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Supporting international students to meet assessment expectations

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Supporting international students to meet assessment expectations

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***Abstract**: This paper offers practical suggestions for teaching strategies that will assist international students. A case study is presented involving the delivery of an introductory engineering unit at Perth Institute of Business and Technology. The approach detailed allowed the academic staff to identify areas of concern in students' learning early in the semester. Detecting and addressing these issues led to a significant improvement in preparing these students to meet the exam requirements.*

Introduction

The international education industry is Australia's third largest export sector, behind coal and iron ore, contributing $17 billion to the Australian economy and supporting more than 125,000 jobs (Access Economics, 2009). Australia is the preferred choice for international students from many countries and is the third most popular English-speaking study destination for these students. About half a million students come to Australia each year (AEI, 2010). Australia offers international students some 26000 courses delivered by more than 1200 universities, training colleges and schools. About 20 percent of students enrolled in Australian universities are from overseas. The Australian Government has identified two aspects which will be fundamentally important to the future of Australian international education: quality and the student experience (Gillard, 2009). To remain competitive we need to continue to enhance our quality education and training system.

Research has highlighted that international students have different needs and issues to the local student population (Biggs, 2003). Particular challenges facing international students that distinguish their experiences from those of domestic students include the language barrier, culture shock, transition issues, learning while developing English language proficiency and learning the academic disciplinary discourse. Research has found that academics are aware of the learning needs of their international students, but may be unclear about how best to address those needs (Ryan, 2005).

In order to further encourage the use of different strategies and approaches in the area of international students' learning, this paper reports on our recent experience at Perth Institute of Business and Technology (PIBT). PIBT is an educational institution providing courses at pre-University and University levels as the leading pathway option to Edith Cowan University (ECU), Perth. PIBT provides Diploma courses in areas including Engineering Studies, which lead into the 2nd Year of the respective Degree courses at ECU. A three-semester system allows students to fast-track their study and complete most courses in 8 months. PIBT staff are fully qualified with university teaching experience.

The program offered by PIBT includes introductory units taught during the first semester of the first Engineering year at ECU. Surveys of international students' experiences in Australia noted that students were generally very positive about their experiences in their courses. However, the students

said that they encountered problems to do with initiation into their course (University Planning Office, 2005). Introductory units are therefore very important for addressing these concerns. This paper relates to our experience concerning such a unit, Computer Fundamentals ENS1161. This unit is coordinated by ECU academic staff and is delivered at five institutions outside ECU, including PIBT, where it is taught by the ECU lecturer since 2009, initially by using the same delivery approach as at ECU. The results were, however, disappointing, with a pass rate as low as 40 percent in the first trimester of 2009 (Figure 1). Although this seemed to be in line with the results for other units at PIBT, alternative ways to improve the pass rate and to increase the efficiency of delivering this unit at PIBT were investigated.

The first clear issue the lecturer was able to identify was the lack of proper communication. Students enrolled in this unit at PIBT come from about twenty different countries and very often with insufficient English language skills (this being one of the reasons they have to study first at PIBT before going to University). Many of them are originally from countries where English may be spoken as a second or third language, or where English is only learnt as a foreign language in school, which leads to reluctance to talk in class. The other major issue the lecturer was able to sense was a feeling of insecurity among students with respect to any form of testing. The students were simply afraid of any test and saw it as a major challenge. Any solution meant to improve the outcomes for this unit had to explicitly address these concerns and ultimately to increase students' trust in lecturer's actions. The strategy taken is presented in this paper. The aim of the work was to introduce to engineering students a voluntary test each week, similar to the exam, so that we could provide them with feedback on topics which needed clarifications. The key areas that are discussed include explaining assessment expectations and encouraging participation. Evidence of benefits has also been included. The practical suggestions in this document have been written for academic staff wishing to explore different ideas in their teaching to address the needs of international students. Reflections are offered with international students in mind but can be useful for all students.

Case study

The ENS1161 Computer Fundamentals unit addresses a number of problems from discrete Mathematics with technical application aspects. Unit content is well established and well organised. All assessment components are well defined and organised, and the exam structure is designed to test the knowledge students acquire during the semester. There are four contact hours per week: every session starts with two hours of lecture and is followed by two hours of tutorials. During tutorial time students are working on a number of problems related to the content of the lecture. By doing this, students learn how to solve practical problems using the theory explained during the lecture. This classical delivery approach is identical to the one used at ECU, where it has been successfully employed. However, as mentioned, the same approach yielded much poorer results with international students at PIBT.

