

A young child with light brown hair and blue-rimmed glasses is sitting on a light-colored floor. The child is wearing a light blue and white striped long-sleeved shirt and dark blue denim overalls. They are holding a black laptop on their lap with their left hand on the keyboard. Their right hand is raised, with the index finger pointing upwards. The background is a warm, yellowish-gold color with soft, out-of-focus light patterns.

# Teaching & Learning Innovations

June 2013

Learning-Styles Change  
 Stories Development  
 Entrepreneurship Education  
 Turn/In  
 Informatics  
 Support Nurture Online Learning  
 Interactive Community Learning  
 Feedback Design Horticuture  
 Flexible Learning Resource Help  
 Clinic Learning Quiz Energy Learning  
 Innovation  
 Business Collaborations  
 Enquiry Based-Learning  
 Mobile Benefits  
 Bcommunication  
 Multi-Cultural  
 Teaching  
 Video  
 Design  
 Universal  
 Audio  
 Social  
 Humanities  
 Objects  
 Learning  
 Weblog  
 Mechatronics  
 Improvements  
 Adobe Connect  
 new-technologies

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## FOREWORD

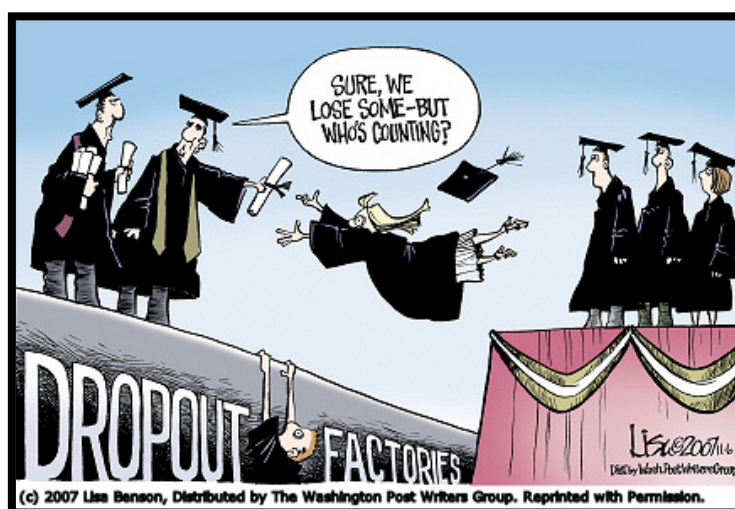


Once again many thanks to Daniel for inviting me to contribute a few words to our Third Teaching and Learning Innovations report. As we have come to expect it is filled with examples of wonderfully exciting and innovative projects, representing a diverse range of disciplines, approaches, media and technologies. This is a testament to the ongoing rich and exploratory teaching and learning philosophy that underpins these endeavours.

This philosophy was also evident in two recent events on campus, the launch of the “*Little Big Imagination*” Book and the Kaleidoscope Showcase event in Creative Digital Media – in each of these activities our learners were asked to be **imaginative**, to **collaborate**, to use the opportunity to **reflect** on their lives and most importantly we asked them to **share** their final products with family, friends and the wider public. Which they all did with aplomb and panache!

Each cohort representing two important junctures in an Irish educational journey - the first group of learners our 11-12 year primary school children emerging from their first encounter with the formal school system and about to transition to secondary school; and our 4<sup>th</sup> Year Creative Digital Media students having completed all the stages in our formal education system i.e. primary, secondary and tertiary.

However, as I reflected on these two high energy events – I was also struck by the fact that on average 14% of these now buzzing, imaginative, energetic and creative 11-year-old writers will not survive our secondary school system and that the children from lower-socio-economic backgrounds will be 2.4 times more likely to be poor performers. For those that do progress to our sector - Higher Education - the challenges they face are even more formidable. Our children deserve better– in fact all our learners at all stages in their educational journey must remain at the centre of all our endeavours.



So as educators our response must also be **imaginative** (and not to keep doing the same thing over and over again and expecting different results); **collaborative** (you are not alone – bring your subject areas together; team teach and capture the interconnectedness of topics and themes and weave a more exciting pattern of knowledge and competence; **reflect on your experiences** with your learners (did it work? could it be improved?) and **share your practice** with your peers, your students and the general public.

And if you would like to read of some examples of how your colleagues have approached this challenge – then all you have to do is turn the page and keep turning – twenty three contributions this year – set yourself a target to add your contribution next year!

It remains for me to congratulate all the authors for their contributions to this publication – each individual has taken the responsibility to reflect on their practice and respond to the needs of their learners. A timely publication in the history of ITB as we embark on the exciting project of creating Ireland's first Technological University. A Government decision that represents a seismic shift in Irish Higher Education policy – but to be realized will require a shift in our thinking as educators about what we do and why we do it? As Einstein is reputed to have said *"you cannot solve a problem from the same level of thinking that created it."*

Finally, to Daniel, our thanks for his ongoing encouragement and support always welcomed and appreciated and without fail delivered in his own inimitable style!

Many Thanks,

Slán agus beannacht,

*Larry*

Larry McNutt | Informatics and Engineering





## Introduction

It's the end of the world as we know it. Well so say REM. The world of higher education is experiencing change and challenge like never before. Funding to Irish third sector institutions seems to be on a never-ending downward spiral and our global rankings (regardless of value) seem to be following suit. In the US, genuine concerns are being expressed about the survival prospects of several research driven universities. Commentators in the UK have recently asked if a high profile UK university or other third level provider could be the next HMV. Could it happen? For years now the music and film industries refused to embrace change and new technologies until it was almost too late. They held onto old values and failed to change the way they worked while the world around them changed. Can the same be said of higher education?

For hundreds of years, universities and other institutions have been the gate keepers of higher education. But this is changing. Private institutions, open learning communities, massive open online courses, community generated content and the open web all provide rich sources of information for those looking to learn a new skill or study in a subject area. The world around higher education is changing but are we changing with it? Are the classrooms and lecture rooms we teach in every day so different from those of our undergraduate days? A colleague recently commented that 'students no longer have the attention spans of their predecessors.' I disagree. I think students have realised that they don't need someone to stand at the top of a room for the majority of the time and speak to them about a topic that they can 'google'. I believe that the student of today has a higher expectation of how any learning experience should be structured and delivered and rightly so. Students packed in rows for two hours at a time, suppressing body functions while the lecturer at the top of the room asks the students questions to which the lecturer already knows the answer is not anybody's ideal learning experience, yet we engage in it all too frequently.

Change is happening. This document aims to provide some evidence of our ability to recognise and respond to the changing needs of our students and the world around us. This annual report gives us an opportunity to share our innovations, experiences and practices with colleagues. In this issue you will encounter innovations in design thinking, online forums, creativity, online teaching and learning, civic engagement, photos journals, reflective writing, learning objects, flipped classrooms and much more. It's a small sample of the teaching and learning innovation taking place across the institution.

Finally to our cover. Don't shout this out loud but on several Saturdays a year, young children come to ITB to learn about computer programming and have fun while doing it! A recent ITB creative digital media project from year two students, produced a wonderful documentary on the 'coder dojo' movement. Entitled 'Coding the Future' (available on YouTube), it has been watched seventy seven thousand times in its first three weeks online. As part of the documentary, several children are interviewed about their experiences. One of the children, a young girl of nine or ten years of age, proclaimed to the camera that "we do rockets, we do html, we do scratch, we do python". That's a class that I want to sit in on!! In a scene reminiscent of the 'I don't know what a tracker mortgage is' advert of the last decade, one of the digital media students watching the documentary shouted out "I don't even know what python is!" Most watching students seemed aghast that a bunch of children were apparently better at programming than they were and seemed to be having fun.

If you watch children learn, you will notice that their favorite questions starts with 'Why'. Children are great at asking why. As we move forward towards a potential technological university designation, perhaps it is time for us to ask the 'why' question about everything that we do. Why do we have 6 modules per semester, why 60 credits, why do we have two hour lectures, why do we have formative assessment, why do we focus on performance, why do our timetables look as they do, why do we teach in these spaces. The list could go on and on. The important thing is that if any of the answers point to a lack of reasoning or even suggest that its 'tradition', then the why needs to be replaced by another question....'how can we do it differently'. This publication is full of innovations that started with 'why' and answered the question of 'how'.

I hope you enjoy this edition and I would like to express my thanks to all those who contributed to it.

Regards

Daniel McSweeney

**Editor**





## Acknowledgements

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## “Little Big Imagination” Community Outreach Project

**Author:** Niamh O’Hora – Lecturer in Creative Digital Media

**Contributors:** Adrienne Harding, ITB Marketing

The Creative Digital Media second year Visual Communications module aims to introduce students to design process and best practice for print production. Through a structured continuous assessment project, CDM students met with more than seventy sixth class students from St Patrick’s School in Corduff, who kindly shared originally penned short stories with the group.

The creative collaboration between young authors and CDM designers resulted in the “Little Big Imagination” publication of illustrated short stories. Each school child was teamed up with a designer who helped interpret their imaginative stories and character development sketches. CDM students were motivated by their enthusiastic clients along with the prospect of creating a completed product dependant on a collective contribution.

Students with heavily weighted practical assessment on the CDM course were able to further develop existing research and design assets in multiple modules throughout second year. In the Website Design module, the same stories were translated into online narratives available to view along with the original publication @ [www.creativedigitalmedia.ie/littlebigimagination](http://www.creativedigitalmedia.ie/littlebigimagination).



## Fundamentals of Sociology: Photo-Journal

**Author:** Pamela Kelly – Lecturer in Sociology

This continuous assessment was a component of the Applied Social Studies Social Care Degree in year one. The module was Fundamentals of Sociology; the CA was developed in order to meet the following learning outcome.

*“Discuss the construction of social identities with a focus on social class, culture, gender and ethnicity in the context of Irish Society”.*

Anthony Giddens (1989) provides the following general definition of Sociology. “Sociology is the study of human social life, groups and societies. It is a dazzling and compelling enterprise, having as its subject matter our own behaviour as social beings. The scope of sociology is extremely wide, ranging from the analysis of passing encounters between individuals in the street up to the investigation of world-wide social processes.”

As a first year student, the introduction to a theoretical subject and the aim ultimately of the application of theory to practice; can seem like an unattainable goal in the beginning. In order to alleviate some of this stress it is important to employ strategies in CA design to make the complex sociological concepts seem familiar. To give them the tools to make the link between, what they are studying (Sociology) and the society (Practice) in which we all live and work on a daily basis.

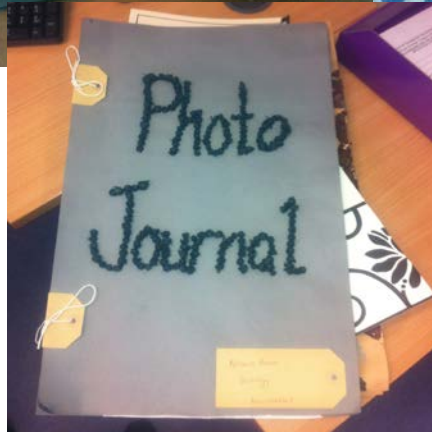
As part of the students CA for this module they were required to create a photo- journal of the following key sociological components.

1. Sub-culture
2. Social Class
3. Gender inequality

Each of the topics listed were to be illustrated in a single photo. The student had to provide a justification for choosing a particular photograph and use external reading from books (only) and reference in order to reaffirm their points made within the document. They were made aware of some of the following important points when taking photographs:

Prior to taking a photograph of a person they were required to do the following:

- NB: Gain their informed consent to take the photograph and explain to them that the photograph will be included in an exhibition to be held in ITB.
- Do not take photographs of children.



The following was added onto the student declaration form:

- I declare that informed consent has been obtained from all persons represented in the photographs submitted.
- I understand that informed consent means that all persons photographed have been informed that they may be included in a photographic exhibition in ITB.

The students exhibited their work in humanities week. The students engaged fully with the course material and performed excellent overall. They were given a detailed 3 page brief and check list. The feedback was given to students in a rubric format. This was an individual assignment.

The feedback from students was excellent with some of the students explaining that “it was a really great first assignment in college and it made college seem easier”. Increasing the confidence of students in their first assignment is very important and this was one of the many aims of this CA.

Giddens, A. (1989) Sociology. London: Polity Press.



## Increasing in-class student engagement using Socrative (an online Student Response System)

**Author:** Paul Dervan – Lecturer in Business Studies

A student response system is an electronic system which allows students to provide feedback and responses to questions in the course of a lecture. Earlier implementations involved students either individually or in teams being issued with a handset referred to as a 'clicker' at the start of the lecture. The 'clicker' communicates with dedicated software running on a PC connected to the overhead projector system. In the course of a lecture, the lecturer can pause and present questions or tasks to the students who then work on them individually or in teams. Using the clickers, feedback and answers are returned and presented visually on the screen where they can be viewed by all participants thus facilitating discussion or debate among the class on the range of answers provided. The lecturer can also assess the extent to which students understand the material based on the answers received.

