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Perceptions and Experiences of Diverse Architectural Technology Students Learning through Formative Feedback & Formative Assessment: a Multiple-case Study

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Catherine M. Prunty

M.A. in Higher Education 2011
Perceptions and Experiences
of
Diverse Architectural Technology Students
Learning through Formative Feedback & Formative Assessment:
A Multiple-case Study

Catherine M. Prunty

M.A. in Higher Education 2011
Declaration

I hereby certify that the material, which is submitted in this thesis towards the award of Masters (M.A.) in Higher Education, is entirely my own work and has not been submitted for any academic assessment other than part-fulfilment of the above named award.

Future students may use the material contained in this thesis provided that the source is acknowledged in full.

Signed:  

Catherine M. Prunty

Date:  15th August 2011
Technological leaps along with increased numbers and greater student diversity is altering the higher education teaching landscape constantly. The academic’s workload is escalating all the time, arising from resource constraints in a time of economic stringency. This places even more pressure on dealing with assessment rather than on enhancing learning. Despite evidence that supports formative assessment as being vitally important to students’ learning, it is not widely appreciated among lecturers in higher education. As a result, lecturers under pressure, understandably, will maintain existing assessment and teaching systems rather than attempt to apply new techniques. Immeasurable hours, days or even weeks, spent providing detailed written feedback on students’ work that was never read or acted upon (and was too late anyway for some students), was the motivation for this research which commenced in 2008. Replicating that initial inquiry over two further years, with two additional first year cohorts, then followed.

This paper will argue that the application of the feedback technique applied throughout this research, including analysis of the students’ perceptions of learning, has contributed towards understanding the first-year student’s learning experience. It will be demonstrated that an effective formative assessment and formative feedback method that enhances learning can support the different educational needs of a diverse student population, without compromising standards.

Published research underpinning formative assessment and feedback to improve learning for a more diverse tertiary student population, including some pragmatic stratagems, were examined and appraised within this study.

Key words:
Formative assessment, student diversity, enhancing learning, perceptions of learning, Studio environment.
I would like to thank the following people whose help and support was invaluable throughout this research study.

My supervisor, Mr Lloyd Scott, for his support, advice and encouragement throughout this research project.

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To all the students who so willingly took part in the research for all of the right reasons, I am extremely grateful to each of them, but particularly the Focus Group participants. Without them, this multiple-case study research project would not have been possible.

I would also like to thank Professor Jim Horan, Head of the School of Architecture and Cormac Allan, Assistant head of School of Architecture, for their support for this research project.

A special word of thanks to my colleague, Máire Crean, fellow enthusiast of formative assessment, for her invaluable support throughout the three years of this study. Credit must also go to my colleagues who were so willing to embrace change, as their concern to improve students’ learning was their goal too.

To my family and friends, especially Michael, who offered such great support throughout this process, I extend my very sincere, and heartfelt, thanks.
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<td>B.Sc.</td>
<td>Bachelor of Science</td>
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<tr>
<td>CAD</td>
<td>Computer Aided Drawing</td>
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<td>CAO</td>
<td>Central Applications Office</td>
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<tr>
<td>CPD</td>
<td>Continued Professional Development</td>
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<tr>
<td>DIT</td>
<td>Dublin Institute of Technology</td>
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<td>ECTS</td>
<td>European Credit Transfer System</td>
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<td>EHEA</td>
<td>European Higher Education Area</td>
</tr>
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<td>EUA</td>
<td>European University Association</td>
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<td>HEA</td>
<td>Higher Education Authority</td>
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<td>HEI</td>
<td>Higher Education Institutions</td>
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<td>HEPRU</td>
<td>Higher Education Policy Research Unit</td>
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<td>ISO 9001</td>
<td>Quality Assurance Management Systems</td>
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<td>NFQ</td>
<td>National Framework for Qualifications</td>
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<td>NQAI</td>
<td>National Qualifications Authority of Ireland</td>
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<td>RIAI</td>
<td>Royal Institute of Architecture in Ireland</td>
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<td>RPL</td>
<td>Recognised Prior Learning</td>
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Chapter One

Context of the Research

Introduction

This thesis, a multiple-case study, is a culmination of data gathered from three different studies of first-year Architectural Technology student groups culminating in a focus group. The justification for studying across three academic years was to examine the students’ perceptions of learning through a formative assessment strategy colloquially named ‘critmarking’. This has been examined during the course of the transition of the Architectural Technology Studio curriculum from a semi-semesterised, yearlong module to a two-semester module (DT-105 Programme Document 2007; DT-175 Programme Document 2009). The other change to the curriculum over this period of study was the transformation from a Level 7 Ordinary degree to a Level 8 Honours degree. The primary aim of the study was to obtain diverse first year students’ views and feelings about this form of assessment and to discern if they thought they had learnt anything educationally or personally through this process or not. The secondary aim was to establish commonalities between each class group that may have affected their learning.

This study does not claim to develop new theory about formative assessment, but will demonstrate, at a micro level, how small modifications to assessment practices can have a big educational impact, whether positive or negative. The development of this study has contributed greatly to my teaching methods, initiating a greater awareness and sensitivity to students’ learning needs, particularly as the ‘typical’ first year student profile diversifies and teaching resources become scarcer.

The study, written throughout in a narrative style, is in my own voice. This is an account structured around the experiences of three different first-year cohorts over three different academic years; I believe the narrative style helps to bring everything together into a coherent ‘story’ (Cresswell, 2007; Gibbs, 2007). Accordingly, each chapter charts the various stages of the research undertaken and is described in the summary as follows:
Context of Research

Researcher’s Position

At the time of writing, I teach on the penultimate year of the last cohort of 2nd Year students on the existing Ordinary Degree (NQAI Level 7), the B.Sc. Architectural Technology in the School of Architecture within the College of Engineering and Built Environment in the Dublin Institute of Technology. During the next academic session, 2011-2012, I shall be teaching on the newly-established Honours Degree (NQAI Level 8), BSc. (Hons) Architectural Technology.

A permanent member of the teaching team since 2006, I gained some experience teaching part-time for a year and a half prior to that. Since graduating from an earlier version of this same DIT course in 1981, I have worked in different architectural practices in Ireland for over 25 years on a wide range, scale, complexity and multiplicity of building projects. Developing professionally, whilst gaining experience and technical expertise, I progressed to Associate Director in a project management role for my final ten years in practice. Staff training, which included Continuing Professional Development (CPD), and ISO 9001 Quality Assurance management systems implementation and upkeep, were also some of my responsibilities. Since my full-time appointment in 2006 I have undertaken the DIT Post Graduate Certificate in Third Level Learning & Teaching, and it is what I have learned about ‘learning’ since 2007 that has inspired me to undertake this research in the form of a multiple-case study.
Learning for Life

Across the span of centuries during which they espoused their different theories a range of highly influential thinkers, teachers and philosophers, all agreed on the principle of man's intellectual education. Despite promoting their own diverse visions of education, all significantly, saw this intellectual process as a never-ending practice:

The best and most pleasant life is the life of the intellect since the intellect is in the fullest sense the man. (Aristotle, 384 -322 BC)

Following on this argument, the Higher Education Authority (HEA), in its report *Creating and Sustaining the Innovation Society* (2002), states that:

The importance of investment of a vibrant research community in the humanities and social sciences is helping us to understand and interpret our changing society...It preserves, widens and advances the intellectual, cultural and artistic accomplishments of society...It equips society with the skills and qualities necessary for economic growth and prosperity and capacity to construct a society based on social justice and individual freedom (HEA, 2002, pp. 25 - 6).

The case for further investment into higher education social sciences research therefore has been strongly made. The objective to increase participation in tertiary education by expanding a 'system that was confined to a social elite' (Hunt, 2011, p. 9) is also to be welcomed. This is also reflected in the following extract from the Dublin Institute of Technology (DIT) mission statement: DIT 'provides an innovative, responsive and caring learning environment for a diverse range and level of programmes to students of all ages and backgrounds' (DIT, 2011). The realisation, or acknowledgement, that 'the higher education system is not separate from the rest of society - it is integral to it' (Hunt, 2011, p. 123), is an important supporting statement. The development of the Irish economy and society therefore it is expected will come about through the massification and engagement of a more diverse higher education student body. Opportunities for 'every citizen' to develop to their full potential will come to fruition; creating, 'critical thinkers, effective communicators, ethical decision-makers and effective team members' (Hazelcorn, 2010).
European Context

At a European level, the Lisbon Strategy seeks to further the EU objective of becoming 'the world’s most competitive and dynamic knowledge-based economy and society'. The Bologna Process, in seeking to enhance the mobility of a borderless European workforce through wider recognition of academic awards, has meant change to many educational programmes of higher education throughout Europe (McMahon, 2010, p. 3). The ease of mobility of graduates and undergraduates who wish to work or learn through different languages and cultures within the 46 countries that have signed up to the creation of the European Higher Education Area (EHEA), is being facilitated by means of an agreed quality assurance framework via the European Credit Transfer System (ECTS).

Affecting 4,000 institutions and 16 million students, the greatest impact of these Bologna reforms has been the introduction of modularised structures measured through Learning Outcomes. This is a redesigned ‘output’ approach rather than an ‘input’ approach to learning, which has now also been defined in terms of knowledge, skill and competence.

There has been ready acceptance and implementation of modularisation, qualifications frameworks and Learning Outcomes on a national level, as reported by Dr Frank McMahon, DIT Director of Academic Affairs in his conference paper ‘Ireland and the Bologna Process: Recognition Issues for Higher Education Institutions’ at the UK Bologna Conference 2010:

The 2010 (EUA - European University Association), report found [Higher Education Institutes] HEI’s to be positive about the Bologna reforms, which they viewed as beneficial to students and institutions. A large majority (95%) have implemented the Bologna degree structure with some progress in shifting to learning outcomes and ECTS. (Mc Mahon, 2010, p. 7)

Compliance with this was through the National Framework for Qualifications (NFQ), (which Ireland had in place in 2003 well ahead of other European countries), along with HEA / National Qualifications Authority of Ireland (NQAI) standards and the DIT’s own standards requirement. For all programmes to be semesterised and modularised by September 2010 was not an issue for DIT as this process was already in train.
Access to Higher Education

One area Ireland was deficient in at this time under the Bologna Process was ‘access’ to the degree system. However by 2010 ‘Ireland was well ahead of their European counterparts with regard to RPL [Recognised Prior Learning] and Lifelong Learning’ (McMahon, 2010, p. 8). Access to higher education was becoming a reality for many and the profile of a ‘traditional’ first year student cohort changed. The DIT commitment to promoting diversity in its student population occurs through the allocation of a percentage of places in undergraduate programmes to a number of categories of students, as demonstrated in Figure 1.1 below.

<table>
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<th>% ALLOCATION TO PROGRAMME</th>
<th>CAO Round '0' INTERVIEW</th>
<th>CAO Round '1' (Leaving Cert Results)</th>
<th>REQ TO MEET PROGRAMME ACADEMIC MINIMUM REQUIREMENTS</th>
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<tr>
<td>MATURE</td>
<td>15%</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>NON-STANDARD</td>
<td>5%</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>DISABILITY</td>
<td>5%</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>ACCESS</td>
<td>5%</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>FETAC Links</td>
<td>5%</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>INTERNATIONAL</td>
<td>5%</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>LEAVING CERTIFICATE</td>
<td>60%</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
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Figure 1.1 DIT application process for prospective Architectural Technology students indicating diversity of routes, 2009 (DT 175 Programme Document, 2009, p. 58).

Consequently, a first year student can enter a higher education programme at DIT through wide and varied routes. The variation of ages, maturity, socio-economic and educational bases create a challenge for teachers to engage all and allow each student reach their best potential. As Wiliam states, ‘assessment is a key process in education. It is only through assessment that we can find out whether instruction has had its intended effect, because, even the best-designed instruction cannot be guaranteed to be effective’ (Wiliam, 2010, p. 5).
107). The assessment therefore of these mixed and diverse cohorts is also a challenge while maintaining academic standards.

**Architectural Technology**

'Architectural Technology' is often very closely associated and allied with Architecture, but is in fact, quite different. The emphasis is on the construction technologies rather than a design concept. Architectural Technologists also have very strong links with the other built environment professionals that form part of the methodology or process that 'gets buildings built'. The particular assessment method we use, - that we call 'crit-marking', adapted from the 'crit' process applied in architecture and other design courses, could be tailored to benefit other taught, project based built environment courses. This suggestion arose from research over one academic year, but requires more exploration as clearly necessitates more exploration as to how this may (or may not be) of benefit to diverse learners.

**Studio**

We think of the studio environment as very much a community, a community of learning in which things happen at a lot of different levels. Its been traditional since the nineteenth century (Bill Mitchell, Dean of the Architectural Department, MIT, 2002).

In order to understand the specific learning environment it is necessary to describe and define the meaning of ‘Studio’. The root of the Italian word *studio* is derived from Latin: *studium*, from *studere*, meaning to study. The phrase ‘studio’ is generally understood to be an artist's or worker's workroom, where the employees or apprentices of the artist work alongside or within that studio. The French term for studio, ‘atelier’, is often associated with fashion designers, again an open space where all work is undertaken in a communal setting. The term studio pre-dates the concept of open-plan offices. Collaboration and opportunities to discuss projects with peers or tutors in an informal setting while ‘learning by doing’ are the main benefits to the studio as a learning environment which are brought from education into the profession. ‘Studio learning and teaching is central to the ethos of the School of Architecture and the Department of Architectural Technology’, (DT175 Programme Document, Part B, 2009, p. 24).
Some tertiary institutions realising the benefit to learning are beginning to create several different collaborative teaching spaces modeled along that of a studio space, for different disciplines, such as M.I.T. and North Carolina University in the USA. It is rare to find an architectural practice that is not still based on the collaborative, open plan ‘studio’ model. The sentiments of the DIT publicity banner ‘DIT-A step closer to the real world’ (DIT, 2005 to date) could be construed to be truly reflected in the studio environment.

In September 2008 while teaching in Studio, initially as year head of first year Architectural Technology, I first implemented some changes to the studio crit as a method of formative assessment. Initially through observations notes I recorded the visible impact the modifications had on the students. With the cooperation of my teaching colleagues, I ‘tested’ first, then, through an open-ended qualitative questionnaire, gathered data from the students to get their reactions to the experimental strategies applied. Following on with the 2009-2010 cohort, data was gathered as the ‘test’ strategies were refined, and this was then replicated for the 2010-2011 cohort. Data gathered from each first year cohort from 2008, for the three years, until May 2011, has amassed students’ thoughts about formative feedback and formative assessment. The research and data gathered during the 2009-2010 academic year formed part of a Teaching Fellowship awarded to my colleague Máire Crean and I, which explored the subject *A Formative Assessment Technique Employed to Enhance Student Learning in Project Based Learning: Crit Marking*. The data gathered for that study was re-examined within the context of this study also.
This thesis compares the perceptions of learning from each of the different first-year class groups, taking into account the profile or diversity of each cohort along with the academic changes to the curriculum that occurred over that period.

**Curriculum Change**

The main curriculum change that occurred was the barely perceptible alteration of the original Ordinary Degree, Level 7 (DT105-1) ‘long thin’ module in September 2007 to a partially semesterised Ordinary Degree by September 2008 and then to a fully modularised and semesterised Honours Degree, Level 8 (DT175-1) in September 2010. The original configuration of the programme as a continuously assessed, constructively aligned, collaborative, problem-based learning structure did not change. The economic downturn has reinforced the necessity for this experiential learning model as the main learning environment because unlike previous years students were unable to gain summer work experience in practices. This has become particularly relevant in the later years of the programme.

At the beginning of this research in 2008, the Bachelor of Science in Architectural Technology Ordinary degree was a NQAI Level 7, Ordinary degree programme. The penultimate year of a course, that had evolved from earlier versions, which had originated in the 1960s (see Appendix). Preparing for change in line with National and European policy on higher education as outlined above,

The Studio Module in Architectural Technology, part of the Bachelor of Science (Hons) in Architectural Technology degree programme is also, as described above, a constructively aligned, continuously assessed, project/problem based, learning-by-doing curriculum. Set in a two semesters and modular framework being 10 ECTS per semester or 20 ECTS per each academic year. This is fundamentally different from the other examinable subjects on the programme, which are theory based and taught through formal lectures then summatively assessed by examination and assignments. However, applying and setting Learning Outcomes for each module as opposed to ‘Aims and Objectives’ created an opportunity to change how learning could take place.

Studio projects, based on project briefs were also amended to apply set learning outcomes In addition to this, the professional body that accredits the Architectural Technology
programme in DIT (one of only two programmes nationally at the time of writing), the Royal Institute of Architects of Ireland (RIAI), has also embraced change by recognising and adopting the Bologna Process through identifying ‘knowledge, skill and competence’. The RIAI have matched the appropriate level of Learning Outcomes of the National Qualifications Authority of Ireland and the National Framework of Qualifications, in order to determine professional competency for membership, for both architecture and architectural technology graduates.

<table>
<thead>
<tr>
<th>Learning and teaching methods</th>
<th>Module assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Engagement with lecturers in studio environment</td>
<td>• Studio projects based on Technical Design Studio module learning outcomes.</td>
</tr>
<tr>
<td>• Engagement with peers in studio environment</td>
<td>• Continuous formative assessment through studio projects in stage submissions during semester.</td>
</tr>
<tr>
<td>• Execution of studio projects</td>
<td>• Summative assessment of complete portfolio at end of semester with grades adjusted to reflect student revisions in response to formative assessment and feedback.</td>
</tr>
<tr>
<td>• Individual and group tutorials</td>
<td>• Aspects of studio projects form the basis for assessment of parts of related architectural technology modules</td>
</tr>
<tr>
<td>• Workshops related to projects</td>
<td>• Marking scheme and assessment criteria are issued in student handbook at the start of each year</td>
</tr>
<tr>
<td>• Guest lectures</td>
<td></td>
</tr>
<tr>
<td>• Site and factory visits</td>
<td></td>
</tr>
<tr>
<td>• Critiques and reviews</td>
<td></td>
</tr>
<tr>
<td>• Construction skills workshops</td>
<td></td>
</tr>
<tr>
<td>• Self-directed learning outside and during contact hours</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1.3 Studio Module in Architectural Technology, DIT, learning and teaching methods and module assessment 2010-2011 (Adapted from DT175 Programme Document, 2009)

While Architectural Technology may not be a very evident player in the ‘knowledge economy’ per se, graduates need to have the requisite knowledge, skills and competencies to engage professionally with the work force, whether in Ireland or internationally. The newly-qualified architectural technologist is embarking upon a career of continuous professional development (CPD); he or she must keep abreast of advances in building technologies and software developments. Architectural technology is at the cutting edge of the introduction of new and emerging technologies in the building industry which will respond to serious environmental issues such as global warming, energy conservation and waste management. Government policy reflected in the *National Strategy for Higher Education to 2030 - Report of the Strategy Group* has an ambition to achieve economic recovery through ‘enhancing human capital by expanding participation in higher education’ (Hunt, 2011, p. 10). This means that those entering higher education, coming
from non-traditional routes, will have diverse learning needs from now onwards. Developing self-directed learners who will continue learning throughout their lives, both professionally and personally, must henceforth be the aim of any teacher in higher education. It is particularly important for those teaching the next generation of architectural technologists.

**Rationale**

The particular rationale for this research was to observe and track students’ perceptions of learning through formative assessment and to assess if they perceived learning as merely the process of passing exams and ‘getting a piece of paper’ or did it mean something else? Determining and capturing students’ feelings about formative assessment and feedback as a support to learning across different first year cohorts over three academic years and between two different academic programmes with a diverse student group, is the foundation for this multiple case study.

Expanding upon this theme to examine how diversity of undergraduate intake will affect learning and teaching, this thesis examines higher education students’ perceptions of learning through application of formative assessment and feedback in the Studio module. Studio was 15 ECTS per semester on the Ordinary level degree in Architectural Technology until September 2010 when it changed to become Technical Design Studio at 10 ECTS per semester in the Honours degree in Architectural Technology. This study examines three different first-year undergraduate groups of Architectural Technology students in the Dublin School of Architecture, DIT, over three different academic sessions between 2008 and 2011 in the Studio module.

The specific structure of the formative feedback and assessment referred to in this study is an adaptation of the ‘crit’ method widely used in architecture to criticise students’ design work in a ‘public’ forum. The difference was that architectural technology projects are not based on concept design but rather are about feasible construction solutions, or technical design, which must meet legislative and regulatory constraints. Motivation to commence this research to re-assess methods of feedback delivered in Architectural Technology arose not just from the ambition to improve students’ learning. Research undertaken in 2005, by a colleague, Patrick Flynn, in the School of Architecture, DIT, also influenced how things might work differently. Flynn re-examined the purpose and the teaching around the ‘crit’
in an original, design environment. His study discovered that the method in which the ‘crit’ operated meant that students either learned or did not learn. Critical of the ‘crit’ as being an ‘immovable’ judgemental system, by implementing subtle changes Flynn ‘moved the crit to being a more constructive and less destructive process’ (Flynn, 2005). Building on Flynn’s hypothesis, and moving into a less conceptual and a more structured, student-centred ‘solutions’ rather than ‘design’ environment, this research has attempted to capture and interpret the thoughts and feelings that the surveyed students had about their learning. In conjunction with their views I examine the learning effects of knowledge, skills and competences gained in the spirit of the Bologna Process.

Recalling those who had taught me at different stages throughout my scholastic life, the ‘good’ teachers stood out, as did the ‘bad’. I began to analyse the particular characteristics that determined my primary, secondary and tertiary education teachers had been ‘good’ or ‘bad’ teachers. Much of primary and particularly secondary education performance is based on the ability to memorise or learn by rote, and then regurgitate accurately data learned during examination within a set period; grades awarded are generally summatively assessed. Normally, within this rigid framework the best grades were not necessarily achieved through creative teaching. Supported by declarations such as, ‘much evaluation of teaching focuses on what teachers do in class’ (Gibbs & Simpson, 2004, Abstract) and ‘that qualitatively different approaches to teaching are associated with qualitatively different approaches to learning’ (Trigwell, Prosser & Waterhouse, 1999, Abstract), the conclusion could be that the subject matter learned was not as relevant as the teacher’s behaviour.

I concluded that students who examined well in popular (or perceived to be easy) subjects that had been taught indifferently without real direction or engagement, demonstrated that it was the student’s interest in the subject matter that enabled the him or her to perform well in exams. Conversely, I concluded that students who examined well in unpopular subjects, or those subjects traditionally perceived to be difficult, like Honours maths, did so because they were taught by teachers whose passion, encouragement and clarity of purpose helped those students achieve real understanding, and moreover boosted their confidence enough to undertake the exam. Only 16%, of Leaving Certificate students undertook the Higher Maths in the 2011 post-primary Leaving Certificate examination, ‘the lowest figure recorded by the State Exams Commission’ (Flynn, Irish Times, 7th June, 2011).
demonstrates that the percentage of students undertaking Honours Maths would appear to relate directly to the apparent scarcity of quality teachers teaching this particular subject, when compared with 77% of students taking higher-level Geography (Flynn, 2011).

Recognising that maths has particular issues, it is the only subject throughout an undergraduate’s time in college that DIT supports with free maths tuition. This free support is of particular interest to mature undergraduates who may not have done any maths for some time (DIT, Students Maths Learning Centre, 2011).

These statistics suggest that superior teaching enables students to do as well as possible academically. The qualitative study undertaken by Trigwell, Prosser & Waterhouse (1999) supports the view that there is a direct relationship between ‘teacher’s approaches to teaching and student’s approaches to learning’ (Trigwell et al., 1999, p. 57). I realised, recalling specific incidents in my own education, that it was receiving constructive feedback from ‘good’ teachers which aided my understanding of a subject. This realisation helped me in my efforts to become the kind of teacher I aspire to be.

Attempting to encapsulate this ‘good’ teaching into an educational theory was only the beginning of a long journey of discovery of the complexities of how, what and why individuals learn, particularly in higher education. While reflecting on how to progress my own teaching practice and improve students’ learning and understanding, I came across the sound maxim by Thomas Shuell, that ‘what the student does is actually more important in determining what is learned than what the teacher does’ (Shuell, 1986, p. 429). Also helpful was the perceptive statement by Biggs: ‘Good teaching is getting all students to use the higher cognitive level processes that academic students use spontaneously’ (Biggs, 2003, p. 9).

I came to recognise that teaching and learning was essentially a collaborative process between teacher and student, and that this collaboration was the key to becoming a ‘good’ teacher in higher education. Collaboration, I further appreciated, was what had actually been happening with the ‘good’ teachers that I had been fortunate enough to encounter in the past: we worked together on a problem. So, how best to attempt to achieve this partnership in learning? Would it be possible to realise the sentiments and meaning of both influential statements in a pragmatic and enriching way? Beginning by critically examining
my immediate teaching and learning environment and by stepping back to observe, I could now see ways to advance this hypothesis.

**Research Hypothesis or Question**

**Context of the Problem**

The studio environment theoretically mimics an architectural practice in the way that projects are life-like buildings and construction materials proposed are ‘problems’ needing a solution. The open plan studio space where these problems are evaluated, investigated and resolved is as important as the task. Yet, I realised the methods we used to ‘teach’ bore no similarity to the collaborative nature of the working environment beyond academia.

One person alone does not build buildings. In addition, the built environment has changed: new materials, higher quality control of building processes, health and safety requirements including a greater awareness of the impact of climate change all impact on building design and construction. New buildings are now subject to constantly revising regulatory and legislative frameworks. Innovative building technologies, including pioneering information and communication technologies, have also altered the methods for instructions to assemble construction projects. While the processes by which a building is constructed has changed professionally and technically, a proposed building must still be visualised or envisaged in its entirety before arranging to organise the processes for its physical assembly. This is where the role of the Architectural Technologist comes to the fore, preparing ‘working drawings’ which are ultimately instructions to a building construction team based on the information gleaned from the design team. The design team traditionally is comprised of the architects, engineers, quantity surveyors, architectural technologists and any other construction profession that is a stakeholder in the assembly of the information pre-construction.

From an educational point of view, these technological changes to construction methods and processes meant that new subject material was introduced to the course accumulatively over the years. The addition of material was surreptitious and incremental. It was introduced by teachers wishing to inform their students of current trends, but without prior consultation with colleagues. Thus, nothing was removed to make room for these ‘new topics’ within the curriculum. Whilst this new uncontrolled information leaked or blended
across subject modules, each being 5 ECTS, the information did not appear in the students’ minds to be linked to ‘studio’. Nor did it appear to them to apply to problem solving within the studio projects set. They saw it more as repetition or duplication of a theme.

<table>
<thead>
<tr>
<th>DT105-1 Level 7 Yearly Content</th>
<th>Hours Per Week</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Technology</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Materials &amp; Specifications</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Environmental Design</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>Mechanics &amp; Structures</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>Professional Development</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>History of Architecture</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>Studio projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 1: Studio Technology</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Section 1: Studio Graphics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Section 1: Studio CAD</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Student learning hours</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DT175-1 Level 8 Semester 1 Content</th>
<th>Hours Per Week</th>
<th>ECTS Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTS (Building Technology Structures) includes 3.6 self-learning hours</td>
<td>7.6</td>
<td>5</td>
</tr>
<tr>
<td>DGC (Digital, Graphical Communication) includes 1.6 self-learning hours</td>
<td>7.6</td>
<td>5</td>
</tr>
<tr>
<td>ESM (Environmental Design/Services Materials) includes 4.6 self-learning hours</td>
<td>7.6</td>
<td>5</td>
</tr>
<tr>
<td>PD (Sem. 1) (Professional Development 1) includes 4.6 self-learning hours</td>
<td>7.6</td>
<td>5</td>
</tr>
<tr>
<td>HTC (Sem. 2) (History Theory &amp; Criticism 1) includes 4.6 self-learning hours</td>
<td>7.6</td>
<td>5</td>
</tr>
<tr>
<td>TDS (Technical Design Studio) Studio Technology 12</td>
<td>15.6</td>
<td>10</td>
</tr>
<tr>
<td>Section 1: Workshop 2</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Section 1: Self Learning 1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>30</td>
</tr>
</tbody>
</table>

Figure 1.4 Comparison of First Year students of Architectural Technology, DIT weekly contact and learning hours 2008-2011

I saw at first hand how theoretical aspects of studio projects taught in formal lectures that should have helped inform the studio ‘problem’, were rarely linked. The students just compartmentalised the information and missed the links between theory and application. They could also clearly distinguish between the different assessment methods and devoted their time accordingly. Studio was continuously assessed over the academic year whereas the other six subject modules being summatively assessed at the end of the year, were ‘something’ that they would concentrate on later. This ‘separation’ of subjects meant that ‘learning’ took place in different ways (usually through ‘cramming’ at the end of the year in advance of the closed book, summative exams). Information received was not viewed holistically nor really understood. Many students could ‘cram’ their way to a good performance in a summative examination, yet still lack understanding of key principles or concepts. Assignments set within the six subject modules were also summatively assessed during the academic year and yet were somewhat ‘stand alone’ and disengaged from what was going on in Studio. Happily, this issue has been addressed in the new BSc (Hons) Architectural Technology, Level 8 Degree programme. The blending of theory and application, as appropriate, has been greatly improved making learning more relevant.
In summary, the college studio physically resembled an architectural practice studio with students contact time in this environment being 15 hours per week. The programme was a constructively aligned syllabus with project work continuously assessed on a weekly basis. The volume of assignments from the other individual modules, all assessed summatively, was extensive. This heavy workload meant that what the student was doing was not as developed as it could have been, from a learning point of view. Just dealing with the workload and trying to achieve the required pass grades (as a minimum) in their separate subject modules demanded ‘surface learning’ from the students and gave them little time to reflect or to draw upon their ‘higher cognitive’ levels.

