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Abstract

The Dublin Institute of Technology is one of the largest multi-level higher education providers in Ireland, catering for over 22000 students annually. Under the 1999 Qualifications (Education and Training) Act, DIT became an awarding body in its own right. Programme provision covers apprenticeships, short continuous professional development courses, taught undergraduate and postgraduate, research MPhil and PhDs. The Institute's traditional mission has always been focused on learning and teaching in the field of advanced technical vocational education and training (TVET), and one of its current agendas is to foster and encourage changes in teaching practice and methodology in order to enhance a student centred learning approach.

This paper reviews a pilot project undertaken regarding this agenda by lecturers of Carpentry and Joinery apprentices. Over the past few years, it appeared that the students were showing less of an interest in their practical jobs in class, as they did not relate the learning to actual work in industry. When it came to exam time their lack of interest in class throughout the term meant they quite often rushed through their exams, mistakes were made and students engaged in unsafe practices. As such the students' final exam mark wasn't necessarily a fair reflection of their ability.

Against this background it was decided that something should be done to revitalise student interest in the work they were doing and also to try and assess a student's real capability or standard level. The method that was decided upon to achieve this was a form of continuous assessment whereby students were encouraged to correct their own work. By doing this it gave them a chance to reflect on the jobs they had just completed and also allowed them to focus in on areas in which they felt they needed to improve. It also gave the lecturers the opportunity to give formative feedback to the students by checking their work and the marks that they awarded themselves to see that they were a fair reflection of each other.

The research demonstrates that this form of proactive teaching can help foster a learning environment whereby the student feels they have some form of direct control and as such take on a more active role in their education.

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1 BACKGROUND

The Dublin Institute of Technology was established as an autonomous institution under the DIT Act in 1992.

Since the establishment of the colleges that now constitute DIT, the craft and apprenticeship programmes have been a significant component of their work and today they remain an important feature. DIT currently caters for over 25% of the national apprentice population both in the designated and the culinary arts trades.

The apprenticeship areas in DIT have an international reputation for excellence, and academic staff in the apprenticeship area are regularly nominated by international peers as Chief and Deputy World Experts for the World Skills Competition. Apprentices educated and trained in DIT have achieved numerous, Gold, Sliver and Bronze medals at the World Skills Competition.

The apprenticeship system in Ireland is a "standard-based" model whereby apprentices must undertake structured training in the skills and knowledge of their chosen trade, and undergo specific tests and assessments to ensure that preset standards of ability and competences are attained.

Apprenticeship training consists of seven phases, both on-the-job with employer and off-the-job with a Training Centre or Educational College.

Phase 1 (on-the-job): is an introduction to apprenticeship, safety, the world of work and an introduction to the basic skills of the occupation.

Phase 2, 4 and 6 (off-the-job): gives the apprentice full-time skills training and related education, and also provides time for putting skills into practice.

Phases 3, 5 and 7 (on-the-job): entail the practice and further development of the skills learned in the off-the-job phases.

Our research focuses on a pilot project that was confined to Carpentry and Joinery Apprentices within the Wood Trade section, in the Department of Construction Skills, School of Construction, Faculty of Engineering and the Built Environment.

It is the practical element of this training in the trade of Carpentry and Joinery, at Phase 4 and 6 levels, on which the research was carried out.

The research is based on set practical projects that are part of the trade syllabus, and how we tried to improve standards and motivate the students by changing the focus as to how these are taught.

A lot of the research stems from the opinions of the authors, as while there is some information out there regarding the topic, very little of it can be directly related to a practical skills training situation.

One of our main aims was to enhance a student centred learning approach by encouraging and motivating students and promoting learning through self-learning.

We also wanted to achieve greater feedback from students, something that was virtually non-existent, and through all of this we were hoping that the students would develop greater learning and skill.

2 INTRODUCTION

2.1 Context

On reflection of our teaching practices, a change was required to develop a more enhanced student learning experience.

However learners are intrinsically different and have different learning styles (Reece and Walker 2003). Bearing these differences in mind our project had to promote learning and cause learning to happen.

It was felt that the students were too caught up in "traditional" educational mannerisms where the teacher directs the learning; and the students are passive recipients of knowledge and did not demonstrate the ability to think for themselves.

We knew we had to address these problems and move our teaching approach to a more student-centred version of teaching.

We intended to move the student from “show me how to do it”, to thinking and learning in a genuine intellectual sense, to solve and complete the practical tasks.

Our research has looked at established theory such as setting up the learning experience in the classroom (Gardner 1993). We have considered this and adapted the relevant elements to foster learning within the practical room.

Further consultation with our peers helped to formulate the idea of continuous assessment of practical projects by the students.

The majority of students welcomed the project.

2.2 Key to Change

As lecturing professionals we feel we have a duty to the students to assess the possibility of new approaches to teaching and assessment to see what we can do to improve the overall learning experience of the students.