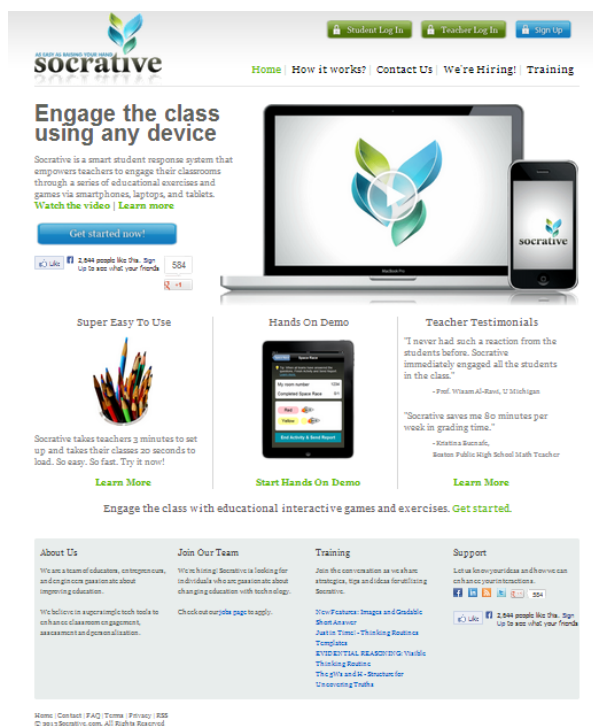


Figure 1: Socrative Home Page

The benefits of using a student feedback system are highlighted in research cited by Dublin Institute of Technology (DIT 2011, p. 3) "Clickers can also provide an immediate source of feedback for the academic and student, rapidly identifying areas of misunderstanding (Morredich & Moore, 2007). Previous publications have cited the enthusiastic response of students towards Clickers (Caldwell, 2007) and also the potential improvements in student learning based on Clicker use (Beatty et al., 2006). More specifically, educationalists who have used Clickers effectively in the classroom have reported improved student interaction (Weerts, 2009), engagement (Mayer, 2009), active-learning, participation, and an increased level of advance preparation (Cook & Hazelwood, 2002) the potential improvements in student learning based on Clicker use (Beatty et al., 2006)"

More recently, free online systems such as Socrative ([www.socrative.com](http://www.socrative.com)) have become available thus obviating the need for a dedicated system using clickers. The Socrative system can be accessed by students over an Internet connection using PCs, mobile phones and Tablet devices. The Socrative system was used by the author in a number of lectures and tutorials delivered to 1<sup>st</sup> Year Sports Management students taking the Contemporary Sports Management Module in Semester 2, Spring 2013.

Lecturers who wish to use the system must first register themselves after which they are granted a 'virtual classroom' with a unique number (which can be changed by the lecturer). To use the system, the lecturer logs in using an e-mail address and a password. It is then possible to present students

with pre-prepared questions or quizzes which they can work on individually or in teams. A particular strength of the system is that questions can be posed ‘there and then’ on the classroom whiteboard in the course of a lecture with students entering their responses to Socrative using mobile phones, Tablets etc.

Figure 2: Teacher Login Page

Students logging in are requested to enter the virtual class number provided by their lecturer. They are then asked to enter a name to identify themselves. Once logged in, they can engage with the question(s) or tasks posed by the lecturer. Based on the author’s experience, it is recommended that individual students (or teams) should be clearly identifiable to minimise abuse of the system through anonymity.

Figure 3: Student Login Page

Figure 4: Sample Quiz Question

## Description of project and experiences

The author used the system in two modes: a) posing questions on a whiteboard and getting students to provide responses during lectures using Socrative and b) using Socrative to deliver pre-prepared quizzes in tutorials. Experiences can be summarised as follows:

### 1. Student Engagement

There was a noticeable improvement in student engagement and students became quite enthusiastic about the use of the system at times requesting that we have a 'Socrative session'. A survey of student perceptions of the system is presented later in this report.

### 2. Technology

The Socrative System proved to be very reliable from both a lecturer and student perspective. There were no issues registering on the system as a lecturer and it was very easy to alter the assigned virtual class number to a six digit number that is easily remembered by the lecturer. (In any event, class number is always displayed once the lecturer logs in). The online help available is very effective.

Students had no difficulty accessing the system from PCs and mobile phones in class. Socrative worked flawlessly in the classroom and there were no login or system problems experienced while the system was being used. The quizzes and questions worked perfectly and were very easy to set up. Of particular benefit is the capability to download an Excel report once a quiz or 'space race'<sup>1</sup> has been executed. This allows the lecturer and students to see precisely where there may be gaps in knowledge or understanding of concepts.

### 3. Additional Comments / Observations

Overall the use of Socrative was very positive and is borne out by student feedback. The benefits derived from use of the system are consistent with research findings cited by DIT (2011) and the author's own research. There are some risks mainly relating to immature students who may seek to disrupt the class by providing inappropriate comments to 'open ended questions'. However, by ensuring there is no anonymity, lecturers who wish to use the system should find that this aspect of the technology can be effectively managed and controlled.

One aspect of the system not assessed was 'Exit Ticket'. This function allows lecturers to take a 'pulse check' at the end of a lecture.

Further research may be useful to establish any linkage between the use of the system and academic performance in exams or assessments. It may also be worth researching any link between the use of the system and improved attendance rates at lectures and tutorials.

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<sup>1</sup> 'Space Race' allows a quiz to be run as a race whereby the on-screen 'vehicles' of individuals or teams advance across the screen commensurate with the number of correct answers that are inputted.

## Outcomes

Sixty Five 1<sup>st</sup> Year Sports students taking Contemporary Sports Management 2 were surveyed in semester 2 week 13 (spring term 2013) via e-mail using a survey instrument prepared using the online Jotform application ([www.jotform.com](http://www.jotform.com)). Prior to circulation, the proposed survey questions were validated using a focus group of six students.

Twenty six valid responses were received (40% response rate). It is worth noting that response rate was enhanced by a request to the Class Representative to publish the survey link on the class Facebook page.

96% of respondents found the Socrative system easy (or very easy) to use while 92 % of respondents agreed that its use had been beneficial to their learning. Queried on the use of Socrative next semester, 77% indicated that they would like to see more (or significantly more) use of the system with the balance of 23% stating that they were satisfied with current usage.

58% of students did not perceive any disadvantages from its use while comments from the balance of 42% indicate that perceived disadvantages include immature students not taking it seriously, making inappropriate comments, wasting time or making useless contributions. One response highlighted the advantage that it allows quieter students to interact without the fear of making 'public' mistakes.

Of particular interest is how students believed the system helped their learning. This information is presented in Exhibit 1 below. Improving engagement during lectures, making lectures more interactive and helping with understanding of course material are consequences of using a system such as Socrative (based on this survey). Responses are not as strong for the system helping the lecturer to understand where students had difficulty and perhaps there is scope for further research/reflection in this specific area.

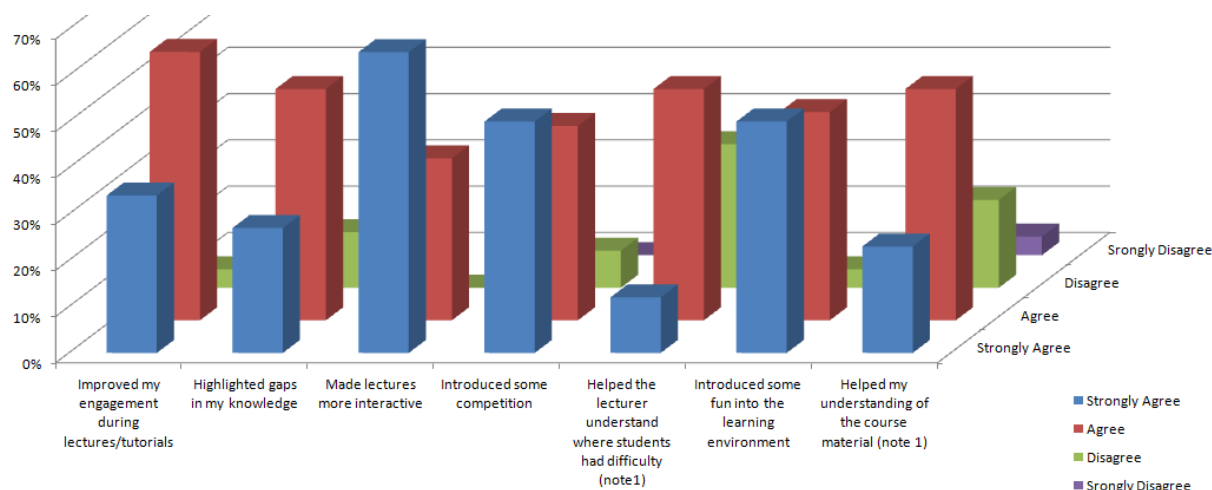


Figure 5 (Note 1: One response missing for these questions)

## References

Enhancement of learning with classroom response systems (clickers) – Lecturer reports and feedback, 2011. *Dublin Institute of Technology*. [Online] Available at: [http://www.dit.ie/litc/media/ditlitc/clickers/Clicker\\_report\\_July\\_2011.pdf](http://www.dit.ie/litc/media/ditlitc/clickers/Clicker_report_July_2011.pdf) [Accessed 05 May 2013]



# Animations for illustrating Matrix Multiplication

**Author:** Damian Cox – Lecturer in Engineering

**Contributors:** Emma Wade, Lecturer in Creative Digital Media

## The Concept

Matrix algebra is a fundamental part of the mathematics syllabus for engineers and technologists. This subject area starts with the fundamental concept of matrix multiplication, around which the whole topic of matrix algebra and its application centres, and then moves on to more involved concepts such as calculating cofactors and then determinants and inverses. These are essentially all calculation procedures, with which the student must become fluent if they are to understand the more fundamental ideas of linear algebra and the application of these ideas to actual problems.

Teaching the basics of this topic is essentially about teaching a set number of calculation procedures. The first and most basic calculation is matrix multiplication. A matrix is a rectangular grid of numbers, and the multiplication of two matrices is done by aligning a row from the first matrix with a column from the second, and then a bit of arithmetic gives one number. This is then slotted into a third matrix, the 'answer'. This is then repeated for every row from the first and column from the second. Other concepts, such as finding the inverse of a matrix, are based around similar alignments of sets of numbers. Most importantly, the application of matrix algebra relies profoundly on this idea; indeed, matrix algebra is designed for its applications. If the student has not grasped these basic definitions, the application will be lost on them.

In explaining these ideas, a lecturer will often be drawing diagrams and attempting to show 'by hand-waving', highlighting sets of numbers and other graphical means, how the rows and columns line up for the calculation, as noted above. There are also videos available on various media to explain these ideas, but they essentially work by the same device of highlighting the relevant lines of numbers to be used, and just filing the results.

## Proposal

Given the importance of alignments of numbers to the fundamental ideas of matrix algebra, it would seem logical that an animated, visual demonstration of each calculation would show the learner what is being done. Multiplication of two matrices could be explained by drawing out the row and column needed for a given calculation from the two matrices, then showing the details of that calculation in the foreground, and finally showing where the result of the calculation goes in the 'answer matrix'. The learner would then see this repeated until the product matrix was formed. This means what should be a simple enough idea can be explained with a minimum of fuss and time, rather than drawing it out with endless hand-waving, as noted above.

## Developing the Objects

The work of this proposal was to develop an animation, in an appropriate format such as Flash®, to illustrate the ‘mechanics’ of matrix algebra. Originally we had proposed to develop a suite of animations, to be explained by the lecturer in class. However, reflecting on how students actually use digital learning objects like this, we quickly moved to the idea of recording a voice explaining exactly what was happening and why, as the animation plays out. Needless to say, once the animation had been created, the bulk of the work (done by Emma!) was the job of synchronising the words with what was happening on screen. The result is an animation explaining clearly and exactly the steps involved in multiplying the two matrices shown on screen.

Using a narration with the animation has also allowed the option of changing the language of instruction. Needless to say English is the language of Instruction of the Institute, however, it may be of some use to a student to see an alternate version of this animation in a language they may be more familiar with. With this in mind, versions have been developed in Arabic, Lithuanian and French, using the voices of the diverse 2013 Engineering Second years.