The innovative change taken to address this issue consists of a short written test which covers the material presented in the previous week's lecture. The test is designed in the same way as an exam question related to a particular part of the material. This way of designing the test exposes the students to the exam type of question long before the exam and additionally makes them familiar with the level of complexity of the exam questions. Students can take part in the test on a voluntary basis. The test is marked but the marks are not used as an assessment component. They are rather a feedback mechanism which allows students to discover how familiar they are with a particular topic. Additionally, by marking the test the lecturer is able to discover common errors in the understanding of the material by students, which can be caused for example by a not very precise explanation of that particular topic during the lecture or can be due to the complex interpretations of some formulae. Once detected, this type of problem can be clarified and explained again during tutorial time. Examples include the negation of the IF statement, negation of statement with two quantifiers, simplification of Boolean functions using Boolean algebra, and Karnaugh maps. Before introducing the test these were recurring critical topics, causing problems in the exam to as many as 80% of the students. However, as

a result of identifying them via the test and addressing these problems, recently the percentage has decreased to about 20%. In addition to addressing problems common to the whole class, by using the test the lecturer is also able to identify problems faced by individual students and he can advise these students individually. The main benefit is that the communication between the lecturer and students is improved, at both individual and group level, and once problems are detected early in the semester, they do not cumulate, so students can confidently build up their knowledge.

Voluntary involvement of the students in the test makes it stress-free, which is especially important for international students. The lack of pressure and constraints helps them overcome their fear of failure and their reluctance to participate in class. There are no time constraints regarding the test either, the students get the test at the beginning of the tutorial and they can return it at the end. They are allowed to collaborate, which encourages the team work. As detailed above, communication is the greatest barrier faced by international students and additional efforts have to be made to make them feel comfortable and to give them confidence to overcome this barrier. The fact that English is the second language for the lecturer, too, is an advantage in this particular case, for at least two reasons. First, students are less discouraged by the language barrier when the lecturer is not a native English speaker. Second, the lecturer is more aware of the challenges foreign students face, based on his own experiences, and a more open communication, based on empathy, can be built. These are only observations at this stage, but we plan to extend the former investigation to the influence of the non-native English speaker teaching this unit at PIBT.

Benefits and issues

Figure 1 shows the effect the introduction of the test in the second trimester of 2009 had on the pass rate for ENS1161 at PIBT, by highlighting the total number of students in the respective trimester (on the horizontal axis), the number of students who passed and failed, respectively, with the bars scaled according to the pass and fail percentages (vertical axis). It can be seen that the pass rate has been increasing over time towards a value which is much closer to the one usually obtained at ECU. There was a slight decrease in the pass rate in the second trimester of 2010, which was due to the particular composition of the class, whose performance in the tests is detailed in Table 1. The marks are out of 10 and blank cells correspond to non-participation in the respective test. Students 03, 07, 08 and 09 have previously failed the unit at least once and it was apparent that they were not really interested in passing it. Their results, shaded in red in the table, confirmed this and contributed to a lower pass rate than the adjacent values in Figure 1. Table 1 offers further insight into the correlation between the test participation (and result) and overall unit result. A strong correlation is evident for students whose results are shaded in green. There are also students whose final results seems to contradict their performance in the tests (Students 04 and 13), but this is due to other factors which cannot be addressed by this initiative, for example Student 4 has had difficulties in handling the stress of the exam environment. It must also be stressed that since group work and collaboration are allowed during the test, which makes it different to the exam conditions, the test results can be regarded as individual results only to some extent (which seems to be the case of Student 07). The relatively small size of the class and the voluntary participation also limit the validity of any conclusions, however, the participation is encouraging and increasing, as illustrated in Figure 2 for the last two trimesters of 2010. Table 2 lists the test and final results for the third semester of 2010, with an even stronger correlation between these results (shaded in green) than in Table 1.

Figure 3 details the grade distribution over the two years (where the grades are defined according to the legend in the top part of the figure). It shows the continuous growth of the pass rate (i.e., a grade of at least 50%) as a result of introducing the test and refining the way of providing feedback to the student: students got back their papers showing not only the mark, but clearly highlighting all the errors they made, along with the right solution and comments on the right approach. Also, as mentioned, the lecturer was available for individual clarifications and he also addressed the commonly occurring issues in class. The evolution shown in Figure 3 is quite interesting, starting with the usual bell shaped distribution before the introduction of the test (although skewed due to the unacceptably high fail rate) and leading then to a polarized distribution, resembling a bimodal distribution. Although

the class size is too small for statistical analysis, Figure 3 highlights that the most significant increase affected the high distinction marks, which is nevertheless a clear indication of the effectiveness of the test, and confirms the major purpose of this experiment.