Constructive Alignment and Workload

The other aspect of this process was that the volume of assignments requiring to be graded put the teaching staff under pressure, particularly in relation to providing timely and relevant feedback. Although a crucial aspect of the syllabus, this was proving to be very difficult to achieve. As the programme was constructively aligned, it was necessary that a student demonstrated understanding of a principle in order to build upon the knowledge gained and to apply it appropriately in subsequent projects. Lack of understanding frequently led to accumulated poor performance. This regularly meant that students did not realise how successfully, or unsuccessfully, they were performing until it was nearly too late to rectify. The approaching end of every academic year required that drastic action had to be taken by students and staff alike to review work for those interested in progressing, whilst other students became disheartened and resigned. The only way a student could understand how they were progressing was by the grade achieved for work done. Several did not know where they had gone wrong and others were surprised, but pleased, that they had passed as they did not really understand why. Progression was a bit like a game of chance.
Furthermore, any revision that may have been undertaken by a student was additionally assessed summatively at the end of the academic year. This final assessment was within the assessment of the student’s portfolio, which was the accumulation of the whole year’s work. Reflecting on this process it became clear that the importance of timely feedback was an essential part of learning, (Sadler, 1989, 1998; Black & Wiliam 1998a, 1998b, 2003, 2009; Cooper 2000; Gibbs & Simpson 2004 -2005; Nichol & Macfarlane-Dick, 2006).

Trying desperately to return graded work quickly while it still mattered, having provided written feedback previously on summatively assessed student’s work, appeared to be a waste of time. Students did not read the feedback nor did they act upon it, being rarely of use except for end-of-year revision purposes. As the architectural technology programme was (and still is) constructively aligned, whereby each project or problem solved forms the basis for the subsequent task, this was a great failing in ‘building’ on any knowledge learned. Students also had difficulty understanding what was required of them. These discoveries ultimately lead to the adaptation of the ‘crit’, now changed to what I believed to be a very effective formative assessment method that better reflects the collaborative feedback used in ‘real world’ practice.

Figure 1.5 Theoretical subjects and Studio, B.Sc. (Ord.) Architectural Technology and B.Sc. (Hons.) Architectural Technology, DIT, 2008-2011 Programmes
In this case study I have explored the thoughts, feelings and perceptions of students about whether they felt they had learned through formative assessment and formative feedback in the studio module, or not.

**Student diversity**

'Architectural Technology', often closely associated and allied with Architecture, is a parallel discipline with strong links to other Built Environment professions. All form part of the methodology or process that 'gets buildings built'. With the current economic downturn, the interest in re-training or up-skilling has increased leading to a greater variety of non-traditional students going to college. Many interested in studying Architectural Technology are drawn from traditional construction skills such as carpentry, plumbing, stonemasonry etc. Many of these mature students have made 'life changing' decisions to go to college. Assessed for suitability for entry to the course through the Central Applications Office (CAO) 'Round '0' interview process, it is clear that these are intelligent and highly motivated applicants.

The interview process applies to Non Standard, Mature, International and Advanced Entry applicants and provides the academic staff with an opportunity to discuss the applicant’s portfolio of work. While presentation of a portfolio of work is not essential, it is very valuable in helping to determine an applicant’s suitability to the very particular demands of the programme, and a career in architectural technology. (DT175, Programme Document, 2009, p. 58)

This selection process allows students who may not have taken the post-primary Leaving Certificate examination to demonstrate through their work experiences at interview that they have the interest, commitment and ability to undertake a higher education course (See Figure 1.1). Applicants from other EU and non-EU countries assessed in a similar process can also demonstrate their ability and interest through interview. International students however, are the only applicants who must apply directly through the DIT International Student Office.
These mature students are generally anxious to succeed yet are nervous about the performance expected of them amongst a group of eighteen year olds straight from secondary school, whom they believe are brighter or more intelligent than they are.

**Research Aim and Objective**

In a study conducted in 2009-2010 (Prunty & Crean, 2010) as part of a Teaching Fellowship award it was demonstrated how a technique referred to as ‘Crit-marking’ was used in a rigorous, technical and legislative discipline that not only improved the quality of feedback to students, but was quicker and more timely. This particular ‘crit marking’ method of assessment was a practical and rewarding process for both students and teachers. Testing a theory by applying some small changes in assessment methods in the 2008-2009 academic year previous to the 2009-2010 Teaching Fellowship research, gave impetus to that inquiry. Implementing further modifications and gathering data in a subsequent academic year 2010-2011 has prompted this research. Disseminating and analysing qualitative data assembled from student responses for all three years along with a focus group made up of two students from each cohort forms the basis for this multiple-case study.

Utilising the positive feedback from students and staff in the Teaching Fellowship study and anecdotal evidence of how weaker or less academic students improved their performance, I hope to verify through a randomly selected, focus group, multiple-case study, the students’ perceptions of learning through formative feedback and assessment can develop their critical thinking, and further improve diverse students’ learning. The argument that the more diverse a student cohort, the greater the need for more academic support, particularly in the form of feedback on guidance, progress and development will be explored in order to attempt to achieve this objective.

It is anticipated that this research will contribute to the enhancement of non-traditional entry-level students’ learning through reflection theory and practice in the field of Architectural Technology, or on any other course that delivers problem solving through project-based learning. I also hope that better understanding of how diverse and traditional students learn and cope in college will be of benefit to the Institute as a whole, particularly in relation to developing an ethos of self directed, life-long learning.
Ethics

The principal focus of this study was to develop learning and while I was teaching on the course I did not have a direct impact on the surveyed group’s academic progression for the 2009-2010 and the 2010-2011 cohorts. I did, however, teach the 2008-2009 first year student group directly, but because the open-ended qualitative surveys were conducted online and anonymously, I had no idea who may or may not have participated. This could not have impacted on the academic progression of either the class group or individual students. This anonymity, stressed at the commencement of each survey with each student group, was faithfully preserved. Thus, I could expect that those who responded had done so freely and without prejudice.

While the research formed the primary component of the MA in Higher Education and was subject to the Head of School’s responsibility, the main ethical procedures that informed the research were subject to the guidelines issued by the DIT Research Ethics Committee and the British Education Research Association (BERA).

However, as this study involved three first-year groups of students for a period of three years, an ‘informed consent’ to partake voluntarily with an explanation of the research purpose and the methods was given to each student group. Each participant was informed about every aspect of the proposed research. For the focus group an ethics statement and an informed letter of consent was presented to all the participants, including a participatory statement that each student signed, understanding that they were free to withdraw consent and discontinue participation in the research at any time without prejudice. Each individual’s anonymity was strictly preserved to the highest possible level of confidentiality, along with each participant being informed that any information gathered was for the exclusive use of this study. Chapter Two addresses this aspect of the ethical issues in greater depth and detail.
Chapter Two

Literature Review

Introduction

As described in Chapter One, the primary purpose of this multiple-case study is to examine the perceptions and experiences of three different cohorts of first year students towards learning through formative feedback and assessment. Whether students actually felt that learning did, or did not take place was another question to be answered. Furthermore, the study aims to discover if the students felt that learning was enhanced (or not) through formative assessment among the diversity that now comprises a twenty-first century tertiary first year student group. Diversity was also a central concern of this thesis. Barriers that affect student learning are also examined.

As referred to in the previous chapter, the types of student undertaking higher education courses are now more diverse with 'less predictable educational backgrounds and prerequisite knowledge than in the past' (Gibbs, 2006, p. 18). My description of 'diversity' in the context of this research also recognises this. While a class group might comprise predominantly of 'traditional' students who have come directly into third level from secondary school (albeit from different school types, segregated and mixed gender, rural and city environments), they will also have peers who may be 'mature' (over 23 years of age), non-Irish-born, have a disability or have come from a disadvantaged socio-economic background – so all are diverse to a point.

There is a real and well-founded expectation that the third-level student population in Ireland will alter in profile to embrace even greater numbers of diverse undergraduates. This is one of the three key points of the Lisbon Strategy and means that institutional and national higher education policy needs to meet these challenges. Hunt (2011) reports as follows:

..that higher education is central to future economic development in Ireland, and that there are broad social and cultural advantages to widening participation in higher education. The capacity of higher education will almost double over the next twenty years, with most of the growth coming
from non-traditional areas, such as ‘mature’ students and those from overseas, as well as increased post graduate activity (Hunt, 2011, p. 3)

Fundamental to any response to this diversity of student intake is that of providing good teaching and a high-quality learning environment. While most people’s notions of a ‘high-quality learning environment’ would probably envisage a magnificently appointed, state-of-the-art resourced, cutting-edge, e-learning technology-supported classroom, my pragmatic outlook in the current economic climate would see this as an ideal only. Therefore even if technologies were more developed than can be currently imagined, they can only be complementary to learning. I argue that the learning environment is much more holistic than the physical space and electronic accessories alone. I also argue that an innovative, philosophically sound and reflective approach to teaching and learning will create the right learning environment for any student group never mind a diverse student group.

Despite the multiplicity of access routes students take to enter higher education, which create a wonderfully diverse first-year cohort, the commonalities are that they are eligible to vote, drink alcohol, live independently if they choose to, and they have all embarked on the same journey of learning that they have elected to do. No coercion or decree forced them to take this particular educational path. For the first time since they were four or five years of age, they have chosen this particular course of study themselves; consequently the students’ attitudes to learning from the first moments of entering a higher education programme must be different.

By recognising that first year students, particularly diverse students, are adults (albeit at different ages and different levels of maturity) the attitudes of teachers and lecturers towards these students will change from merely ‘lip service’. Ideally this will begin with the abolition of the use of the term ‘pedagogy’ (pedagogy, from the Greek paid meaning ‘child’ and agogus, meaning ‘leader of’), in relation to learning in higher education institutions and its replacement with the phrase ‘andragogy’ (andragogy, from the Greek anere meaning ‘adult’ and agogus, meaning ‘leader of’). Leading adults as opposed to children immediately moves one’s thoughts from passive learning through transmittance or ‘learning by recitation or replication’ (Dewey, 1916) to learning ‘collaboratively’ and more self-directed learning approaches. (Knowles, 1975; Yorke, 2004; Boud 2007, Sadler 1989)
Shifting from pedagogy to andragogy does not mean that the supports that are in place to assist and enhance the ‘First year experience’ (Yorke, 2007) must be removed. As referred to in the previous chapter Gibbs (2006, p.18) argues that the more diverse student cohorts need more academic support, particularly in the form of feedback on guidance, progress and development.

The position of adult students experiencing the first year of an undergraduate course requires a historical, international, national and institutional contextualisation. Historically, from earliest recorded time, all of the great thinkers and teachers imparted their knowledge primarily to adults rather than children. From Confucius in ancient China to Aristotle and Plato in ancient Greece, Cicero and Euclid in ancient Rome to the Hebrew prophets and Jesus, all were teachers of adults - not children. Knowles et al very interestingly state:

Because their experiences were with adults, they developed a very different concept of the learning/teaching process from the one that later dominated formal education. They perceived learning to be a process of mental inquiry, not passive reception of transmitted content. Accordingly, they invented techniques for engaging learners in inquiry. The ancient Chinese and Hebrews invented what we now call the case method, in which the leader or one of the group members describes a situation, often its characteristics and possible resolutions. The Greeks invented what we now call the Socratic dialogue, in which the leader or group member poses a question or dilemma and the group members pool their thinking and experience to seek an answer or solution. (Knowles, Holton, Swanson, 2005, p. 35)

Knowles clarifies the development of the concepts of teachers and teaching. He shows that following the fall of Rome in the 2nd and 3rd centuries AD any writings of the great ancient teachers were saved in European monasteries but forgotten about for centuries. He explains that between the 7th and 12th centuries the organisation of schools for children through and by monastic institutions initially brought about a new development in the perception of learning and teaching whilst utilising the previously forgotten knowledge and teaching methods of the ancients for teaching adults. The concept of teachers and teaching
were invented, and learning came to be defined as transmitting content (mostly knowledge and skills) from teachers to students. (Knowles, Holton, Swanson, 2005)

Thus this method of learning became known as pedagogy. The teacher became fully responsible for all the decisions made about what, how and when anything should be learned and if it had been learned. This is the pedagogical model used and established in practically every school system since. Knowles points out that this means that the pedagogical model would appear to have been applied inappropriately by educators of adults, and could account for difficulties with adult learners such as dropping out of courses, low motivation and poor performance.

In researching the topics ‘feedback’, ‘formative feedback’ or ‘formative assessment’ over the past two years, I am reminded of the well-known quotation:

If I have seen a little further it is by standing on the shoulders of giants (Isaac Newton, 1676)

The ‘giants’ I refer to in this context are those seminal researchers and theorists who are zealous in their approaches to developing teaching and learning and, more importantly, are willing to share their hypotheses and their research. What emerges most significantly from their research is a very genuine concern about how people learn and how best to improve that learning. There is a sense too that perhaps learning and teaching is grindingly, slowly, coming around in a full circle, back to a vision of teaching similar to that of the earliest known teachers.

There appears to be an underlying current of realisation by these contemporary seminal authors that perhaps the ‘old pedagogic’ ways really were not the best way to teach or learn at all. I believe this view has been strengthened by governments competing for the ‘knowledge economy’, which has transformed the way policy makers view teaching. They are now more receptive to alternative, innovative teaching methods that will improve learning, at all educational levels.

Academics constantly strive for ‘perfection’ in themselves and in their students’ performances. Some teachers sample the ‘good bits’, attempting to enhance student
learning experiences, others are caught up in student performance 'leagues' and some are engrossed in research either for progression purposes or in the quest for knowledge. Yet many are still unaware of the need to change and adapt teaching and learning, particularly in view of the impending expansion of student diversity.

There is a considerable amount written about formative feedback and formative assessment at primary and secondary level education: (Black & Wiliam, 1998a, 1998b, 2003, 2009); little however is published in the field about tertiary education. Despite this paucity of literature about formative assessment in higher education to date, influential researchers (Yorke, 2003; Boud, 2000; Sadler, 1998; Black & Wiliam, 1998, 2003, 2009; Gibbs & Simpson, 2004, 2006; Nichol & Macfarlane-Dick, 2006) all champion the view that formative feedback is essential to learning. These seminal writers and researchers are so knowledgeable, articulate and enthusiastic about their research on formative feedback, that it is somewhat surprising that there has not been a greater general change in teaching and learning within higher education institutions. Despite the smaller number of publications in the tertiary field there are several outstanding studies. The very extensive Black & Wiliam's study of all educational sectors over a ten-year period is reviewed by Sadler, who reports that they 'found that, by and large, formative assessment is effective in virtually all educational settings; content areas, knowledge and skill types, and levels of education' (Sadler, 1998, p. 77) The British Educational Research Association (BERA) in its overview of the Black & Wiliam study summarises it thus:

The authors trace the development of the King's Formative Assessment Programme from its origins in diagnostic testing in the 1970s, through the graded assessment movement in the 1980s, to the present day. In doing so, they discuss the practical issues involved in reviewing research and outline the strategies that were used to try to communicate the findings to as wide an audience as possible (including policy-makers and practitioners as well as academics). They describe how they worked with teachers to develop formative practice in classrooms, and discuss the impact that this work has had on practice and policy. Finally, they speculate about some of the reasons for this impact, and make suggestions for how the impact of educational research on policy and practice might be improved. (BERA abstract, 2001)
Sadler, in an earlier piece of research, bemoans the lack of a 'general theory of feedback and formative assessment in complex learning settings' (Sadler, 1989, p. 119). He identified that there were three necessary conditions required in order that students would benefit from feedback. The student must know the following:

- What good performance is,
- How current performance relates to good performance
- How to act to close the gap between current and good performance. (Sadler, 1989, p. 119)

This led Sadler to make the observation; students must already possess some of the same evaluative skills as their teacher (Sadler, 1989, p.121). Refining Sadler's 'evaluative skill' (Sadler, 1989, p. 119) and following on from this model, Nichol & Macfarlane-Dick (2006) re-interpreted formative assessment and feedback. Their research demonstrated how these methods can help students to become self-regulated learners. They describe how, particularly in tertiary education, formative assessment and feedback should be used to empower students as self-regulated learners. They argue that self regulated learning is clearly displayed through the active supervision and control of a number of different learning processes, giving examples of:

- The setting of, and orientation towards, learning goals; the strategies to be used to achieve goals; the effort exerted; reactions to external feedback; the products produced. (Nichol & Macfarlane-Dick, 2006, p. 2)

Intelligent self-regulation means that the student must have in mind some goals to be achieved against which performance can be compared and assessed. Nichol & Macfarlane-Dick (2006) identify that the effective self-regulated learner can generate their own better (internal) feedback enabling them to achieve their desired academic goals. They also identified that a method to enhance feedback to support self-regulation had never been explored fully, and proposed their seven principles of good feedback practice to achieve this.

They also recognize that there has been a shift in the way teachers and researchers write about student learning in tertiary education. They describe the change in education as moving from being a simple 'acquisition process based on teacher transmission' to:
...a process whereby students actively construct their own knowledge and skills, (Barr & Tagg, 1995; De Corte, 1996; Nichol, 1997). Students interact with subject content transforming and discussing it with others in order to internalise meaning and make connections with what is already known. Terms like 'student-centred learning', which have entered the lexicon of higher education, are one reflection of this new way of thinking. Even though there is disagreement over the precise definition of student-centred learning, the core assumptions are active engagement in learning and learner responsibility for the management of learning. (Nichol & Macfarlane-Dick, 2006, p. 3)

The wealth of written knowledge in this exciting teaching and learning area seems to be expanding rapidly. Viewed as an educational reform of assessment, the newly-published *Handbook of Formative Assessment* (Andrade, Ed. 2010), is a series of papers by thirty educators and researchers who state that there is

broad agreement among both researchers and educators that formative assessment should be on the front burner of education reform efforts because its potential is so great. (Andrade et al. 2010, p.viii preface)

While predominantly referring to research and examples of non-tertiary education, Andrade et al. construct arguments that formative assessment

represents a unique, powerful, and plausible avenue for future policy development, reform initiatives and most of all classroom-based approaches that promote greater learning. (Andrade et al. 2010, p.vii preface)

This topic, benefiting from over twenty years of well-documented research and some classroom testing during that time, must now be ready to be taken more seriously by policy makers and course or programme designers. Formative assessment and feedback assists learners to develop the ability to think critically. Garside reviewed definitions of critical thinking and concluded that it is usually defined in terms of a skill component and an attitude component. (Garside, 1996)
Formative Feedback

Mantz Yorke in his paper *Formative Assessment in higher education: Moves towards theory and the enhancement of pedagogic practice* (2003), encapsulated the many issues surrounding formative assessment, particularly in relation to higher education. Despite evidence that strengthens this methodology as being vitally important to student-centred learning ‘the theoretical constructs that underpin formative assessment are not widely appreciated among lecturers in higher education’. (Yorke 2003, p. 496)

He further elaborates that:

Feedback has to be intelligible to the student but, whilst it might appear so from the teacher’s perspective, there is evidence that the ‘messages’ can go astray (e.g. Chanock, 2000). If feedback is perceived by students as satisfactory, there remains as an issue the use to which is put. As noted earlier, students may do little or nothing with the feedback, perhaps because it arrived too late to be useful for a programme that by then had moved on to other things, or simply because the gaining of an adequate grade was felt to be sufficient in itself (Yorke, 2007, p.? ).

Consequently, Yorke’s papers suggest some points to assist lecturers interested in developing their teaching and learning methods or those interested in further researching this important area. Being a great admirer of Professor Mantz Yorke, my only criticism of his valuable research is his employment of the word ‘pedagogic’ instead of ‘andragogic’ in relation to formative assessment in higher education. Developing this formative assessment theme on foot of their own in-depth study in the higher education area, Gibbs and Simpson examined how to design assessment that supports worthwhile learning with their proposal for a set of *11 conditions under which assessment supports students’ learning* (2004).

Gibbs and Simpson (at the time of writing) were in the process of testing ‘in practice’ through a large scale, collaborative, project involving two UK universities. They envisage that this set of ‘conditions’ would develop further as data becomes available not alone on any change being effective but also why any change to practice is effective. Yorke’s, Gibbs & Simpson and Nichol & Macfarlane-Dick’s papers all reference resource constraints preventing the development of formative assessment in higher education despite its documented value in promoting learning. When Gibbs and Simpson explored this area, they discovered that when:
Chansarkar & Raut-Roy (1987) studied the effects of combinations of various forms of coursework with examinations. They found that all combinations of coursework of varying types with examinations produced better average mark rates than did examinations alone — up to 12% higher average marks. Gibbs & Lucas (1997) reported an analysis of marks on 1,712 modules at Oxford Polytechnic. Modules with 100% coursework had an average mark 3.5% higher than modules with 100% examinations, and there were three times as many failed students on modules where there were only examinations (Gibbs & Simpson, 2004, p. 6).

Independently of the Gibbs and Simpson research project, the research undertaken in Phase 2 of this thesis, which was the action research study with the 2009-2010 first year cohort as part of a teaching fellowship undertaken by my colleague Máire Crean and I, led to similar findings. The data published in our study demonstrated how the Gibbs and Simpson framework of the set of ‘conditions’ could be applied to examine formative assessment and feedback structures in first year Architectural Technology. The argument was made that implementing this framework as a ‘check list’ helped to enhance student learning and development, all within reduced teaching resources:

Using two-stage assignments with feedback on the first stage, intended to enable the student to improve the quality of work for a second stage submission, which is only graded. Cooper (2000) has reported how such a system can improve almost all students’ performance, particularly the performance of some of the weaker students (Gibbs & Simpson, 2004, p. 24).

Writing in 2006 about the model and principles of good feedback practice, Nicol also refers to the definition of formative assessment as ‘assessment that is specifically intended to generate feedback on performance to improve and accelerate learning’ (Sadler, 1998, p.77). Nichol et al argue that ‘in higher education, formative assessment and feedback should be used to empower students as self-regulated learners.’ He explains that ‘self regulation refers to the degree to which students can regulate aspects of their thinking, motivation and behaviour during learning’. Nichol elaborates further that self-regulated students use feedback effectively and actively to achieve their academic goals.

The important issue of how feedback can be enhanced to develop further self-regulation and ‘the possibility that the feedback process can shape learning’ (Yorke, 2007) is also clearly set out in Formative assessment and self-regulated learning: A model and seven principles of good feedback practice (Nichol & Macfarlane-Dick, 2006), and was a very useful reference.
Biggs, speaking at the Learning Innovation Network Conference 2009 in the Institute of Technology, Athlone, Ireland, stated that 'self and peer assessment can greatly reduce the teacher's assessment load'. Like Sadler, Nichol & Macfarlane-Dick, he further argued 'that it is an important learning experience. The student has to learn what makes a good performance then judge their own work and very likely have a different 'take' on the topic' (Biggs, 2009). This stance was very encouraging, particularly in relation to the research I had embarked upon by then.

The potent argument is made therefore for extensive and thoughtful preparation in advance of each formative feedback and formative assessment session, or 'marking crit' as the Architectural Technology students have named it. The Prunty & Crean Teaching Fellowship study recognised that the learning outcomes clearly identified for each component of any project assessment, including the 'value' of self and peer assessment, was one of the key elements for this particular measure of success. Students learn through the formative feedback collaborative process how to categorize their own performance against another's, as well as how to identify the differences between a good, and a poor, performance. They began to value each other's opinions because there was a realisation that their peers had arrived at the same conclusions about the quality of work done as they had (Prunty & Crean, 2010).

The idea of self directed learning is not new. Knowles produced a handbook in 1975 that formulated a new general theory about self-directed learning. In three different sections, he separated out the experiences of the learner, the teacher and then the resources required to achieve learning. Probably the most significant aspect of this publication however was the move from 'independent learning' to the realisation that 'self-directed' learning was usually a co-operative activity which in turn became Knowles theory of 'andragogy', or theory of adult learning. What both these terms convey is succinctly portrayed by Knowles (1975); 'people who take the initiative in learning...learn more things, and learn better, than do people who sit at the feet of teachers passively waiting to be taught.' He further explains 'that self-directed learning is more in tune with our natural processes of psychological development' and that the development of appropriate skills is essential as 'students entering into these programs without having learned the skills of self-directed inquiry will experience anxiety, frustration, and often failure, and so will their teachers' (Knowles, 1975, pp 14 -15).
Knowles concepts of self-directed learning have much relevance in today’s rapidly changing world of tertiary education. He quite radically described the development of knowledge itself as needing the realisation that ‘it is no longer realistic to define the purpose of education as transmitting what is known’ (Knowles, 1975, p. 15), and that it is necessary for all to develop self-directed learning techniques to be used in life-long learning. Knowles also advocated that learning should be experiential and must contribute towards personal growth and development. Arguing that learning could no longer just be identified with formal schooling, he declared that ‘it is no longer appropriate to equate education with youth. Education - or, even better, learning - must now be defined as a life-long process’ (Knowles, 1975, pp. 15-16).

This theme, referred to in Chapter One, of developing graduates who are critical thinkers as well as self regulated learners is essential in order that they will sustain their professional development. Continuing Professional Development or CPD are programmes of life-long learning for a professional Architectural Technologist. Part of my own professional development, as a member of the RIAI Architectural Technology Task Group, over a two-year period was to draw up a comprehensive document establishing Architectural Technology Graduates competencies. This document, the *RIAI-Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist* published in 2010 and having been assessed by professional, career and academic Architects and Architectural Technologists is the first such document of its kind will help establish a new benchmark and criteria for all Architectural Technology courses in Ireland (see Appendix).

Knowles states:

the ‘why’ of self-directed learning is survival – your own survival as an individual, and also the survival of the human race. Clearly, we are not talking here about something that would be nice or desirable; neither are we talking about some new educational fad. We are talking about a basic human competence – the ability to learn on one’s own – that has suddenly become a pre-requisite for living in this new world. (Knowles, 1975, pp 16-17)
Studio as experiential learning

The studio environment mirrors a typical architectural office, with the projects style based on ‘real’ life situations, along with peer and lecturer discussions. The students have to apply acquired knowledge and new learned skills to produce a desired outcome. Though not strictly about learning through work placement, Mark. K Smith’s paper, *David A. Kolb on experiential learning* (1996), argues that Kolb and Fry in devising their learning style inventory in 1976 attempted to

place people on a line between concrete experience and abstract conceptualisation; and active experimentation and reflective observation; have helped to challenge those models of learning that seek to reduce potential to one dimension such as intelligence (Tennent, 1997, p. 91). They also recognise that there are strengths and weaknesses associated with each style (and that being locked into one style can put a learner at a serious disadvantage) (Smith, 1996).

One of the main weaknesses of the Architectural Technology programme was the simple lack of time allowed for the reflection process. And reflection is key to successful learning. However, Tennent suggests that, the Kolb, ‘model provides an excellent framework for planning teaching and learning activities and it can be usefully employed as a guide for understanding learning difficulties, vocational counselling, academic advising and so on’ Tennent (1997, p. 92). The argument can now be made that by the implementation of more formative feedback strategies, being a reflexive activity, assists the enrichment of the ‘learning by doing’ model.
Chapter Three

Research Design

Introduction
A genuine desire to improve my teaching and my students' learning prompted this research, particularly in light of the increased intake of non-traditional students into higher education. Dealing with this diversity of educational backgrounds and cultures from a teaching point of view requires that all should have the same opportunity to do as well as they can educationally, and yet still maintain set standards. While enabling all students to achieve was an important aspect of this study, the students' perception of learning through formative assessment was the main issue.

In this chapter, the central concern is how to design the research, the theoretical perspectives which might inform this research, and the methodologies to be applied which will best serve its overall aims. The qualitative research method shall be employed during this research proposal. I will outline the research design in terms relative to this research study. The chapter opens with an exploration of the purpose, the justification and the assumptions that I bring to this work, and elements which are essential to it. Each stage of the research design and analytical framework, including limitations, is also addressed.

Studying something in depth in order to establish facts or to reach new conclusions helps us to better understand the world around us. How reality is viewed by each of us as individuals is also very different as we are all informed by our own particular views of the world. These differences in perceptions of reality have given rise to a diversity of research traditions (Denzin & Lincoln, 2005: Creswell, 2007). To commence research design, the very useful guidance offered by Crotty (1998), opens with the research proposal and explains how answering two particular questions with considerable effort is a good starting point:
1. What methodologies and methods will be used?
2. How do we justify the selection made and use of the methodologies and methods chosen?