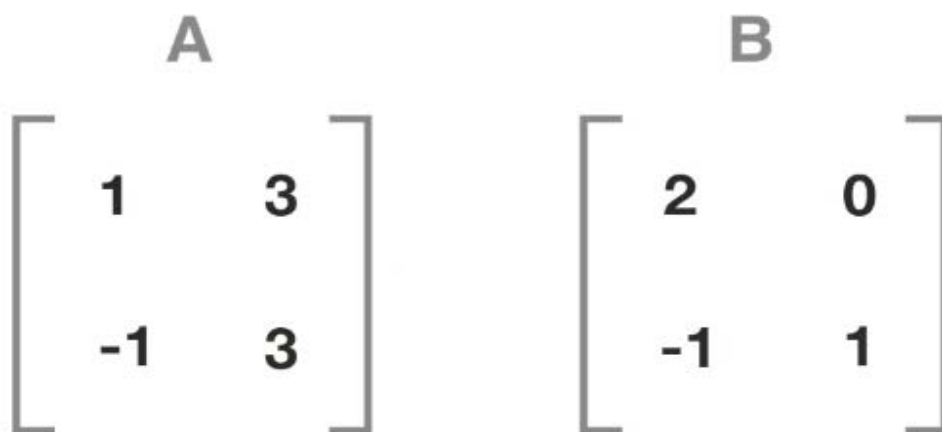

$$\begin{matrix} & \mathbf{A} & & \mathbf{B} \\ \left[ \begin{array}{cc} \mathbf{1} & \mathbf{3} \\ \mathbf{-1} & \mathbf{3} \end{array} \right] & & \left[ \begin{array}{cc} \mathbf{2} & \mathbf{0} \\ \mathbf{-1} & \mathbf{1} \end{array} \right] \end{matrix}$$

Figure 1 – Screenshot from the animation

## Using the animation

The project was to be seen as successful if a visually appealing, straightforward to view, animation is produced and simply offering it to a group of students studying this topic would quickly demonstrate whether the learning objects have achieved this standard. Once a reasonably presentable version was available, Damian Cox started using it in class whenever Matrix Multiplication was to be taught.

The impact has been quite striking, although in one respect it might almost be missed! It now takes very little time to put across the idea of multiplication the first time around, and it takes a matter of minutes to refresh the students memory if the question of how to carry out a matrix multiplication arises again. The animation is available on the Student Share for students to play back at their leisure, and on moodle.

## Lego® Serious Play® (LSP) - Introducing Computer Programming Concepts to 1st Year Business Students

**Author:** Ann Murphy – Lecturer in Business

Lego Serious Play (LSP) is used to encourage creative thinking through metaphors using Lego bricks. As an alternative method for learning, LSP is based on the belief that everyone can contribute to discussion, the decisions and the outcome of a problem or opportunity, by fostering participation and creativity while developing team-building and communication skills.

LSP is an established business development tool used by companies such as Google, eBay, Roche and NASA as an alternative to traditional planning meetings. It is also widely used in both large and small enterprises as a consultation tool in workshops for managing change. LSP invites all participants to take an active part in the process, the common language: the bricks, treats everyone as equals and allows all opinions and suggestions to be heard.

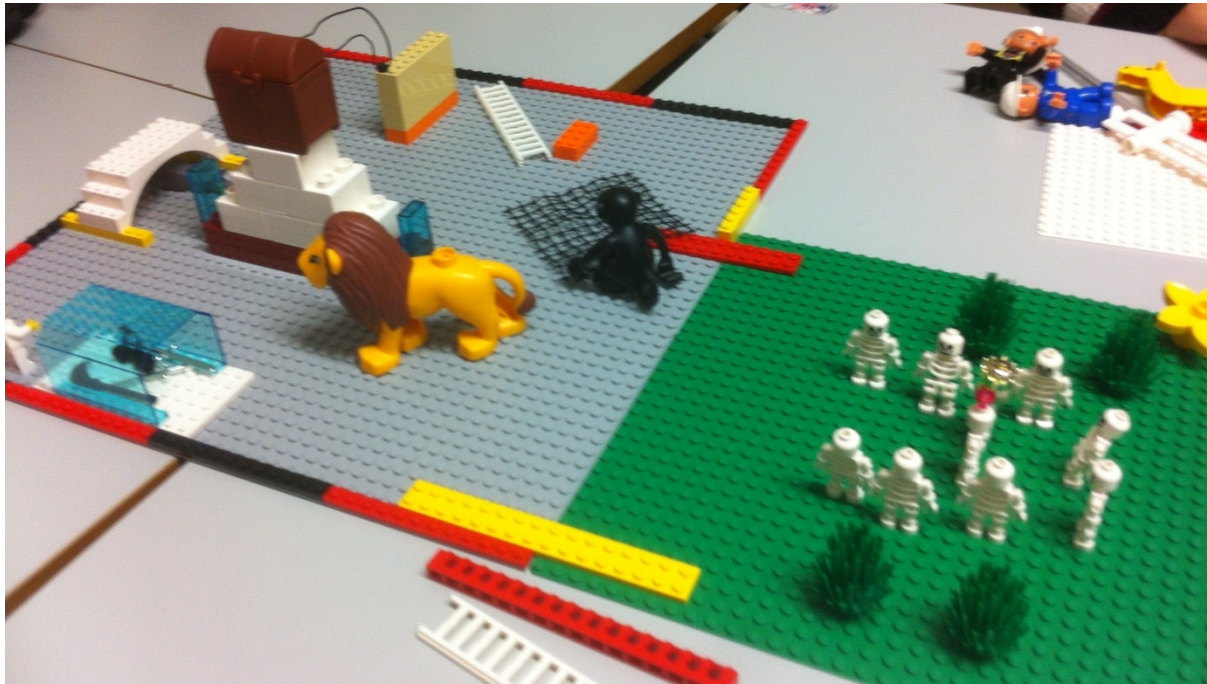
As part of a relatively new module 'Skills for Problem Solving', for 1<sup>st</sup> Year students in Business and IT, LSP has been used to encourage students to engage in creative thinking. The initial workshops are designed to demonstrate that each student is creative, has different ideas and that by amalgamating these, problems can be solved in an inclusive and satisfactory manner. Using the same set of bricks, students are divided into groups and tasked to create new business products and design a marketing campaign to sell their products via a presentation to the entire class group.



Programming concepts are introduced via LSP demonstrations, the students are divided into large groups and required to build an adventure game using Lego, demonstrating their understanding of procedural programming, module creation, local and global variable declarations, decision trees, repetition structures and Boolean logic. Each student takes responsibility for demonstrating the

module they designed as part of the game. In addition, students produce flow charts for each module and for the game as a whole.

The idea behind teaching programming concepts in this manner is to give the students a visual picture of abstract concepts. The games designed by the students were very inventive; all could conceivably be produced as apps at some point in the future. All groups capably acted out their games to their peer group and all reported that they were impressed by the variety of games produced throughout the class.



Anecdotally, students who completed the module last year were appreciably more adept at learning Java programming than those of previous years.

However, the overall feedback from the students was that while the module was enjoyable, they had learned very little and did not see how it related to their course. Hopefully, when they begin programming next year, all will be clear – this is a case where ‘they don’t know what they don’t know’, and find it difficult to evaluate what they have learned in advance of applying their knowledge to programming.



## Community Project for Second Year Horticulture

**Author:** Ciarnad Ryan– Lecturer in Horticulture

**Contributors:** Joe Smith - Lecturer in Mathematics and Landscape Construction  
Brendan Cregan - Horticulture Technician

As part of ITB's Bachelor of Science in Horticulture programme, there is a mandatory 5 credit module in year two titled 'Group Project'. The aim of this module is to develop the learner's collaborative and communication skills while engaged in a design and build horticulture project.

Following on from the success of a much smaller design and renovate project completed last year by first year horticulture students at our local hospital, James Connolly –Blanchardstown it was decided to take on a larger more adventurous task. The hospital management had received a grant from the Irish Hospice Foundation under their Design and Dignity Grant Scheme to significantly improve facilities at the hospital for people at the end of life, for their families and for the staff who care for them. The garden is part of another project which involves the refurbishment of a room in the social care department for patients and their families to spend some time away from the hustle and bustle of the main hospital.

Currently the care of hospital grounds is under resourced with many overgrown and unsightly courtyards and borders within the most heavily used areas. The budget allocated for the garden was quite small- €8,500 and while ITB could provide tools, equipment, expertise and time, it was still necessary to purchase construction materials and plants. As the garden would be used by families dealing with terminal illness, there was a number of priorities identified in the site survey and analysis carried out by the students. The courtyard was overgrown by poor quality evergreen shrubs, badly shaped trees and heavily infested with briars and weeds. All of this had to be cleared, mostly by hand and hauled out through a series of small doorways and corridors with minimal disturbance to staff and patients. The courtyard is overlooked on all sides by three floors of wards, offices and examination rooms and students recognised immediately the need for users to feel some privacy and distance from the rest of hospital's activities. This new courtyard project measured over 400m<sup>2</sup>, about four times larger than their previous hospital project and was understandably daunting to most of the group.

Students were divided into four teams based on their interests, some specialised in hard landscape construction, others focussed on choosing suitable plant material or design and lay-out. The assessment of the module was broken down into peer reviewed group presentations and individual reflective journals. Students were to record weekly progress, taking note of difficulties that arose and then finding solutions to those difficulties.

The entire class was briefed by hospital management and the head of social services who described the circumstances in which people would be using the room and garden. For most students terms like hospice and palliative care were unfamiliar. The students found this session to be very informative and were given the opportunity to ask questions. Knowing more about how the garden should and shouldn't function formed the design basis of garden.

The project architect Ronan Rose Roberts, who had completed a number of schemes for the Irish Hospice Foundation, came to ITB and gave a talk about his own practice and the importance of balanced proportion and using simple materials for this scheme. Ronan also helped each group refine their concept sketches and further tease out creative ideas.

Then the heavy work began, the focus and persistence of each student was impressive. Usually in horticulture practical's, some students tend to hang back from lack of confidence or shyness but working as a group, even the reluctant gardeners get involved. Attendance and punctuality improved, partly because the work was in aid of such a good cause but mostly because they were enjoying themselves. This was evident as students worked extra hours on the project when possible. Where logistical or practical difficulties presented, students were encouraged to find solutions themselves, no reasonable suggestion was rejected. Students negotiated strategies, shared information and supported each other in their work.



### ***Clearing the overgrown vegetation-March 2013***

Their first presentation focussed on site survey/analysis and concept development and students were given a clear set of presentation criteria in a rubric and each group graded the others. Marks and feedback were delivered and explained by the students. A representative from the hospital, Karl Dalton, Environmental Manager attended the first presentation and remarked afterwards that they spend so much each year on consultants and yet there was so much expertise and innovation in our studio.

The hard landscape construction teams surveyed the site accurately to determine the proper levels for the new terrace; they then calculated and ordered the required materials. Meanwhile the planting teams have visited two of the most important nurseries in the country, Tully's Nurseries, Blakes Cross, Lusk and Mount Venus Nurseries in Rathfarnham and met with the owner/proprietors of both. Mr Martin Tully and Mr. Oliver Schurmann to receive advice and guidance on selecting plant material.



### ***Terrace Construction April 2013***

Final group presentations were delivered at the end of semester with marked improvements in confidence and delivery. Clear project records, plans and instructions for completion of the project by the incoming first year horticulture students in semester 1, 2013 have been delivered. It envisaged that the garden will be fully completed in October 2013. Real life worthwhile projects such as this foster a sense of professionalism and pride among our students, they gain an insight into the value of horticulture in the community and also a deeper appreciation of their own skills and capabilities.

## Online degree in Mechatronics

**Author:** Niall Campbell – Lecturer in Engineering

**Contributors:** Chris Murphy, Ivan Smyth, Gareth Curran, Mary Cowan, Derek Kerr & Garret Brady -  
Lecturers in Engineering

### Introduction

Mechatronics is the integration of a number of fields of Engineering including mechanics, electronics, control systems and information technology. Its application is widespread throughout industry and in products from process control systems to engine management systems. There are employment opportunities for a mechatronics technician throughout industry in areas such as process control, automation, quality assurance, emissions control, power generation and product design. The full time degree in Mechatronics at the Institute of Technology in Blanchardstown (ITB) is well established with graduates at NFQ level 7 (BN009) and NFQ level 8 (BN422, formerly BN407) while a collaborative Certificate in Mechatronics (BN903) was established in consultation with Intel and IBM under the Institute Trainee programme.

With the growth in the knowledge economy there was a demand by 2008 for an option to upskill technicians in industry who had left education with a National or Higher Certificate in an engineering discipline. As assembly operations moved to lower cost economies, the focus of manufacturing in Ireland has moved to the higher value added products resulting in the need for degree level graduates. Although in many cases industry was willing to pay for the cost of upskilling programmes, they were in general reluctant to release employees to attend college even on a part-time basis.

In addition to those with a Higher Certificate, a significant number of tradespeople exist who were also looking for the opportunity to upskill so as to avail of any opportunities arising. In the main, those interested in a Mechatronics programme are either electricians or fitters. Employment opportunities in the building sector are reducing and employees in this sector are now forced to seek opportunities in industry.