The various models of reflection (Kolb 1994, Gibbs 1998) all refer to a cyclical pattern of learning whereby you complete an experience, think about what you did, and then think about how you would do things differently and start again. In this way you are constantly challenging established ideas to try to come up with a “best practice”.

In our case we are not only challenging the established teaching syllabus, but also encouraging the students to challenge their own abilities. We were trying to nurture a type of learning whereby the students are able to learn and develop themselves, and move away from the passive role previously undertaken.

We propose a move away from the current summative assessment, towards a continuous assessment format, whereby the student is involved and informed in the assessment process.

The pilot project is in itself a diagnostic exercise of the effectiveness of the assessment process.

3 METHODOLOGY

3.1 Developing the Idea

It was decided to run the project for a period of two years.

In total the classes involved in the pilot project consisted of 16 students per group, 2 groups per term and 3 terms per year for 2 years, with a total of 192 students.

The research was carried out, by using a form of continuous assessment of the student’s practical work in class. The 5 jobs were graded and an average standard of the students ability measured.

It is unrealistic for the student to be able to complete the practical jobs without any guidance as what they are working on is probably new to them and the process of manufacturing the item is meant to be a learning one, so we decided that we would strike a balance between self-learning and instruction and guidance where necessary. We would then observe them as work progresses, always keeping an eye out for safe working practices.

We also told the students at the start of each project exactly how long they would have to work on them, and with an eye on motivational factors (Dembo and Seli 2008) we communicated a high standard, challenged the student to do the work, empowered the student to be responsible for their own marks and encouraged peer collaboration.

To enable this, we had to devise a marking scheme for each of the five practical jobs that the students were doing. This had to be clear, concise and easy to follow as the students had to correct their own work, with the lecturer providing a critique of the results.

The marking scheme was given to them while they were working on the projects in order to give them a much clearer picture of what was required of them, whilst at the same time allowing us to offer guidance as to how to approach a job and how their practical exams would be assessed.

When devising the marking scheme, it also had to take account of and offer allowance for the fact that each project undertaken was in fact a learning piece and mistakes were going to be made by the

students which couldn't be harshly punished as this would detrimentally have the opposite effect to the motivation that we were trying to achieve.

Thus, the students had to be shown various methods of overcoming any mistakes made so that it wouldn't negatively affect their final marking of themselves.

This in turn brought a further experience of learning into the class work and student feedback highlighted that being shown how to work through and overcome mistakes was one of the most valuable lessons learned in terms of going back out into the workforce to practice their enhanced skills.

With this new skill of problem solving, the students became more assertive and confident in the work they were doing and their overall standards have improved.

3.2 Constraints and limitations to the research

There are various methods of teaching in the practical room. The options available are demonstrating and observation, continuous guidance, or self-learning.

Similar to most other classroom situations we found ourselves asking: "to what level do I need to demonstrate and to what extent will the students be able to work on their own?" This varies greatly according to the class dynamics and what works for one group may not work for another. It also varies greatly from student to student within any class.

These factors only serve to undermine the reflective process as it can never be fully possible to replicate the same situation to get a comprehensive result, and this can lead to the questioning of the legitimacy of the research and its ensuing results.

Also, it was not possible to properly compare the standard of workmanship achieved under the pilot project with standards achieved beforehand as it was never required to capture or record the students' practical coursework in the past. Furthermore, previous exam results remain the property of the external examination body and as such the learned professional opinion of the lecturers had to be relied upon to judge the overall calibre of the work and recognise the overall improvement in standards that was achieved.

In spite of this we went ahead with our pilot project and due to a number of external constraints, principally time, we decided to focus on a small sample group of Carpentry and Joinery apprentices.

In overall terms of assessment for the trade, our influence in Carpentry and Joinery is very limited as it is a prescribed syllabus that sets key learning points and exam format; however we are always looking for new ways of teaching or new methods of explaining to try and help the students.

One of the drawbacks of the continuous assessment is the length of time that is spent engaging with each student and going through every practical job. This detracts from the normal day to day teaching and limits the general class time available for the observation of the students. It is therefore harder to pinpoint where errors are being made as work progresses.

There was a larger amount of paperwork involved as the lecturer has to assemble all of the student results so that they can get an average reading of the standard or ability level of the students.

4 MOTIVATION

This was one of the main problems that we were coming across and one of the great drives behind our need to change.

There is no real reward or incentive to get better than a pass in their trade exams as once the standard is achieved they are eligible to qualify as trades people.

For some students, once they achieved a pass in the actual exam that was all they required. They put very little effort into the practical projects along the way, often not finishing them as they were aware that they have no real bearing on their final result.

They saw no real benefit to be gained from the sample projects they were doing and felt that they would never come across something similar when they had finished their apprenticeships.