Expanding the sense of each of these questions, Crotty (1998), through questioning the purpose, the justification, and the assumptions that we bring to our work as well as the kind of knowledge that will emerge from the study, arrives at four pertinent questions for a researcher to pose when designing research:

What methods do we propose to use?
What methodology governs our choice and use of methods?
What theoretical perspective lies behind the methodology in question?
What epistemology informs this theoretical perspective? (Crotty, 1998, p. 2)

Crotty argues that these four questions are the four essential elements of any research process and that we must very carefully identify what we mean by each of them. Reversing the order of the four elements makes clear the sequential influence each element has on the next element (see Fig 3.1). I view these four elements as overlapping stages whereby each stage is defined by the characteristics which have been informed by the previous stage.

These four basic elements of research design constitute 'a penetrating analysis of the process and points up the theoretical assumptions that underpin it and determine the status of its findings' (Crotty, 1998, p. 6). The philosophical assumptions that have a practical
implication for all qualitative research are then considered in relation to this project. Thus, in this chapter, using each of these elements as a framework for the research process, I present an outline of the research design, justifying the choice of a qualitative research strategy and the selected methods of enquiry along with requisite good ethical practice.

Philosophical Assumptions

In making the choice to undertake qualitative research, Creswell (2007, p. 16) argues that the inquirer has taken a particular stance upon certain philosophical assumptions: ontology, epistemology, axiology, rhetoric, and methodology. He lists five as follows:

Ontology - A stance towards the nature of reality
Epistemology - How the researcher knows what they know
Axiology - The role of values the researcher brings to the research
Rhetoric - The language of research
Methodology - The methods used in the process (Creswell, 2007, p. 17)

As previously outlined, choices made when designing and conducting research have a practical implication. Therefore, it is necessary that I elucidate reasons for the choices made in this study by declaring my particular stance for each philosophical assumption made.

This study examines three different first year groups of students’ personal perceptions of learning. I acknowledge the ontological assumption of multiple realities, which I will relate in detail. The axiological stance shall also be clarified as the values I bring to this study will be presented candidly through the interpretation of gathered data in conjunction with the participants’ accounts. The language of the research, through the interpretation of the students’ perceptions, will be the researcher’s own voice.

Epistemology

Epistemology, defined in simple terms as "how we know what we know", is clarified in relation to research by Crotty as ‘the theory of knowledge embedded in the theoretical perspective and thereby in the methodology’ (Crotty, 1998, p. 3). He further explains that there are ‘quite a range of epistemologies’ which require to be described. It is important to acknowledge that the three primary epistemological stances, namely, objectivism,
constructivism and subjectivism ‘are not to be seen as watertight compartments’ (Crotty, 1998, p. 9), as they have variants within. Describing ‘objectivism’ as the epistemological view that ‘things exist as meaningful entities’, Crotty explains that things exist even if one is unaware of their existence. The knowledge view holds that meanings are discovered and that ‘understandings and values are considered to be ‘objectified’ in the people we are studying and, if we go about it in the right way, we can discover the objective truth’ (Crotty, 1998, p. 8). According to this stance, research is about discovering objective truth. This view is rejected by the constructivism understanding of knowledge, whereby meaning or truth is constructed through engagement with the realities of the world. Different people, experiencing the same observable facts construct their own meanings of that experience or things in different ways. The third epistemological position is that of subjectivism, whereby meaning is more abstract as it is imported or comes from anything except the interaction between the subject and the object.

This research is focused on interpreting the perceptions, or feelings that students in a small educational community might have about their learning through formative assessment. While it may be possible to generalise the findings I did not think an objective stance appropriate in this instance. This study is based on the different responses of individuals all experiencing the same phenomenon, thereby constructing their own meanings, including me as the researcher. Therefore the epistemological stance that has influenced the approach for this research is constructivism and is the theoretical perspective supporting my work.

Theoretical Perspective
Philosophical assumptions reflect a particular stance that researchers take when choosing to undertake a qualitative research study. Having made the choice the research is further shaped by paradigms, worldviews or a theoretical perspective which ‘is a basic set of beliefs that guide action’ (Guba, 1990, p. 17). The work of qualitative researchers varies with the set of beliefs that they bring to research. Creswell argues that there are four world views that inform qualitative research and shape the practice of research:
1. Postpositivism,
2. Constructivism,
3. Advocacy / participatory

**Postpositivism**

Postpositivism is described by Crotty as a ‘less arrogant form of positivism’. Positivism claims ‘that scientific knowledge is utterly objective and that only scientific knowledge is valid, certain and accurate’ (Crotty, 1998). Postpositivism is described as qualitative research undertaken with a scientific approach as the researcher would make use of a belief system grounded in postpositivism. However, while not necessarily jettisoning the objectivism inherent in positivism, these insiders [scientists ‘from within’] have challenged its [positivism] claims to objectivity, precision and certitude, leading to an understanding of scientific knowledge whose claims are more modest (Crotty, 1998, p. 29).

There is scope for qualitative research to be understood positivistically, or to be orientated towards positivist purpose, yet when exploring meanings through qualitative research and then confirming or validating findings by quantitative methods, the researcher has turned their study into a positivist piece of work. Crotty argues that this change has occurred not through the use of quantitative methods, but the ‘attribution of objectivity, validity and generalisability to quantitative findings’ (Crotty, 1998, p. 41).

**Social Constructivism**

Creswell describes Social Constructivism frequently combined with interpretivism as another world view or theoretical perspective where individuals seek understanding of the world in which they live and work. Meanings are formed through interaction with others, typically through discussion. The more open-ended the questioning, the better the researcher listens. These meanings are complex, varied and multiple. This means that a researcher’s aim is to rely as much as possible on the participants’ views of the situation: he/she does not attempt to categorise these intricacies. The researcher also needs to recognise that their own personal, cultural and historical background shapes any interpretation and ‘positions’ them (Creswell, 1998, p. 21) within the study. This gives rise
to the qualitative researcher ‘interpreting’ or making sense of the meanings others have about the world.

**Advocacy / Participatory**

The theoretical perspective or world view of advocacy / participatory research is based on the belief that a postpositivist stance ‘imposes structural laws and theories that do not fit marginalised individuals or groups’ and that ‘constructivists do not go far enough in advocating for action to help individuals’ (Creswell, 1998, p. 21). Reform through an action agenda is the principle of this research. The researcher provides a voice to the participants whose social issues are of paramount importance. This type of research is emancipatory and empowering, usually generating political debate that might initiate change for the participants. Active collaboration and engagement of the researcher with the participants throughout the research is not just a practicality; it is a necessity in order that the ‘voices’ are heard.

**Pragmatism**

Unlike postpositivism, researchers holding the pragmatic world view or theoretical perspective focus on the outcomes of the research and not on the antecedent conditions. The actions, situations and the consequences of the study are central to the researcher, as are applications of ‘what works’ or practical solutions to problems. The focus of the research is on the problem being studied and the questions being asked about the problem rather than on the methods to be employed. Creswell, citing Cherryholmes (1992) and Murphy (1990), suggests researchers:

- Will use multiple methods of data collection
- Will employ both quantitative and qualitative sources of data collection
- Will focus on the practical implications of the research
- Will emphasise the importance of conducting research that best addresses the research problem. (Creswell, 1998, p. 23)

Creswell gives examples of when ‘this world view is at work’ when ‘case study researchers use both quantitative and qualitative data (Luck, Jackson, & Usher, 2006; Yin, 2003 )’ (Creswell, 1998, p. 23).
In summary, the theoretical perspective or ‘set of beliefs’ that I bring to this research are social constructivist and pragmatic hypotheses which will become evident though the methodology and mixed methods applied in this case study, as outlined in this chapter.

Research Methodology
Travers (2001) succinctly defines the distinction between Methods and Methodology in his preface as follows:

Methods are the techniques used in collecting data. Methodology, on the other hand, refers to the assumptions you have as a researcher, which can be epistemological or political in character or mean that you support the view of the world promoted by a particular theoretical tradition. (Travers, 2001, p. xi)

Similarly to Creswell, Travers also argues that whether one acknowledges, or is even aware of these assumptions, they will influence how a topic is researched. Bryman argues that the differences between quantitative and qualitative research lie in the connections between three areas: theory and research, epistemological considerations and ontological considerations. These, he maintains, can be viewed as then forming two distinct ‘clusters of research strategy’ (Bryman, 2008, p. 22, p. 23), defined as Deductive, testing of theory (quantitative research) and Inductive, generation of theory (qualitative research).

![Diagram of Deductive and Inductive approaches to the relationship between theory and research](image)

Figure 3.2 Deductive and Inductive approaches to the relationship between theory and research. (Bryman, 2008, p. 11) right, and on the left, The Process of Deduction. (Bryman, 2008, p. 10)
Significantly, Gibbs (2007) clarifies that while much of quantitative research is deductive, however while the underlying logic to qualitative research is inductive. It actually uses both deductive and inductive evaluations.

Bryman (2008) argues that when a researcher makes a particular research design choice, it may reflect an inclination on the probability of outcomes from aspects of any course of action taken. Writing that when designing research 'we are paying attention to the different frameworks for the collection and analysis of data', Bryman then explains that these include the importance attached to expressing causal connections between variables:

- Generalising to larger groups of individuals than those actually forming part of the investigation;
- Understanding behaviour and the meaning of that behaviour in its specific social context;
- Having a temporal appreciation of social phenomena and their interconnections. (Bryman, 2008, p. 31)

Gibbs also argues that it is in fact impossible to eliminate any a priori theoretical framework because it is inevitable that 'qualitative analysis is guided and framed by pre-existing ideas and concepts'. This, he explains is because frequently researchers are 'checking hunches; that is, they are deducing particular explanations from general theories and seeing if the circumstances they observe actually correspond' (Gibbs, 2007, p. 5).

The three main issues or criteria that recur in quantitative research design that traverse all methods of evaluative enquiry, Bryman (2008, p. 31) defines as reliability, replication and validity. He expands by explaining that many writers and researchers sought to apply the rigidity of these three criteria or concepts to qualitative research, whereas many others argued that this was inapplicable to qualitative research. He cites Kirk and Miller (1986) as having applied 'concepts of validity and reliability to qualitative research but have changed the sense in which the terms are used very slightly.' Some qualitative researchers, Bryman continues, have proposed either adapting criteria or creating different criteria for evaluating studies undertaken.
The Emergence of Qualitative Research

Denzin and Lincoln (2005), document through a somewhat brief history, the ‘Eight Moments of Qualitative Research’. Beginning in the 1900s through to World War II whereby qualitative researchers during this period or ‘moment’ wrote:

‘objective’, colonizing accounts of field experiences, that were reflective of the positivist scientist paradigm. They were concerned with offering valid, reliable and objective interpretations in their writings. The ‘other’ whom they studied was alien, foreign and strange. (Denzin and Lincoln, 2005, p. 15)

Attempts to apply positivist or scientific frameworks to social science research advanced with the Chicago School approach to ethnographic ‘life story’, an interpretative methodology that empowered the researchers voice representing or telling the story of the subject examined which is still valued today. The growth of qualitative research in social science since World War II gave rise to the immense number of publications covering all aspects of this particular method of enquiry in Europe and in North America. From the 1970s attempts to formalise qualitative methods by undertaking: ‘rigorous qualitative studies of important social processes’ provided the right conditions for ‘a moment of creative ferment’. This was then distilled to become the new interpretative theories of ethnomethodology, phenomenology, critical theory and feminism.

More significantly from the social researcher’s viewpoint, the highly dramatised depiction of the ‘paradigm wars’ during the 1980s ‘resulted in the demise of objectivity-seeking quantitative research on teaching - a victim of putatively devastating attacks from anti-naturalists, interpretivists, and critical theorists’ (Gage, 1989, abstract). This endeavoured to make qualitative research as rigorous and as valid as quantitative research methods.

The conclusion of this ‘war’ of words was that there was no difference between writing and fieldwork; this moved qualitative research into new, relevant and critical dimensions. The case study, as a methodology, (Creswell, 2007; Denzin & Lincoln, 2005; Yin, 2003b), or as a method (Stake, 1995; Crotty, 2003) has been a beneficiary of this change. Yet the case-study is still seen as the ‘poor relation’ in the research stakes, despite its prolific application in different research and professional disciplines (Yin, 2003b, p. 1). However, to paraphrase Pierce, we must ‘let no method stand in the way of enquiry’ (Maxcy, 2003, p. 86).
Characteristics of Qualitative and Quantitative Research

This qualitative research study, situated in a higher education institution, examines the opinions of individuals' actions or behaviour, relative to learning, now required to be 'designed' or mapped. So where to start when faced with such a wide diversity of classification systems for types of qualitative research, never mind quantitative research? (Bryman, 2008; Creswell, 2007; Denzin & Lincoln, 2005; Henn, Weinstein, & Foard, 2009)

Research, 'the study of materials and sources in order to establish facts and reach new conclusions' (Oxford Dictionary, 2005), is easily defined in general terms. However, I felt it was necessary to firstly become familiar with the characteristics of each of the two main traditions of research, namely quantitative versus qualitative.

Bryman (2008) in defining the differences makes the argument that

The status of the distinction is ambiguous, because it is almost simultaneously regarded by some writers as a fundamental contrast and by others as no longer useful or even simply as 'false' (Layder 1993, p. 110). However, there is little evidence to suggest that the use of the distinction is abating and even considerable evidence of its continued, even growing currency (Bryman, 2008, p. 21).

Bryman declares, in quite simplistic terms, that quantitative researchers utilize measurement or quantification whereas qualitative researchers do not. In his editorial in Analyzing Qualitative Data (2007), Flick states that 'qualitative research is no longer just simply 'not quantitative research', but has developed an identity (or maybe multiple identities) of its own' (Gibbs, 2007, p. x). Creswell (2007, p. 36) also proposes a definition of the characteristics of qualitative research whilst acknowledging as well that this method of research has become more complicated in recent years. This is also borne out by his inclusion of Denzin and Lincoln's (1994, 2000, and 2005), latest version of their evolved generic definition through three editions of their Handbook of Qualitative Research as follows:

Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretative, material practices that make the world visible. These practices transform the world. They turn the world into a set of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretative, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or
interpret, phenomena in terms of the meanings people bring to them. (Denzin and Lincoln, 2005, p. 3)

Acknowledging that Denzin and Lincoln's definition has a 'strong orientation toward the impact of qualitative research and in transforming the world', Creswell, in describing himself as an 'applied research methodologist' (2007, p. 37), offers his own working definition of qualitative research. This he presents as a methodology that 'emphasises the design of research and the use of distinct approaches to enquiry' that stresses the importance of the process of research. Creswell's definition is worth including here:

Qualitative research begins with assumptions, a worldview, the possible use of a theoretical lens, and the study of research problems inquiring into the meaning individuals or groups ascribe to a social or human problem. To study this problem, qualitative researchers use an emerging qualitative approach to enquiry, the collection of data in a natural setting sensitive to the people and places under study, and data analysis that is inductive and establishes patterns or themes. The final written report or presentation includes the voice of participants, the reflexivity of the researcher, and a complex description and interpretation of the problem and it extends the literature or signals a call for action. (Creswell, 2007, p. 37)

Thus, using this working definition and armed with Creswell's view that, 'Qualitative enquiry represents a legitimate mode of social and human science exploration, without apology or comparisons to quantitative research' (Creswell, 2007, p. 11), it remained to identify the best approach to apply to this particular study.

Research Methodology - Case Study

Each of the five major approaches to qualitative enquiry: Narrative research, Phenomenology, Grounded Theory, Ethnography and a Case Study, required examination. Characterised and summarized by Creswell as follows:

The focus of a narrative is on the life of an individual, and the focus of a phenomenology is a concept or phenomenon and the 'essence' of the lived experiences of persons about the phenomenon. In grounded theory, the aim is to develop a theory, whereas in ethnography it is to describe a culture-sharing group. In a case study, a specific case is examined, often with the intent of examining an issue with the case illustrating the complexity of the issue. (Creswell, 2007, p. 93)

Using Creswells' definitions the nature of this research study is primarily on the students' perceptions, experiences or feelings about learning. Because different people can experience the very same event or situation quite differently, the phenomenological approach could have been an option. So, also, as the participants are part of a 'small
community’ sharing the ‘culture’ of Architectural Technology, an ethnographic approach could have applied. Grounded theory was not an option, as theory had not been established to be developed. However, having realised that I, as the researcher, have an epistemological leaning towards interpretivism, a pragmatic theoretical perspective or worldview, and an ontological orientation towards constructivism, I considered it was more appropriate to apply the case study methodology to this research project. That the research is based upon a comparison across and between different first year undergraduate cohorts and two different curricula has meant that the study developed to become a multiple-case study. This has added another research layer to the inquiry into Architectural Technology students’ individual experiences of learning.

Methodology - Case Study

The technical definition of a case study is made clear by Yin as being essentially in two parts:

1. *A case study is an empirical inquiry that*
   - Investigates a contemporary phenomenon within its real-life context, especially when
   - The boundaries between phenomenon and context are not clearly evident.

2. *The case study inquiry*
   - Copes with the technically distinctive situation in which there will be many more variables of interest than data points, and one result
   - Relies on multiple sources of evidence, with data needing to converge in a triangulation fashion, and as another result
   - Benefits from the prior development of theoretical propositions to guide data collection and analysis (Yin, 2003b, pp. 13-14)

The case study, therefore, as an all-encompassing method is a comprehensive research strategy. With a less structured, more interpretative view, Stake (2005) advocates ‘that case study research is not a methodology but a choice of what is to be studied’ and that mixed methods inform the case (Creswell, 2007, p. 73). Acknowledging this view, Creswell prefers instead to choose to see a case study as a methodology. However, regardless of approach, the characteristics of case study research are described as developing an in-depth description, analysis, and holistic understanding of the case or cases. Used in many social
science research settings from disciplines such as law, psychology, medicine, political science and education, the case study uses multiple sources to gather data to develop a detailed analysis and conclusion.

As this study deals with the interpretations of students’ perceptions of their learning, such interpretation required gathering information from multiple sources of evidence.

Of all the roles, the role of interpreter, and gatherer of interpretations, is central. (Stake, 1995, p. 99)

Stake expands by explaining that an individual’s construction of knowledge appears to ‘begin with sensory experience of external stimuli’ which in turn explains how analysis of a stimulus triggers perceptions or interpretations of the experience felt or observed. As noted already,

Most contemporary qualitative researchers nourish the belief that knowledge is constructed, rather than discovered’ (Stake, 1995, p. 99)

Stake claims that humans construct their understandings from experience and from being told what the world is; they do not discover it ‘whirling there untouched by experience’. Therefore the constructivist view of knowledge appears to have further refined to become a rationalist-constructivist perspective that accepts that an outside world exists, that ‘corresponds suitably to our notion of it’ (Stake, 1995, p. 101).

However, criticism of case study methods can be that other cases outside the study cannot be understood; weak generalisations are often made and lack of rigour can be problematic. The amount of data gathered also can be unwieldy or overwhelming. Acknowledging the strengths of a case study, and aware too of its limitations that are also subject to the interpretations of the researcher, by applying a methodological approach and following explicit procedures will provide a framework to support the analysis of data gathered. This will give significance to the ‘quintain’ or any commonalities across all three years or cases. The research questions posed along with the examination of supporting literature have shaped this research methodology.

In examining the role theory has in relation to designing a case study, Yin states that ‘theory and theoretical constructs are useful in all kinds of case studies’ (Yin, 2003a, p. 5), which he considers central to completing a successful research project. He then identifies at least six kinds of case study, describing them as variables within either single or
multiple-case studies: they can be exploratory, descriptive or explanatory (causal) within either framework. Defining a multiple-case study, Yin describes it as including two or more cases within the same study, but that they must replicate each other in order to predict similar results (literal replication) or to predict contrasting results (theoretical replication).

**Ontological aspects of Case Study**

To conduct good qualitative research, it is necessary for a researcher to clearly define the philosophical assumptions, paradigms and interpretative frameworks. According to Creswell, these are the ‘basic elements of designing a qualitative study’ (Creswell, 2007, p. 13). Therefore, the participants’ personal views, gathered as part of the data collected, will also shape the design and characteristics of the research. When conducting qualitative case study research, evidence of ‘multiple realities [which] includes the use of multiple quotes based on the actual words of different individuals and presenting different perspectives from individuals’ (Cresswell, 2007, p. 17, p. 18), means that different world views are allowed to emerge from the individual participants.

From a slightly different action-research position, McNiff & Whitehead (2006) describe people’s *values* as being their ontological perspectives: how we view ourselves can influence how we view others and our environment. They further clarify that

> if we see ourselves as constantly creating our identities, we may come to see others as sharing our lives within a shared environment. This does not mean that we relinquish our uniqueness as individuals. Rather we see ourselves as unique human beings who are inevitably in company with other unique human beings. (Mc Niff & Whitehead, 2006, p. 10)

As I have journeyed alongside the three different student cohorts studied in this thesis over the past three years, these sentiments are particularly pertinent to how I see myself, the insider researcher, positioned in the centre of this study. I am an ‘insider’ researcher; the ‘gatherer of interpretations’ (Stake, 1995, p. 99). The duration of time spent gathering information and making close observations over each year with each cohort has closed any supposed gap between researcher and those researched, enabling me ‘to know’ what I ‘know from firsthand information’ (Stake, 1995, p. 99).
The evidence of ‘multiple realities’ and the different thoughts captured by all the individual participants is reflected in the data acquired.

The philosophical views I espouse therefore are, as Creswell explains, a ‘blending’ of those ‘philosophical assumptions that the inquirers make in deciding to undertake a qualitative study’. This in turn explains why ‘diverse interpretative and theoretical frameworks that shape the content of a qualitative project’ (Creswell, 2007, p. 15) have been applied to this particular multiple-case study.

Rhetorical and Axiological Assumptions - Case Study

The narrative approach was employed as I believe all the participants voices should be heard. Creswell supports this as he says, ‘language and terms of qualitative inquiry’ and also ‘the rhetorical assumption that the writing needs to be personal and literary in form’ (Creswell, 2007, p. 18). Consequently, I can defend the ‘I’ in this research, using my own voice within this informal style of writing, and yet ensure that the participants’ ‘stories’ (Stake, 1995,p. 1 and p. 127) are told accurately, with ‘credibility’ and ‘dependability’ (Creswell, 2007, p. 18).

McNiff & Whitehead (2006), while they focus on action research, also describe a theory as a set of ideas about what we claim to know and how we have come to know. By demonstrating that what we know (our theory) can stand up to public scrutiny, we can then claim that the theory proposed does have validity. However, Creswell argues that

Instead of using quantitative terms such as "internal validity", "external validity", "generalizability", and "objectivity" the qualitative researcher writing a case study may employ terms such as "credibility", "transferability", "dependability", and "confirmability" (Lincoln & Guba, 1985) or "validation" (Angen, 2000), as well as naturalistic generalisations (Stake, 1995). (Creswell, 2007, p. 18)

From an axiological philosophical perspective, the three different cohorts studied, is nonetheless part of a small academic community within the DIT. I can readily admit that the data and information gathered for this study is extremely ‘value-laden’ (Creswell, 2007, p. 18). Because of my position within the research process and the beliefs that I may inadvertently bring, it is important that those values be made plain. Reporting biases clearly, while recognising the significant nature of the study and the information gathered therein, is actively demonstrated in the data analysis in Chapter Four.
Social Constructivism and Pragmatic Worldview – Case Study Perspective

Developing the constructivism theme, the more specific theoretical perspective of social constructivism is interesting. It is described by Creswell as being where ‘individuals seek understanding of the world in which they live and work’ (Creswell, 2007, p. 21). The social constructivist researcher is one who seeks out the complexities of views, developing ‘subjective meanings of their experiences’ formed through interaction with others, and relying ‘as much as possible on the participants’ views’ of the inquiry. Such a researcher inductively generates a theory, recognises that background personal to the researcher ‘shapes the interpretation’, yet attempts to make sense of others’ meaning about the world (Creswell, 2007, p. 21). While this study does interpret the students’ feelings, or their perceptions, and experiences of learning through formative assessment, the pragmatic approach of a multiple case study methodology allows for the use of direct interpretation and description of the case.

Creswell cites both Cherryholmes (1992) and Murphy (1990), who provide direction for the ‘basic ideas’ of pragmatism, describing it as ‘not committed to any one system of philosophy and reality’ (Creswell, 2007, p. 23). The freedom to choose multiple methods of inquiry, to be not affiliated to one particular way of collecting and analysing data, and to conduct research that best addresses the research question, then to see where the results lead, makes for a liberating, non-dependency on a ‘methodological tool kit’ (Yin, 2003a, p. 27). The use of the ‘case study method allows investigators to retain the holistic and meaningful characteristics of real-life events’ (Yin, 2003a, p. 2), yet deciding the boundaries for a case study to limit time, events and processes is both critical and challenging.

This study, as explained in Chapter One, was initiated from a pragmatic research inquiry point of view. The focus was very much on the outcome of the research to determine what might work to resolve the problem. The practicality therefore, of the case study approach appealed to my pragmatic belief to discover ‘what might follow when we act in a specific way or follow some idea’ (Biesta & Burbules, 2003, p. 101).

The research was reflective as it was exploratory in nature: exploring the phenomenon of the students’ perceptions of learning. Three cases, the three different first-year student
cohorts from three consecutive academic years, compared and analysed within the same case study, defined this research as a literal replication, multiple-case study.

Multiple-data collection methods and multiple sources, both primary and secondary, informed this study. Primary data was gathered from questionnaires, by direct observation, and from the participants’ commentary. Secondary sources were journals, papers (both published and recently delivered conference) and seminal texts.

Research Methods
Research design must relate to the criteria employed when evaluating social research by providing a methodological framework for the collection and analysis of data. This framework (Wolcott, 1990; Gibbs, 2007), fundamental to research methods, is the detailing of the procedures or ways that data is gathered for research and analysis. A research method is simply a technique for collecting data.

Concepts or ideas that are embedded within a hypothesis require to be drawn out to become researchable components. These components in turn must be converted into thorough techniques or methods of how data will be collected to support that original idea that ‘makes up this hypothesis’ (Bryman, 2008, p. 9).

Despite its traditional reputation among researchers as being ‘soft’ research, undertaking a case study is described by Yin as being ‘remarkably hard’. One of the reasons Yin gives for this poor reputation is the possibility that detractors were not systematic in their procedures (Yin, 2003b, p. 17). Henn et al (2009) describe qualitative research being ‘an unwieldy process characterised by lone researchers wallowing in paperwork’ (Henn et al, p. 243), a particularly apt image. This was perhaps the most challenging aspect as a beginner-researcher.

Context of Research Methods
Speculation about ‘why students are just not getting it’ prompted the initial inquiry for the first phase of this study in 2008. Subsequent research has refined the original hypothesis about the support to understanding that the formative feedback provided. Understanding this approach further reinforces the view that the mixed-methods research strategy is the most appropriate method to elucidate the findings derived from this multiple-case study. Furthermore, as the students’ personal experiences of learning are core to the enquiry, the
complete and appropriate depiction of this phenomenon required to be described fully. Accordingly, a descriptive case study is included as an additional layer to illustrate the method applied to this research. Thus as Yin explains; ‘the good use of theory will help delimit a case study inquiry to its most effective design; theory is also essential for generalizing the subsequent results’ (Yin, 2003a, p. 6).

**Phases of Research**

As discussed in Chapter Two, the research commenced with the students who started first year in 2008, and continued until 2011. The study over these three academic years was ‘bounded’ by examining learning within the Studio environment only. In Phase 1 (see Fig. 3.3) of the research, 2008-2009, a specifically designed, part-quantitative, part-qualitative open-ended questionnaire was issued to survey the class group after some interventions had been applied to test formative assessment in the Studio. This was to gather the reactions of the students. The data gathered was analysed and the findings informed the decision to apply the same strategy in the subsequent year but with improved timing to gather data. This meant that in Phase 2, over 2009-2010 the first year cohort were surveyed at three strategic stages over the academic year, and the data from each survey was analysed. An identical strategy was then applied to Phase 3 of the research, the subsequent year of first year student intake, 2010-2011. The survey questionnaires issued were then analysed and data extracted. Comparison of the data from each phase was then undertaken.
A focus group involving two participants from each of the three class groups formed Phase 4 of the research. Data was extracted by recording the proceedings and transcription. Each of these actions involved the application of mixed-methods of data collection. The examination of each case, which was replicated each time, is organised around the same research question and has resulted in a multiple-case study analysis method. Describing the multi-case studies as being usually studies of particularisation more than generalisation, Stake recounts that the power of case study is actually its attention to the local situation, not in how it represents other cases in general. (Stake, 2006, p. 8)

Acknowledging the ‘world view’ of this pragmatic, multiple-methods, action research, multiple-case study, and being aware that case study research shares the burden of clarifying descriptions and refining interpretations, I will require to be very clear in my narrative. Yet it is not simply ‘story telling’ (Gibbs, 2007; Kvale, 2007; Stake, 1995). The social-constructivist stance that I have assumed for this research, I trust, will provide the

<table>
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<th>PHASE DETAILS</th>
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| PHASE 1       | ·INTERVENTIONS TO TEST FORMATIVE ASSESSMENT OF PROJECT WORK APPLIED IN STUDIO  
                ·TESTING COMPLETED MAY 2009  
                ·STUDENTS PARTICIPATED IN 3 SURVEYS REFLECTING ON 3 DIFFERENT STAGES BEFORE COMMENCING PROJECT WORK IN 2ND YEAR |
| PHASE 2       | ·REPLICATION OF PHASE 1  
                ·DATA GATHERED AT 3 STRATEGIC STAGES  
                ·TESTING COMPLETED APRIL 2010 |
| PHASE 3       | ·REPLICATION OF PHASE 2  
                ·DATA GATHERED AT 3 STRATEGIC STAGES  
                ·TESTING COMPLETED APRIL 2011 |
| PHASE 4       | ·FOCUS GROUP FORMED WITH PARTICIPANTS FROM ALL 3 PHASES |

Figure 3.3 Phases of research undertaken.
reader with good raw material ‘so that naturalistic generalisation is facilitated’ (Stake, 1995, p. 126).

