to access.
2. The speed of access to the assessment feedback system is slow when accessed from the university.
3. The speed of access to the assessment feedback system is slow when accessed from home.
4. The assessment feedback system is available when I need to use it.

Ease of use

5. The assessment feedback system is easy to use.
6. The assessment feedback system makes it easy for me to find information I need.
7. The assessment feedback system is stable, responsive and easily worked.
8. The assessment feedback system is easy to understand.
9. The assessment feedback system is user-friendly.
10. The assessment feedback system makes it easy for me to evaluate my learning performance.
11. The assessment feedback systems is useful
12. Familiarising myself with the assessment feedback system was easy.

Usefulness

13. The assessment feedback system provides information that exactly meets my needs.
14. The assessment feedback system provides useful information.
15. The assessment feedback system provides information in sufficient detail.
16. The assessment feedback system provides complete information.
17. The e-learning assessment feedback system provides accurate information.
18. The e-learning assessment feedback system provides unbiased information.

Attitude to assessment feedback via VISTA

19. I am satisfied with the assessment feedback system.
20. The assessment feedback system is successful.
21. The assessment feedback system enhances my tertiary education experiences.
22. The assessment feedback system is valuable to my educational experience.
23. The assessment feedback system is a positive component of my learning experience.
24. The assessment feedback system is central to my learning performance.

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