This logic was misplaced however as the projects are chances to practice and hone skills for their trade and the test and should be used as such.

The result of this was that students who had made less effort during term would usually end up panicking during exam time and mistakes were made. From observation, continuous assessment results and student feedback, in general, those who put the effort in were relaxed, confident and produced better jobs on exam day.

The introduction of the continuous assessment of the practical projects also gave the students the opportunity to challenge their abilities and strive to better their marks every time. This had a knock on effect of encouraging the students to finish each of their practical projects, and to a high standard, in order to better these marks.

There is a further motivation achieved due to competition and collaboration between peers, and this will quite often lead to them further analysing each others jobs and marks awarded. This form of peer review in our experience motivates the student and the reviewer is now engaged in another form of learning.

5 FEEDBACK

5.1 Feedback to students

The marking of the continuous assessment pieces gave us the opportunity to provide formative feedback to the students and offer some form of guidance as to how to approach a job and how their practical exams will be assessed.

By first getting the students to correct their own jobs it gave them a chance to reflect on the jobs they had just completed and also allowed them to focus in on areas in which they needed to improve. Whilst conducting the formative feedback that is – checking over a students work and marks to see that they were a fair reflection of each other, one could quite often ask a student why they had docked themselves marks in a particular area. The simple process of reflection on each task encouraged a deeper understanding and learning. This gave the student a much clearer picture of what exactly it was that was being required of them.

5.2 Lecturer Feedback

One of the surprising benefits that was gained from the project was the level of feedback from students that was received. In the past there had been very little capacity for student feedback, particularly in the practical area, and there was no real method of quantifying any feedback that was given.

The only feedback system that was previously available was a general class discussion of a job or questions after a period of demonstration, and this had very limited effect as quite often only one or two students within a group would engage with the lecturer and the bulk of the class would remain silent either through not wanting to participate or the feeling of being unable to speak out in front of peers.

To counteract this much emphasis was placed on creating an environment free from intimidation, where a student can contribute and feel their opinion is valued, and an environment where mutual respect for each other is evident (MacFarlane 2004).

Student feedback also indicated that as a result of the engagement process a better classroom environment was created.

The fact that everyone now gets some form of one to one feedback is a huge improvement on the way things were. We have continuously reviewed our feedback and how it is received by the student, and by trial and error, and the reviewing of established literature, we have devised an informative dialogue with the student that encourages, motivates and improves the student.

6 RESULTS OF RESEARCH

Having gone through the assessment process the students were much more relaxed on their exam day and consequently fewer errors were made from rushed mistakes.

The student better understood the standards they needed to achieve, developed greater problem solving skills, became more analytical, and their overall standards have improved.

It was also noted that in some cases that the result in the final test was either way above or way below their continuous assessment average, which leads one to believe that the current assessment system isn't necessarily giving a fair reflection of a students abilities.

On project completion we reflected upon our findings. During this period of reflection it was decided to remove the continuous assessment as a method of formative feedback.

It was found that the students dropped back into the old mould of just "doing jobs for the sake of it", with no apparent pride in their work and only really concentrating on the final exam. The reflective student was much less in evidence.

The student also expected to be taught only what was required for the tests and weren't interested in furthering their knowledge base or developing core transferable skills.

7 CONCLUSION

The conclusion that was reached is that the current assessment system is flawed and needs some form of an overhaul to promote better student learning and give a better reflection of student ability. We would feel that the promotion of continuous assessment in the class to compliment or replace the final exam would give a fairer reflection.

There is almost a pay off as to which system of learning makes best use of the limited time that a lecturer has in the workshop for the students.

On one hand they can spend their time demonstrating how to do things and then observing the students at work and telling them where to improve, but this takes the onus off the students and doesn't really motivate their improvement.

On the other hand if the lecturer is to correct/assess each item of work done there must be a reduction in "traditional" teaching time for the students to accommodate this.

Part of the overall conclusion is that the payoff is worthwhile as the students gain from another method of learning, but also are given a sense of self motivation and drive in order to get the job completed and will have a level of pride and ownership in the work done (or possibly a level of frustration with the turned out job as they feel they could have done better).

It still has to be born in mind that the assessed practical pieces are a work in progress, something that the students will learn from and a standard of perfection will rarely ever be achieved, but each student needs to be encouraged to reach their individual potential. This level of motivation will vary from student to student, but as more pieces of work are completed and marked, you would usually find that both the standards are improving and the marks are improving and this can be all the encouragement that is needed.

The research demonstrates that a change in teaching practice can help foster a learning environment whereby the student feels they have some form of direct control and as such take on a more active role in their education.

This was however only a small trial project and further research is on-going to provide a quantitative analysis of the assessment process to verify our initial observations. It has shown that the goal of greater student interest can be readily achieved by the process of inclusion.

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