Questionnaires
The questions were designed to identify preferences for specific forms of feedback and assessment as well as to extract personal comments from the participants through a follow-up question, all within each survey undertaken. Therefore the questions were part quantitative and part qualitative, which produced an open-ended questionnaire.

The open-ended survey questionnaires were undertaken by all the participants at each stage anonymously and electronically, on-line, through the Bristol Online Surveys (BOS) portal. This proved to be an easy-to-use service that allowed development, deployment, and analysis of the quantitative element of the surveys via the Web. Relatively straightforward, there was no complicated set-up or technical expertise required. The clarity of this system became more apparent when there was a difficulty with the first survey of the 2009-2010 first-year cohort. A problem with the computers had occurred, thus there was no access for any of the students to the online survey. A paper document version of the questions set was distributed. Again, the survey was anonymous, and completed questionnaires were gathered and analysed. The analysis of the surveyed students’ responses by hand was painstaking and very time consuming. Fortunately this had to be undertaken only once.

The only shortcoming of the BOS online survey was that, naturally being a quantitative analysis tool, it could not categorise or identify themes from the personal responses given. This was instead systematically recorded into a Microsoft Excel programme each time, for each phase of the research, which could then be utilised to group similar responses and generate visual charts in percentages.

Open-ended Questions
The open-ended questions that formed approximately half of the total number of questions asked, enabled the students to give personal responses at strategic points within each survey. The remainder of the questions were quantitative. The majority of the personal responses were an attempt to glean more depth to a categorical response made in the previous question. Most of the participants did respond reasonably well, however there
were some who responded monosyllabically, and others who, in order to progress to the next question, just placed a comma or a hyphen. The purpose of eliciting personal responses was to attempt to bring more depth to a categorical ‘yes/no’ response made to a previous question. The BOS online survey required that every question be addressed in order to progress or complete the survey and ‘sign’ out. The 2009-2010 paper document survey, generated difficulty in the open-ended personal responses in that particular survey. This was because some of the handwriting, spelling and self expression was poor and was difficult to decipher in some cases. The type written open-ended personal responses in the online surveys were not much better with regard to the quality of writing, but at least the text of the answers was legible.

Observation notes

In 1994, Adler and Adler argued that ‘in the future observational research will be found as “part of a methodological spectrum” but that in this spectrum it will serve as the most powerful source of validation’ (Angrosino, 2005). Testimony from trustworthy eyewitnesses in legal cases is a good example of a particularly convincing form of verification of the effectiveness of observation. Studies that rely mainly on interviewing as a data-gathering technique utilise observation of body language, facial expressions and other cues to lend depth and meaning to words used. However, observation in the context of this study was recorded in field notes at infrequent intervals and was specifically looking at the group dynamics, and the variations of that, rather than scrutinising individuals. The additional depth this exercise brought to the research, particularly during the focus group discussion, and in the transcription of the recording, was of immense value.

Observation notes were made at two different points per cohort at strategic formative assessment events timed to suit the stages of the projects being assessed through the year head in the 2009-2010 and 2010-2011 first-year cohorts. The studio teaching staff were advised that ‘I would probably drop in to see the students’ work’ and to ‘ignore me’. The informality of the studio environment meant that this created no particular tension from the staff or students’ point of view.
The 2008-2009 first-year cohort was the ‘test group’ and as trials took place, as a result had four different formative assessment models imposed during the academic year. Thus, there were four observed and noted sessions that year:

**Phase 1** 2008-2009 first-year cohort. Observation notes made were based on recording students’ and staff reactions to the introduction of the adjustments to assessment applied as test models as I taught this group.

**Phase 2** 2009-2010 first-year cohort. Observation notes made were based on recording students’ and staff behaviour during formative assessment sessions arranged through the year head.

**Phase 3** 2010-2011 first-year cohort. Observation notes made were based on recording students’ and staff behaviour during formative assessment sessions arranged through the year head.

The reason for the infrequency of observed sessions in Phases 2 and 3 was due to the realisation through observation that as the students and staff became more familiar with the formative assessment strategy, it was adequate to observe development made. Thus direct observation took place at the earlier part of the year and then again towards the end of the academic year. Timetabling of studio was another practical reason for observing at these specific stages also, as I taught elsewhere on the same programme at a parallel time.

**Focus Group**

‘If you want to know how people understand their world and their lives, why not talk with them?’ Kvale (2007, p. 1) candidly suggests in his opening sentence. Conversation is a very basic human interaction: learning about others’ experiences, feelings, hopes and dreams. Kvale describes the research interview as an inter-view where knowledge is constructed in the inter-action between the interviewer and the interviewee (Kvale, 2007, pp. 1, 4). This exchange of views between two persons about a theme or a common interest can be applied also to a focus group. The purpose is to gather qualitative data from individuals or groups all of whom have experienced some ‘particular concrete situation’. As an exploratory technique, the ‘particular concrete situation’ or common interest serves as the focus of the interview (Stewart, Shamdasani & Rook, 2007, p. 9). Therefore, following analysis of the data collected from the three different academic years, I felt there
was insufficient depth in the answers to the open-ended questions to really probe the students feelings about learning through formative assessment. Additionally I thought that as the first cohort of students surveyed in 2008-2009 were now in their third year and about to graduate, they would be a very rich source to tap, as they had experienced a wide range of assessment applications since first surveyed. As the 2009-2010 first-year group had also experienced various academic assessment methods, I considered that their input would help ‘triangulate’ all the information gathered.

An average of 60% of each class group participated in the surveys anonymously. Their anonymity ensured that I did not know who had participated. The dilemma this caused was that I needed to get a diverse group but was loath to approach students individually. Any selection on my part would indicate the aspect I was exploring, and also I really wanted randomly-selected volunteers. I was somewhat fanatical about ensuring the anonymity of the members of this focus group, as mentioned earlier DIT is a ‘small community’.

Following the last online survey in April 2011 of the final 2010-2011 first-year cohort, I tentatively circulated an e-mailed letter to all one hundred and fifty students, seeking volunteers and outlining what I hoped to do. I explained that the volunteers come from the students from each cohort who actually took part in the original surveys. I also explained that as I only sought six participants, two from each year, that in the event of over subscription that I would then select randomly. Conscious that the students were under great pressure preparing end-of-year portfolios and that exams were imminent, I was very pleased to receive six volunteers, two from each year. Had I had the opportunity to ‘hand pick’ the ideal cross-section of diverse students, I could not have been more satisfied with the participants who stepped forward. Thus with relief the focus group had been formed.

**Data Analysis**

At this stage of the research all the data gathered was examined, cross checked and analysed. Comparing the resulting commonalities, differences, trends and figures across the three years, culminating in the focus group interview, I feel has addressed the research question, the findings about which are explained in Chapter Four.
Ethics

Ethical concerns are relevant for all types of research, but are most pertinent at the data collection and research planning stages. As they usually involve others they can raise a host of ethical questions. Gibbs warns that ‘the principle of fully informed consent means that participants in research should know exactly what they are letting themselves in for’ (Gibbs, 2007, p. 8). Participants need to know what will happen to them during the research gathering, and what will happen to the data collected when the research is completed. The sensitivity of the researcher, because of the personal nature of qualitative research, is of immense importance as is preserving the anonymity of participants.

An ethics statement and an informed letter of consent were presented to all participants in this research (see Appendix). The ethics statement also included a reassurance that they were free to withdraw consent at any stage, without prejudice. All participants were also assured that anonymity would be preserved and that any information gathered was for the use of this study only. The informed letter of consent outlined the research purpose, scope and also assured participants that all data would be treated confidentially with an explanation of the methods that would be used to gather data.

There are particular ethical concerns around the transcription of interview notes. Transcription of the full unabridged audio-recorded focus group interview was undertaken personally, as I was adamant that it should be transcribed faithfully and also to further preserve the participants’ anonymity.

Summary

I found it quite daunting to identify my philosophy in relation to this research. Pragmatically disposed, I had started this research in 2008 with the ‘how’ rather than the ‘why’. I had not really thought through a research philosophy. I took heart from discovering that Dewey’s pragmatic approach was different too, in that

He [Dewey] deals with questions of knowledge and the acquisition of knowledge within the framework of a philosophy of action, in fact a philosophy that takes action as its most basic category. This connection between knowledge and action is especially relevant for those who approach questions without knowledge primarily from a practical angle – such as educators and educational researchers (Biesta & Burbules, 2003, p. 9)
However, the research design for this study, informed by an interpretative epistemological theory, constructivist ontological orientation and a pragmatic theoretical perspective, governed the methodology that established this research be a multiple-case study. The techniques and methods used to gather data as outlined in this chapter are more fully addressed in Chapter Four.
Chapter 4

Presentation and Discussion of Research Findings

Introduction

This chapter presents the findings generated by this research. Case study research is widely agreed to involve in-depth description, analysis, and holistic understanding of the case or cases. Observing the conceptual responsibilities that the qualitative case researcher must include, each case was ‘bounded’ by the academic year in which it was examined. A particular theme that was identified as occurring within each case was studied. Throughout this chapter, the analysis of the data collected is presented in synoptic form along with a discussion of the findings relevant to each phase.

The rationale for taking the multi-case study approach in this manner was the fact that there were four identifiable aspects to this study.

<table>
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<tr>
<th>PHASE DETAILS</th>
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| PHASE 1 2008-2009 | - Interventions to test FORMATIVE ASSESSMENT of Project work applied in Studio module  
- Testing completed May 2009  
- Students’ participated in 3 surveys, reflecting on three different stages before commencing project work in 2nd year in September 2009 |
| LEVEL 7 Ordinary Degree | |
| PHASE 2 2009-2010 | - Replication of Phase 1  
- Data gathered at three strategic stages, completed April 2010 |
| (Teaching Fellowship) | |
| LEVEL 7 Ordinary Degree | |
| PHASE 3 2010-2011 | - Replication of Phase 2  
- Data gathered at three strategic stages, completed April 2011 |
| LEVEL 8 | |
| Honours Degree (Curriculum Change) | |
| PHASE 4 - Focus Group | - Focus group formed with participants from all 3 Phases in May 2011 |
| Random sampling of all three cohorts 2008-2009; 2009-2010; 2010-2011 | |

Figure 4.1 Phases of Research from 2008-2011

Each was a case study in its own right, with clearly defined parameters, being a separate first-year cohort from three different academic years. While there were slight variations
between each cohort, and within each study, the multiple-case study allows for further exploration across the three years. The research enquiry that has emerged, to explore diverse students’ perceptions of learning through formative assessment and formative feedback, led me to examine each case individually.

As questionnaires were answered anonymously there was no possibility of identifying the students who had participated. However, this would create conditions for the final and fourth stage of the research, the focus group. In the first case, or phase, the purpose of the original question was to examine ways to improve feedback practices. This revealed that learning was taking place through this process. This was evident initially through anecdotal observation notes.

This research project employed a holistic view of the empirical enquiry. While a large amount of data was collected over the three years, this study is examining only those responses gathered specifically in relation to the students’ feelings or perceptions of learning. Consequently only five characteristics are examined across the three years surveyed, rather than the minutiae of each case.

The five distinct characteristics were examined via collected data in the following corresponding, strategic order for each first-year cohort:

Induction: Q.1. Do you know what is meant by feedback?
Formative Feedback – Semester 1
  Q. Did you feel feedback was provided in sufficient detail?
  Q. Please comment on your answer to the last question.
Formative Assessment – Semester 1
  Q. Did you understand the process of formative assessment (crit marking).
  Q. Please comment on your answer to the last question.
Formative Feedback – Semester 2
  Q. Did you feel feedback was provided in sufficient detail?
  Q. Please comment on your answer to the last question.
Formative Assessment – Semester 2
Q. Which of these two methods of grading work do you prefer? A- The 'Marking Crit’ (Formative Assessment) or B. Marking or Grading by Staff only (Summative Assessment)

As other information was sought through the questionnaires to help improve other aspects of the course, the order of the question numbers on each survey altered slightly between each year, thus the question numbers have been omitted for clarity in this presentation of findings. The surveys conducted are however untouched, and intact, see Appendix?

The participants, the Architectural Technology students, were a “purposeful sample” (Creswell, 2007, p. 125) as they were ‘accessible and convenient’ to the researcher. The fact that all three years were still in the School of Architecture, DIT, albeit at different stages of progression, was of immense value to the study also. There were of course limitations to the study, which are addressed below. The conclusions that emerged from analysing the data are also addressed in this section.

Case Study Analysis

Stake describes case studies as being both ‘qualitative and quantitative’ (Stake, 2005). He then refers to how Yin (1992), in search of fundamental pursuits common to both quantitative and qualitative research, found four common commitments that are just as important in case research as in any other type of research:

- to bring expert knowledge to bear upon the phenomena studied
- to round up all the relevant data
- to examine rival interpretations
- to ponder and probe the degree to which the findings have implications elsewhere (Stake, 2005, p. 460).

Using this research framework, the data collection methods for this qualitative research were as follows:

Open-ended questionnaires (3 per each academic year)

part quantitative and
part qualitative questions
Observational / field notes
Focus group interview

Phases of Research
The research carried out, over three years, is outlined in Fig 4.0 below. The study of each case was ‘bounded’ by examining learning and assessment within the Studio module environment only.

Coding
Fundamental to any analytical process in qualitative research is coding. Identifying text that exemplifies a theme or an idea and linking it to a devised code as a ‘shorthand reference’ for ease of retrieval and comparison ensures that is not just simply a description of participants’ views of the world (Gibbs, 2007, p. 54). Open coding, where the texts of each cohort response is read reflectively to identify relevant categories, was the coding approach applied.

All data collected was categorised based on experiences mentioned in the open-ended responses to the questionnaires to specific questions as described above. The experiences were logged as images, feelings, reactions and meanings that emerged along the same themes (Gibbs, 2007). These were embedded in the personal responses as either ‘positive’ or ‘negative’ in nature and related to formative assessment, formative assessment or learning within the studio environment.

The research commenced originally in September 2008 with a first-year cohort of Architectural Technology students. This was following up on a deductive theory about learning through formative assessment in Studio that required testing. This theory was tested through applying some changes in assessment practices in one module over one academic year. A second action-research case study in September 2009 was conducted as the research part of a Teaching Fellowship with my colleague, Máire Crean. The findings from this study confirmed that learning through formative assessment was the preferred method of assessment and that this method also enhanced learning. Moving forward, as the academic programme changed in September 2010 from a Level 7 Ordinary degree to a
Level 8 Honours degree, a further study was undertaken to identify if a different academic group of students would have different preferences for assessment methods.

Research Methods
Shaped by the philosophy around the research question itself, the research design that ultimately emerged directed the choice of method and methodology, which, as explained previously, identified the *modus operandi* as being most appropriately that of a multiple-case study.

Research commenced with an anonymous, random ‘quantitative’ sampling survey questionnaire. The survey’s format was a blend of quantitative close-ended questions, some multichotomous alternatives along with open-ended questions. This was then replicated over the two subsequent academic years with two other first-year student groups. Data gathered for each year was initially compiled from the DIT Student Registration Office and the Central Applications Office (CAO) databases. Three surveys were conducted each academic year at the same strategic times and the data gathered from each survey was then disseminated.

A comparison made across all three years to identify similarities or differences, then formed a series of questions, which were finally put to a focus group interview with volunteer representatives from each cohort surveyed. Each stage of the research process is presented with some discussion on the findings.

Case 1, Phase 1, 2008 - 2009
In Phase 1 of the research, 2008-2009 (see Fig. 4.1) adjustments to assessment practices for Studio projects were implemented. This came about, as I had been part of the team that had taught the 2006-2007 first-year group. When in 2007-2008 I was teaching the same group in their second year, I was stunned and puzzled at how little they seemed to have understood of basic building technology principles. Had I not been with this group in their first year I would have had serious misgivings about their ability to learn *and* even more about the *way* they were taught in first year. The constructive alignment of the syllabus appeared to be in jeopardy. I examined what was actually happening in studio and wondered if the lack of timely feedback could be the root cause.
The intensely over-crowded curriculum and timetable was not helping matters either. Another factor was that the crit which is central to feedback was not fully implemented as is done in professional practice; it was a one-way conversation and was certainly not collaborative. Thus, upon my return to teaching first-year students in 2008, action to address this problem was, in my view, crucial. Up to this time, the assessment of weekly submitted projects, which were ‘technically’ constructively aligned, was essentially summative. Furthermore, a delay of up to three weeks before receiving feedback or returning graded work was a common practice. This meant that actual ‘constructive alignment’ did not happen for most students and any written feedback on work was also received too late to matter and was not understood.

<table>
<thead>
<tr>
<th>Action/Date</th>
<th>Time Frame</th>
<th>CASE STUDY 1</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Week 1 Semester 1 September 2008</td>
<td>Approval acceptance from teaching colleagues to commence micro adjustments to assessment practice in Studio of 1st Year 2008-2009 to observe students reaction to formative assessment</td>
<td>First Year Studio teaching team, 1ST Year students Level 7, DT 105, BSc (Ord.) Architectural Technology</td>
<td></td>
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<tr>
<td>Academic Week 1 Semester 1 September 2008</td>
<td>Tested first formative feedback and first formative assessment strategy on the first project</td>
<td>1ST Year students Level 7, DT 105, BSc (Ord.) Architectural Technology</td>
<td></td>
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<tr>
<td>Academic Week 1 Semester 1 September 2009</td>
<td>Induction of 2008-2009 1st Year intake class group to participate in a qualitative survey to identify diversity and reasons for enrolment on this particular academic programme</td>
<td>1ST Year students Level 7, DT 105, BSc (Ord.) Architectural Technology</td>
<td></td>
</tr>
<tr>
<td>Academic Week 1 Semester 1 September 2009</td>
<td>Qualitative questionnaire on-line, Part 2 to capture students' perceptions of learning at the end of Semester 2008-2009</td>
<td>1ST Year students Level 7, DT 105, BSc (Ord.) Architectural Technology</td>
<td></td>
</tr>
<tr>
<td>Academic Week 1 Semester 1 September 2009</td>
<td>Final qualitative questionnaire, on-line, Part 3, to capture students' perceptions of learning mid-Semester 2008-2009</td>
<td>1ST Year students Level 7, DT 105, BSc (Ord.) Architectural Technology</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.2 Time-frame of sSurveys taken 2008-2009 Case 1, Phase 1.

Deductive Theory Applied

Following consultation with the first year studio teaching staff in 2008, I decided to implement a stratagem specifically for assessment and feedback in the studio module commencing at the start of the academic year. At key stages, during and after completion of selected projects, different micro strategies were tested through the crit process. Feedback given on a one-to-one daily basis within studio teaching hours continued as before, but was supported by ‘progress crits’, where everyone involved was informally tested. Impromptu workshops around a commonly recurring issue became the norm. Any
discernable improvement gauged through observation of students’ and staff reactions or verbal feedback helped shape an improvement to be adopted for the subsequent ‘test’. Each change was discussed informally with the teaching staff and the students after implementation, thus verbal feedback helped progress.

Strategy Applied – An Example

For example, the very first project, a drawing and sketching project jointly undertaken with first-year Architectural Technology and first-year Architecture students took place in the first week. The project brief outlined that students were to sketch certain buildings around Dublin city, based on the theme *Towers in the City*, along with the assessment method explained. Placed in groups, they set off with their sketchbooks. The city centre became the studio, staff giving direction at the various sketching sites. After three days, they returned to the studio and following instruction had to prepare a presentation on an A1 board of their work. This work was then exhibited alongside everyone else’s work and subject to a ‘crit’ or criticism. This introductory project was always considered ‘light’ or benign to allow the students to ‘settle in’ to the studio environment and get to know each other. This was the first time that this was a joint project with another programme.

The project and the nature of the subsequent ‘crit’ caused consternation among many of the Architectural Technology students. Firstly, several students exclaimed that they had not ‘done Art’ and thus had never sketched; secondly they were intimidated by the expectation that they were to present their work in a public forum; thirdly, seeing the ‘expertise’ of their Architectural colleagues (who had gained entry to their program through a portfolio assessment as well as Leaving Certificate points) was demoralising. However, at the ‘crit’ it was further explained that each student was being assessed by their ability to reasonably accurately observe and record what they saw. There was some exceptional work and some really very competent drawings done by a large proportion of the Architectural students, but there was a very good representation of excellent work by half of the Architectural Technology students. These students had recorded the buildings in question and their context in the city very well.

Both groups had their less ‘artistic’ peers, but what was most interesting was that some who had never drawn before had actually recorded features of the selected buildings more
accurately than their more talented colleagues. This was celebrated during the crit. Through discussion with the students and by observing others' work via the gallery style exhibition of all the students work, students could see where there was room for improvement in their own work. They could begin to see what good work was and what was poor. They were initiated into a new judgement role, which none of them were even aware of. The ‘crit-marking’ formative assessment alleviated a lot of anxiety and many of the students ended their first week in Studio with more confidence gained. The greater advantage that this exercise had from a teaching point of view was the observed transformation in self-confidence and morale of those clearly anxious students in such a short while, through such a simple technique. I could see a clear distinction between this approach towards assessment and what had been observed of the previous summatively assessed, hand-written, or annotated feedback model. Thus the ‘testing’ began.

The deductive aspect of this specific case was very useful as it helped inform teaching practice at each stage and with each intervention applied. Improvements to the crit as a formative assessment model became colloquially known as ‘crit-marking’. By week eight in the second semester, the improvements had reached a satisfactory conclusion. Testing had come to a halt when the last stage of the studio projects was reached, as these are summatively assessed in the end-of-year portfolio. Formal student feedback was not undertaken until this cohort of students was in their first week in second year of the programme in 2009-2010.

Data Analysis

Questionnaires 2008 - 2009

A specifically designed, randomly sampled, anonymous, part-quantitative, part-qualitative, open-ended questionnaire was then issued to the students in three parts. This was to survey the class group about their reflections on assessment in Studio during their previous year. These three surveys were carried out on the same day, electronically, before teaching commenced in the 2009-2010 academic year. Using the Bristol On-line Survey website, https://www.survey.bris.ac.uk, for which DIT has a license, it took under 60 minutes to complete them all.
The survey undertaken at this, perhaps, rather late stage was because this particular student group had experienced both the ‘new’ formative and ‘old’ summative assessment methods for their project work during their first year. Thus it was useful to retrospectively record what the students recalled upon reflection. Their recorded experiences were very useful, particularly for programme or project planning. These surveys therefore succeeded in formally capturing the reactions of the students to formative feedback and assessment which supplemented the observations made and the verbal feedback previously received. The further purpose was to confirm their understanding of the terms used.

The observed and anecdotal evidence inspired further research of formative assessment as an effective teaching and learning mechanism (Prunty & Crean, 2010). As outlined above, this research is examining only five aspects of that data specifically.

**Induction Survey 2008 - 2009**

**Q.1. Do you know what is meant by feedback? 2008 - 2009**

![Figure 4.3 Positive reaction to Q.1. Do you know what is meant by feedback? 2008-2009](image)

The result, possibly unsurprisingly in this case, was that all the students understood what feedback meant. The responses were wide and varied but held the same theme. This group were the test group therefore it would have been disappointing had there been a negative response to this question.
Semester 1 Survey 2008 - 2009

The subsequent questionnaire also issued to this cohort on the same day was to capture their reflections on what they remembered from their first semester in first year. Figure 4.4 below records their responses.

Q. Did you feel feedback was provided in sufficient detail?

This question triggered a wealth of varied responses that all required coding to establish themes or areas that could be identified as different experiences encountered. Extending the coding of ‘positive’ and ‘negative’ categories was essential here to analyse this appropriately. The ‘Positive strong’ group of responses did feel that feedback had been provided in sufficient detail to learn from and improve work during the different weekly set projects. Some students’ comments were as follows:

Constructive criticism helped a lot

If a substantial number of students had a problem with a particular issue the lecturers would set time aside for a lecture on the topic or talk

The ‘Positive weak’ group refers to a general affirmation about feedback but had some minor unenthusiastic feelings in some instances as described below:

Sometimes we were told to research the right method when just being told would save a lot of time
However, this still means that 72% of respondents had favourable comments about the effects formative feedback had. The ‘Negative’ responses had nothing to say in favour of formative feedback, which is illustrated by similar comments such as

_Sometimes lecturers would explain something which may be clear to themselves, but forget that most are beginners and hard to imagine things we have never seen. I believe a drawing would have helped, or perhaps a picture_

The 11% of students who commented on a ‘Teacher issue’ raised some interesting points from a practice or operational point of view. These respondents referred to ‘contradictions between staff’ and a sense that some staff did not contribute as much in feedback as others with statements such as:

_Sometimes the feedback given could be confusing
It varied from project to project and lecturer to lecturer, pretty inconsistent_

The further 11% of respondents’ who ‘spoilt’ their answers (represented in white), mainly by not making any response, was unfortunate from the research point of view. I used the word ‘spoilt’ as these respondents lost their opportunity to have their feelings about assessment acknowledged in this survey. It is not clear if they were just unconcerned or did not understand the question, and it would have been interesting to discover what those reasons for not answering were.

**Did you understand the process of formative assessment (crit-marking)?**

![Figure 4.5 Positive reaction to Formative Assessment—Semester 1 Based on student personal responses to Q. Did you understand the process of formative assessment (crit-marking)?](image-url)
An impressive 82% responded very favourably to the question asked *Did you understand the process of formative assessment (crit-marking)?* and commented as follows:

*It was brilliant, one on one time to iron out difficulties I had with the project and where to brush up my knowledge, great system.*

*I understood where marks were allocated.*

*It allowed me to see other peoples work and help us all to realise where mistakes could be made, and what was the best way to go about our work.*

Among all respondents, 9% reported 'teacher issues' which referred to a sense that some staff graded 'harder' than others, for example:

*Other classmates could have similar projects, but corrected by different lecturers and get a different mark.*

*Sometimes the feedback given could be confusing*

*Depending on who marked the drawings the result was different.*

**Semester 2 Survey 2008 - 2009**

In semester two, the studio projects had incrementally increased in complexity and required an increased level of input from the students. Outcomes had stepped up a pace.

Time was more precious in studio and outside of studio.
Q. Did you feel feedback was provided in sufficient detail?

As many students were working twelve hours a day between assignments and studio projects, repeating the question *Did you feel feedback was provided in sufficient detail?* was important in this more stressful second semester. The indication that 50% of the respondents felt that feedback was provided in sufficient detail was encouraging:

*Every query was talked through thoroughly*

*Lecturers would always take the time to explain something, more than once if needed more detail could be provided*

However 41% felt that while generally positive had some reservations too, for example;

*I always thought when the feedback was fine as long as I asked enough questions*

*Sometimes enough feedback was not given because they did it as a group rather more rather than individually*

Or some simply responded to the sufficiency of feedback as, *sometimes.*

The ‘teacher issue’ percentage recorded as 9% were typically about the time - or the lack of time - spent by the lecturer with the student, or about inadequate clarity when explaining a problem:
There were times where I left the crit still asking myself questions that were not explained in enough detail

When busy or rushed crits then you felt not enough feedback was achieved.

Thus while they did receive some feedback, it was not always of the quality that perhaps it could have been.

Q. Which of these methods of grading work do you prefer A. (Formative Assessment) or B. (Summative Assessment)?

Figure 4.7 Positive reaction to Formative Assessment – Semester 2 Based on student personal responses to Q. Which of these methods of grading work do you prefer?

A. (Formative Assessment) or B. (Summative Assessment)

Figure 4.7 above, based on the respondents’ personal responses to the question posed Which of these methods of grading work do you prefer? A. (Formative Assessment) or B. (Summative Assessment) was an overwhelming vote in favour of formative assessment. This group of students had experienced both forms of assessment during their year in studio, thus were able to judge one against the other. Some examples of the responses are:

It allows staff to give us comments directly and there is a less likelihood of misunderstanding

I seem to learn a lot more from this method than I would from the other. I feel confident I know exactly what to do when it is pointed out to me personally.

The ability to ask questions on grading methods and comments as they happen
We get a chance to explain our work

I do find it hard during the marking crit itself, but as a learning tool, I find it much better. I find the student has more of a chance to defend their work and explain themselves, also staff get a chance to explain the shortcomings of the work better.

Conclusion from Phase 1

The observations and verbal feedback was very positive from staff and students, and the subsequent analysis informed the decision to apply the same strategy in the following year in studio. From a research point of view, it was planned to improve the timing of the data gathering so that it might be more closely linked to any formative feedback actions taken in Studio.