### Degree structure

Due to an emerging demand, the decision was taken to design a part-time ordinary degree in Mechatronics and to offer it online as opposed to the traditional day release of students. There was already broadcasting facilities available and Moodle had just been introduced at ITB.

The programme was designed around Year 3 of the existing degree in Mechatronics, which is the year that builds on the engineering foundations with the introduction of Automation, Quality, Networking and Product Design. The 12 modules were to be introduced at a rate of 3 per semester.

As mechatronics combines the elements of mechanics and electronics, any student entering the programme with a Higher Certificate would be deficient in one or other discipline, so an accelerated module in each discipline was introduced, one of which was to be taken by each entrant.



Finally to accommodate students with a senior trade certificate (with 3 years industrial experience) an additional maths module, was introduced to provide them with sufficient knowledge and understanding to undertake the remaining mathematics modules.

### Programme delivery

BN306 is an engineering degree and requires students to spend time in the laboratory where practical experiments are undertaken. Although this is primarily an online programme, students are required to attend ITB for three practical days per semester. For the remainder of the programme, lectures, tutorials and assessments are delivered online. A lecture in each module is scheduled and broadcast at a set time weekly, which is recorded and made available for anyone who could not attend or for revision at a time of their convenience.

Many of the students on this programme are manual workers; they install, maintain or deliver services, so their IT skills in some cases are quite limited. With advice from Daniel McSweeney Moodle was made a single point of access for access to all lectures, recordings and course material, [ref Figure 1]. All the lectures are delivered using Adobe Connect, with a link from Moodle to the virtual meeting rooms.

During the student registration night, a practical session ensures that each student can log-on to the system, pick up their emails, and register on the password recovery system. They also experience the online environment with a short lecture. This introductory session familiarises students with the online environment and eliminates many of the usual IT queries.

This programme was updated during the Programmatic Review of 2010 and to provide a better cohesion with the Honours programme in Mechatronics (BN422) it was decided to introduce a module on Microcontrollers. This module replaces Computer Interfacing Technology, offering similar topics but also introducing students to Microcontrollers and to a software programming environment. It retains all the elements of Problem Based Learning (PBL) provided for in the previous module.

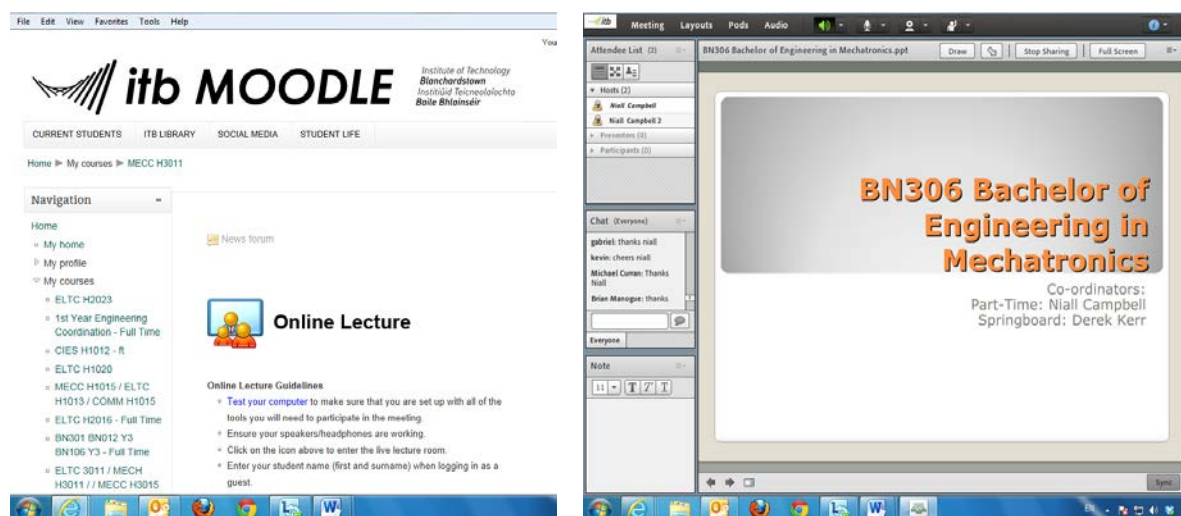


Figure 6 Moodle and Adobe Connect screenshots

## Applicants

This programme was first advertised for entry in September 2008. The initial intake was 13 fee paying students. The numbers registering for this programme has progressed over the following years as shown in Table 1. The student population on this programme now includes a mix of fee-paying and funded students.

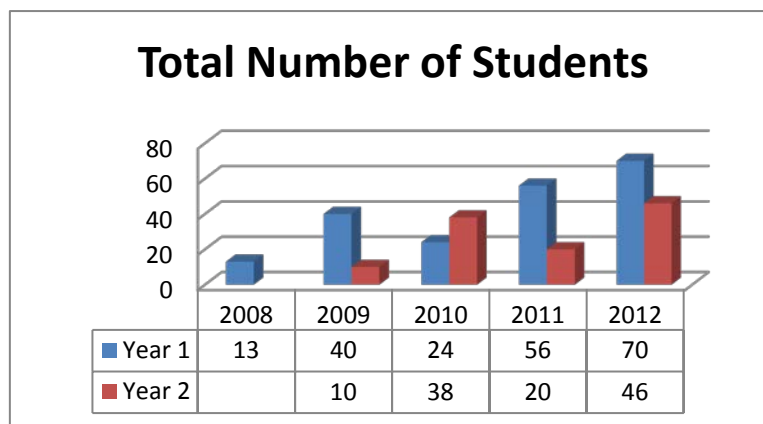


Table 1 Student number registered on BN306

Funding for this programme has come from a two main sources:

- 1) The European Globalisation Fund for the former workers at SR Technics. These students had the equivalent of a Senior Trades qualification and are included in the 2009 numbers. The flexibility of the online programme allowed ITB to accelerate the programme to meet the time requirements to access this funding.
- 2) The second source of funding came from what was initially known as Labour Market Activation but is now termed Springboard (<http://www.springboardcourses.ie/>). BN306 was approved for Springboard funding in 2011 and again in 2012. The criterion for Springboard funding has changed for 2013 so a full programme of 2 years is now too lengthy to attract funding.

As the numbers have grown significantly it has been necessary to amend the programme delivery. While the online aspect remains the same albeit with greater numbers, it has necessitated in the addition of extra practical days held on three Friday's during each semester.

In terms of student eligibility, last year's entry attracted up to 75% of its entrants with a FETAC level 6 (plus 3 years work experience) qualification, up from 30% in the first year. The programme has also seen a number of students successfully gain entry via the Accreditation of Prior and Experiential Learning (APEL) route. These are students with industrial experience who have completed programmes that are not recognise by the NFQ (e.g. City & Guilds) or are specific to their industry.

## Programme Feedback

While student issues are dealt with on an on-going basis by the lecturers, coordinators and the student information desk (SID), which has been of great assistance with password and IT issues, we formally receive feedback at course board meetings. For example following previous feedback we

have added an additional electronics workshop practical in semester 1 to familiarise students with electronic components, wiring and taking measurements. The timely release of exams dates was highlighted by students and this has been resolved through the exams office. Other issues that are currently being addressed include;

- Extra laboratory time for practical subjects on practical days,
- Offsite availability of software packages such as Labview,
- Provision for breaks on a Saturday,
- Satellite exam centres (e.g. CIT, GMIT, IT Sligo ...).

The following represents a snapshot of the views expressed from a request for feedback from those lecturers involved in delivering the modules on this programme.

Many of the students engaging on this programme are returning to education for the first time in many years and as Mary Cowan states *'the speed at which they are fully immersed is a bit of a shock to most of the students'*. Although we provide an introductory session to the IT systems that the students will use, their first week involves the student taking up to four lectures in addition to tutorials. Students first encounter their lecturers in the online environment and without being familiar to them, their peers or the environment, may find it difficult to ask questions or submit queries by email. Currently students do not have an opportunity to meet lecturers and peers until week four, and suggestions have been made that perhaps in future an earlier practical day could be timetabled. Feedback from Derek Kerr would indicate that some consideration might also be given to including a practical session in word and excel to enhance report writing skills.

Many lecturers would feel that the online environment as Ivan Smyth states *'is not as rich as a face to face lecture where the lecturer has the opportunity to read from the students body language whether a point has been successfully communicated or not'*. The online environment does not allow such non-verbal feedback to be ascertained, nor indeed group reaction to be gauged. Despite this all of the lecturers involved, as Gareth Curran has pointed out, strive to use the tools available to make the learning experience *'as similar as possible'* to that of the classroom.

Contrasting delivery styles are evident in this programme with one lecturer pre-recording course material and ensuring that it is available to the students on Moodle. The 'live' session has in this case been converted into a tutorial session with solutions to queries from the students being worked out using the Adobe Connect whiteboard. This allows students to work at a pace that suits them and query any aspect of the material on a weekly basis. Gareth Curran has commented that *'by using this approach I was able to provide not only a recorded lecture where the material was delivered, but also approximately 10 to 12 hours of online tutorial time'*. A student on a programme such as this tends to be fairly well motivated once the material is available and they tend to take on many of the tasks themselves. In every module there is a requirement for a certain amount of self-directed learning (SDL) and Ivan Smyth would feel that *'we need to communicate the self-study hours a course is going to take more clearly to the students'*. Earlier the consideration of extra time for practical lab sessions was highlighted, and in its absence and due to the condensed lab time available Derek Kerr points out that students *'need to be very organised and prepared in advance of the practical days'*. He goes on to state that *'this is a positive experience for the motivated students, but can be a major hurdle to others, sometimes resulting in poor performance'*.

The meeting room in Adobe Connect is an open meeting with students entering as 'guests'. It has been suggested that it would be preferable if students were authenticated when entering the room as this would deter any potential abuse of the system. Issues still exist with the software that needs to be resolved and it is felt by Ivan Smyth that it *'would be highly advantageous to have access to software such as Adobe Presenter to enrich the power-points we use for online lectures'*.

Problem-based learning (PBL) is a student-centered pedagogy in which students learn about a subject through the experience of problem solving<sup>2</sup> and is experienced by students on the full time programmes. One of the modules introduces the student to PBL in the online environment. Due to the nature of BN306, students have very limited time on campus, so they are encouraged to partake in as much online communication as possible. Chris Murphy who lectures on that PBL module states that *'this encourages the students to share knowledge, and helps them to maximise their online learning experience. Students are placed into teams of four, and they have one month to produce a report on a topic only briefly covered in lectures. The main goal of this exercise is to teach the students how to project manage, communicate with team members, manage time efficiently, record progress and make decisions based on same and help other team members in areas of weakness. All team based communication has to be carried out on the modules Moodle forum, where it can be monitored and managed'*. As he concludes, *'my experience over the last two years is that students not only engage but they go above and beyond the requirements...and beyond again'*.

Finally this programme offers a degree of flexibility which is considered to be work and family friendly. The students are not required to miss any time at work, arrange childcare in the evening or travel to ITB and as Garret Brady points out they *'are still available to travel for work during semester'*. This together with the option to view lectures or complete course work at a pace that best fits their own personal circumstances makes for an attractive alternative for many working students. Garret concludes that *'contrasting only the quality of online and full-time delivery seems an incomplete yardstick'*. The programme, in the main, attracts motivated mature individuals who generally strive for and achieve high grades, evidenced by the fact as Derek Kerr has highlighted *'that last year saw 8 students from BN306 proceeded onto the BN422 honours program (online delivery of course)'*.

## Conclusion

As course coordinator I concur with many of the comments made by my colleagues. The variation in challenges faced by lecturers in delivering a predominately online programme may well depend on the level of practical work required in the module that you teach. The projects, for example, require time to be allocated in the Mechatronics workshop and with larger numbers this raises its own challenges. Project materials are provided to the student and thereafter they are left to design and complete their project at home/work.

As this programme grows in popularity, teaching methodologies and technology used to deliver it will continue to evolve. With more demand resulting in more lecturers becoming involved in this on line environment, it is essential that the necessary resources in terms of funding and methodologies are provided by ITB. As part-time programmes are deemed extra to one's core lecture hours, which

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<sup>2</sup> [http://en.wikipedia.org/wiki/Problem-based\\_learning](http://en.wikipedia.org/wiki/Problem-based_learning)



continue to increase, this author feels that they receive less focus than deserved despite the funding they attract. There is a need for wider discussions on online teaching, dispersion of methodologies, investigation of software tools, and staff training within ITB, perhaps in some type of forum or as part of a working group. This would help improve the learning environment for the student and assist any lecturer taking on an online module, for example, a discussion on the IT system would highlight how crucial it is to the operation of such online programmes to have access to Moodle, support for Adobe Connect and the renewal of passwords.