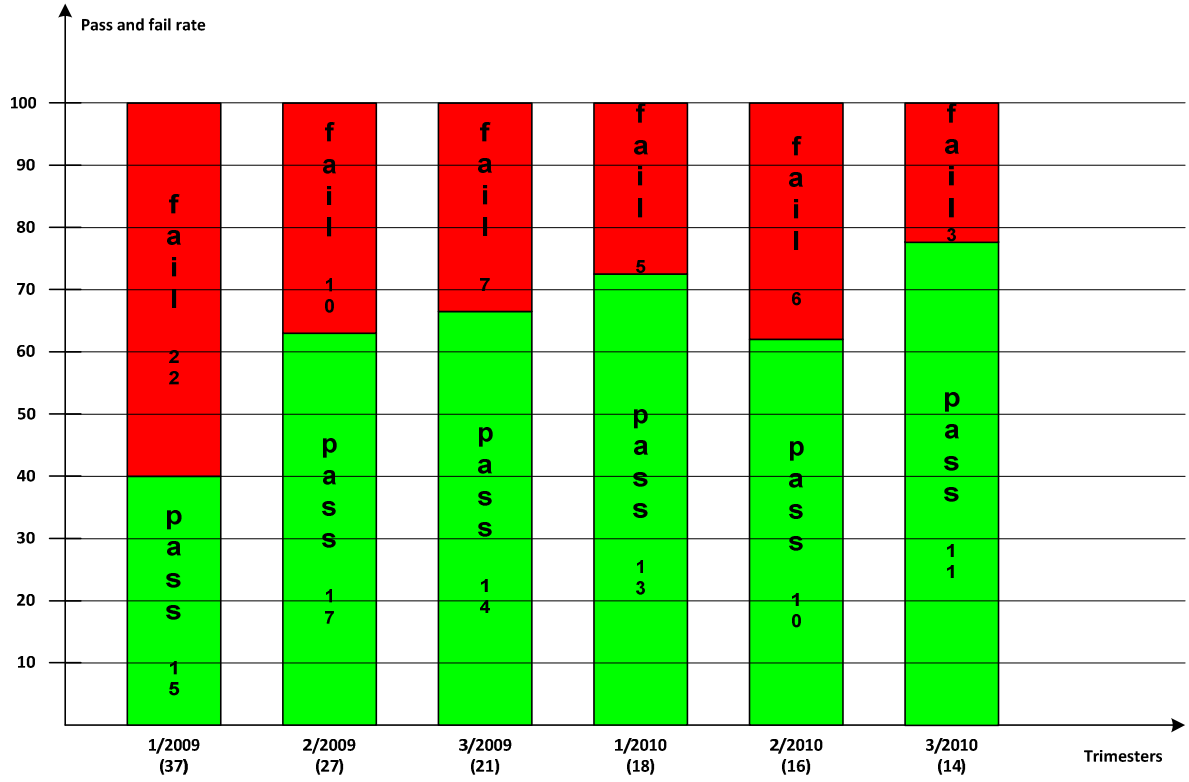

Figure 1: Evolution of pass rate after introducing the test

Table 1: Test and final results in 2/2010

	T1	T2	T3	T4	T5	T6	T7	T8	T9	Total	Nr tests	Final
Student 01	8	10	10	9		10	10	9		66	7	70
Student 02							10		10	20	2	88
Student 03											0	6
Student 04	9	7	9	10	9	9.5	10	10		73.5	8	42
Student 05	10	8	7	10	10	9.5	10	10	7	81.5	9	97
Student 06											0	57
Student 07	9	6	7	9	10	10	10			61	7	16
Student 08											0	44
Student 09											0	43
Student 10	7	7	8		6	10	10			48	6	59
Student 11				8			9			17	2	62
Student 12	7	8	9	7	8	10	10			59	7	92
Student 13	6		9		5		9			29	4	36
Student 14						9.5	10			19.5	2	56
Student 15	8	6	7	10			9		9	49	6	82
Student 16	9	9	8	10	8					44	5	74

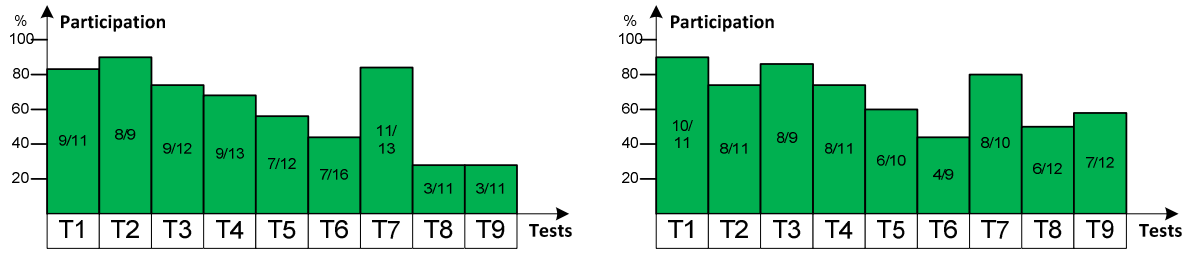

Figure 2: Test participation in 2/2010 (left) and 3/2010 (right)