Case 2, Phase 2, 2009 - 2010

Survey Context

As part of the research carried out for the Teaching Fellowship (Prunty & Crean, 2010) the First Year and Second Year Architectural Technology students of the Bachelor of Architectural Technology degree programme were invited to participate anonymously in a number of qualitative surveys. Data was gathered to investigate how to improve feedback to students. Following an inductive session, and a letter of informed consent, it was made clear to the students that their participation was completely voluntary and that they were free to decide to participate. The same statement and request was presented each time for each survey as a form of induction; this possibly explains why the number of participants fluctuated slightly between each survey. Despite this slight fluctuation, I am confident that the core group of respondents remained the same throughout for all student groups.
### Action/ Date | Time Frame | CASE STUDY 2 | Participants
--- | --- | --- | ---
June 2009 | Seek approval/ acceptance from Head, Department of Architectural Technology and teaching colleagues to commence research of 1st Year students 2009-2010 reaction to formative assessment strategies in Studio as part of a Teaching Fellowship awarded to colleague, Mitty Clean and I. | | Assistant Head of School, Year Head, Assistant Year Head, First Year Studio teaching team,

September 2009 | Induction of 2009-2010 1st 1st Year intake class group to participate in a qualitative survey, on-line, research of 1st Year students 2009-2010 reaction to formative assessment strategies in Studio | 1st Year students Level 7, DT 106-1 2009-2010 ESc (Ord.) Architectural Technology |

Academic Week 14 | Qualitative questionnaire, on-line. Part 2 to capture students’ perceptions of formative assessment and feedback research of 1st Year students 2009-2010 reaction to formative assessment strategies in Studio at the end of Semester 1. | 1st Year students Level 7, DT 106-1 2009-2010 ESc (Ord.) Architectural Technology |

Semester 1 December 2009 | | |

Academic Week 8 | Final qualitative questionnaire, on-line. Part 3, research of 1st Year students 2008-2009 reaction to formative assessment strategies in Studio | 1st Year students Level 7, DT 106-1 2009-2010 ESc (Ord.) Architectural Technology |

Semester 2 April 2010 | | |

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Figure 4.8 Time frame Case 2, 2009-2010 Cohort

Four surveys in total were undertaken at different strategic stages over the 2009-2010 academic year and were all, with the exception of Survey 1.1 issued to the ‘just registered’ First Year students, and carried out electronically using the Bristol On-line Survey website. This was a much larger first-year class group, comprising sixty-one students. The research questions format was a replication of Phase 1:

**Induction:** Q.1. Do you know what is meant by feedback?

**Formative Feedback – Semester 1**

Q. Did you feel feedback was provided in sufficient detail?

Q. Please comment on your answer to the last question.

**Formative Assessment – Semester 1**

Q. Did you understand the process of formative assessment (crit marking)

Q. Please comment on your answer to the last question.

**Formative Feedback – Semester 2**

Q. Did you feel feedback was provided in sufficient detail?

Q. Please comment on your answer to the last question.

**Formative Assessment – Semester 2**

Q. Which of these two methods of grading work do you prefer? A- The ‘Marking Crit’ (Formative Assessment) or B. Marking or Grading by Staff only (Summative Assessment)
Induction Survey 2009 – 2010

Q.1. Do you know what is meant by feedback? 2009-2010

Following the same format, the students’ responses to the question posed *Do you know what is meant by feedback?* had the same outcome as the 2008-2009 cohort. Generally positive, respondents were clear about what feedback meant. This question was asked prior to commencing the programme.
Q. Did you feel feedback was provided in sufficient detail?

![Pie chart showing feedback responses](image)

Figure 4.10 Positive reaction to Formative Feedback – Semester 1

Q. Did you feel feedback was provided in sufficient detail?

Positive responses to the question asked, at the end of Semester 1, *Did you feel feedback was provided in sufficient detail?* (Fig. 4.10)

Yes, the lectures provided good criticism and help guide me to areas in which I had to explore more and improve in

Yes I do. If I ever had any questions or didn’t understand, I got answers and help and was told if I ever needed help there was no problem, all I had to do was ask.

The knowledge of the lecturers is invaluable and it means they give us comprehensive and detailed feedback on our project. There is no doubting the quality of the feedback.

Whereas ‘positive weak’ comments were such as

Yes feedback was sufficient most of the time

We get mixed answers and instructions and comments

Yes, depending on the lecturer.

Negative comments were as follows;
Sometimes responses were more confusing than helpful

Sometimes we are only told what's wrong with our project and the lectures don't understand that [our] knowledge is limited and this is completely new to some. Going back to basics would help.

Eleven percent of the respondents appeared to choose not to respond to this question.

Q. Did you understand the process of formative assessment (crit-marking)?

Feedback from the respondents which demonstrated their understanding of formative assessment was useful, particularly in relation to such a large class (see Fig. 4.10). Seventy-five percent of the class illustrated their understanding of this process with comments such as:

*It's good in the fact that you learn a lot and most of the time remember to never repeat your mistake*

*This process was new to me in starting in September. It proved very beneficial to me.*

*Yes, formative assessment gives the student on the spot constructive criticism of their work and shows them how and where their work went wrong, and how it can be improved. Encourages us to explain our drawings.*
It was time for us to look at other peoples work and also get feedback from the lecturers on our work and possible improvements. It was also time for us to be able to talk about and understand our own work.

At first I didn't have a clue, but now I fully understand it, and like how we get feedback on our projects it's not just marked and thrown in a pile.

Negative comments recorded were critical of clarity and fairness of grading within the assessment process and a sense that things were not explained fully.

Not sure exactly what the marks are based on or if our presentation of the project can bring the marks up??

Well sometimes it rushed over and not done fairly.

I didn't know quite how some things were graded, and felt that a written breakdown of where marks were lost or gained could have been useful.

**Semester 2 Survey 2009 - 2010**

Q. Did you feel feedback was provided in sufficient detail?

*Figure 4.12 Reaction to Formative Feedback – Semester 2*

Once more, as the second semester project work increased in complexity, the validity of repeating the question to discover if feedback was provided in sufficient detail was
demonstrated here also. Over a fifth (21%) of the respondents did not return any comment at all.

Respondents fully endorsed formative assessment as a grading or marking system and acknowledged it as a useful learning process. A sample of responses is as follows:

You get to see how other students have done their projects and learn from them.

Greater understanding and insight of how to improve work, and mistakes

The marking crit is better as it makes plagiarism obvious and gives the student the opportunity to justify his/her work.

I prefer the Marking Crit because this is how it's going to be done in practice, outside here. We will need to be able to explain our work to clients/lay-people and this is the best way to gain experience and confidence.

I find I can learn more from my mistakes.

One on one direct constructive criticism - more feedback, generally and specific to my work. > encourages presentation skills > learn from fellow students work
This was particularly encouraging as dealing with assessment with a larger class could have been especially problematic. Grading work summatively would have delayed the feedback process.

Case 3, Phase 3 2010 - 2011
Survey Context

This third phase was the first year of the newly-established BSc (Hons) in Architectural Technology. Entry level Leaving Certificate points, processed through the CAO were similar to the previous minimum points required. Factors that led to little change in the entry threshold, and a similar applicant profile - despite this being a new honours programme - may have been the economic downturn and the bleak prospects for employment in the construction sector. Analysis of why there was little change in the intake of 2010-2011, when compared with that of 2009-2010, does not form part of this research but could perhaps be answered in a further study.

<table>
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<th>Action/Date</th>
<th>Time Frame CASE STUDY 3</th>
<th>Participants</th>
</tr>
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<tr>
<td>June 2010</td>
<td>Seek approval acceptance from Head of School and teaching colleagues for my research proposal of a multiple-case study of three different 1st Year cohorts across three years from 2008-2011</td>
<td>Head of School, Assistant Head of School, First Year Studio teaching team.</td>
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<td>August 2010</td>
<td>Following CAO First Round offers, identify student diversity for 2009-2010 student intake, 2008-2009 and 2009-2010 cohort analysis undertaken in relevant academic years previously.</td>
<td>Desktop analysis of data by researcher.</td>
</tr>
<tr>
<td>September 2010</td>
<td>Induction of 2010-2011 1st Year intake class group to participate in a qualitative online survey questionnaire for the case study, following their approval and informed consent to participate. Induction survey to identify diversity and reasons for enrolment on this particular academic programme. Survey of 2008-2009 and 2009-2010 cohort undertaken in relevant academic years previously.</td>
<td>1ST Year students commencing the first ab-initio 4 years duration, Level 8, DT 175, BSc (Hons) in Architectural Technology</td>
</tr>
<tr>
<td>Academic Week 14 Semester 1 December 2010</td>
<td>Qualitative questionnaire, Part 2 to capture students’ perceptions of learning at the end of Semester 1. Survey of 2008-2009 and 2009-2010 cohort undertaken in relevant academic years previously.</td>
<td>1ST Year students commencing the first ab-initio 4 years duration, Level 8, DT 175, BSc (Hons) in Architectural Technology</td>
</tr>
<tr>
<td>Academic Week 5 Semester 2 April 2011</td>
<td>Final qualitative questionnaire, Part 3, to capture students’ perceptions of learning mid-Semester 2. Survey of 2008-2009 and 2009-2010 cohort undertaken in relevant academic years previously.</td>
<td>1ST Year students commencing the first ab-initio 4 years duration, Level 8, DT 175, BSc (Hons) in Architectural Technology</td>
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</tbody>
</table>

Figure 4.14 Time frame Case 3, 2010-2011 Cohort
Q.1. Do you know what is meant by feedback? 2010 - 2011

Following the same format as previous years, the students’ responses to the question posed *Do you know what is meant by feedback?* had a slightly different outcome. Generally positive, 19% of the group were not clear what feedback meant. However, when further asked within the full survey what they thought it meant, they replied ‘constructive criticism’ or ‘opinions from others’. Thus respondents did have some *idea* of what feedback meant but were not definite in their understanding. This was prior to commencing the programme. Some of the positive responses in the students’ own words, and spellings, are as follows:

*Advice given to you by someone after doing something*

*When a student and lecturer communicate how they feel about progress. Feedback is beneficial to both students and lecturers as it may resolve an underlying issue.*

*Feedback is someone's advice or opinion on someone else's actions*

Whereas some of the negative or lack of understanding, responses are similar to these;

*Response to an inquiry*
Answer back, back talk, comment, criticism, reply to someone's actions, it can be either negative or positive.

Yes on what I'm like as a person, how I played.

Semester 1 Survey 2010 - 2011

Q. Did you feel feedback was provided in sufficient detail?

![Figure 4.16 Positive reaction to Formative Feedback - Semester 1 Q. Did you feel feedback was provided in sufficient detail?](image)

At the end of semester 1, the students' response to this question was overwhelmingly positive in essence. There were however 60% of the respondents who felt slightly less positively towards the detail or the quality of the feedback, as reflected in the following:

*Very helpful*

*Not really, as we would have to do a project straight afterward*

*Yes I felt that most of the time I was given the guidance I need to mark up the project when I was finished, however there were times I felt more could have been done before handing up, that would have helped on our overall mark in the end.*

*They answered the bare minimum and rarely gave advise on where one could improve in future*
I found that adequate feedback was given to students the majority of the time could be more clear on what should be changed

Yes mostly but sometimes left unclear as some comments were conflicting

I always attempted to implement what i took on board in previous projects where relevant in future projects

Q. Did you understand the process of formative assessment (crit-marking)?

The responses to this question were interesting. Whilst 67% had positive feelings about the ‘crit-marking’ there was 23% who had some negative feelings, which included ‘teacher’ issues. The 10% of non-respondents is also interesting, as their silence is difficult to interpret, similar to previous respondents in the other cohorts.

Positive responses were similar in vein to previous cohorts, as follows:

I understood that it was used to see how we were progressing in the course

Yes its a good system informs u on strenghts/weaknesses

Lecture gave enough information to revised the project allocated and for future refernce
Negative responses on the other hand were interesting. While only 3% registered that they had nothing positive to say about formative assessment, and 20% of the respondents felt that the ‘teacher’ issue was significant, they do appear to have valid reasons for their statements, such as:

*Sometimes when I got the teachers to look at my work before the assessment, they would say that it was grand, but during the assessment they would, then say all the negative about it, unfair.*

*There is a little ambiguity in the crits - for example I completed some hardline drawings, 5 or 6, but one of them was poorly done (in the brief that particular drawing was something like 10% of the marks), and after being critted and told that the rest of the drawings were good and "not bad", I fail the assignment (35%). A little confusing.*

*It really depends who is marking you, because they all mark differently.*

**Semester 2 Survey 2010 – 2011**

In Semester 2, as in previous years, the complexity of projects increased, however there were more opportunities created within the new honours degree curriculum to reflect on work done. Thus the pace of learning for projects set in studio was designed to be more measured. As previously, this survey was launched in week 8 of the second semester, replicating the format and timing of the previous cohort surveys.
Q. Did you feel feedback was provided in sufficient detail?

Again, positive feelings in general, gathered through interpretation of all personal responses in relation to feedback in the second semester, supported by statements such as:

Lecturer's given information was greatly appreciated and no more of the same mistake would occur.

You get to see others work pinned up and pick up tips on it

I was pointed in the right direction on several important details and given invaluable pieces of advice.

Get a better understand of what is expected by direct conversation with a lecturer

However just 17% had some minor reservations in relation to the sufficiency of feedback detail, which were described in statements such as:

i prefer written feedback on what i can do better as when being told in person its hard to remember
Q. Which of these methods of grading work do you prefer? A. (Formative Assessment) or B. (Summative Assessment)

The student preference for formative assessment is very clear, with 88% of the respondents indicating a strong preference for learning from this type of assessment above that of summative assessment. This cohort would have experienced end-of-semester exams at the conclusion of Semester 1, which of course were assessed summatively. They would have experienced some assignments set which were also summatively assessed. The assessment practices generally for the new honours degree programme at first year level are formative in the majority. This might explain why 12% of the respondents did not respond to either choice; they may not understand the differences or they do not see what the differences are nor how it affects their learning. However, the clear, positive feelings expressed for formative assessment, are in greater contrast to earlier in the academic year. The respondents appear to have learned how the crit process works and how it helps them in their learning. Statements such as those selected below would endorse this view:

Yes I learned a lot from all of crits, even though it was tough at times I liked taking the criticism I feel it has improved me a lot. I feel the current project is my best I'm very pleased with my progress.

I learnt alot during the formative assessment in how to present my work, drafting skilling and techical information that will help me in many more projects to come.
From the formative assessment I quickly understood what I did right and wrong

I was told what I needed, the guidelines were clearer and I understood more about what I should do and what I should not do.

I learned that there was some things I should have done which I didn't do.

For method A I learnt to go with my own take/opinion on things more. Also it is good to see what the other students have done.

I learnt not to trust details on computers.

The contrast in opinion between the first semester and the second semester was most encouraging.

Review of Analysis of Questionnaire Data

The sheer breadth and quantity of information gathered in a qualitative process such as this makes it difficult to assess for trends, or results. The purpose of good data analysis should be to organize these qualitatively researched, wide-ranging opinions into recognisable, distinctive groups. By identifying trends, which may be converted into quantitative data and expressed visually as charts or graphs, valid analysis of the findings may proceed (Creswell, 2003; Gibbs, 2007).

The procedure adopted over each year comprised of some close-ended questions that gave some purely quantitative results to the questions posed that only required a simple 'yes' or 'no' answer. However, the open-ended questions within the same survey gave rise to a wide range of answers and opinions which needed to be studied, interpreted and thematically coded before they were organised into different groups, from which they could then be quantified and expressed in graphic form.

Drilling down into personal responses to questions asked, discovering new meanings, demonstrates the versatility of qualitative research. Most answers given indicated firm
ideas, attitudes and beliefs of the respondents to formative feedback, formative assessment and other areas related to their programme of study.

The 2010 – 2011 cohort was unusually reticent to complete the surveys issued, which resulted in the surveys requiring to be re-launched twice. Normal communication about programme events that affect students is generally via the DIT student e-mail class list, however this was not utilised by this class group either, which was also very unusual.

Cross-case Comparison of Responses

<table>
<thead>
<tr>
<th>STUDENT INTAKE</th>
<th>CAO POINTS AND CLASS SIZE</th>
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Figure 4.20 Student intake Leaving Certificate points and class sizes per cohort from 2007 - 2010

Cross case comparison of students’ personal reactions to the first open-ended question Do you know what feedback is? in Figure 4.20 shows the responses gathered from each of the three cohorts, all at Induction Stages. This was to capture their thoughts about feedback before commencing the course. With the exception of the 2008-2009 cohort, this question was asked of the students in Survey 1 on their first day of college, following the general familiarisation or ‘Induction’ week in 2009, and 2010. It is interesting to note that when the course admission level reduced, and the percentage of CAO Round ‘0’ students increased by 5%, that less students demonstrated an understanding of the concept of feedback prior to commencing the course.
The personal responses of each of the three cohorts, which were numerous and varied, were coded and then gathered into positive and negative groups. ‘Positive’ indicates that they had some understanding that it was in essence ‘getting information back to help’. A ‘negative’ response was a clear misunderstanding of what ‘feedback’ meant. The yellow column depicts the total number of respondents who took part in each survey within each cohort, each year. In 2008-2009, 66% participated; in 2009-2010, 60% participated; in 2010-2011, 60% participated. As this was a participation rate of over 50% for all three years, I am satisfied that it is a reasonable representation of the students’ feelings about learning through formative feedback and formative assessment.
Semester 1 Survey – Comparison of all three cohorts

**Q. Did you feel Feedback was provided in sufficient detail?**

**Cohorts 1, 2 & 3**

![Bar chart showing comparative response to open-ended question posed Did you feel Feedback was provided in sufficient detail?](chart1)

Figure 4.22 Comparative response to open-ended question posed Did you feel Feedback was provided in sufficient detail?

Figure 4.21 shows the comparative response to open-ended question posed Did you feel Feedback was provided in sufficient detail? This question was asked of all cohorts at the end of their Semester 1, whereby all students had experienced progress crits in Studio projects by this time. Figure 4.22 shows the comparative response to the ‘marking crit’ in Studio projects whereby all students had experienced formative assessment by this time also.

**Q. Did you understand the process of Formative Assessment?**

**Comparison of responses of First-year cohorts 1, 2 & 3**

![Bar chart showing comparative response to open-ended question posed Did you understand the process of formative assessment?](chart2)

Figure 4.23 Comparative response to open-ended question posed Did you understand the process of formative assessment?
Semester 2 Survey – Comparison of responses of all three cohorts

Q. Did you feel Feedback was provided in sufficient detail?
Cohorts 1, 2 & 3 (Semester 2)

![Bar Chart]

<table>
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<th>Total 2010-11</th>
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<td>Spilt Answer</td>
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Figure 4.24 Comparative response to open-ended question posed Did you feel feedback was provided in sufficient detail? This was asked at week 8 of Semester 2

Figures 4.23 above and 4.24 reaffirm the students’ positive attitudes towards formative feedback and formative assessment as the methods of assessment. By week 8 of Semester 2, all students had even further experience of the progress ‘crit’ in their Studio projects.
The students’ responses could be interpreted as a resoundingly positive reaction in favour of formative feedback and formative assessment as a method of assessment.

Observations / Field notes

Observation, in the context of this study, was recorded in field notes. These, taken at infrequent intervals, specifically looked at group dynamics and variations of that, rather than scrutinising individuals. They are recorded as simple notations with some ‘to do’ lists, in an academic diary after each event viewed. The observer-inquirer position I adapted was that of a ‘participant’ observer, as I was involved in teaching the 2008 - 2009 class group. However the role I assumed was that of a ‘non-participant’ observer for the 2009 - 2010 and the 2010 – 2011 groups (Creswell, 2007). The additional depth that this exercise brought to the research was of immense value, particularly for recollection of events for improvement to the ‘crit-marking’ and later on during the focus group discussion.

These notes were made at two different points per cohort after strategic formative assessment events. These observations were timed to suit the stages of the projects being assessed. Access was arranged through the year head in the 2009-2010 and 2010-2011 first-year cohorts. The informality of the studio environment meant that this was agreeable from the points of view of both staff and students.
The 2008-2009 first-year cohort, being the ‘test group’, had four different formative assessment models imposed during the academic year. As a result there were four observed and noted sessions that year. For example, following the simple introduction to the ‘crit’ as a formative assessment in the very first project at the end of the first week (described in Chapter Three) the notes recording that event were as follows:

Great buzz. The students are interacting much better with each other. Even shy students are talking to each other! Students normally more reserved with each other at this early stage of the programme. Great way to learn the students names. Encouragement works then a critique of how work could improve. Must tell students how to layout presentation boards.

Another example was the assessment of a more complex project in the middle of Semester 1. This was when the students pinned up their work around the studio walls and then had to walk anti-clockwise around the studio looking at everyone else’s work. This created a gallery style situation, following which we asked the students whose work they admired most, purely from a visual presentation perspective. After this a general crit was delivered on common errors noticed in the preview undertaken by staff, done before the work was put up on the walls. Then the individual assessment began. These are the notes made after this event:

That really worked. They were so reluctant to walk and look at someone’s work. It was like herding sheep. They all got to see where they were in relation to the others. The relief on --- ‘s face, he had been terrified he was not keeping up with the younger students, and --- can see they are not doing ‘awful’ work. They are less terrified of us. The class are on a high, great fun and we got everyone marked in the one day and the results issued immediately after! Must improve marking sheet with grades/weighting more broken down. They were good at picking out the work they liked best.

A later entry, when the students were receiving formative assessment on computer aided drawings, records the following:
Students caught copying. Evident through crit. --- did not have a clue what she did! ---- knows never to give stuff to someone else again. Seriousness of this has flown around the class. Good. Might have missed this marking in staff office.

Another entry comments on the impromptu workshops that had started to emerge during crits as staff noticed recurrent problems, recorded as follows:

*That was great, they really saw that the issue related to them. Brilliant note-taking. ---- and ------[staff members] did some excellent explanations on the board. Great.*

These entries may not be comprehensible to another reader, but even now, for me, they conjure up vivid images of what went on, and the faces of those involved on those particular days three years ago. The ‘field’ notes follow this style throughout, in notation form only, as they were meant to act as ‘triggers’ towards improvement each time.

In Phase 2, for the 2009 - 2010 first-year cohort, notes made were based on arranged times for observation through the year head. This only happened twice, but was perfectly adequate for observing the familiarisation of the ‘crit marking’ and progress or feedback crits that were developing at this stage. An observation made worth recording here is as follows:

*Staff need to let the students talk more. Very big class, critting on one-to-one might be ‘ok’ if staff rotated, so same staff not marking the same students? Other students need to be involved, too many wandering around.*

In Phase 3, the 2010-2011 first-year cohort, observation was also arranged through the year head and notes recorded were very similar in content. This time it could be seen that the formative feedback methods were fine-tuned even further. The introduction of ‘desk crits’ with up to six students at a time discussing a problem or issues during projects was an additional improved layer that the students just seemed to take for granted by then. Notes of behaviour were limited to watching behaviour. The ‘crit’ had also moved out from the studio to a shared School of Architecture space called ‘the crit pit’. This is a tiered space for exhibiting large-sized project-work that requires special stands as the wall space is limited. My views of this are recorded in my notes as follows:
Half the class were back in studio and only a handful were being critted. How do workshops work? One student by two staff. Students very anxious. Staff quizzing a tad aggressive. Staff sitting and student standing ‘presenting’. Lighting, layout terrible! --- not giving any feedback. Studio better.

The reason for the infrequency of observed sessions in Phases 2 and 3 was due to the realisation that as the students and staff became more familiar with the formative assessment strategy, it was adequate to observe only the development that was made. Thus direct observation took place at the earlier part of the year and then again towards the end of the academic year. Timetabling of studio was another practical reason for observing at these specific stages also, as I taught elsewhere on the same programme at a parallel time.

Teaching Staff Feedback
The following are two teaching colleagues who have been involved in the transformation from summative assessment to formative assessment and ‘crit’ marking:

I have found that the formative assessment approach which has been taken in the past few semesters has shown that the students register a better understanding of where they or their project stands at that time. This together with the crit based marking provides a better appreciation for where improvements are required. I have found that when a student discusses the project or answers questions at a crit they come to realise shortfalls themselves and this type of learning is of greater benefit than being simply told what to do.

While a formative mark could be argued as unnecessary I have come to realise that many students get a better realisation of where they stand when given a mark. When we crit a students work we often make constructive criticism and suggest improvements in a positive, encouraging way, this I have found can sometimes lead a student to thinking they are doing better than they actually are or even leave them not knowing where that stand. A formative marking system gives clarity to all and eliminates doubt or misunderstandings thus allowing for a better realisation of the work to be achieved before the final, summative marking. (Anon)
I have been working and involved with 1st year students in the Department of Architectural Technology since 1994.

Over that period I have seen many changes both to the curriculum and to the way it is taught. The size of the student group was always a factor in the programme as this is a studio based course. Getting feedback and results back to students with a large group always took some time, which meant that students were working on subsequent work while not being aware of the mistakes they had made, therefore carrying through incorrect assumptions and solutions forward. In 2008 my colleague, Cathy Prunty, and I decided to try something different and introduced formative assessment methods to the 1st year programme. What a transformation.

At that point for the students it meant instant and individual feedback, assessment and results. For me it transformed the studio environment. Although at times the days were very, very busy - assessing, in pairs of staff members usually, the student's work with the individual student, it was a much, much more pleasant experience than the hours of marking, on your own, previously undertaken.

I would never go back to that system, I much prefer to be assessing the student's work alongside the student and giving the student the opportunity to describe and demonstrate the understanding of their work. (Máire Crean, 2011)

These testimonials encapsulate and add credence to the perceived effectiveness of this form of teaching and learning. There is very little to add to these statements.

Focus Group
Following analysis of the data collected from the three different academic years, I wanted to really probe the students' feelings about learning through formative assessment. As the first cohort of students surveyed in 2008-2009 were now in their third year and about to graduate, I decided they would be a very rich source to tap, as they had experienced a wide range of assessment applications since first surveyed. In addition, as the 2009-2010 first-year group who were now in their second year of college had also experienced various academic assessment methods, I felt that their input would also help 'triangulate' all the information gathered and interpreted thus far.
All the students had participated in all of the surveys anonymously, and from the number of respondents for each survey, being in excess of 50% for each class group, I had no indication of who might have taken part. So, how to acquire a diverse group that would participate in a discussion to answer this particular research question, who had also taken part in the original survey of their particular cohort? Approaching students individually, I felt, might declare the aspect I was exploring, and my preference for randomly-selected volunteers would not be met. As mentioned earlier, DIT is a ‘small community’ and I was anxious to maintain the anonymity of the members of this focus group.

Following the last online survey in April 2011 of the final 2010-2011 first-year cohort, I circulated an e-mailed letter to all one hundred and fifty Architectural Technology students, seeking volunteers and outlining what I hoped to do. I made it clear that the volunteers should come from among those in each cohort who had actually taken part in the original surveys and that I only sought six participants, two from each year. Despite pressure preparing for end-of-year portfolios, I was very pleased that six volunteers, exactly as required, stepped forward.

In advance of the focus group, I circulated a list of ten guide questions to each participant along with an explanation of the research (see Appendix)

Using Kvale’s ‘Seven Stages of an interview enquiry’ as a framework:

- Thematizing
- Designing
- Interviewing
- Transcribing
- Analysing
- Verifying
- Reporting (Kvale, 2007, p. 35).

I re-visited the data gathered from the three previous surveys to confirm the theme I wished to explore. The principle function of the focus group in this research was to address two particular aspects of inquiry. Firstly it was to triangulate the data gathered from each
three cases, and secondly it was to attempt to delve deeper into the personal responses, to
discover how a diverse group of students might individually feel about their learning
through formative assessment. The questions therefore needed to be significant for the
students in terms of their personal learning. The design of the questions and the
practicalities of planning the interview were difficult.

I wanted to create an unstructured, conversational environment that would allow the
students feel at ease with me, and with each other, and yet draw out material suitable for
this research. I sent the students the list of prompt questions in advance to ensure that they
were comfortable about the content, and that I was not going to ask them anything they
might feel they would not like to answer. However, it became clear during the interview
that none of the participants had read them in advance. I was also very aware that they
were all working hard and under pressure as there was only one week remaining before
they all submitted their end-of-year portfolios. This meant I did not want to be distracting
them for too long from this activity, so I sought a suitable room in the college that would
be away from their normal circulation routes, yet easily accessed. I also decided that lunch­
time was the most appropriate time and that I would arrange sandwiches and soft drinks for
the participants.

The room was a place unfamiliar to any of us, being a sound-proofed media room. My
heart sank when I saw what we had been allocated. However, that actually worked to our
advantage, as the whole group commented on it and chatted a bit about it, thus ‘breaking
the ice’. Being from three different years, the students knew each other to see, but had not
talked with each other before. Hilarity ensued when I produced my two little digital
recorders instead of utilising the banks of equipment in the adjacent sound booth. It
became apparent very quickly that the students were famished and fell upon the food with
great enthusiasm. Therefore, by the time we were ready to turn on the recorders and start
the interview, everyone had eaten, was relaxed and appeared comfortable with each other’s
presence.