Many thanks to the contributors for their insights into teaching in this online environment. It has been a useful exercise in capturing the thoughts and issues involved. Much of this is discussed informally at ITB, and addressed in the same manner. To allow this environment to develop and to capitalise market opportunities, there needs to be a collaborative focus on the issues involved and in support for online teaching and learning generally.

## Story Sack Presentations

**Author:** Margaret O'Donoghue – Lecturer in Early Childhood Care and Education

**Contributors:** Deirdre McGrath - Course Coordinator ECCE

Joanne McHale - Lecturer ECCE

The project was carried out with third year Early Childhood Care and Education students. The project was part of the Creative Group Facilitation Module which was 100% continuous assessment. Each student chose a children's book and had to design and make a Story Sack in relation to the book. The assessment was broken down into two parts.

### CA 1 50%

Students were asked to:

- Explain the theoretical framework underpinning the benefits of drama conventions with young children
- To carry out a group needs assessment: Age group, (different learning styles of children)
- Provide a description of chosen convention and discuss how they intended to create a plan to meet those needs – i.e. puppet, game or activity
- Make links to theory including -the Aistear curriculum
- Reflection on what they hoped to achieve from the activity

### CA 2 50%

The students visited local Pre-schools and Primary schools and delivered their Story Sack Presentations. Students then had to deliver a ten minute presentation to their class to include:

- Introduction to their convention and why they chose it
- An evaluation of the techniques they employed to ensure successful progression in the children's social cognitive and linguistic education.
- Reflection on their own performance.
- Adaption of activity (how might the activity be adapted to allow for children with special needs or a child who has English as a second language.

Working in pairs, the students were given a well-known story such as 'We Are Going on A Bear Hunt' by Michael Rosen, and then create a sack filled with props and games to bring the story to life for their young audiences. Being part of this initiative strengthens ITB's commitment to literacy and develops our links to other stakeholders in the local community who are interested in promoting literacy in the early years.

Siobhan Walshe of Fingal Libraries said "Fingal County Libraries are delighted to work with the IT Blanchardstown to facilitate the delivery of the Story Sack presentations as part of the BA in Early Childhood Care and Education to local Dublin 15 community crèches and a primary school as part of Fingal Libraries' literacy strategy to give children the best start in life through the use of books as fuel for the imagination and lifelong learning."

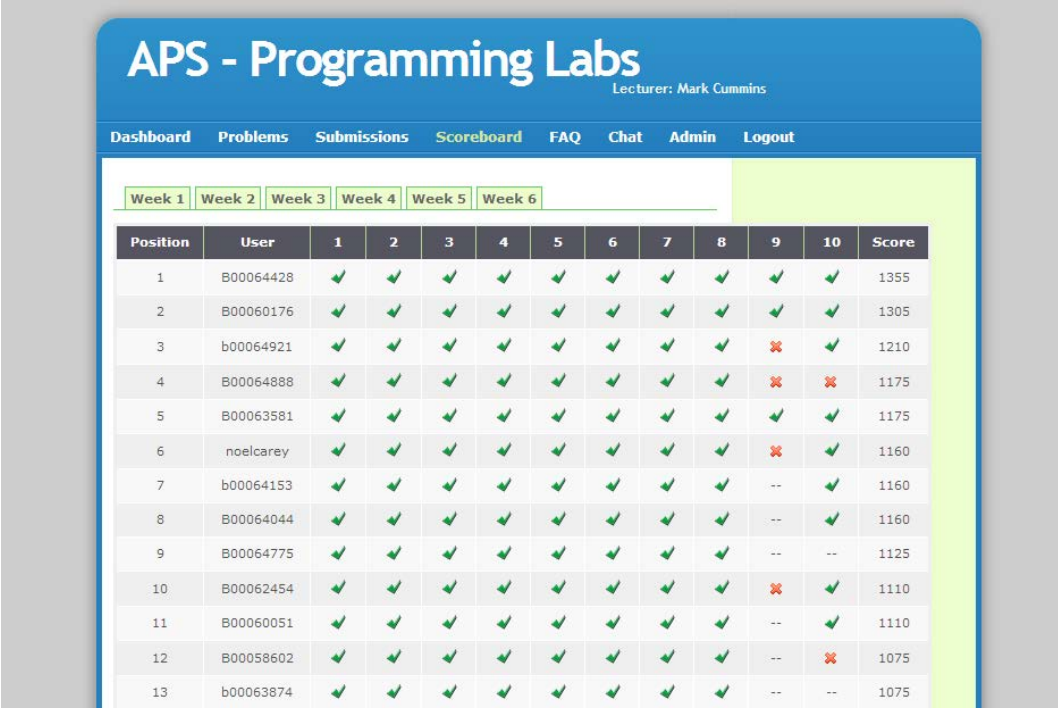
## Online auto grader for APS java programming labs

**Author:** Mark Cummins – Lecturer in Informatics

Most people teaching programming agree that one of the essential elements in learning to code, is plenty of practise. This method however is only effective if the students can get feedback on their progress and coding. This is the problem faced by most instructors, we struggle to provide enough timely feedback, the time needed to correct program code makes it nearly impossible to correct any reasonable number of student programs.

The first semester module, algorithmic problem solving (APS), focuses on teaching first year computing students problem solving techniques. For the second half of the module students are asked to write some small java programs to solve a set of problems. To help provide some instant feedback an auto grading tool and website was developed that would allow students submit their solutions and receive immediate feedback on the correctness of their program output.

Students created an account on the website, were they could see their weekly problem sets and submit their solutions for each problem. The website compiled and tested each submission and gave the student immediate feedback on the correctness of their program output. Students could then resubmit as often as they liked until they correctly solved each problem. The website also featured a basic chat room that allowed students to ask questions or look for help from staff and classmates. All chats remained public so other students could avoid asking the same questions.



The screenshot shows the 'APS - Programming Labs' website interface. At the top, there's a blue header with the title 'APS - Programming Labs' and 'Lecturer: Mark Cummins'. Below the header is a navigation bar with links: Dashboard, Problems, Submissions, Scoreboard, FAQ, Chat, Admin, and Logout. The 'Scoreboard' link is highlighted. Below the navigation bar, there are tabs for 'Week 1' through 'Week 6', with 'Week 1' selected. The main content area displays a table with 13 rows of student data. Each row includes a position number, a user ID, and a grid of 10 columns representing weekly scores. Green checkmarks indicate correct submissions, while red X's indicate incorrect ones. The final column shows the total score for each student.

Position	User	1	2	3	4	5	6	7	8	9	10	Score
1	B00064428	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1355
2	B00060176	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1305
3	b00064921	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	1210
4	B00064888	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	1175
5	B00063581	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1175
6	noelcarey	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	1160
7	b00064153	✓	✓	✓	✓	✓	✓	✓	✓	--	✓	1160
8	B00064044	✓	✓	✓	✓	✓	✓	✓	✓	--	✓	1160
9	B00064775	✓	✓	✓	✓	✓	✓	✓	✓	--	--	1125
10	B00062454	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	1110
11	B00060051	✓	✓	✓	✓	✓	✓	✓	✓	--	✓	1110
12	B00058602	✓	✓	✓	✓	✓	✓	✓	✓	--	✗	1075
13	b00063874	✓	✓	✓	✓	✓	✓	✓	✓	--	--	1075

Over the course of 6 weeks, each student was asked to complete 42 compulsory problems as part of their CA. 9 more challenging and optional problems were also available for any students looking for an extra challenge. (These problems did not count towards each student's CA grade). To create a competitive element, each problem had a weighted score and the website displayed a full leader board of all submissions. Random selections of final submissions from each student were manually reviewed for program design quality (indentation, commenting, etc.)

Leaderboard	
B00064428	1355
B00060176	1305
b00064921	1210
B00064888	1175
B00063581	1175

A simple backend allowed the lecturer to view all original submissions, compare for plagiarism, and set the dates during which each problem set was viewable and also set the submission dates. For this student group all submission were through java but the auto grader tool allows us to correct submissions in php, python, C/C++ and java.

At the end of the module students were asked to complete a questionnaire on their experience using the website and auto grading tool.

#### Some of the website statistics at the end of the 6 weeks:

- 116 students registered and attempted some problems on the website.
- 72 students attempted at least one of the optional challenge problems.
- The auto-grader processed a total 6991 submissions.



- 28% of total submissions occurred during the students lab slots.
- 58% of all submissions occurred between Friday 6pm and Sunday midnight.

### Highlights from the student feedback questionnaire (86 respondents)

- 92% said they enjoyed using the website.
- 92% said the instant feedback and website helped with their java programming.
- 95% felt that they spent more time than they normally would on their programming. (The desire to complete a problem, instant feedback and the leader board were the top reasons mentioned by students)
- 87% of respondents agreed that the website chat feature was useful for getting quick help from the lecturer and other students. (21% asked for a private chat feature, all website chat is currently public)
- The main issues mentioned by students, included the initial learning curve in formatting their code so it worked with the auto grader software and having to match the exact output.

APS programming lab website: <http://exploringsecurity.com/aps/coding/>

**APS - Programming Labs**  
Lecturer: Mark Cummins

Dashboard Problems Submissions Scoreboard FAQ Chat Admin Logout

**Programming Labs have ended**

**Winner**  
B00064428

**Submission Statistics**

Week 1 Week 2 Week 3 Week 4 Week 5 Week 6

Problem	Correct	Total
1	97	305
2	92	225
3	94	124
4	88	362
5	86	151
6	80	241
7	73	165
8	77	144
9	23	155

**APS Labs over**  
00:00:00

**Details**  
Admin 90

**Leaderboard**

B00064428	1355
B00060176	1305
b00064921	1210
B00064888	1175
B00063581	1175

## Online discussion topics to support theory to practice during practice placement

**Author:** Joanne McHale – Lecturer in Early Childhood Care and Education

**Contributors:** Lecturing staff from the Department of Humanities: Deirdre McGrath, Margaret O'Donoghue, Colette Murray, Deirdre Bonar, Rachel Rodgers & Denise Lyons.

ECCE 2<sup>nd</sup> year placement runs as a block for eleven weeks from early October to late December during which time students must complete 330 hours of supervised placement. It is supported through supervision on site and supervision visits from ITB staff. One of principle learning objectives of placement is the development of the students' ability to make the links between the theory covered during modules in first year and the practical aspects of working in an early years' service. To support this, we set up a system of online threads on Moodle with weekly topics on which the students were required to comment based on their experiences on placement. This was assessed as part of their placement project. Each week over the eleven weeks, a new topic was added and each student was required to participate in ten out of the eleven total posts.

Initially, they were given clear guidelines on netiquette and acceptable behaviour in relation to confidentiality.

This project was piloted in our first year of student placements in 2011 and repeated in semester one of this academic year. Over the course of the placement students engaged with the required one post per topic.

This academic year saw our first group of 3<sup>rd</sup> year students on placement. Having used the forum on Moodle last year with them when they were on their second year placement, the requirement in third year was different. We had had the forum available and created a number of posts, but their participation was not mandatory. They also had the opportunity to create their own discussions based on experiences they had on placement.

In general, the 2<sup>nd</sup> year students engaged well with the process with the majority commenting on all the minimum required posts. A number of students not only made the required comment but extended their participation to commenting on each other's posts, adding thoughts and suggestions, creating a community of practice by which they were learning from each other's experiences and developing their own reflective practice. In the 3<sup>rd</sup> year placement, posts were not mandatory and not all students engaged in the process, but a number did and their responses showed more depth of consideration of the topics posed. The option of creating new discussion topics was also introduced and a number of students made contributions in this regard.

In terms of feedback and evaluation from students, some commented that they found the weekly deadline tough but all acknowledged that it helped to maintain the link with the theory and focused their attention on certain aspects of their practice on a weekly basis, often giving them ideas for activities or observations in which they could engage. They also commented on being able to have some perspective on their peers' experiences, particularly in an eleven week block, where they could otherwise feel quite isolated. One student expressed concern about the forum being public to all placement students, though this was an isolated comment and would potentially defeat the purpose of the discussion.

From the academics' perspective, it provided an insight into the experiences that students were having on placement. In the two placement blocks in which this process has been utilised, each academic has graded the students under their supervision. The possibility of each academic assessing a topic rather than specific students across topics is under consideration for future placements. This should make the grading of the students more streamlined. Encouraging the students to participate in a discussion rather than just responding to the minimum mandatory number of posts will be a focus of future placements.