Table 2: Test and final results in 3/2010

	T1	T2	T3	T4	T5	T6	T7	T8	T9	Total	Nr tests	Final
Student 01	7									7	1	52
Student 02	5	9	5	9					10	38	5	70
Student 03										0	0	55
Student 04	6	7	10	10	9	9	10	10	10	81	9	98
Student 05	5	7			10					22	3	68
Student 06	8	6	10	10	10	9	10	10	10	83	9	84
Student 07	5	4	10	10			9			38	5	13
Student 08	2	8	8	9	7		9	2	5	50	8	81
Student 09											0	0
Student 10	9		5	5		9	10			38	5	59
Student 11												11
Student 12	10	9	10	10	10	9	10	10	10	88	9	78
Student 13							10	10	7	27	3	74
Student 14	8	10	10	9	7		9	8	10	71	8	86

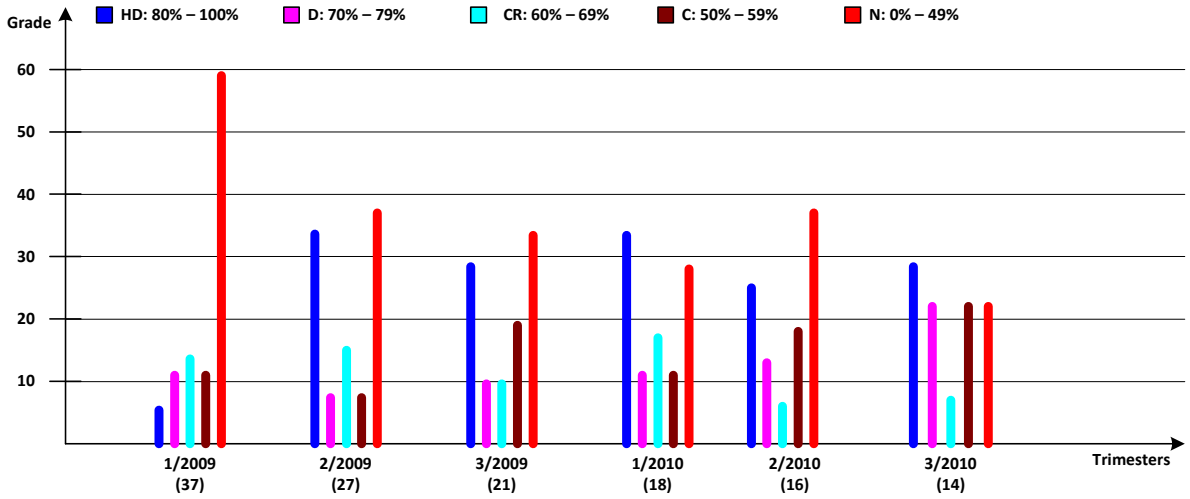

Figure 3: Evolution of mark distribution after introducing the test

We would also like to stress that using this kind of test to monitor students' learning during the semester is especially suitable to international students in the context of institutions like PIBT, where class attendance is compulsory and is a visa condition (even if the test itself is not compulsory, colleagues taking it can be an incentive). While the approach can be used in a similar manner with University students, the difference in attendance requirements can lead to different outcomes.

The only issue we had with adopting the use of the test during the semester was the increase in the workload of the lecturer, associated with the regular marking of the tests and providing individual feedback. However, the size of the class is relatively small and manageable, and the positive results compensate the extra effort. Furthermore, changes in marking can be implemented, one option being to consider peer-marking arrangements, under which students complete their answers, then the lecturer reveals the answers on board, students swap their work and then mark and comment. This would further strengthen the collaborative learning experience.

Conclusion

From surveys we know that international students are challenged and exposed to new ways of learning. We reported in this paper on specific challenges we were able to identify and address during the delivery of an introductory engineering unit at Perth Institute of Business and Technology. The approach we adopted was to offer students a voluntary test each week, similar to the exam, so that we could provide them with feedback on topics which needed clarifications. Results show that this method was effective in significantly improving the performance of the students. We hope that although the small class size makes this study rather case specific, suggestions offered in this paper as a result of the experience gained in the initial stage of this study can contribute to the development of alternative approaches to help international students prepare for their undergraduate studies in Australia. We plan to further develop this experiment, and to adopt a more formal approach following this initial, experimental stage, including the investigation on possible correlations between the cultural background and variation of attitudes to testing, and learning styles in general (Felder and Silverman, 1988).

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