Having explained the research, given each participant the informed consent form which
they signed, and reassured yet again that all responses were absolutely confidential, the
interview began.
Responses to Interview Questions

The full transcript of the interviews is available to the supervisor of this thesis. This section gives a synopsis of the key points that emerged from each of the ten questions posed. The participants were two representatives randomly selected from each of all three surveyed first-year cohorts, six participants in total.

1. Did you come straight from post-primary education?
Three participants had come straight from secondary school, three had not. Two were mature students, another was non-standard entry, that is, this participant already had a degree in another discipline. One participant was dyslexic.

2. Were your objectives / expectations met by the course? Give a reason or some examples
All participants agreed that the programme met their expectations; three felt that it exceeded their expectations. Two who had applied for Architecture first were glad they had accepted a place on this programme.

3. Did you feel that you adapted well to the third level environment? - In what ways?
All the participants were in agreement that the studio environment had been particularly supportive in helping them to adapt to the higher education environment. Two of the responses in particular are worth including here:

I adapted really well and with studio it was different cause you are not just sitting in the class at school and god this is really nice and everyone is together and if you are stuck on something or you are going to do it well and people are sharing things with you and all that sort of thing and I just really like the environment.

I was a bit apprehensive because I was a bit older than Leaving Cert people coming in and stuff I thought it might be a bit difficult but what helps I suppose on this course was the studio based part of it that you are always together you can talk or have the crack I suppose with other people in your class and stuff so that you are not sitting down being quiet all the time, a bit of interaction between students and with the lecturers as well, like you can sit down and have a normal kinda conversation with everyone and hm.. I think this helps. If I had started this
when I was seventeen I think being in a studio based course like this would have helped me adapt easier into third level.

I thought that it was good. Coming from Leaving Cert where you were basically told to do everything- this is more self-directed, working in groups and do what you want to prioritise your own time and it was good, I am enjoying the new set up. Happy to be here

4. What positive things did you encounter in your first year?

All the participants felt the studio was one of the most positive aspects of first year with the collaborative support from lecturers and peers being the predominant point. One of the third year participants reflected that the greater ratio of lecturers in first year compared to the upper years was a positive aspect of first year.

5. What negative things did you encounter in your first year?

This created extensive discussion. All were unanimous about the workload being overwhelming; that they had much longer hours than peers in other courses. The two 2010-2011 participants also complained about the workload. Structures (maths) was unanimously declared the hardest subject by participants on both the DT105 Level 7 and the DT175 Level 8 programme. All reported reliance on peers who were good at maths to help with exams. Poor model making instruction was also considered a negative point, as was an overview instruction in some basic software skills.

6. Have your learning strategies changed from what they previously were before undertaking this course?

The students’ responses were very interesting. The group members were in strong agreement that learning through the ‘crit’ was very beneficial, however they were all very critical of lack of standardisation of marking between staff. Students were strategic in identifying staff who were weak in technology to determine who should mark their projects or provide them with feedback. Timing of feedback was considered important. The current third years who were from the 2008-2009 original formative feedback and formative assessment ‘test’ group particularly bemoaned not having this form of assessment. I expanded this question to the group, by using the word ‘marked’ instead of assessed, as follows:
This is where the crits were part of your marking and how you were marked. Now I know because of what I have observed over the three years that you all have had slightly different variations of it, so I just, ... if you wouldn't mind talking about what you... how that affected you? Did you learn anything from it or did you feel you learnt anything from that kind of way of being marked?

Yeah, lots I would say. Yeah – instant feedback when you finish off something and print it out and hand it up or pin it up and straight away you are finding out where you are going wrong.

Yeah, no I do agree, that the crits are a huge learning, I mean you go in and you think something is great however and then you come away and like, that was wrong and this was wrong, so it's not just finding out what's wrong but what can you do different, so you are constantly learning. Yeah, it is disheartening sometimes but at the same time you are going to go revise that then and you know you are going away with something more. I do agree as well when you are pinning things up certain Lecturers focus on different things. Like someone might be really into technical details and someone like might be into presentation and stuff and I do feel like there is not consistency in that - it just depends on who it is and what their kind of thing is, you know that kinda way?

F. When you are working on a drawing, say putting all the work into it and you are saying “yeah that's grand” and then you see next Monday you have to pin it up. You know when you pin it up and you look at it again and you say “why didn't I change that a bit, why didn't I do this?” and you see when the Lecturers are talking to people you wish you have time to run off and change it. (All laugh) It is nearly like you go away from it for a while and then you come back to it for the actual crit – 'cos you know when you are working on it you know exactly what you are thinking where you don't put it down on to the paper- but when you come back, you sort of, your head takes a rest from it and when you come back you see it afresh and you are taking in what is on the page as well, instead of what's in your head..

Well I found First Year crits to be more... it was, like, you probably didn't learn as much from the first Year crits because you had learnt it more in studio because
there was more Lecturers around and there was more continual crits really in First Year. But in Second Year I found the crits thing in the very end to be very informational, I learnt so much from the crits in Second Year at the end as opposed to the ones at the end of First Year. I think that, like, when you see what you have done wrong you go ’aw I missed that’ but you go back and you change it and then you nearly feel you know better once you’ve done it again after its critted.

Yeah, no absolutely, with First and Second Year they were quite good. The only thing I would say of a negative for the crits was that sometimes between Lecturers there was a different standard. I suppose between them there wasn’t a common standard so like you might get Lecturer A and they might go “this is right and this is wrong but overall it’s pretty good” and another Lecturer could see your drawing and go “were you asleep when you did this?” Like, they might absolutely slate it and there was - not that it happened to me.

With the crits between Lecturers I suppose you didn’t know how well you would do, sometimes you would hope to get one Lecturer over another - just to get more information out of them or if you did a particularly bad project you’d want to get a certain other Lecturer so that they would mark you a bit easier.

With Third Year, the crits we had this year, they were pointless, they were ‘mickey mouse’, they didn’t help us at all. We had continuous, a continuous crit on your work so far, like a middle crit?

Researcher. A progress crit?

A. Yeah, a progress crit and sometimes we didn’t get those and we got them at the end, so what was the point of getting a ‘progress’ crit at the end - like when it was finished? Like, we didn’t learn anything as we were going. I think we’ve, because we’ve lacked some proper crits we have lacked on learning. And Lecturers would disagree with that in Third Year, but as students we feel that would be 100% true. Even compared to last year, like I learned far more last year compared to this year.

Researcher. Do you definitely feel you learn from a crit?
A. Definitely I feel I learn from them if they are carried out correctly. There are people who got better marks for 'pretty' sheets and wrong technical information where people have right technical information and the page doesn't look the best but half an hour on that would make it look 'pretty', you could do that. But people getting marked for aesthetically pleasing drawing as opposed to a technically right drawing is just wrong and that is what has happened this year.

D. Yeah, no I do agree, that the crits are a huge learning, I mean you go in and you think something is great however and then you come away and like, that was wrong and this was wrong, so its not just finding out what's wrong but what can you do different, so you are constantly learning. Yeah, it is disheartening sometimes but at the same time you are going to go revise that then and you know you are going away with something more. I do agree as well when you are pinning things up certain Lecturers focus on different things. Like someone might be really into technical details and someone like might be into presentation and stuff and I do feel like there is not consistency in that - it just depends on who it is and what their kind of thing is, you know that kinda way?

Its unavoidable, but the same time, maybe if they had a chat at the start and said 'right what are we concentrating on', are we pointing out this?, because crits on the right - everybody is getting pulled up making this mistake and crits on the left nobody has had a word said about the same mistake!

R. As a matter of interest if you do revise, do you find you learn by revising again?

F. Yeah definitely.

R. Does it reinforce what you have done?

F. Yeah absolutely.

E. You can compare it to what you might have done beforehand, it actually shows, you can actually look at the difference.
R. And do you see the difference?

F. When you think about it, when you put it down the first time it's just, it's the information that's in your head, that is going down and you think this is great. But then you get told it's not what they want, what they are looking for, you go back, change it a bit, and yeah, it does look a lot better. It does seem to work, to make sense. That's what I think.

how did you actually feel being criticized or critiqued, how did you actually feel? This is about your own personal feelings.
A. It could be heartbreaking.

F. You could feel all the colour draining out of my face but that was the first time that happened and with the later crits I was certainly more prepared that I might have been getting knocked down.

R. As a matter of interest, when you were doing your crits, were you all standing together or were you asked to sit down?

E. If people want to stand around they can, but generally people are off. You might have one person there taking notes for you, nobody else is paying much attention. We have a group of about 10 or 12 pinned up depending on how much space in the crit pit and sometimes all the people who would be pinned up would be there and wandering around waiting for the Lecturers to get around to their boards and the odd time you get a few people hanging around but most of them that I have seen it is you, the Lecturer and maybe one or two people. There used to be at the start, there were a bit more paying attention.

It is clear from the views of staff and students recorded in these notes during the study that both groups felt they had learned something new about teaching and being taught. They had become increasingly aware of the value of collaborative learning. Collaborative learning immensely improves their critical and analytical thinking skills.
Chapter Five

Conclusions and Recommendations

Introduction
This chapter draws conclusions from the findings of this multiple-case study and puts forward some recommendations for teaching practice. The conclusions are addressed under the following headings:

- significance of the study from a personal perspective
- significance of the study for diverse learners in Architectural Technology
- significance of the study for teachers of Architectural Technology
- significance of the study in the development of professional Architectural Technologists

At the outset of this research, a particular theme was revealed, which remained constant over the three years studied. These early perceptions and anecdotal evidence have now been confirmed. The recommendations are discussed in light of the findings that surfaced from the interpretation of the data gathered, concluding then with suggestions for further study or research.

Shortcomings of the Research
Whilst the research confirmed that a diverse group of students of Architectural Technology do indeed feel that they learn through formative assessment and formative feedback, this cannot be generalised to the rest of the higher education population. The educational setting of the Studio is crucial to this process, and could not be replicated in other more traditional higher education settings.

The discussion that took place with the Focus Group was also too short, which I realised even as the group interview was underway. The frank and open discussion which characterised the group interview revealed to me the potential of this methodology for gaining valuable insights into the world of a first-year undergraduate. Issues of real importance to the students were raised in the group interview, but it was just ‘scratching the surface’. The hour allocated to the conversation was over far too quickly.
The research did not validate the maintenance of academic standards, however staff anecdotal evidence would support that standards were in fact upheld. This view is also supported through the annual review of the external examiners from the RIA, the professional accrediting body. To establish this with certainty would require tracking students’ grades or achievements over a much longer period. This was not possible within the confines of this particular thesis, however it could form part of further research.

Significance of the Study from a Personal Perspective

Embarking upon this research in a small-action-research way in 2008, an investigation of ways to improve my own teaching led to the discovery that students’ learning could also change for the better. The rather loose (though well-meaning) manner in which the ‘crit’ had been utilised in Architectural Technology in the past meant that it could not achieve its full potential as a teaching and learning method. It was not the concept of the ‘crit’ but the way in which it was being implemented that mattered, a realisation that marked a profound shift in my thinking, a ‘Eureka’ moment.

Reading in and around the immense amount of literature sourced to date, on the topics of formative assessment and formative feedback in higher education, some key points recur. The first-year experience for all undergraduates, with all its ramifications, is a key concern. The expected increase in the diversity of the first-year student intake has added a new layer to academic interest in assessment of student learning, as learners are coming to higher education from different educational, cultural and experiential backgrounds. The teaching workload is also changing, as the numbers of students with different learning needs increase, resources are reduced, yet set standards need to be maintained.

Significance of the Study for Diverse Learners in Architectural Technology

The open-ended questionnaires that captured the different students’ thoughts about feedback and formative assessment was a valuable research tool; however it did not identify the educational profile of the student. The observations made periodically over the three academic years proved to be much more useful than I had expected and helped me to identify some of the different learners visually. The focus group, however, was the most revealing and became the most effective in relation to this research. Just how much the students valued the ‘crit’ to deepen their learning and improve their work was emphatically
clear when it had not been implemented. Realising how the students could be strategic in their use of the crit by ‘organising’ to avoid staff members perceived to be ‘hard’ graders – so that they might obtain better or ‘easier’ marks - was also very revealing. These students, in common with those of other generations and disciplines, bring a pragmatism to their work that staff would do well not to overlook.

The ‘crit’ was very positively endorsed by all cohorts as a preferable method of assessment over summative assessment. The fact that all of the focus group participants, particularly, confirmed this, validates this as a preferred teaching and learning method to meet diverse learners’ needs.

Feedback is widely recognised as being the most effective way to enhance learning, yet is also acknowledged to be a complex and difficult process to apply in practice. Large classes of students in lecture theatres, for example, make it difficult to provide effective feedback, and certainly not instant feedback. The electronic answering system ‘clickers’ is a step in the right direction and is one such method that can improve feedback in that setting. The Architectural Technology students in DIT however are fortunate that the tradition of the Studio environment greatly facilitates this process. The Studio, unfortunately, being a dedicated, flexible work space for students, is under threat whenever the student ratio to floor area cost is raised.

Through their involvement in assessment, the students very quickly learn to evaluate the quality of their own work as well as that of their peers (Sadler, 1989; Boud, 2007; Boud, 2009).

Significance of the Study for Teachers of Architectural Technology

Having a conversation with a student about their work during assessment is a very clear method for a teacher to gauge how well, or not, a principle has been grasped. Often students may not have completed the project due to time constraints yet they can explain what should have been done, what ‘next step’ they would have taken. The delay may be due to the time taken up in learning a new software programme rather than a lack of understanding of what is required. The opposite is also true, as becomes very clear during a conversation if a student has completely missed the point. However, the most significant
aspect of this method of assessment from a teaching point of view has been the detection of copying another’s work or plagiarism. The vast collection of downloadable information available from the internet is staggering. While this is a useful resource, the solution to the problem-based learning of the project question set generally requires interpretation of several elements before arriving at an answer. Thus through conversation it is easy to discover the authorship of the solution presented. With the ever increasing sophistication of computer-aided drawing software, files are easily ‘sent’ around a class group. Making minor changes to ‘personalise’ the work, students attempt to pass it off as their own work. This was a very challenging aspect of assessment which was particularly difficult to detect when marking summatively, however the detection rate has improved enormously through the formative assessment vehicle of the ‘crit’.

There are many teaching issues still outstanding that will require improvement which were criticised in the questionnaire responses as well as the focus group. Some of these criticisms were well founded.

Despite the teaching team having a series of very carefully planned, constructively aligned tasks and projects with very explicit learning outcomes and aims spelled out in each project brief, this research has demonstrated that the students did not always see it like that. The students did not view the organisation of how and when work would be assessed as sufficiently clear.

The objectives which have been identified as follows forms the framework that is used to create each project brief:

- that the successful completion of each task should clearly enable the learner to undertake the next new task, using incremental recently-learned knowledge, and developed confidence, skills and competence.

that any delay in delivering or receiving feedback should be avoided.

Meeting this goal or aim within each project set has required improved forward planning and more clearly defined learning outcomes in order to:

- improve the quality and speed with which formative feedback is given
• help enhance the depth and level of learning
• provide reflective time for both students and teaching staff

The teaching team, by agreeing these objectives and applying 'front loaded' thorough preparation for each project brief, can reduce time spent on assessment. The time spent doing assessments is not changed, just altered; the more detailed the preparation work from the outset of the project, the less time spent assessing. This does not mean that the time spent with each student is reduced but rather that there is no ambiguity about where marks are to be allocated. Clarity of purpose focuses the mind, thus feedback can be of better quality. This can be achieved by using a well-defined and rigorous marking or grading scheme during the 'crit-marking' process. If this is clearly communicated from the outset on the carefully planned project brief, everyone, students and teachers alike, will know what exactly is required. To date, this does not appear to have been rigorously applied, or certainly requires further investigation, based on the student feedback through the questionnaires and the focus group. Their responses have also highlighted that staff also appear unsure of how this process works. The process of inducting some studio tutors to the process of formative assessment has met with some mild resistance to date, but it is improving gradually.

Significance of the Study towards Development of Professional Architectural Technologists

In the everyday world of work, Boud (2009) argues that we are essentially engaging in assessment as we deal with the challenges that any form of work generates. He describes how we make judgements about what needs to be done and whether we have done that work effectively. We work alone, and yet we engage with our work colleagues, making judgements about individuals, groups or situations, all in a particular work context. Boud makes the argument that in order that graduates will be prepared for practice assessment must operate to inform judgement in contrast to just learning outcomes.

Describing the 'apprentice' as being a learner that is immersed in the particular practice involved, surrounded by continual opportunities for guidance and feedback from experienced practitioners, Boud could be describing the Studio setting. The 'learning-by-doing' within projects set, and the 'realistic' workload of the projects immediately places
• help enhance the depth and level of learning
• provide reflective time for both students and teaching staff

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Describing the ‘apprentice’ as being a learner that is immersed in the particular practice involved, surrounded by continual opportunities for guidance and feedback from experienced practitioners, Boud could be describing the Studio setting. The ‘learning-by-doing’ within projects set, and the ‘realistic’ workload of the projects immediately places
the student in a productive learning activity, which motivates the student because of its perceived relevance. As the ‘apprentice’ practices, assessment is frequent, specific and standards-based. Work is repeated until the required standards are reached (Boud, 2009, p. 34). The life-long learning that this model implies is what graduates of Architectural Technology, as practitioners, must face in the world of work. Continuing professional development is mandatory, and the professional accrediting body, the RIAI, monitors this maintenance of the ‘Knowledge Skill and Competence’ of practitioners (see Appendix).

The Architectural Technology programmes in DIT Bolton Street have long enjoyed an excellent reputation, in Ireland and internationally. It is self-evident that the first concern of all involved in the future development of these programmes must be to ensure that the high standards that earned this reputation are upheld. However, this thesis has a larger significance; it seeks to highlight assessment approaches through which future graduates may have even better judgement skills, both technically and professionally, through an improved depth of learning and confidence gained through formative feedback.

This multiple-case study research project has been a collaborative process from the outset, and its successful completion must be credited to my colleagues who were so willing to embrace change. The improvement of their own teaching skills was their goal too. The students who engaged so willingly demonstrated better than any textbook that learning is a shared journey of discovery.

Opportunity for Further Research

Formative assessment and feedback practices are widely acknowledged to be complex and difficult to apply in higher education teaching environments. The variety of teaching spaces and configurations of class sizes means that it is difficult to find a ‘formula’ that can be applied to all. From a first year undergraduate perspective, and based on the feedback gathered in this research, the ‘studio’ appears to be a very good model for helping students from all educational backgrounds to adjust successfully to the third level environment. The collaborative environment, in a set work space to which the students returned after lectures held elsewhere, was important to their learning and something that all the students appreciated. The verbal method of the ‘crit-marking’ formative assessment model examined within this research, I believe can be further developed. The significant benefits of this teaching and learning methodology are likely to extend well beyond the field of
Architectural Technology into other disciplines. But Architectural Technology, the focus of this research, lends itself especially well to the further development of this approach.

The focus on standards draws attention to the problem that there are far more things to learn, know and do than can possibly be included in the assessment regime of any particular course or unit of study. There is a need to move from privileging our own academic content and of assessing students 'as if our part of the course was more important than anything else', to a position that respects the use of knowledge within the overall programme so that its graduates will be able to learn and assess for themselves. This will create opportunities to find new assessment models that will involve making judgements in the co-production of knowledge (Boud, 2007, pp 41-42.). But that does require a willingness to let go of some cherished ‘old ways’ of doing things, and a readiness among third-level teachers to ‘learn anew’.
References and Bibliography


Prunty, C. & Crean, M. (2010, January). Formative Assessment structures in 1st and 2nd Year Architectural Technology to enhance student learning that could be used effectively on other Built Environment courses. Paper presented at the inaugural All Ireland Symposium of Built Environment Education, AISBEE, University of Ulster, Belfast Campus, Northern Ireland.


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Welcome and thank for completing this survey.

In Semester 1 there were nine projects in total, allowing for approximately one per week. The purpose of these projects was to follow the module coursework in tandem with the Building Technology lectures, to accumulate knowledge and information to prepare students for the coursework in the second semester. The programme was designed to allow students sufficient time to understand the course material set for each project.

Continue »
Questionnaire

Please answer the questions below.

1. How did you find out about the course?
   - College Prospectus
   - Career Guidance
   - Family or Friend
   - Post Leaving Cert Course
   - Work Experience
   - Other (please state)
   - Other (please specify):

2. Did you understand what Architectural Technology was before commencing on the course?
   - Yes
   - No

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09/06/2010
4. Please comment on the information you had discovered about the Architectural Technology course.

5. To complete the learning outcomes in Semester 1, in your opinion, was the number of assessed projects in Studio
   - Too many
   - Too few
   - Just right

6. Did you think there was enough time allowed between projects?
   - Yes always
   - Sometimes
   - Rarely
   - Never

7. Did you feel enough time was allocated within the programme for each project?
   - Yes always
   - Sometimes
   - Rarely
   - Never

8. Were there some projects that had too much time allocated?
   - Yes
   - No

9. Please give examples of projects with too much time allocated.

10. Were there some projects that had too little time allocated?
    - Yes
    - No

11. Please give examples of projects with too little time allocated.

https://www.survey.bris.ac.uk/?manifestid=40264&op=preview

09/06/2010
12. Did you understand the process of formative assessment (crit marking)?
- Yes
- No

13. Please comment on your answer to Question 12.

14. Did you understand that learning activities during the marking crit were one, some, or all of the following?
   (Select all that apply)
   - Explaining and presenting your work to staff and peers
   - Receiving feedback by way of marked up drawings and in
   - Conversation with staff during marking crit
   - Note-taking by yourself
   - Note taking on behalf of fellow student
   - Reflection

15. Did you feel you had time to reflect on the work assessed?
- Yes always
- Sometimes
- Rarely
- Never

16. Did you feel you were given clear instructions on what work was to be carried out for each studio project?
- Yes always
- Sometimes
- Rarely
- Never

17. Did you feel you were given clear information on the assessment criteria for each project i.e. the marks allocated for different pieces of work within a project?
- Yes always
- Sometimes
- Rarely
- Never

18. Did you feel sufficient feedback was provided?
- Yes always
- Sometimes
- Rarely
- Never

19. Did you ask questions during the feedback session (crit)?

https://www.survey.bris.ac.uk/?manifestid=40264&op=preview

09/06/2010
20. Did you feel feedback was provided in sufficient detail?
- Yes always
- Sometimes
- Rarely
- Never

21. Please comment on your answer to Question 20

22. Did you feel the general crit, delivered at the start of the marking crit, which discussed common problem areas of the project was relevant to YOU and YOUR project?
- Yes always
- Sometimes
- Rarely
- Never

23. Did you feel that the feedback you received was delivered at a time which helped you with the work in subsequent or later projects?
- Yes always
- Sometimes
- Rarely
- Never

24. Did you seek further feedback?
- Yes always
- Sometimes
- Rarely
- Never

25. Did you feel you used the feedback you received towards your work in subsequent projects?
- Yes always
- Sometimes
- Rarely
- Never

26. What was your overall Studio mark, excluding Graphics and CAD, in Semester 1 2008-2009?
- Less than 40
- 40 - 44
- 45 - 54
- 55 - 65
- 65 - 85

https://www.survey.bris.ac.uk/?manifestid=40264&op=preview

09/06/2010
27. Did you find it useful to get the Esquisse brief for the Final Project before Christmas?
- Yes
- No

28. Please comment on your answer to Question 27:

29. Is there anything you would do differently in Semester 1?
- Yes
- No

30. Please comment on your answer to Question 29:

Continue >  |  Check Answers & Continue >
## Survey overview

<table>
<thead>
<tr>
<th>Number of respondents: 37</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected number of respondents: 64</td>
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<tr>
<td>Response rate: 57.8%</td>
</tr>
<tr>
<td>Launch date: 14 Dec 2009</td>
</tr>
<tr>
<td>Close date: 15 Dec 2009</td>
</tr>
</tbody>
</table>

1. To complete the learning outcomes in Semester 1, in your opinion, was the number of assessed projects in Studio
   - Too many: 18.9% 7
   - Too few: 0.0% 0
   - Just right: 81.1% 30

2. Did you think there was enough time allowed between Studio projects?
   - Yes always: 10.8% 4
   - Sometimes: 64.9% 24
   - Rarely: 18.9% 7
   - Never: 5.4% 2

3. Did you allocate appropriate amounts of time to your Studio projects?
   - Yes always: 35.1% 13
   - Sometimes: 54.1% 20
   - Rarely: 10.8% 4
   - Never: 0.0% 0

4. Did you feel enough time was allocated within the programme for each Studio project?
   - Yes always: 21.6% 8
   - Sometimes: 67.6% 25
   - Rarely: 10.8% 4
   - Never: 0.0% 0

5. Were there some Studio projects that had too much time allocated?
   - Yes: 10.8% 4
   - No: 89.2% 33

6. Please give examples of Studio projects with too much time allocated.
   - There are too many responses to display on this page and so all the responses to this question are available on a separate page.
7. Were there some Studio projects that had too little time allocated?

<table>
<thead>
<tr>
<th></th>
<th>Yes:</th>
<th>No:</th>
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<tbody>
<tr>
<td>62.2%</td>
<td>37.8%</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>14</td>
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</tbody>
</table>

8. Please give examples of Studio projects with too little time allocated.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

9. Did you understand the process of formative assessment (crit marking)?

<table>
<thead>
<tr>
<th></th>
<th>Yes:</th>
<th>No:</th>
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<td>86.5%</td>
<td>13.5%</td>
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</tr>
<tr>
<td>32</td>
<td>5</td>
<td></td>
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</table>

10. Please comment on your answer to Question 9.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

11. Did you understand that learning activities during the marking crit were one, some, or all of the following?

<table>
<thead>
<tr>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>Explaining and presenting your work to staff and peers:</td>
<td></td>
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<tr>
<td>Receiving feedback by way of marked up drawings and in:</td>
<td></td>
<td></td>
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<tr>
<td>Conversation with staff during marking crit:</td>
<td></td>
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<tr>
<td>Note-taking by yourself:</td>
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<tr>
<td>Note taking on behalf of fellow student:</td>
<td></td>
<td></td>
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<tr>
<td>Reflection:</td>
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<tr>
<td>n/a</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>n/a</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>n/a</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>n/a</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

12. Did you feel you had time to reflect on the work assessed?

<table>
<thead>
<tr>
<th></th>
<th>Yes always:</th>
<th>Sometimes:</th>
<th>Rarely:</th>
<th>Never:</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.0%</td>
<td>37.8%</td>
<td>27.0%</td>
<td>8.1%</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>14</td>
<td>10</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

13. Did you feel you were given clear instructions on what work was to be carried out for each Studio project?

<table>
<thead>
<tr>
<th></th>
<th>Yes always:</th>
<th>Sometimes:</th>
<th>Rarely:</th>
<th>Never:</th>
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<tr>
<td>18.9%</td>
<td>59.5%</td>
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<td>7</td>
<td>22</td>
<td>8</td>
<td>0</td>
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</tbody>
</table>
14. Did you feel you were given clear information on the assessment criteria for each Studio project i.e. the marks allocated for different pieces of work within a project?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
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<td>Yes always</td>
<td>40.5%</td>
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</tr>
<tr>
<td>Sometimes</td>
<td>43.2%</td>
<td>16</td>
</tr>
<tr>
<td>Rarely</td>
<td>10.8%</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>5.4%</td>
<td>2</td>
</tr>
</tbody>
</table>

15. Did you feel sufficient feedback was provided?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>37.8%</td>
<td>14</td>
</tr>
<tr>
<td>Sometimes</td>
<td>56.8%</td>
<td>21</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.4%</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
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</tbody>
</table>

16. Did you ask questions during the feedback session (marking crit)?

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Yes</td>
<td>59.5%</td>
<td>22</td>
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<tr>
<td>No</td>
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<tr>
<td>Sometimes</td>
<td>40.5%</td>
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</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
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</table>

17. Did you feel feedback was provided in sufficient detail?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>64.9%</td>
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<tr>
<td>Sometimes</td>
<td>29.7%</td>
<td>11</td>
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<tr>
<td>Rarely</td>
<td>5.4%</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
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</tbody>
</table>

18. Please comment on your answer to Question 17.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

19. Did you feel the general crit, delivered at the start of the marking crit, which discussed common problem areas of the Studio project was relevant to you and your Studio project?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>40.5%</td>
<td>15</td>
</tr>
<tr>
<td>Sometimes</td>
<td>51.4%</td>
<td>19</td>
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<tr>
<td>Rarely</td>
<td>8.1%</td>
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</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
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</tbody>
</table>

20. Did you feel that the feedback you received was delivered at a time which helped you with the work in subsequent Studio projects?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>18.9%</td>
<td>7</td>
</tr>
</tbody>
</table>
21. Did you seek further feedback?