# Creation of Learning Object to Support Creative Digital Media

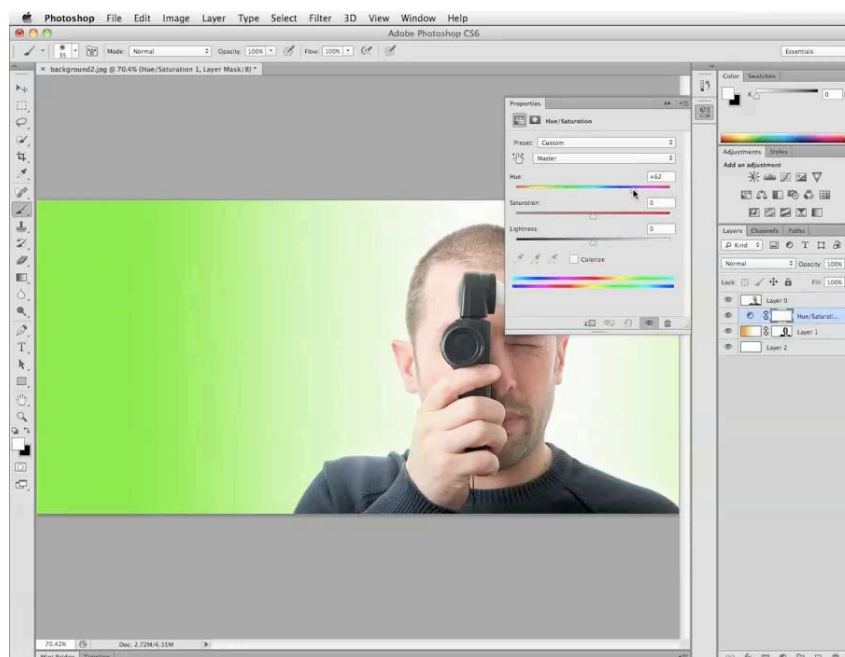
**Author:** Stephen Sheridan– Lecturer in Informatics and Creative Digital Media

## Description of initiative

This project is a continuation of a previous funded NDLR project where 50+ video tutorials were created for the Adobe Photoshop CS4 software application. The tutorials created as part of this project have become an integral part of the teaching material for the Digital Imaging module on the Creative Digital Media degree in the Institute of Technology Blanchardstown. The video tutorials provide learners with the opportunity to view and review Photoshop topics offline and out of class time.

The plan for the second part of this project was to add approximately 25 video tutorials to the already existing 56 in order to cover some of the recent technology that Adobe has introduced since Photoshop version CS4 and to cover more advanced topics.

As in the previous project, most of the videos are approximately 10 minutes in length and cover a specific Photoshop topic , tool or function. A small number of the videos are approximately 20mins in length due to the advanced topics being covered.

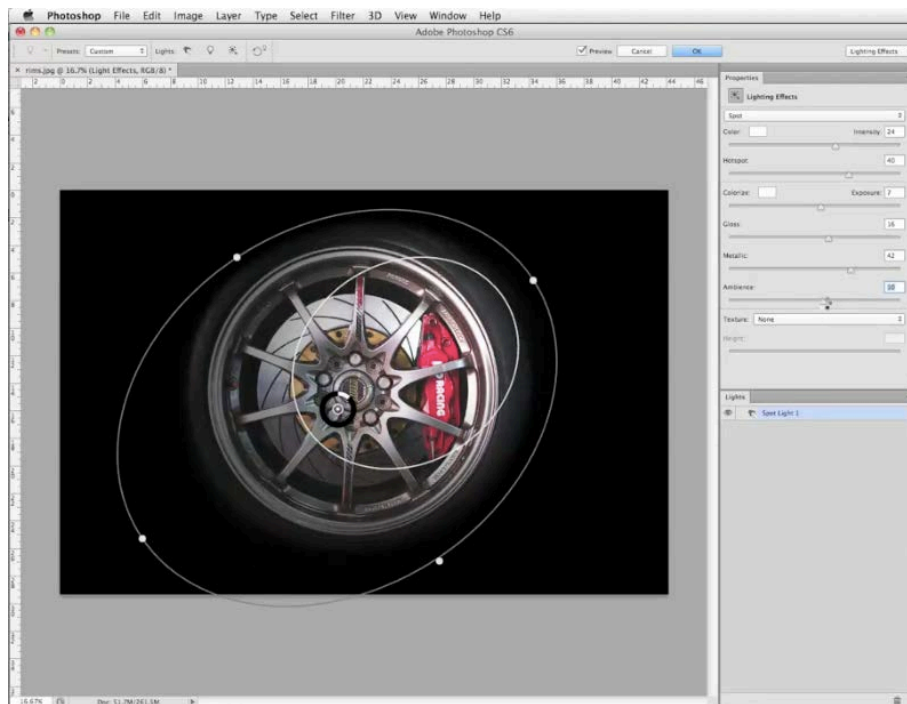


Once again the idea behind the video tutorials is to give the students a set of resources that they can return to when completing continuous assessment or project work. Each of the topics covered in the video tutorials are also covered as part of the normal class work. Students are walked through the tools and techniques in class and the videos are used as a revision resource.

All of the sample images used in the video screencasts have also been made available to the students so they can download the images and follow along with the videos to practice the associated tool or technique in Photoshop.

## Description of project and experiences

Creating video tutorials that are based around a software package such as Adobe Photoshop is a challenging task as the software is constantly evolving and improving. Photoshop is a complex and powerful software package in which a single task can be performed in a number of ways. Therefore, it was important to ensure that the content for each video was fully researched and the techniques and tools covered were appropriate for the given topic. Although some of the videos created are approximately twenty minutes long, it was important to endeavour to keep the duration of each video to approximately ten minutes in order to make the time investment for students attractive.






























The video tutorials developed in phase one of this project concentrated on basic building blocks and tools such as Graphic file formats, Layers, Selections, Layer Masks, Adjustment layers and Photo enhancement. These lessons had quite a linear progression in order to step the student through the necessary skills needed to progress to more advanced Photoshop topics. As stated earlier, Adobe released a number of new versions of Photoshop since the creation of the first set of video tutorials, so it was important to cover some of the small differences between versions and new features before proceeding to the more advanced topics. The first ten videos developed as part of phase two of this project cover the new Photoshop CS6 User Interface and topics such as the New Crop tool, Content Aware Tools, Blur tools and new Filters. The rest of the videos created are more modular in nature and allow the student to dip in and out of more advanced topics such as Hair extraction and selection, Portrait retouching, Liquify filters, and advanced rendering filters (Lighting, Clouds, Fibres).

I found the research and development of the second set of video tutorials very enjoyable and it is hugely beneficial for me to have a large number of learning objects that students can be directed towards for further practice and revision.



## Outcomes

A total of twenty-seven video tutorials have been created along with the same number of practice images so students can follow along step by step

	DI_Session57_Effects_BW_Gradient_Map.mov
	DI_Session58_Effects_White_Background_Cleanup.mov
	DI_Session59_Effects_HDR_Grunge_Look.mov
	DI_Session60_CS6_Interface.mov
	DI_Session61_CS6_Crop_Tool.mov
	DI_Session62_Content_Aware_Move1.mov
	DI_Session62_Content_Aware_Move2.mov
	DI_Session63_Camera_Raw1.mov
	DI_Session64_Camera_Raw2.mov
	DI_Session65_Field_Blur.mov
	DI_Session66_Iris_Blur.mov
	DI_Session67_Tilt_Shift_Blur.mov
	DI_Session68_Oil_Paint_Filter.mov
	DI_Session69_Hair_Selection.mov
	DI_Session70_Changing_White_Background.mov
	DI_Session71_Changing_Black_Background.mov
	DI_Session72_Creating_Backgrounds.mov
	DI_Session73_Subtle_Portrait_Retouching.mov
	DI_Session74_High_Pass_Filter.mov
	DI_Session75_Studio_Look.mov
	DI_Session76_Liquify_Filter.mov
	DI_Session77_Selective_Colour.mov
	DI_Session78_Photomerge.mov
	DI_Session79_Clones.mov
	DI_Session80_Out_Of_Bounds.mov
	DI_Session81_Clouds_Fibres_Flares.mov
	DI_Session82_Creating_Watermarks.mov

## Student experiences

As part of this project the 2012 intake of Creative Digital Media first year students were surveyed in order to get some feedback on the usefulness of the video tutorials created in phase one and two of this project. The following is a sample of the feedback given:

### ***Good / Bad points:***

Very interesting and enjoyable. Learn key skills. Good teaching method and good class times.
The videos you have made explaining how to use certain tools in Photoshop is a great help! Maybe a few more videos showing the tools we would use in a certain lab you have given us and in an assignment. Explaining how to do the lab work in class is also such a great help.
I have learned so much about Photoshop this semester! The course content is great, and the supporting videos are really useful, especially when it comes to revision.
I have learned so much about Photoshop this semester! Great lecturer. The course content is great, and the supporting videos are really useful, especially when it comes to revision.
Could be more in depth with selection methods such as hair selection on a colour background and how to effectively use the refine edge tool.
Would have liked to have more information on effects or at least a link to tutorials on various effects before attempting the assignments.
The hands on, watch and then do is a perfect way of learning for me. As a result I found it easier to grasp the concepts.

### ***Suggestions for improvement:***

Could use more difficult sample images in labs for selection methods and healing/retouching methods.
More detailed hand out sheets showing how to do the lab, would also be helpful along with the videos, Because it can be difficult trying to change from the video to Photoshop, video to Photoshop.
While understanding the lack of time to cover every single effect on Photoshop, links to website tutorials would be very helpful.
Would have liked to have more information on effects or at least a link to tutorials on various effects before attempting the assignments.

## A Reflection on Reflective Journals

**Author:** Tom Mulvey– Management and Business Subjects

### Description of initiative

Reflective Journal writing was piloted this semester (2nd semester 2012/3) in my Operations Management 2 (OM2) module with 3rd year General Business students. A 30% CA was built around the Reflective Journal which was progress checked in week 5 with final submission in week 8. Learners were asked to document their questions, reactions, thoughts and insights relating to OM2 concepts, frameworks and application contexts.

In the previous semester I used a similar structure for a Reflective Journal CA with 3rd year Sports students. Gary Bernie (ITB Lecturer) gave me very helpful material and guidance regarding the use of Reflective Journals as an assessment technique. Based on my positive experience with the Sports module I decided to adapt Gary's material and re-designed it for the OM2 context. Again I was very pleased with the positive outcome and results from the General Business students.

### Positives

Active learning and engagement improved dramatically. Positive and genuine participation during the lectures and workshops/tutorials became a constant feature of OM2. Previously participation was never as active or consistent and mainly came in sporadic bouts revolving around CA submission dates and in-class tests.

The Journals have also acted as an effective feedback mechanism from the learners to the lecturer in a rich and meaningful manner. Our traditional Quality Assurance (QA1) forms rarely capture this level of feedback which is readily available via these Journals. I was able to get a real sense of the topics within the module that students struggle with and then address these concerns before the conclusion of the module.

However the QA1 forms certainly demonstrated the strengths of Reflective writing as the vast majority expressed their satisfaction and appreciation with this CA technique which they had never experienced before. The students commented that although the journals demanded consistent hard work to make weekly entries they benefited by gaining a much deeper understanding of the material. They also claimed that they felt much better prepared for their OM2 exam because of the attention they paid to their Reflective Journals.

There were no complaints about CA overload as the Reflective Journal equated to one major assignment to be submitted in week 8 rather than two or three smaller assignments to be submitted at various stages during the semester.

## Negatives

After submission in week 8 there was certainly a discernable fall off in engagement. I had considered making the submission date later to avoid the inevitable fall off but for a 30% CA I believed 8 weeks was sufficient. Additionally it gave me an opportunity to identify any common areas of concern which I could address before the end of semester.

I requested that the Reflective Journals be completed in hand-writing on hard-back notebooks. There were positives (less cut & paste) and negatives (storage and handling) so my preference for future Reflective Journals will be electronic upload through Turnitin.

## An evaluation of the use Student Led Seminars in Module Delivery

**Author:** Ann Murphy – Lecturer in Business Studies

As part of the assessment requirements for their E-Business module, third year students of Business with IT, were required to take part in a series of Student Led Seminars.

The Student Led Seminar has been designed to promote the students ability to demonstrate evidence of individual academic research, group liaison, presentation skills and critical assessment on their individual and group interactions. Students were advised that synthesis with current business examples would be expected as part of their research.

Following a series of introductory traditional lectures, students were allocated to a group tasked to cover a specific topic in key E-Business issues. The topics were E-Business Security, E-Payments, E-Supply Chain Management, E-Procurement and SLEPT (Social, Legal, Ethical, Political and Technical) issues. Each group consisted of three to four members.

