ASSESSMENT TO IMPROVE SELF REGULATED LEARNING

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Abstract

This short paper considers how strategies of giving timely and enabling feedback, assist students in regulating their learning on a level 1 java programming module using a blended learning approach. The module has two short computer delivered assessments. Feedback for the programming exercises has been given 'face to face' instead of the previous method of VLE delivered feedback. The paper considers the effects of this change.

Introduction

At the University of Bolton many computing students study Java as their first programming language. The Java module has been running with relative success for 3 years (1, 2), students are given access to a variety of online materials, including animated learning objects, course notes, practical activities and so on.

The module has weekly assessed programming exercises, an end-of-module problem solving programming task and two short assessments during the module, each worth 20% of the coursework. Each short assessment which lasts for two hours and takes place during a practical session has two parts: a programming exercise and a multiple-choice quiz, both delivered through the VLE, WebCT. The multiple choice quiz selects questions randomly from a topic set, marks for the multiple choice quiz are released when the cohort has completed the quiz. Students can review the quiz in detail during the next practical session. Feedback and marks for the programming exercise are always available in WebCT by the following practical session.

Catalyst for Change

It has been noticed how in the past a few students have ceased to attend the module after these assessments. Over three years, with 500 students, on average 7.5% stopped attending after the first assessment and a further 6% after the second assessment.

This semester remediation is being attempted by piloting a different approach. Giving feedback comments in WebCT meant they were disassociated from the programming code and not always understood by the student. Feedback comments delivered in this way which are a transmission of the tutor's own view will most likely be first viewed by the student in a situation where the tutor is not present to share in a dialogue.

The New Approach

Writing a program under test conditions as a novice programmer can be a daunting experience. Before the test students were instructed to 'comment out' any lines of code they felt were incorrect rather than deleting them and leaving no evidence of their thought processes. In this way credit could be given for something that was partially correct. To improve the quality of learning through feedback, students were required to mark their own programs using a clearly defined solution and marking scheme which was emailed to all students once the task was completed by the whole cohort.

By using this methodology the intention was to adopt some of the seven principles of good feedback practice recommended by Nicol and Milligan (3).

- 1. helps clarify what good performance is (goals, criteria, expected standards);
- 2. facilitates the development of reflection and self-assessment in learning;
- 4. encourages teacher and peer dialogue around learning.

Principle 1. Giving students a solution and marking scheme, that rewards both good style as well as correctness, enabled the students to see the required standard for this assessment as well as understanding the marking process. This was particularly important in the second programming exercise where it was possible for a student to have a 'working solution' to the problem but one that was inefficient in programming terms.

Principle 2: Having the solution and being required to use it, required students to reflect and measure their own performance against a specified standard.

Principle 4: The process facilitated dialogue and understanding between the tutor and student.

The students were required to present their marked program the following week in the practical class, in order to receive their annotated and marked program from the tutor. These were then compared for similarity giving a basis for discussion where there was a significant discrepancy.

Discussions as Part of Feedback

The discussions enabled the student to see why their program was failing or how it could be improved. Programming is an activity that requires the programmer to pay attention to often minute details in the code. This attention to detail is well served by encouraging good habits in beginners, as often there are some novice programmers who simply want to 'make it work' and then move on to the next task. Some of these minutiae are about good style, i.e. adopting the appropriate conventions for the programming language, others are critical to the correctness of the program.

After the first programming assessment conversations centred more around issues of style, whereas after the second assessment dialogue focussed more on structural issues. In particular after the second assessment conversations highlighted how students needed varied feedback. Little feedback was needed for those who had already corrected their own errors in order to satisfy any frustration they felt in having a task that was incomplete. Others who were failing in the logical parts of the task needed the mediation of dialogue and gesture, i.e. pointing to and showing the amendments to the logical structures involved in order to be able to conceptualise their errors. Again using gesture and dialogue some needed to be shown a re-ordering to make their programs more efficient, it was not possible on the marking scheme to show how each inefficient order could be adapted.

Results

The programs were marked out of 20. After the first assessment, about 70% of the students marked within 2 marks of the tutor's mark, rising to about 80% after the second assignment. The prevalent trend for both assessments was for students to award less marks than the tutor.

Students were also required to complete a reflective questionnaire after each assessment.

Question	Test 1	Test 2
The mark reflected my programming ability	92%	88%
marking my own work helped me understand what was required	92%	88%
the tutor feedback was helpful	100%	100%
I was adequately prepared for the programming assessment	82%	88%
I felt confident whilst taking the test	90%	80%
Average mark for programming exercise (out of 20)	13.4	14.2

Percentages indicate those agreeing

The second programming assessment yielded broadly similar results to the first, except a about 6% felt better prepared and 10% felt less confident whilst taking the test. This was not however reflected in the average marks.

Module numbers and completions are given below. These have been recorded two weeks after second assessment in week 11. There are 67 students enrolled on the module of whom 57 have actively participated. The 10 excluded have either never attended or only attended once or twice at the beginning and not taken any assessments.

Test	Survey	Not seen	Attended after	Test	Survey	Missed 2, but
1	1	after 1	1, missed 2	2	2	attended since
54	39	2	3	43	26	4
(3)				(5)		

Completions (bracketed numbers are students with mitigating circumstances)

Conclusions

Has the approach been successful?

There were 2 disappearances immediately after the first assessment. Comparing with previous figures this is 2 out of 55 (3.6%) and shows an improvement from the average 7.5% over the last three years. There is concern for the 4 students who missed the second assessment as yet for no given reason. On balance this is an improvement on previous semesters. Students are responding well to the detailed feedback and although this does not use a disproportionate amount of practical time, it does use more tutor time.

This approach has been used to replace on-line feedback; however there is a challenge to see if the feedback methodology can be implemented on-line and still maintain these improvements.

As the module is still live, there may be minor alterations in the data presented at the conference.

References

(1) Boyle T., Pickard P. et al, *Introducing a virtual learning environment and learning objects into higher education courses*, International Journal of Learning Technology, vol 1, nos4, 2005, pp. 383-398

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(3) Nicol D. & Milligan C, (2006) *Rethinking technology-supported* assessment practices in relation to the seven principles of good feedback practice. In C. Bryan and K. Clegg (Eds), Innovative Assessment in Higher Education, Taylor and Francis Group Ltd, London (pub 22/03/06).