<table>
<thead>
<tr>
<th></th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
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<td>Yes always</td>
<td>70.3%</td>
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<td>Sometimes</td>
<td>48.6%</td>
<td>35.1%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.4%</td>
<td>4.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
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</table>

22. Did you feel you used the feedback you received towards your work in subsequent Studio projects?

<table>
<thead>
<tr>
<th></th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>56.8%</td>
<td>40.5%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>48.6%</td>
<td>35.1%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.4%</td>
<td>4.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

23. What was your overall Studio mark, excluding Graphics and CAD, in Semester 1 2009-2010?

<table>
<thead>
<tr>
<th></th>
<th>Less than 40</th>
<th>40 -- 45</th>
<th>45 -- 55</th>
<th>55 -- 65</th>
<th>65 -- 85</th>
<th>85 -- 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40</td>
<td>8.1%</td>
<td>5.4%</td>
<td>18.9%</td>
<td>43.2%</td>
<td>21.6%</td>
<td>2.7%</td>
</tr>
<tr>
<td>40 -- 45</td>
<td>8.1%</td>
<td>5.4%</td>
<td>18.9%</td>
<td>43.2%</td>
<td>21.6%</td>
<td>2.7%</td>
</tr>
<tr>
<td>45 -- 55</td>
<td>8.1%</td>
<td>5.4%</td>
<td>18.9%</td>
<td>43.2%</td>
<td>21.6%</td>
<td>2.7%</td>
</tr>
<tr>
<td>55 -- 65</td>
<td>8.1%</td>
<td>5.4%</td>
<td>18.9%</td>
<td>43.2%</td>
<td>21.6%</td>
<td>2.7%</td>
</tr>
<tr>
<td>65 -- 85</td>
<td>8.1%</td>
<td>5.4%</td>
<td>18.9%</td>
<td>43.2%</td>
<td>21.6%</td>
<td>2.7%</td>
</tr>
<tr>
<td>85 -- 100</td>
<td>8.1%</td>
<td>5.4%</td>
<td>18.9%</td>
<td>43.2%</td>
<td>21.6%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

24. Is there anything you would do differently in Semester 1 of 2009-2010?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>86.5%</td>
<td>32</td>
</tr>
<tr>
<td>No</td>
<td>13.5%</td>
<td>5</td>
</tr>
</tbody>
</table>

25. Please comment on your answer to Question 24.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.
Appendix B

2009 - 2010
Welcome and thank you for completing this survey.

In Semester 1 of your first year in the Architectural Technology you will have completed 6 projects in total. The purpose of these projects was to follow the module coursework in tandem with the Building Technology lectures, to accumulate knowledge and information to complete the project work in Semester 1 and to prepare students for the coursework in the Semester 2. The programme was designed to allow students sufficient time to understand the course material set for each project.
Questionnaire

Please answer the questions below.

1. To complete the learning outcomes in Semester 1, in your opinion, was the number of assessed projects in Studio?
   - Too many
   - Too few
   - Just right

2. Did you think there was enough time allowed between Studio projects?
   - Yes always
   - Sometimes
   - Rarely
   - Never

3. Did you allocate appropriate amounts of time to your Studio projects?
   - Yes always
   - Sometimes
   - Rarely
   - Never

https://www.survey.bris.ac.uk/?manifestid=48292&op=preview

09/06/2010
4. Did you feel enough time was allocated within the programme for each Studio project?
   - Yes always
   - Sometimes
   - Rarely
   - Never

5. Were there some Studio projects that had too much time allocated?
   - Yes
   - No

6. Please give examples of Studio projects with too much time allocated.
   

7. Were there some Studio projects that had too little time allocated?
   - Yes
   - No

8. Please give examples of Studio projects with too little time allocated.
   

9. Did you understand the process of formative assessment (crit marking)?
   - Yes
   - No

10. Please comment on your answer to Question 9.
    

11. Did you understand that learning activities during the marking crit were one, some, or all of the following?
    (select all that apply)
    - Explaining and presenting your work to staff and peers
    - Receiving feedback by way of marked up drawings and in conversation with staff during marking crit
    - Note-taking by yourself
    - Note taking on behalf of fellow student
    - Reflection

12. Did you feel you had time to reflect on the work assessed?
    - Yes always
    - Sometimes
    - Rarely
    - Never
21. Did you seek further feedback?
- Rarely
- Sometimes
- Often
- Never

22. Did you feel you used the feedback you received towards your work in subsequent Studio projects?
- Yes always
- Sometimes
- Often
- Never

23. What was your overall Studio mark, excluding Graphics and CAD, in Semester 1 2009-2010?
- Less than 40
- 40 - 45
- 45 - 55
- 55 - 65
- 65 - 85
- 85 - 100

24. Is there anything you would do differently in Semester 1 of 2009-2010?
- Yes
- No

25. Please comment on your answer to Question 24.

[Comment field]

[Continue] [Check Answers & Continue]
Final Page

Thank you for completing this survey.

Cathy Prunty and Maire Ceann
## Survey overview

| Number of respondents: | 37 |
| Expected number of respondents: | 64 |
| Response rate: | 57.8% |
| Launch date: | 14 Dec 2009 |
| Close date: | 15 Dec 2009 |

### 1. To complete the learning outcomes in Semester 1, in your opinion, was the number of assessed projects in Studio?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too many</td>
<td>18.9%</td>
<td>7</td>
</tr>
<tr>
<td>Too few</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Just right</td>
<td>81.1%</td>
<td>30</td>
</tr>
</tbody>
</table>

### 2. Did you think there was enough time allowed between Studio projects?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>10.8%</td>
<td>4</td>
</tr>
<tr>
<td>Sometimes</td>
<td>64.9%</td>
<td>24</td>
</tr>
<tr>
<td>Rarely</td>
<td>18.9%</td>
<td>7</td>
</tr>
<tr>
<td>Never</td>
<td>5.4%</td>
<td>2</td>
</tr>
</tbody>
</table>

### 3. Did you allocate appropriate amounts of time to your Studio projects?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>35.1%</td>
<td>13</td>
</tr>
<tr>
<td>Sometimes</td>
<td>54.1%</td>
<td>20</td>
</tr>
<tr>
<td>Rarely</td>
<td>10.8%</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

### 4. Did you feel enough time was allocated within the programme for each Studio project?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>21.6%</td>
<td>8</td>
</tr>
<tr>
<td>Sometimes</td>
<td>67.6%</td>
<td>25</td>
</tr>
<tr>
<td>Rarely</td>
<td>10.8%</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

### 5. Were there some Studio projects that had too much time allocated?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>10.8%</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>89.2%</td>
<td>33</td>
</tr>
</tbody>
</table>

### 6. Please give examples of Studio projects with too much time allocated.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.
7. Were there some Studio projects that had too little time allocated?

| Yes: | 62.2% | 23 |
| No: | 37.8% | 14 |

8. Please give examples of Studio projects with too little time allocated.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

9. Did you understand the process of formative assessment (crit marking)?

| Yes: | 86.5% | 32 |
| No: | 13.5% | 5 |

10. Please comment on your answer to Question 9.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

11. Did you understand that learning activities during the marking crit were one, some, or all of the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>n/a</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explaining and presenting your work to staff and peers:</td>
<td>n/a</td>
<td>31</td>
</tr>
<tr>
<td>Receiving feedback by way of marked up drawings and in:</td>
<td>n/a</td>
<td>32</td>
</tr>
<tr>
<td>Conversation with staff during marking crit:</td>
<td>n/a</td>
<td>22</td>
</tr>
<tr>
<td>Note-taking by yourself:</td>
<td>n/a</td>
<td>20</td>
</tr>
<tr>
<td>Note taking on behalf of fellow student:</td>
<td>n/a</td>
<td>27</td>
</tr>
<tr>
<td>Reflection:</td>
<td>n/a</td>
<td>23</td>
</tr>
</tbody>
</table>

12. Did you feel you had time to reflect on the work assessed?

<table>
<thead>
<tr>
<th>Time to Reflect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always:</td>
<td>27.0%</td>
</tr>
<tr>
<td>Sometimes:</td>
<td>37.8%</td>
</tr>
<tr>
<td>Rarely:</td>
<td>27.0%</td>
</tr>
<tr>
<td>Never:</td>
<td>6.1%</td>
</tr>
</tbody>
</table>

13. Did you feel you were given clear instructions on what work was to be carried out for each Studio project?

<table>
<thead>
<tr>
<th>Instructions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always:</td>
<td>18.9%</td>
</tr>
<tr>
<td>Sometimes:</td>
<td>59.5%</td>
</tr>
<tr>
<td>Rarely:</td>
<td>21.6%</td>
</tr>
<tr>
<td>Never:</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
14. Did you feel you were given clear information on the assessment criteria for each Studio project i.e. the marks allocated for different pieces of work within a project?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>40.5%</td>
<td>15</td>
</tr>
<tr>
<td>Sometimes</td>
<td>43.2%</td>
<td>16</td>
</tr>
<tr>
<td>Rarely</td>
<td>10.8%</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>5.4%</td>
<td>2</td>
</tr>
</tbody>
</table>

15. Did you feel sufficient feedback was provided?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>37.8%</td>
<td>14</td>
</tr>
<tr>
<td>Sometimes</td>
<td>56.8%</td>
<td>21</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.4%</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

16. Did you ask questions during the feedback session (marking crit)?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>59.5%</td>
<td>22</td>
</tr>
<tr>
<td>No</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Sometimes</td>
<td>40.5%</td>
<td>15</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

17. Did you feel feedback was provided in sufficient detail?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>64.9%</td>
<td>24</td>
</tr>
<tr>
<td>Sometimes</td>
<td>29.7%</td>
<td>11</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.4%</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

18. Please comment on your answer to Question 17.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

19. Did you feel the general crit, delivered at the start of the marking crit, which discussed common problem areas of the Studio project was relevant to you and your Studio project?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>40.5%</td>
<td>15</td>
</tr>
<tr>
<td>Sometimes</td>
<td>51.4%</td>
<td>19</td>
</tr>
<tr>
<td>Rarely</td>
<td>9.1%</td>
<td>3</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

20. Did you feel that the feedback you received was delivered at a time which helped you with the work in subsequent Studio projects?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>18.9%</td>
<td>7</td>
</tr>
</tbody>
</table>
21. Did you seek further feedback?

<table>
<thead>
<tr>
<th>Feedback Level</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>5.4%</td>
<td>2</td>
</tr>
<tr>
<td>Sometimes</td>
<td>48.6%</td>
<td>18</td>
</tr>
<tr>
<td>Rarely</td>
<td>35.1%</td>
<td>13</td>
</tr>
<tr>
<td>Never</td>
<td>10.8%</td>
<td>4</td>
</tr>
</tbody>
</table>

22. Did you feel you used the feedback you received towards your work in subsequent Studio projects?

<table>
<thead>
<tr>
<th>Feedback Level</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>56.8%</td>
<td>21</td>
</tr>
<tr>
<td>Sometimes</td>
<td>40.5%</td>
<td>15</td>
</tr>
<tr>
<td>Rarely</td>
<td>2.7%</td>
<td>1</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

23. What was your overall Studio mark, excluding Graphics and CAD, in Semester 1 2009-2010?

<table>
<thead>
<tr>
<th>Mark Range</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40</td>
<td>8.1%</td>
<td>3</td>
</tr>
<tr>
<td>40 -- 45</td>
<td>5.4%</td>
<td>2</td>
</tr>
<tr>
<td>45 -- 55</td>
<td>18.9%</td>
<td>7</td>
</tr>
<tr>
<td>55 -- 65</td>
<td>43.2%</td>
<td>16</td>
</tr>
<tr>
<td>65 -- 85</td>
<td>21.6%</td>
<td>8</td>
</tr>
<tr>
<td>85 -- 100</td>
<td>2.7%</td>
<td>1</td>
</tr>
</tbody>
</table>

24. Is there anything you would do differently in Semester 1 of 2009-2010?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>86.5%</td>
<td>32</td>
</tr>
<tr>
<td>No</td>
<td>13.5%</td>
<td>5</td>
</tr>
</tbody>
</table>

25. Please comment on your answer to Question 24.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.
Architectural Technology Developing Formative Assessment Results

The results from the survey are presented below question by question. Apart from viewing your results below you also have the option to:

- cross-reference two questions to see the correlation of their answers
- cross-reference the whole survey against a chosen question
- export survey results in text or coded format for use in other packages
- filter results by answers to specific questions or by excluding questions
- compare the survey to other similar surveys
- combine the survey with other surveys which have identical structure
- step through individual responses
- restore a previously stored comparison
- view additional statistics
- view responses from incomplete surveys (NB: this report is currently slow)
- add or edit question classification tags for filtering
- add, edit or delete thresholds for colour coding of questions

1. To complete the learning outcomes in Semester 2, in your opinion, was the number of assessed parts of the Final Project in Studio -

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Too many</td>
<td>16.0%</td>
<td>4</td>
</tr>
<tr>
<td>Too few</td>
<td>4.0%</td>
<td>1</td>
</tr>
<tr>
<td>Just right</td>
<td>80.0%</td>
<td>20</td>
</tr>
</tbody>
</table>

2. Did you allocate appropriate amounts of time to your Studio project?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>36.0%</td>
<td>9</td>
</tr>
<tr>
<td>Sometimes</td>
<td>60.0%</td>
<td>15</td>
</tr>
<tr>
<td>Rarely</td>
<td>4.0%</td>
<td>1</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>
3. Did you feel enough time was allocated within the programme for each part of the Final Project?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes always:</th>
<th>Sometimes:</th>
<th>Rarely:</th>
<th>Never:</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>16.0%</td>
<td>68.0%</td>
<td>16.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Count</td>
<td>4</td>
<td>17</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Were there some parts that had too much time allocated?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes:</th>
<th>No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>36.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>Count</td>
<td>9</td>
<td>16</td>
</tr>
</tbody>
</table>

5. Please give examples of parts with too much time allocated.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

6. Were there some parts that had too little time allocated?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes:</th>
<th>No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>76.0%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Count</td>
<td>19</td>
<td>6</td>
</tr>
</tbody>
</table>

7. Please give examples of parts with too little time allocated.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

8. In Semester 2 did you understand the process of formative assessment (crit marking)?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes:</th>
<th>No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>92.0%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Count</td>
<td>23</td>
<td>2</td>
</tr>
</tbody>
</table>

9. Please comment on your answer to Question 8.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

10. Did you understand that learning activities during the marking crit were one, some, or all of the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>n/a</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explaining and presenting your work to staff and peers</td>
<td>n/a</td>
<td>18</td>
</tr>
<tr>
<td>Receiving feedback by way of marked up drawings and in:</td>
<td>n/a</td>
<td>23</td>
</tr>
<tr>
<td>Conversation with staff during marking crit:</td>
<td>n/a</td>
<td>18</td>
</tr>
<tr>
<td>Note-taking by yourself:</td>
<td>n/a</td>
<td>24</td>
</tr>
<tr>
<td>Note taking on behalf of fellow student:</td>
<td>n/a</td>
<td>3</td>
</tr>
<tr>
<td>Reflection:</td>
<td>n/a</td>
<td>15</td>
</tr>
</tbody>
</table>

11. Did you feel you had time to reflect on the work assessed?
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Did you feel you were given clear instructions on what work was to be carried out for each part of the Final Project?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes always</td>
<td>44.0%</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>52.0%</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>12.0%</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Did you feel you were given clear information on the assessment criteria for each part i.e. the marks allocated for different pieces of work within the Final Project?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes always</td>
<td>60.0%</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>28.0%</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Did you ask questions during the feedback session (marking crit)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>52.0%</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4.0%</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>44.0%</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Did you feel sufficient feedback was provided?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes always</td>
<td>28.0%</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>72.0%</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Did you feel feedback was provided in sufficient detail?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes always</td>
<td>44.0%</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>56.0%</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Please comment on your answer to Question 16.

There are too many responses to display on this page and so all the responses to this question are available on a separate page.
18. Did you feel the general crit, delivered at the start of the marking crit, which discussed common problem areas of the project was relevant to YOU and YOUR project?

<table>
<thead>
<tr>
<th></th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>48.0%</td>
<td>52.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Count</td>
<td>12</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

19. Did you feel that the feedback you received was delivered at a time which helped you with the work in subsequent or later parts of the Final Project?

<table>
<thead>
<tr>
<th></th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>32.0%</td>
<td>68.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Count</td>
<td>8</td>
<td>17</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

20. Did you seek further feedback?

<table>
<thead>
<tr>
<th></th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>28.0%</td>
<td>48.0%</td>
<td>24.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Count</td>
<td>7</td>
<td>12</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

21. Did you feel you used the feedback you received towards your work in subsequent parts of the Final Project?

<table>
<thead>
<tr>
<th></th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>56.0%</td>
<td>44.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Count</td>
<td>14</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

22. What was your overall Studio mark, excluding Graphics and CAD, in Semester 2 2008-2009?

<table>
<thead>
<tr>
<th></th>
<th>Less than 40</th>
<th>40 -- 45</th>
<th>45 -- 55</th>
<th>55 -- 65</th>
<th>65 -- 85</th>
<th>85 -- 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>0.0%</td>
<td>12.0%</td>
<td>28.0%</td>
<td>32.0%</td>
<td>28.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

23. Did you find it useful to get the Esquisse brief for the Final Project before Christmas?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>72.0%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Count</td>
<td>18</td>
<td>7</td>
</tr>
</tbody>
</table>
24. Please comment on your answer to Question 27.

View All Responses - There are too many responses to display on this page and so all the responses to this question are available on a separate page.

25. Is there anything you would do differently in Semester 2?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60.0%</td>
<td>15</td>
</tr>
<tr>
<td>No</td>
<td>40.0%</td>
<td>10</td>
</tr>
</tbody>
</table>

26. Please comment on your answer to Question 25.

View All Responses - There are too many responses to display on this page and so all the responses to this question are available on a separate page.
Welcome

Marking Crit - v - Marking / Grading by Staff (and assuring Work)

(A) The Marking Crit (formative assessment) is the one of the methods of grading projects in 1st and 2nd Year Architectural Technology.

It consists of each student pinning up their project and presenting, discussing and supporting their work to the Studio Staff. The Studio Staff simultaneously give feedback and then mark or grade the project presented by each student. The students’ peers are also part of this process.

The studio staff then review the grades allocated to each student before releasing the grades. The grades are then issued to the class group as soon as possible after the Marking Crit.

(B) Marking / Grading by Staff only (summative assessment)

Studio Staff Team ranks the work outside studio without the students input, and grades for the work are then issued to the class. Feedback is delivered by a General ‘Crit’ which is delivered to the entire class highlighting issues discovered by Studio Staff during their grading of the projects.

We would like you to spend a couple of minutes reflecting on the Marking Crit and Marking/Grading by Staff only (and returning work) methods and commenting on your experiences

Continue >

https://www.survey.bris.ac.uk/?manifestid=54114&op=preview

09/06/2010
1. Which of these two methods of grading work do you prefer?
A. The Marking Crit (formative assessment)
Or
B. Marking/Grading by Staff only (summative assessment)
Please tick A or B

- A. The Marking Crit (formative assessment)
- B. Marking/Grading by Staff only (summative assessment)

2. Why do you prefer your selected method of grading?
Please comment:

3. What do you NOT like about the method above that you DID NOT select?

https://www.survey.bris.ac.uk/?manifestid=54114&op=preview

09/06/2010
4. Did you feel you learnt anything about your project work from either method A or B above?
   - Yes
   - No

5. Please expand your answer by clarifying what you experienced by either method.

6. Did you feel you learnt anything that would change how you might undertake the next studio project from either method A or B above?

Continue >  |  Check Answers & Continue >
Final Page

Thank You, your input is greatly appreciated.
Survey overview

Number of respondents: 19
Expected number of respondents: 60
Response rate: 31.7%
Launch date: 10 Mar 2010
Close date: 15 Mar 2010

Section 1

1. Which of these two methods of grading work do you prefer? A - The Marking Crit (formative assessment) Or B - Marking/Grading by Staff only (summative assessment) Please Tick A or B

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - The Marking Crit (formative assessment)</td>
<td>89.5%</td>
<td>17</td>
</tr>
<tr>
<td>B - Marking/Grading by Staff only (summative assessment)</td>
<td>10.5%</td>
<td>2</td>
</tr>
</tbody>
</table>

2. Why do you prefer your selected method of grading? Please comment.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

3. What do you NOT like about the method above that you DID NOT select?
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

4. Did you feel you learnt anything about your project work from either method A or B above?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100.0%</td>
<td>19</td>
</tr>
<tr>
<td>No</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

5. Please expand your answer by clarifying what you experienced by either method.
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

6. Did you feel you learnt anything that would change how you might undertake the next studio project from either method A or B above?
- There are too many responses to display on this page and so all the responses to this question are available on a separate page.
Appendix C

2010 - 2011
Welcome

I am embarking upon a piece of research to explore ways in which formative assessment feedback can be developed to support students' learning. In order to start the research, I am keen to gather information about students' current perceptions of the feedback they receive. I would be very grateful if you would take some time to answer this questionnaire as fully as you can. The results will be collated and used as part of the data for my research. Thank you very much for taking the time to complete the questionnaire.

Cathy Prunty.
Questionnaire

Please answer the questions below

1. Do you know what is meant by feedback?
   - Yes
   - No

2. If your answer was YES to question 1 please explain what you understand is meant by FEEDBACK.

3. If your answer was NO to question 1 please explain what you think is meant by FEEDBACK.

4. Have you ever received feedback?
5. If your answer was YES to question 4 please give examples of the type of FEEDBACK you received.

6. If you answer was YES to question 4 how was the feedback given to you? (verbally, written, group work etc etc)

7. How did you find out about this Architectural Technology course? Please tick box.

- College Prospectus
- Career Guidance
- Family or Friend
- Work Experience
- Post Leaving Cert Course
- Other (please state)
- Other (please specify):

8. Why did you choose this Architectural Technology course?

Continue >
Thank you for completing this survey.
### DT175-1 Induction Survey 2010-2011 2nd release Results

The results from the survey are presented below question by question. Apart from viewing your results below you also have the option to:

- cross-reference two questions to see the correlation of their answers
- cross-reference the whole survey against a chosen question
- export survey results in text or coded format for use in other packages
- filter results by answers to specific questions or by excluding questions
- filter results using a previously stored filter
- combine the survey with other surveys which have identical structure
- compare the survey to other similar surveys
- step through individual responses
- restore a previously stored comparison
- view additional statistics
- view responses from incomplete surveys (NB: this report is currently slow)
- add or edit question classification tags for filtering
- add, edit or delete thresholds for colour coding of questions

---

1. Do you know what is meant by feedback?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>92.6%</td>
<td>7.4%</td>
</tr>
</tbody>
</table>

**1.** Do you know what is meant by feedback?

- **Yes:** 92.6% (25)
- **No:** 7.4% (2)

**2.** If your answer was YES to question 1 please explain what you understand is meant by FEEDBACK.

**View All Responses** - There are too many responses to display on this page and so all the responses to this question are available on a separate page.

**3.** If your answer was NO to question 1 please explain what you think is meant by FEEDBACK.

**View All Responses** - There are too many responses to display on this page and so all the responses to this question are available on a separate page.

**4.** Have you ever received feedback?
5. If your answer was YES to question 4 please give examples of the type of FEEDBACK you received.

<table>
<thead>
<tr>
<th>Yes:</th>
<th>85.2%</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>No:</td>
<td>14.8%</td>
<td>4</td>
</tr>
</tbody>
</table>

6. If you answer was YES to question 4 how was the feedback given to you? (verbally, written, group work etc)

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. How did you find out about this Architectural Technology course? Please tick box.

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Prospectus</td>
<td>48.1%</td>
<td>13</td>
</tr>
<tr>
<td>Career Guidance</td>
<td>22.2%</td>
<td>6</td>
</tr>
<tr>
<td>Family or Friend</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>Work Experience</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>Post Leaving Cert Course</td>
<td>11.1%</td>
<td>3</td>
</tr>
<tr>
<td>Other (please state)</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>11.1%</td>
<td>3</td>
</tr>
</tbody>
</table>

8. Why did you choose this Architectural Technology course?

<table>
<thead>
<tr>
<th>Reason</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Reason</th>
<th></th>
<th></th>
</tr>
</thead>
</table>
### DT175-1 (Sem 1 2010-2011) Survey Results

The results from the survey are presented below question by question. Apart from viewing your results below you also have the option to:

- cross-reference two questions to see the correlation of their answers
- cross-reference the whole survey against a chosen question
- export survey results in text or coded format for use in other packages
- filter results by answers to specific questions or by excluding questions
- filter results using a previously stored filter
- compare the survey to other similar surveys
- combine the survey with other surveys which have identical structure
- restore a previously stored comparison
- view additional statistics
- view responses from incomplete surveys (NB: this report is currently slow)
- add or edit question classification tags for filtering
- add, edit or delete thresholds for colour coding of questions
- step through individual responses

#### Survey Overview

- Number of respondents: 30
- Expected number of respondents: 50
- Response rate: 60.0%
- Launch date: 22 Dec 2010
- Close date: 31 Jan 2011

#### 1. To complete the learning outcomes in Semester 1, in your opinion, was the number of assessed projects in Technical Design Studio (TDS)

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too many</td>
<td>23.3%</td>
<td>7</td>
</tr>
<tr>
<td>Too few</td>
<td>3.3%</td>
<td>1</td>
</tr>
<tr>
<td>Just right</td>
<td>73.3%</td>
<td>22</td>
</tr>
</tbody>
</table>

#### 2. Did you think there was enough time allowed between TDS projects?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>6.7%</td>
<td>2</td>
</tr>
<tr>
<td>Sometimes</td>
<td>63.3%</td>
<td>19</td>
</tr>
<tr>
<td>Rarely</td>
<td>26.7%</td>
<td>8</td>
</tr>
<tr>
<td>Never</td>
<td>3.3%</td>
<td>1</td>
</tr>
</tbody>
</table>
3. Did you allocate appropriate amounts of time to your TDS projects?

<table>
<thead>
<tr>
<th>Option</th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>36.7%</td>
<td>56.7%</td>
<td>6.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Number</td>
<td>11</td>
<td>17</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Did you feel enough time was allocated within the programme for each TDS project?

<table>
<thead>
<tr>
<th>Option</th>
<th>Yes always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>16.7%</td>
<td>70.0%</td>
<td>10.0%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Number</td>
<td>5</td>
<td>21</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

5. Were there some TDS projects that had too much time allocated?

<table>
<thead>
<tr>
<th>Option</th>
<th>%</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16.7%</td>
<td>5</td>
</tr>
<tr>
<td>No</td>
<td>83.3%</td>
<td>25</td>
</tr>
</tbody>
</table>

6. Please give examples of TDS projects with too much time allocated.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

7. Were there some TDS projects that had too little time allocated?

<table>
<thead>
<tr>
<th>Option</th>
<th>%</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>43.3%</td>
<td>13</td>
</tr>
<tr>
<td>No</td>
<td>56.7%</td>
<td>17</td>
</tr>
</tbody>
</table>

8. Please give examples of TDS projects with too little time allocated.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

9. Did you understand the process of formative assessment (crit marking)?

<table>
<thead>
<tr>
<th>Option</th>
<th>%</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>93.3%</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>6.7%</td>
<td>2</td>
</tr>
</tbody>
</table>

10. Please comment on your answer to Question 9.

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.