Students presenting within each topic area were expected to structure and self-manage their academic research with each individual taking responsibility for his/her own learning and research. This deliverables for assignment were:

1. A group presentation and individual research paper based around specific agreed aspects of the topic.
2. An individual reflection, based on Gibbs Reflective cycle, on the students own research.
3. A document reflecting each student's response to two of the weekly presentations

Within the class context, students were supervised, directed and facilitated to general areas that might be useful in conducting their research, being advised that the 'lecture' from their group must be structured so that no repetition of material among presenters occurred. In addition, no notes or cue cards were allowed.

The topic presentations were scheduled to take place within the scheduled class timeframe. All student presentations were videotaped and restricted to a 12 minute time limit, followed by a question-and-answer session. Each presentation was evaluated by the lecturer and by peer review, with the students not involved in the lecture completing an evaluation form on both the individual and group presentation, the results of which were compiled and made available to the individual students. Following each Student Led Seminar, a traditional lecture complementing the specific areas was delivered. The videos were compressed and uploaded to Moodle facilitating each student to critically evaluate their own performance.

Feedback from the individual reflections are summarised in the bullets below:

### From the Individual Perspective

1. Compared to presentations, which students had to deliver previously, students felt that the SLS involved the presentation being delivered to the audience as a whole, i.e. fellow students, not just the lecturer.



2. Very difficult to prepare a lecture, much more comfortable to sit and listen to someone else
3. Videotaping the presentations provides an unrivalled individual learning experience
4. Nerves can destroy confidence, so preparation and practise is really important
5. The presentation feedback form provided a unique insight to the perceptions of other students
6. The amount of material available far exceeds the requirements set, attempting to synthesise and present the material coherently was very difficult
7. While daunting, the prohibition of notes or cue cards actually improved presentation skills
8. Evaluating other students performance is a great learning experience for what to include or avoid in your own presentations

### From the Audience Perspective

1. The pace of most of the presenters was too fast
2. Audience interaction is critical, each member of the audience needs to feel engaged with the person delivering the seminar, this can be achieved through
  - a. Eye Contact
  - b. The design of the slides which is of paramount importance
    - i. too much text reduces audience interest
    - ii. graphical images and real world examples are essential to involve the audience
3. The individual level of interest in the topic is enhanced by appreciating the effort that each group had to put into preparing their seminar material, and preparing questions at the end of each presentation
4. There is no substitute for extensive preparation and practise – Lack of same shows.

Overall, from a lecturer standpoint, while this type of assessment creates a great deal of work in terms of reviewing the presentations and research papers, editing and uploading the videos and evaluating both the individual and peer feedback, it proved a very worthwhile exercise. Students are now acutely aware of the issues involved in the preparation and delivery of academic material.

The quality of the individual presentations was universally excellent; the students testified that they had learned a great deal and had gained a significant increase in their confidence levels for engaging in public presentations.

# Mechatronic Engineering Online: a reflective report

**Author:** Philip Owende - Senior Lecturer in Mechatronics

## Introduction

Online education has been accepted as a major and viable component of higher education; hence, online engineering education programmes and modules, offered at different levels of qualification are increasingly becoming available<sup>3,4</sup>. However, undergraduate engineering education has notably lagged behind in adopting online methodologies, arguably since some of the special needs such as laboratory work which is pivotal in engineering education curricula and mathematical foundation and engineering design/analysis tools have not been well served by online delivery methods<sup>5</sup>. Future viability of online undergraduate engineering education programmes (compared to current delivery methods) may be in key performance indices such as<sup>3</sup>; learning effectiveness, learner satisfaction, staff satisfaction, access and cost effectiveness. Attributes of quality, scale, and breadth are also important, e.g.: quality must be comparable to or better than learning experience gained in face-to-face lecture rooms; courses should be available when needed and accessible from anywhere, and by a wider range of learners, and; topics across a broad range of engineering disciplines should be available.

This reflective report articulates personal experience in online teaching over the academic years 2011-13. It describes how perceptions of online teaching have evolved, and outlines indicative plans towards embedding the application of technologies to teaching of Mechatronic Engineering modules at ITB. The experiences discussed are part of the Department of Engineering's initiative towards further development of online modules for the undergraduate Mechatronic Engineering programme.

## Overview of personal experience

### Looking back

At the beginning 2011-12 academic year, I was assigned two modules for online delivery in the Part-time mode of the BEng (Honours) in Mechatronics, which is offered predominantly to industry-based students. The modules included Control Systems (highly mathematical with practical/laboratory content) & Sustainable Energy Systems (incorporating software based energy systems modelling/analyses content). The range of constituent modules in the programme can be found at <http://courses.itb.ie/index.cfm/page/course/courseId/139>. Initially, I felt quite deficient in the impending demand for development and/or transcription of the module contents from traditional

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<sup>3</sup> Seat E, JR Parsons & WA Poppen. 2001. Enabling Engineering Performance Skills: a programme to teach communication, leadership, and teamwork. *Journal of Engineering Education*, **90**(1): 7-12.

<sup>4</sup> Stanford Engineering Everywhere. 2012. online portal offering ten courses from Stanford's School of Engineering <http://see.stanford.edu/see/about.aspx> <accessed 20/02/2012>

<sup>5</sup> Bourne J, D Harris & F Mayadas. 2005. Online Engineering Education: Learning Anywhere, Anytime. *Journal of Engineering Education*, **94**(1): 131-146.

face-to-face lectures to sets of coherently sequenced and reasonably interactive lecture material to suit online delivery. Specifically, I was uncertain of the compatible online learner support strategies and course management techniques. I was also uncertain of the different approaches to developing and maintaining timely response to typical problems that may be encountered by learners from different backgrounds, and who would be expected to access my course contents in both synchronous and asynchronous sessions throughout the semester.

## Lesson Learning

A notable challenge in the initial interaction with my online classes was to determine how to motivate the class to; enhance inquiry skills, acquire pre-dominantly self-directed learning skills, and engage in learner-led peer-to-peer consultations. This need arose from the first few assignments that I had administered and which prompted a flurry of email queries from the students that seemed to indicate that the majority in the class had misjudged at enrolment, the depth of research/inquiry and personal motivation towards independent learning that was required. Arising from this, I had wondered if effective online learning required a unique hybrid of learner attributes.

As a novice online instructor, I also wondered what specific learner support I needed to develop in order to prompt learner engagement with content on regular basis, at the same time to be able to respond to learner queries in a near-synchronous schedule. After delving on available material and guidelines on how to manage online learners, I realised that the problems I had just encountered that far, were well recognised in online teaching & learning communities of practice. Some learner management strategies in respect of obtrusive learners are well articulated in available online teaching resources. Overall, drawing from my personal experience in the preparation and delivery of the two online engineering modules mentioned earlier, Open Education Resources (OER) offer access to a broad range of quality expertise and content that can be customised according to need. Ability to locate online didactic resources, and specific examples of digital repositories and current open resources initiatives were invaluable references.

Subsequent realisation that renowned tertiary education institutions (*viz.*, Stanford University<sup>6</sup>, MIT<sup>7</sup>, Yale, UNSW, UC Berkeley, etc.) have made significant investments on OER therefore, a firm pointer to the future direction of higher education both locally and in the global perspective was particularly motivating. However, awareness of copyright issues; hence, a need to adopt a more cautious approach to integration of OER in teaching is extremely important. Criteria for evaluating online resources, i.e., authority, objectivity, currency, relevance and reliability are compelling, and arguments well supported in literature.

It is obvious that the success of any online course is contingent on development of comprehensive contents to support both individual and collaborative learning. Exemplar tools for collaborative learning are available and alluring (see an example: [Promoting Creativity & Collaboration in Your Classroom with Google Docs](#)). The concept of learning without borders recognises the importance diverse platforms for learning in the digital age and how to embrace any changes that support

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<sup>6</sup> Stanford Engineering Everywhere. 2012. online portal offering ten courses from Stanford's School of Engineering <http://see.stanford.edu/see/about.aspx> <accessed 20/05/2012>

<sup>7</sup> Coughlan S. 2012. MIT launches free online 'fully automated' course. Education & Family, BBC News 13/02/2012. Available at <http://www.bbc.co.uk/news/education-17012968> <accessed 20/02/2012>

learning (e.g., mobile gaming, social media, open source and other digital platforms)<sup>8</sup>. The inherent potential for creativity, if well developed and managed, could address the fundamental soft/transferable skills deficiencies that have often undermined the competences of engineering graduates and was particularly attractive. Potential applications include; communication skills (viz., technical writing & presentation skills, and social and business context interaction with peers and the society at large) and the handling of broad range of ethical issues and dilemmas that may present as case studies for *Engineering Practice*.

### Indicative roadmap for Mechatronic Engineering Online at ITB

In the integration of online resources to teaching:

*“You are not contributing to the last word, you are not delivering the final summan on the contents in your unit. What you are delivering is something much challenging and intellectually stimulating, which is; questions, point of view, challenges and provocations, and maybe content through which you weave all the material that is available online”.*

Prof. Matthew Allen, HoD Internet Studies, Curtin University

#### What do we need to know?

Firstly, pedagogical technology selection should be primarily *Learning Outcomes* driven, and also be capable of fostering a robust digital literacy culture among the learners (especially communication skills based on shared values) which is also deemed to be key to enterprise and innovation<sup>9</sup>. Technology-based learning resources appropriate for engineering programmes require the capability to handle graphic and numeric aspects of fundamental principles and concepts. Table 1 provides a synopsis of how online delivery can augment the underpinning competency framework.

In the continuing development and rollout of online delivery in Mechatronic Engineering at ITB, compatible research questions that will need to be addressed are as follows (among others):

- (1) Available evidence suggests that online delivery will be a core activity, and will only continue to expand into the future. But:
  - (a) What are the realistic face-to-face sessions required to optimise learning, cost and learner satisfaction? Are the three sessions available in the current schedule adequate?
  - (b) Otherwise, how can the face-to-face sessions available in the current schedule be utilised more efficiently?
- (2) On the deployment of different pedagogical methods;
  - (c) What are the best ways to utilise constructivist approach to delivery (*vide*, teamwork, shared of workspace, investigation, compilation/build & presentation) in order to enhance learning?
  - (d) What are the optimal ways of assessing the delivery modes' influence on achieving the designated learning outcomes for the competency framework outlined in Table 1?

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<sup>8</sup> LWF. 2012. [www.learningwithoutfrontiers.com/about-us/](http://www.learningwithoutfrontiers.com/about-us/) <accessed 20/02/2012>

<sup>9</sup> Adhikari A. 2011. Universities must rethink their approach to student digital literacy. [The Gardian Higher Education Network](http://TheGardianHigherEducationNetwork.com) <accessed on 16/02/2012>.

- (3) It has been argued that, better understanding of course contents is more likely to develop when learners engage in analyses, evaluations, interpretations, simulation, and explanation of theories and concepts related to course contents<sup>10,11</sup>. But;
- (e) What type of assessment strategies could enable learners to keep up with course content by providing valuable *formative feedback*?
- (f) What type of assessment techniques can be used most efficiently for methodical identification of any underlying misconceptions by learners?

**Table 1. Potential added value in online delivery of Mechatronic Engineering Programmes**

ENGINEERING PROGRAMME OUTCOME/COMPETENCES <sup>12</sup>	POTENTIAL VALUE ADDED BY ONLINE DELIVERY
(a) Knowledge and understanding of the mathematics, sciences, engineering sciences & technologies underpinning particular branch of engineering.	Availability and exposure to real problems (with OER realistic/reusable learning objects) & unique case studies is expansive.
(b) The ability to identify, formulate, analyze & solve engineering problems.	Readily accessible knowledge & state-of-the-art technology to gain problem solving competencies, hence, capability to generate innovative solutions.
(c) The ability to design components, systems or processes to meet specific needs.	Possibility to work in geographically distributed design teams, and with relevant industry participation, can enhance learning experience.
(d) The ability to design and conduct experiments and to apply a range of standard & specialized research tools and techniques.	Access to remote resources & expertise that ordinarily would be unavailable, can aid improve experimental design and analytical skills.
(e) Understanding of the need for high ethical standards in the practice of engineering, including the responsibilities of the engineering profession towards people & the environment.	Access to a wider range of case studies involving specific ethical issues, coupled with relevant expertise could enhance understanding and handling of ethical dilemmas.
(f) The ability to work effectively as an individual, in teams and in multi-disciplinary settings, together with the capacity to undertake lifelong learning.	Although outcome (f) deals with 'soft/transferable skills', developing a true multidisciplinary setting as part of undergraduate engineering programmes has been a key challenge. Online methods can more easily develop multidisciplinary projects without geographical boundaries, to achieve unique learning experience and at minimal cost.
(g) The ability to communicate effectively with the engineering community & with society at large.	Online delivery infrastructure is based on a wide range of media that can foster proficiency in both oral and written communication skills.

<sup>10</sup> Coleman EB. (1998). Using explanatory knowledge during collaborative problem solving in science. *Journal of the Learning Sciences* 7(34):387-427.