11. Did you understand that learning activities during the formative assessment / marking crit were one, some, or all of the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>%</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explaining and presenting your work to staff and peers</td>
<td>n/a</td>
<td>27</td>
</tr>
<tr>
<td>Receiving feedback by way of marked up drawings and in</td>
<td>n/a</td>
<td>26</td>
</tr>
</tbody>
</table>
## 12. Did you feel you had time to reflect on the work assessed?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>20.0%</td>
<td>6</td>
</tr>
<tr>
<td>Sometimes</td>
<td>43.3%</td>
<td>13</td>
</tr>
<tr>
<td>Rarely</td>
<td>30.0%</td>
<td>9</td>
</tr>
<tr>
<td>Never</td>
<td>6.7%</td>
<td>2</td>
</tr>
</tbody>
</table>

## 13. Did you feel you were given clear instructions on what work was to be carried out for each TDS project?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>30.0%</td>
<td>9</td>
</tr>
<tr>
<td>Sometimes</td>
<td>63.3%</td>
<td>19</td>
</tr>
<tr>
<td>Rarely</td>
<td>6.7%</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

## 14. Did you feel you were given clear information on the assessment criteria for each TDS project i.e. the marks allocated for different pieces of work within a project?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>26.7%</td>
<td>8</td>
</tr>
<tr>
<td>Sometimes</td>
<td>60.0%</td>
<td>18</td>
</tr>
<tr>
<td>Rarely</td>
<td>13.3%</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

## 15. Did you feel sufficient feedback was provided?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>40.0%</td>
<td>12</td>
</tr>
<tr>
<td>Sometimes</td>
<td>46.7%</td>
<td>14</td>
</tr>
<tr>
<td>Rarely</td>
<td>13.3%</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

## 16. Did you ask questions during the formative assessment feedback session (marking crit)?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>43.3%</td>
<td>13</td>
</tr>
<tr>
<td>No</td>
<td>3.3%</td>
<td>1</td>
</tr>
<tr>
<td>Sometimes</td>
<td>53.3%</td>
<td>16</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

## 17. Did you feel feedback was provided in sufficient detail?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes always</td>
<td>40.0%</td>
<td>12</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
<td>Count</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>18. Please comment on your answer to Question 17.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Did you feel the general crit, delivered at the start of the formative assessment / marking crit, which discussed common problem areas of the TDS project, was relevant to YOU and YOUR project?</td>
<td>Yes always:</td>
<td>26.7%</td>
</tr>
<tr>
<td></td>
<td>Sometimes:</td>
<td>63.3%</td>
</tr>
<tr>
<td></td>
<td>Rarely:</td>
<td>6.7%</td>
</tr>
<tr>
<td></td>
<td>Never:</td>
<td>3.3%</td>
</tr>
<tr>
<td>20. Did you feel that the feedback you received was delivered at a time which helped you with the work in subsequent TDS projects?</td>
<td>Yes always:</td>
<td>26.7%</td>
</tr>
<tr>
<td></td>
<td>Sometimes:</td>
<td>56.7%</td>
</tr>
<tr>
<td></td>
<td>Rarely:</td>
<td>16.7%</td>
</tr>
<tr>
<td></td>
<td>Never:</td>
<td>0.0%</td>
</tr>
<tr>
<td>21. Did you seek further feedback?</td>
<td>Yes always:</td>
<td>16.7%</td>
</tr>
<tr>
<td></td>
<td>Sometimes:</td>
<td>66.7%</td>
</tr>
<tr>
<td></td>
<td>Rarely:</td>
<td>13.3%</td>
</tr>
<tr>
<td></td>
<td>Never:</td>
<td>3.3%</td>
</tr>
<tr>
<td>22. Did you feel you used the feedback you received towards your work in subsequent TDS projects?</td>
<td>Yes always:</td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td>Sometimes:</td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td>Rarely:</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Never:</td>
<td>0.0%</td>
</tr>
<tr>
<td>23. Please comment on your answer to Question 22.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Is there anything you would do differently in Semester 1?</td>
<td>Yes:</td>
<td>50.0%</td>
</tr>
<tr>
<td>No:</td>
<td>50.0%</td>
<td>15</td>
</tr>
</tbody>
</table>
Welcome

Marking Crit - v -- Marking / Grading by Staff (and returning Work)

(A) The Marking Crit (formative assessment) is one of the methods of grading projects in 1st Year Architectural Technology. It consists of each student pinning up their project work and presenting, discussing and supporting their work to the Staff. The Staff give feedback and then mark or grade the work presented by each student. The students' peers are also part of this process. The Staff team then review the grades allocated to each student before releasing the grades. The grades are then issued to the class group as soon as possible after the Marking Crit.

(B) Marking/Grading by Staff only (summative assessment)
Staff Team marks the project work without the students' input, and grades for the work are then issued to the class. Feedback is not individual.

We would like you to spend a couple of minutes thinking about the 'Marking Crit' and 'Marking/Grading' by Staff only (and returning work without feedback) and commenting on your experiences with either type of assessment.
1. Which of these two methods of grading work do you prefer?
   A - The Marking Crit (formative assessment)
   Or
   B - Marking/Grading by Staff only (summative assessment)
   Please Tick A or B
   - [ ] A - The Marking Crit (formative assessment)
   - [ ] B - Marking/Grading by Staff only (summative assessment)

2. Why do you prefer your selected method of grading?
   Please comment.

3. What do you NOT like about the method above that you DID NOT select?
4. Did you feel you learnt anything about your project work from either method A or B above?
   - Yes
   - No

5. Please expand your answer by clarifying what you experienced by either method.

6. Did you feel you learnt anything that would change how you might undertake the next studio project from either method A or B above?
4. Did you feel you learnt anything about your project work from either method A or B above?
   - Yes
   - No

5. Please expand your answer by clarifying what you experienced by either method.

6. Did you feel you learnt anything that would change how you might undertake the next studio project from either method A or B above?
Thank You, your input is greatly appreciated.
dt175-1_10-11_mid-semester2_survey Results

The results from the survey are presented below question by question. Apart from viewing your results below you also have the option to:

- cross-reference two questions to see the correlation of their answers
- cross-reference the whole survey against a chosen question
- export survey results in text or coded format for use in other packages
- filter results by answers to specific questions or by excluding questions
- filter results using a previously stored filter
- compare the survey to other similar surveys
- combine the survey with other surveys which have identical structure
- step through individual responses
- restore a previously stored comparison
- view additional statistics
- view responses from incomplete surveys (NB: this report is currently slow)
- add or edit question classification tags for filtering
- add, edit or delete thresholds for colour coding of questions

Section 1

1. Which of these two methods of grading work do you prefer? A - The Marking Crit (formative assessment) Or B - Marking/ Grading by Staff only (summative assessment) Please Tick A or B

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - The Marking Crit (formative assessment):</td>
<td>73.1%</td>
<td>19</td>
</tr>
<tr>
<td>B - Marking/ Grading by Staff only (summative assessment):</td>
<td>26.9%</td>
<td>7</td>
</tr>
</tbody>
</table>

2. Why do you prefer your selected method of grading? Please comment.

3. What do you NOT like about the method above that you DID NOT select?
4. Did you feel you learnt anything about your project work from either method A or B above?

<table>
<thead>
<tr>
<th>Yes</th>
<th>96.2%</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>3.8%</td>
<td>1</td>
</tr>
</tbody>
</table>

5. Please expand your answer by clarifying what you experienced by either method.

6. Did you feel you learnt anything that would change how you might undertake the next studio project from either method A or B above?

- There are too many responses to display on this page and so all the responses to this question are available on a separate page.
Appendix D

Focus Group
Letter by e-mail, to all DIT Architectural Technology students seeking participants for the Focus Group discussion.

From: Cathy Prunty [mailto:Cathy.Prunty@dit.ie]
Sent: 12 April 2011 16:05
To: '2nd Year Class '; dt1053-list@student.dit.ie; 'DT1751-list@student.dit.ie'
Subject: Focus group
Importance: High

Dear Students,

As you know I have been annoying you all (particularly the 3rd years) - asking you all to take part in various surveys about my research into formative assessment since 2009. I am nearly at the end of it all now and I am making one last request. I am looking for 2 people from each year who actually took part in any of the survey questionnaires (some of you didn't – which is fine – it's a free country!) to take part in a focus group to talk about this research. It will take no more than 45 minutes at a time and a place that will suit us all.

I need the 6 people who agree to take part to speak freely, informally, honestly and genuinely about how they might feel about this research on this particular assessment process. I can handle the truth!

If you are willing to take part, can you e-mail me by return so that I can set something up very soon? If I happen to get more than 2 people from each year, (if I was that lucky!) – I will stick the names into a hat if that's 'ok' and will then contact you?

Many, many thanks for your patience throughout this whole process; I have really appreciated your contribution.

Best regards,

Cathy

Catherine M. Prunty Dip Arch. Tech., RIAI Arch Tech., Dip A. (Comm. & Ind.), PMP
Year Co-ordinator DT105-2 / Lecturer
Dublin School of Architecture
College of Engineering & Built Environment
DIT
Bolton Street
Dublin 1

Tel: 00353 1 4023944

This message has been scanned for content and viruses by the DIT Information Services E-Mail Scanning Service, and is believed to be clean. [http://www.dit.ie](http://www.dit.ie)
Sample e-mail responses from randomly selected volunteers for the Focus Group

Sent: 12 April 2011 18:41
To: Cathy Prunty
Subject: Re: Focus group

yeh Cathy i dont mind doing that for you if u have no-one

Regards

Subject: Re: Focus group

Hi Cathy.

I would be happy to take part but unfortunately I'm away for the next two weeks from friday. However if it is to take place after Easter Id be more than happy to participate.

Regards.

Sent: 13 April 2011 12:16
To: Cathy Prunty
Subject: Re: Focus group

Cathy,
I would be willing to take part in the focus group, and as far as i remeber i took the survey questionnair last year.

regards,

Sent: 13 April 2011 12:16
To: Cathy Prunty
Subject: Re: Focus group

Hi Cathy,

As far as I can remember I took the survey last year so if I did I would be up for doing the focus group.

Regards,
My response to each respondent willing to participate in the Focus Group discussion

Dear ,

Thank you very much for offering to take part in the focus group as part of my research for my MA. As everyone is under terrible pressure at this time of year, I am proposing that we meet next Friday, 6th May over lunchtime in Bolton Street for 45 minutes MAXIMUM in a room to be determined yet. I will provide lunch for all the participants (after all you do need to eat – and don’t worry I won’t be making it myself!), so that it won’t take up too much of your time. I will confirm the room number by e-mail and sort out your allergies/likes/dislikes (food-wise) nearer the time. If, for any reason you cannot take part next Friday, please let me know as soon as possible so I can arrange a replacement in time.

Many thanks again - your willingness to participate is greatly appreciated,

Best regards,
Cathy

Catherine M. Prunty Dip Arch. Tech., RIAI Arch Tech., Dip A. (Comm. & Ind.), PMP
Year Co-ordinator DT105-2 / Lecturer
Dublin School of Architecture
College of Engineering & Built Environment
DIT
Bolton Street
Dublin 1
Tel: 00353 1 4023944

Sent: 03 May 2011 15:19
To: 'Cathy Prunty'
Subject: MA Research -Focus Group Friday 6th May Bolton Street

Dear All,

Just to confirm that the discussion/ focus group will take place in R407 this Friday at 1pm in Bolton Street and to thank you all again for agreeing to participate. I have ordered mixed sandwiches and pastries, tea and coffee and some soft drinks and water to refresh you while we chat, but If you have any special food requirements please let me know, so I can arrange an alternative that suits? I will be forwarding a topic list to you in advance of the session also, so that you can see what we will be discussing. Again any responses you make during the session will be completely anonymous.

Looking forward to seeing you all then,
Regards,

Cathy

Catherine M. Prunty Dip Arch. Tech., RIAI Arch Tech., Dip A. (Comm. & Ind.), PMP
Year Co-ordinator DT105-2 / Lecturer
Dublin School of Architecture
College of Engineering & Built Environment
DIT
Bolton Street
Dublin 1
Tel: 00353 1 4023944
Letter informing the Participants of the Focus Group of the proposed topics

From: Cathy Prunty [mailto:Cathy.Prunty@dit.ie]
Sent: 05 May 2011 13:29
Subject:

Dear Students,

Thank you again for taking the time to participate in this research. For your information, please find attached a topic guide for the focus group session. Don't worry if it looks a little long - we will only be using these very much as a guide to our discussions. Again, I wish to stress that your responses will remain completely anonymous.

Should you have any queries, please do let me know

Looking forward to seeing you on Friday

Kind regards

Cathy Prunty

Catherine M. Prunty Dip Arch. Tech., RIAI Arch Tech., Dip A. (Comm. & Ind.), PMP
Year Co-ordinator DT105-2 / Lecturer
Dublin School of Architecture
College of Engineering & Built Environment
DIT
Bolton Street
Dublin 1

Tel: 00353 1 4023944

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Title of Project:
Formative Assessment and Formative Feedback as a learning and Teaching Strategy for First Year Students: A case study

Name of Researcher: Catherine Prunty

Participant Identification Number for this project: Student A

1. I confirm that I have read and understand the information sheet for the above project and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

3. I understand that my responses will be anonymised before analysis. I give permission for the researcher and the Supervisor to have access to my anonymised responses.

4. I agree to take part in the above project.

Name of Participant ________________________ Date ____________ Signature ________________________

Researcher ________________________ Date ____________ Signature ________________________
Focus Group Guide Questions issued to student participants in the Focus Group

Retrospective Evaluation: Focus Group Interview

Recollections of your first year experiences

- Did you come straight from post primary education?
- Were your objectives/expectations met by the course?
  - Give a reason or some examples
- Did you feel that you adapted well to the third level environment?
  - In what ways?
- What positive things did you encounter in your first year?
- What negative things did you encounter in your first year?

Formative Assessment/formative feedback teaching Strategies: Impact on Your learning

- Have your learning strategies changed over what they previously were before undertaking the course?
  - *Name Specific Changes*
- Have you seen any change in the way you learn as a result of the different teaching strategies you were exposed to? If yes, what examples do you have for this change?

In-depth exploration of Learning Strategies

- How did you engage with the ‘marking crit’ – can you describe the process both negatively and positively from your point of view?
- How did the marking crit make you feel?
- Are there any other comments you would like to make regarding the impact of formative assessment or formative feedback on you or your college work?
Letter of thanks issued to the participants of the Focus Group, one per student pairing, per year.

From: Cathy Prunty [mailto:Cathy.Prunty@dit.ie]
Sent: 06 May 2011 16:50
To: Each pair of 1st and 2nd Year Focus Group Participants
Subject: Thank you

Dear and ,
Thank you both very much for taking part today in the focus group for my research, it was very helpful.
Best wishes to you both on your portfolio submissions and upcoming exams,
Kind regards,
Cathy

Catherine M. Prunty Dip Arch. Tech., RIAI Arch Tech., Dip A. (Comm. & Ind.), PMP
Year Co-ordinator DT105-2 / Lecturer
Dublin School of Architecture
College of Engineering & Built Environment
DIT
Bolton Street
Dublin 1
Tel: 00353 1 4023944

From: Cathy Prunty [mailto:Cathy.Prunty@dit.ie]
Sent: 06 May 2011 16:53
To: 3rd Year Participants of the Focus Group
Subject: Thank you

Dear and ,
Thank you both very much for taking part today in the focus group for my research, it was very helpful.
Best wishes to you both for your Thesis, portfolio submissions and upcoming exams, I am sure you will both do very well and deserve it!
Kind regards,
Cathy

Catherine M. Prunty Dip Arch. Tech., RIAI Arch Tech., Dip A. (Comm. & Ind.), PMP
Year Co-ordinator DT105-2 / Lecturer
Dublin School of Architecture
College of Engineering & Built Environment
DIT
Bolton Street
Dublin 1
Tel: 00353 1 4023944
Appendix E

RIAI Standard of Knowledge, Skill and Competence for practice as an
Architectural Technologist
Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist

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Contents

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Background............................................................3

Development of the Standard........................................4

Use of the Standard...................................................5

Reading and interpreting the Standard...............................5

RIAI Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist......7
Foreword

In 2006 RIAI Council made a decision that the requirements for practice as an architectural technician in Ireland should be laid out clearly in a single document. To carry out this exercise Council convened the RIAI Architectural Technology Task Group.

In carrying out its work the Task Group received very welcome advice and comment from experts in the fields of academia, architectural and architectural technology practice and education, and in November 2008 submitted to Council a thoroughly researched document setting out the range of knowledge, skills and competences that might be expected of the architectural technician / technologist at successive stages of qualification and experience.

This document formed the basis of an RIAI decision in January 2009 to replace the membership category of 'Architectural Technician' with that of 'Architectural Technologist' and to develop a single RIAI Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist.

This standard, developed following further consideration by the Architectural Technology Sub-Committee and a period of consultation, will be the benchmark for admission to RIAI Architectural Technologist membership, regardless of how a candidate's knowledge, skill and competence has been attained. It will provide those seeking RIAI Architectural Technologist membership with a clear statement of what is required at the professional level. It is also intended to provide a framework for Continuing Professional Development, keeping Architectural Technologists aware of the key areas of knowledge skill and competence which must be maintained for effective practice.

Its publication now sets in place a firm foundation for the RIAI Action Plan 2010 – 2013 objective of promoting, developing and supporting the role of the RIAI Architectural Technologist.

I would like to take this opportunity to thank all of those who gave freely of their time and expertise to contribute to the development of this document. I would especially like to thank the members of the RIAI Architectural Technology Task Group and the Architectural Technology Sub-Committee who invested very considerable time and effort in this exercise.

John Graby
Registrar

The Royal Institute of the Architects of Ireland
The Registration Body for Architects in Ireland
Background

The RIAI is the leading professional body in Ireland for architects, architectural technologists, and graduates in both fields. Since its foundation in 1839, the RIAI has committed itself to the development of knowledge required for practice in the field of architecture and latterly of architectural technology. Of equal importance is the role of the RIAI in protecting the interests of clients, consumers, building users, the public interest and the quality of the built environment. This demands that RIAI members, including both its architect and architectural technologist members, are equipped with the necessary skills to deliver the services they offer.

In 1974 the RIAI created a new category of membership to provide for Architectural Technicians, and has been accrediting courses in architectural technology since 1975. In the years since then the profession of architectural technician has developed significantly in terms of professional practice and in the provision of education at both undergraduate and postgraduate level. In recognition of this RIAI Council agreed in 2009 to alter the technician membership title from ‘architectural technician’ to ‘architectural technologist’. (Though not protected, use of either title is prescribed under the Building Control Act 2007).

The RIAI regards the professional Architectural Technologist as a technical designer, skilled in the application and integration of construction technologies in the building design process.

The RIAI architectural technologist membership category is established to recognise architectural technologists working in both private and public sectors, in architectural practices, in multi-disciplinary practices or in architectural technology practices, and architectural technologists working at various levels in industry.

The RIAI policy on the education of the ‘architectural technician’ at undergraduate level was outlined in 13 points in Section 3.5.1 of the RIAI Statement of Policy on Architectural Education, 2001. However, recent years have seen the opening of several new courses in architectural technology and an increase in the numbers of technologists coming from countries where laws, climate, building processes, and education differ from those in Ireland.
In this context the RIAI identified the need to establish a clearly expressed Standard for entry to the Architectural Technology profession in Ireland. The Standard would provide a basis for clear understanding of the requirements and thereby support consistent and equitable assessment of the skills required for recognition as an Architectural Technologist. This increased clarity would benefit clients, consumers, employers, students, schools of architectural technology, architectural technologists and candidates for RIAI Architectural Technologist membership.

The new Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist establishes the skill set required for practice in architectural technology in Ireland. It will form a single standard for assessment and will apply to all entry routes for Architectural Technologist membership of the RIAI.

Development of the Standard

In 2006 the RIAI Council appointed an Architectural Technology Task Group (ATTG) to review standards of knowledge, skill and competence required for practice in architectural technology. The ATTG was representative of architectural technicians, architects and architectural technology educators. The ATTG considered the levels of skill to be expected at each stage of the education and training of the Architectural Technician. Preparatory work included review and research of core reference documents published by various bodies including the RIAI, the Higher Education Training and Awards Council (HETAC) Ireland; National Qualifications Authority of Ireland (NQAI) and the UK Quality Assurance Agency, amongst others. The draft standards produced by the Task Group, together with other work carried out by the Architectural Technician Committee and RIAI Education Division, contributed to a fundamental re-consideration of the role of the architectural technician.

In January 2009, following Council’s decision to adopt the title ‘Architectural Technologist’, a new sub-committee was appointed by Council to develop the single standard for Architectural Technologist membership of the RIAI. The sub-committee membership included representatives from the ATT, architectural technician representatives from the ATC and representatives from the architectural membership. Those consulted on the document as it evolved included: experts in the field, RIAI Council, RIAI Board of Architectural Education, RIAI Committees and Examination Boards, and the Institutes of Technology.
Use of the Standard

The RIAI Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist describes the areas and levels of knowledge, skill and competence required of an architectural technologist at the professional level. To be an Architectural Technologist member of the RIAI - RIAI ArchTech - an individual must have demonstrated that he or she has achieved this Standard. The Standard is applied in all RIAI examinations and assessment mechanisms and is integrated into all of the RIAI’s Admission routes to Architectural Technologist membership. In RIAI CPD Engage, the Institute’s online CPD planning, provision and monitoring tool, the Standard provides the framework for Continuing Professional Development.

Reading and interpreting the Standard

The Standard is divided into seven Sets - Context, Technology, Regulation, Procurement, Communication, Management and Professionalism - each of which contains a list of relevant competences that are recognizably related to the realities of practice.

In many cases the Competence is accompanied by a ‘Guidance Note’ which clarifies the scope or meaning of the criterion. In others, where the scope and meaning are self-evident, there is no Guidance Note.

Each Competence is set at one of four Levels in terms of the level of achievement to be demonstrated:

Awareness: a person should be aware that specific regulations, issues, concepts, procedures, etc. exist and where they are relevant or might apply. A thorough knowledge is not required. This is about knowing that something exists and may have an impact.

Knowledge: a person, in addition to being aware that a concept, regulation, issue, procedure, etc. exists must also have some degree of knowledge of how it applies, and be able to apply it independently at a basic level. Knowledge means knowing enough about something to be able to work with it without necessarily having to bring in someone with more expertise.
Understanding: means that the person has a comprehensive knowledge of a concept, regulation, issue, procedure, etc., including how it applies, and is able to apply it at a complex level. The Applicant should be capable of guiding and advising others in this area and of applying this knowledge in new and unforeseen circumstances.

Ability: means that the person can bring all of his/her knowledge and skills to bear in the successful delivery of that particular element of a professional architectural service.
### RIAI Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist

<table>
<thead>
<tr>
<th>Competence</th>
<th>Guidance Note</th>
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<tbody>
<tr>
<td><strong>1 Context</strong></td>
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<tr>
<td>1 Knowledge of current societal concerns, their changing nature and their integration into architectural technology practice.</td>
<td>Current examples include climate change, sustainable development, energy conservation, health &amp; safety, and universal inclusive design. These will evolve, and new topics emerge, over time. Candidates may be more knowledgeable in some areas than others.</td>
</tr>
<tr>
<td>2 Knowledge of the range of organisations with a responsibility for, or interest, in the built environment.</td>
<td>These include national government, consultative, advisory and voluntary bodies and interest groups which play a part in the development of policy, directives, laws, guidelines and regulations, and an awareness of how they interact with each other.</td>
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<tr>
<td><strong>2 Technology</strong></td>
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<tr>
<td>1 Ability to develop performance-based solutions to technical design problems.</td>
<td>Includes being able to innovate and think creatively in the technical design process, and to use drawing as a means of exploring and resolving technical problems. Includes being able to undertake research and investigation as part of the technical design process.</td>
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<tr>
<td>2 Understanding of theory, principles and science in the technical design process</td>
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<tr>
<td>3 Ability to use measurement and calculation accurately and consistently in the technical design process</td>
<td>Includes an understanding of the importance of dimensional accuracy in the preparation of drawings. Includes measurement and calculation of building and environmental performance.</td>
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<tr>
<td>4 Understanding of traditional and innovative building materials and technology</td>
<td>Includes knowledge of the sourcing and processing of materials and technology, their responsible and sustainable use, their potential environmental impact, and the ethical dimension of their mode of production.</td>
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<tr>
<td>5 Knowledge of the theory and principles of environmental design</td>
<td>Includes the relationship between a building and its immediate and wider environment. Includes thermal behaviour, energy performance, climate protection and conditions of comfort factors in the building design process. Includes issues such as ecological sustainability, physical and climatic environment, conservation, natural disaster risks.</td>
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<tr>
<td>6 Ability to produce technical drawings, specifications, compliance reports, and other written technical documentation</td>
<td>Includes integration of the requirements of relevant construction legislation, regulations, codes and standards at the various stages in the building design process.</td>
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<tr>
<td>7 Ability to undertake measured building and site surveys and translate data into legible digital and graphical format</td>
<td>Includes awareness of the application and limitations of current survey techniques.</td>
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<tr>
<td>8 Knowledge of the history and evolution of construction technology</td>
<td>Includes the ability to date buildings on the basis of the technologies used in their construction.</td>
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<tr>
<td>9 Ability to collaborate effectively in the architectural design process</td>
<td>Includes awareness of the history of architecture includes being able to respond to and develop the architectural design intent, collaborating within the design team to produce technical solutions that address technical, functional and visual criteria.</td>
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<tr>
<td><strong>2 Technology (continued)</strong></td>
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<tr>
<td><strong>10</strong> Ability to coordinate and integrate structural and building services design inputs</td>
<td>Requires knowledge of the theory and principles of structural and building services engineering. Requires an intuitive sense of what is appropriate as an engineering solution, and the impact of this on the 'buildability' of a design. Includes being able to co-ordinate and monitor structural and building services engineering design drawings and related information.</td>
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<tr>
<td><strong>11</strong> Ability to coordinate and integrate other specialist design inputs</td>
<td>Includes various areas of specialist design expertise such as materials science, energy design, environmental design, fire engineering, acoustic engineering, conservation etc.</td>
</tr>
<tr>
<td><strong>12</strong> Ability to coordinate and integrate design subcontractor inputs</td>
<td>Requires an understanding of the design responsibilities of the contractor and design subcontractor in the building design process. Includes being able to co-ordinate and monitor design subcontractors, manufacturing and workshop drawings and related design information.</td>
</tr>
<tr>
<td><strong>13</strong> Ability to assess and integrate cost control factors</td>
<td>Requires knowledge of the economics of development. Requires knowledge of the potential cost implications arising from decision making in the technical design process. Requires knowledge of budgets, costs and cost control and their implementation and general effect on projects.</td>
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<tr>
<td>3 Regulation</td>
<td>Includes Building, Planning &amp; Development and Health &amp; Safety legislation and regulations. Includes Irish, British, EU and other codes and standards for core technical areas such as fire safety, universal design, health and safety etc. Includes the understanding for the need for and type of testing required in establishing conformity with specifications and the ability to interpret the test results.</td>
</tr>
<tr>
<td>2 Knowledge of other relevant codes and standards</td>
<td>Includes Irish, British, EU and other codes and standards for various other technical areas.</td>
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<tr>
<td>3 Awareness of other relevant legislation and regulations</td>
<td>Includes environment, waste management, disability, equality, national monuments and heritage, property, EU Directives etc.</td>
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<tr>
<td>4 Understanding of the changing nature and increasing complexity of the legal and regulatory environment, and the necessity to seek advice or update knowledge from accredited sources, as appropriate</td>
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<tr>
<td>4 Procurement</td>
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<tr>
<td>1 Understanding of the stages in the building design process from inception to completion.</td>
<td>Includes understanding of the general building contracts, contract administration. Includes implications of sensitivity and confidentiality of negotiation in tendering processes.</td>
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<tr>
<td>2 Knowledge of commonly used procurement systems and contract types and their appropriate application.</td>
<td>Includes design development and the input of the architectural technologist at the various stages including planning, fire safety, cost, building regulations, tender documentation etc.</td>
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<tr>
<td>3 Understanding of the structure, operation and general activities of the design team and their interaction within the design process.</td>
<td>Includes the construction process and the input of the architectural technologist in contract administration activities such as chairing and taking minutes of site meetings, responding to RFPs, engaging in ongoing design development with subcontractors, monitoring builders work and workshop drawings etc. Includes understanding of site practice and procedures, site organisation and setup, compound, storage, sanitisation etc. Includes monitoring, assessing and reporting on the execution of quality/workmanship during Operations On-Site and Completion Stages. Includes engagement in critical appraisal of quality/workmanship with contractors and subcontractors.</td>
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<tr>
<td>4 Understanding of the structure, operation and general activities of the construction team and their interaction within the construction process.</td>
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<tr>
<td>5 Ability to prepare and co-ordinate tender documentation.</td>
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<tr>
<td>6 Ability to prepare and coordinate post-tender and handover documentation</td>
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## Communication

### 1. Ability to impart / present and receive / understand information clearly and effectively in graphical, written and verbal formats.

Includes clear written and verbal communication, report writing and scheduling; ability to communicate effectively in the local language of commerce.

### 2. Ability to use information technologies commonly required to support the building design process.

Relates to the broad range of IT applications in the work of the architectural technologist, including Computer Aided Design (CAD), Building Information Modelling (BIM) and related analytical calculation software, multimedia packages, web based document control etc.

### 3. Knowledge of the need to negotiate from an informed position through the relevant phases of the design and construction processes.

Includes being able to engage with others in negotiation, to assert a position where necessary and address issues in a professional non-confrontational way.

## Management

### 1. Understanding of the principles of project management in construction projects.

Includes project programming, includes time management and its relationship to project costs and quality includes change management.

### 2. Ability to lead, motivate and/or work within a team as appropriate

Involves a basic appreciation of motivation, group dynamics, staff appraisal and reward structures; communication, goal setting, coaching, coping, delegation and the vision to see beyond the immediate in the context of project and practice objectives.

### 3. Understanding of Quality Management processes in the building design and construction process.

Includes management of project documents and technical information, both internal and external and including information storage, retrieval and archiving; includes the management of the technical design inputs to the architectural design process includes knowledge of quality assurance and ISO processes.

### 4. Knowledge of the application of general health and safety regulations, in particular those relating to construction, to the design and procurement processes.


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<td><strong>7</strong> Professionalism</td>
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<tr>
<td>1</td>
<td>Ability to identify and evaluate information, apply critical judgment and formulate objective, competent advice and/or strategies for action.</td>
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<tr>
<td>2</td>
<td>Understanding of the need to regularly review personal performance against good practice, carry out critical self-appraisal, recognise limitations of knowledge, expertise and performance and take necessary steps to seek advice, update knowledge and make good any deficiencies.</td>
</tr>
<tr>
<td>3</td>
<td>Understanding of the obligation to act with honesty, integrity and impartiality in all matters arising from the practice of architectural technology, including associated or related activities such as teaching and research.</td>
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<tr>
<td>4</td>
<td>Awareness that ‘good practice’ may extend beyond legal/minimum requirements.</td>
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<td>5</td>
<td>Awareness of resolution mechanisms for disputes.</td>
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<td>6</td>
<td>Understanding of the requirement for personal safety in the practice of architectural technology.</td>
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<tr>
<td>7</td>
<td>Understanding of the duty to honourably discharge responsibilities to the client or employer.</td>
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