<sup>11</sup> Coleman EB, ID Rivkin & AL Brown.1997. The effect of instructional explanations on learning from science texts. *Journal of the Learning Sciences* 6(4), 347-365.

<sup>12</sup> Engineers Ireland. 2007. Accreditation Criteria for Engineering Education Programmes. Dublin: The Institution of Engineers of Ireland. 41 pp.



### What do we need to do now?

- (1) Continue participating in pedagogical training towards the improvement of the quality of online teaching and learning. Personal experience in the online teaching module offered at the Dublin Centre for Academic Development (DCAD) at DCU was exhilarating.
- (2) Enhance the handling of mathematics and design concepts (including graphical illustration) in the delivery media/platforms.
- (3) Lead and participate in development of better laboratory facilities for online teaching of Mechatronic Engineering course contents, including, web-based simulation (virtual labs), manipulation and observation of real equipment and instrumentation remotely (remote labs), and demonstration and foster of skills using portable equipment (briefcase toolkits).
- (4) Identify what can be done with technology that will facilitate learning which ordinarily may be unachievable without technology, and how each potentially affects quality, scale and breadth of Mechatronic Engineering education.
- (5) Locate and foster partnerships and consortia with the main purpose of organising access to learning resources which ordinarily may be unavailable to ITB as a single entity.

### Concerns and doubts: What could be possible in the future?

- (1) Technology resources for group or teamwork that could meet the outcomes outlined earlier in Table 1 require: in-house collaborative framework to facilitate interactive learner instruction; peer-to-peer interaction and critiquing, and; equitable contribution by learners to group/team-based assignments in shared workspace at ITB. These should be coupled to learner management, i.e., monitoring and timely instructor/tutor moderation of progress, and objective assessment of the collaborative elements, including the role of individual learners.
- (2) Integrity of the assessment and grading strategy of learners is equally important<sup>13</sup>; therefore, continuous monitoring of learner participation, contribution, and overall performance may be an effective tool in achieving and maintaining the integrity of group-based tasks/assignments.
- (3) Student retention has been a major concern, not only in ITB, but in the Institutes of Technology sector as a whole. It may be useful to assess how online delivery could be used to facilitate strategic support activities towards learner remediation, which could challenge the high attrition rates, especially at the initial stages upon enrolment at ITB.
- (4) Collation of teaching and learning experience (success, failure & unique observations) will enable learning from our mistakes. The Department of Engineering has already initiated such efforts.
- (5) Obviously, there is also the inherent potential for expanding overseas student recruitment and access management for both undergraduate and postgraduate engineering programmes that could be further developed.

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<sup>13</sup> Abdelfatah AS & SW Tabsh. 2010. Engineering Students' Perception of Academic Dishonesty at an American University in the Middle East. *Online Journal for Global Engineering Education* 5(1): Article 1.

## **‘Our Legacy to You’ Fourth year Social Care students leave a legacy for new intake of first year students in Sept 2013**

**Author:** Joanie Cousins - Lecturer in Applied Social Studies in Social Care

This project was undertaken as a CA by 4th Year students on the Social Care studying the module ‘Management of Social Care Practice’. Within the indicative syllabus, the students cover ‘Project Management’.

As a class, the students were required to come up with a number of group projects, the outcomes of which would leave a legacy for new first year students coming into ITB in September.

The students were fully responsible for choosing their groups, deciding what project they would undertake and completing a piece of work that not only met the learning outcomes in relation to project management but also was deserving of a 40% mark within a level 8 degree programme.

The following initiatives were created by the students:

- A documentary on diversity which explains how diversity is respected and valued in ITB. The documentary covers interviews with a variety of students and lecturers across different departments within the Institute who all share their experiences of studying and working in ITB. It offers a very positive picture of college supports, acceptance of difference and overall comments on why people chose to study at ITB.
- A book of stories (approximately 65) gathered from around the campus and across departments which will be published for the new intake of students in September. The stories are students personal experiences of ITB complete with photographs, comments and funny sayings!
- Posters which are to be placed around the walls outside the registration room to help new students relax a little during what may be a stressful 1st day at college.
- An Information booklet with an A-Z of practical information for new students.

### **Outcomes**

The outcomes from this specific project will be a package which will have a book of stories and an A-Z of college life for new first year students. A number of posters to be displayed on prominent walls throughout induction and a documentary which will be shown to all new first years during their induction into ITB.

Student experiences: Below is a small sample of statements of what students had to say about undertaking this project.

*“I feel the whole experience was a good one, an experience where I not only learned so much about myself but also the group members. I had such fun doing this assignment and feel it will stay with me now as I leave the college environment”*

*“Overall this experience was fantastic. I learned so much for myself in my role as project manager”*

*"I realised that having a fixed world view can and does stop one from seeing the big picture. This for me was a real learning experience, to actually work effectively on a large group project. This brought home for me a lot of learning in management in a very real and practical way"*

## FOREWORD

*This book explores the expectations, the fears, the experiences and achievements that students had when first starting and throughout their time in ITB. The different accounts were taken from students from all different courses, different years, different ages and different ethnic, cultural and social backgrounds. It was put together by fourth year social care students, the majority of which are studying in ITB from 2009-2013.*

*We put this together as we all know how daunting all the 'first's' are in college. the first exam, the first assignment, the first time you get handed that long, student number and you panic about how you can possibly remember all those numbers and letters is scary. We felt the need to let you know..... **"It's O.K.!"** We all went through it; you're not the only one and won't be the last. Soon enough assignments will be like breathing, exams like eating and that student number will be etched so deep into your brain that sometimes you forget your birth name!*

*ITB has some great supports and as 'cheesy' as it sounds "they are always there to help". Some of the stories in this book will explain how the college supported the students who shared their stories with us, through hard times and how helpful it was. The lecturers' bark is worse than their bite; they all will offer a lending hand without hesitation. The services in the college range from counselling to helping with your C.V. there is even a free doctor and nurse on site. So don't be afraid to use the services here in ITB. They are useful and available and be honest who doesn't like getting free services?*

*When putting this together we all reminisced on the good times in ITB. Leaving is bitter-sweet, we love that we are leaving but sad to say good-bye. We hope that these stories lessen the panic, make you laugh and help you appreciate what a great community ITB is.*

*The stories are **REAL**; the students are **REAL**!!! Welcome to ITB. This is our legacy to you.*

## Developing online learning objects using Articulate Storyline

**Authors:** David Murphy - Lecturer in Business Studies

Ann Murphy – Lecturer in Business Studies

### Introduction

This project was funded under the NDLR Learning Innovation Projects initiative and was carried out by Dave Murphy and Ann Murphy, lecturers in the Department of Business of ITB. The purpose of the project was to develop an online learning object which would be used as an aid for students to understand how to meet a professional standard in the preparation of written submission in their course work.

### Background

The Department of Business has developed a standard for the quality of the submission of written work by students. The specification for this standard is available as a PDF document made available to students through Moodle. The purpose of the NDLR proposal was to develop an interactive online guide to the techniques required to comply with the standard.

The project has produced an online guide to the Advanced Microsoft Word techniques required to comply with the departmental standard and can be used by students as a visual interactive guide to the techniques involved. This tool will be available to both staff and students as an aid to the production of quality documentation.

While the learning resources produced for this project are specific to the departmental standard, all of the techniques involved are such that any student in the college would benefit greatly were such a resource be made available college wide.

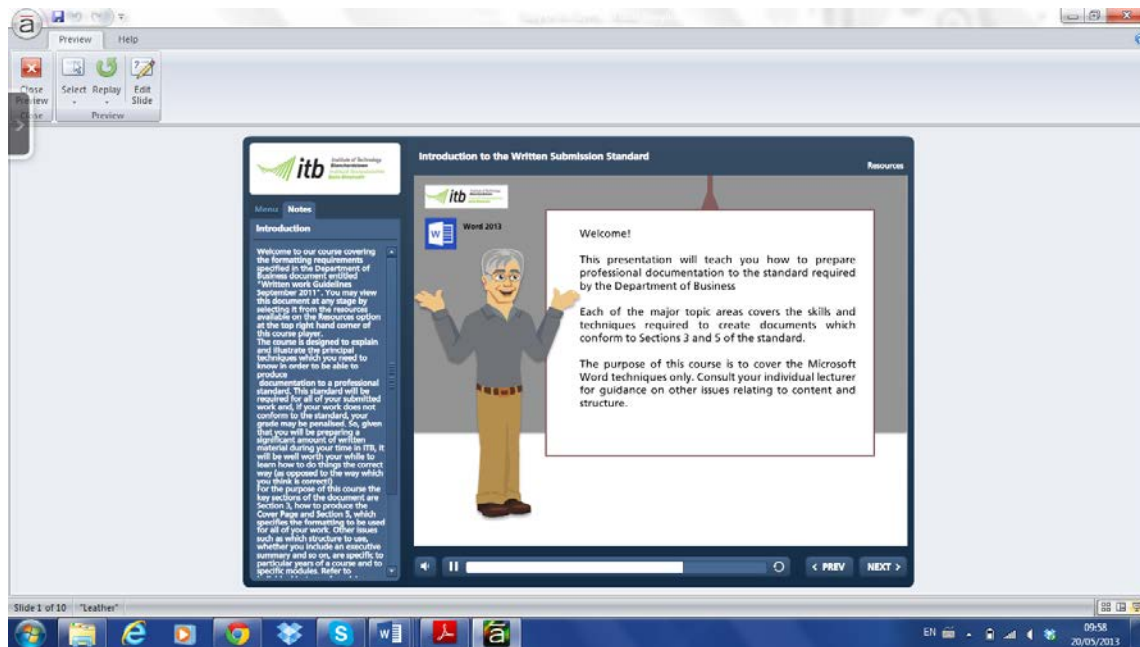
The document explaining the standard and its key sections are also integrated into the learning object so that students can refer to the standard while the techniques involved are explained interactively.

### Approach and Outcomes

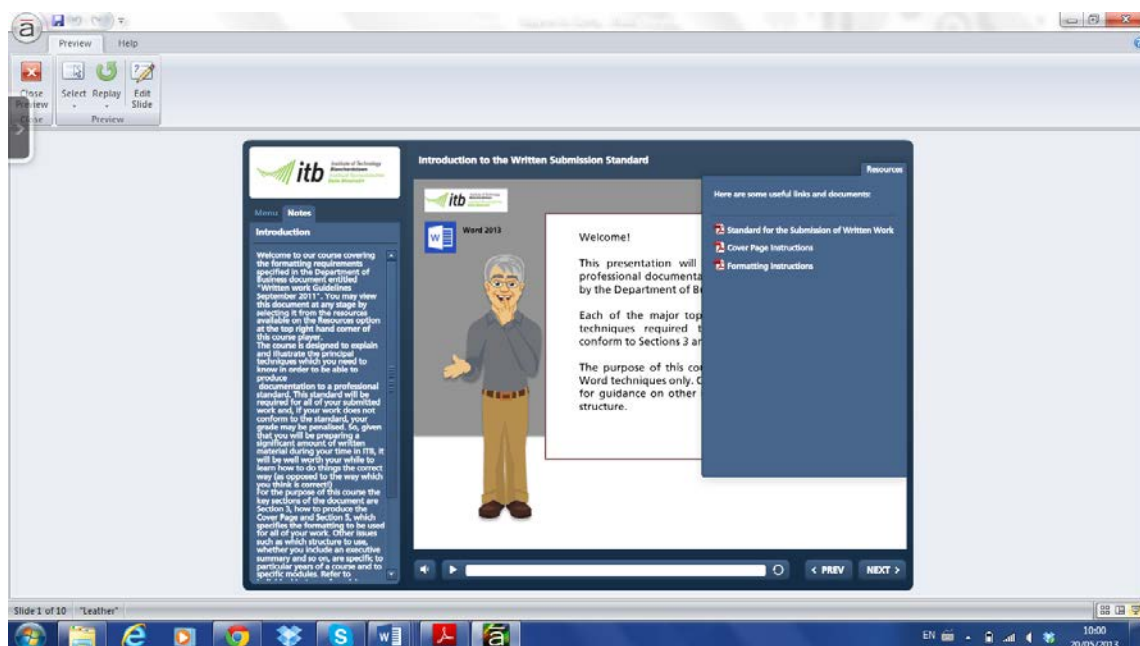
This project was completed by Dave Murphy and Ann Murphy during the period from February to May 2013. The following separate elements were covered:

1. Customising Styles
2. Section Breaks
3. Customising Headers and Footers within Section Breaks
4. Applying styles
5. Using Captions
6. Generating automated Table of contents, Figures and Tables

Each element has an interactive guide which is introduced by a 'character' based lecturer, who explains the purpose of the technique, why it is important to the standard, and how to implement the technique for the production of written assignments. A sample of the type of interface used is shown below:

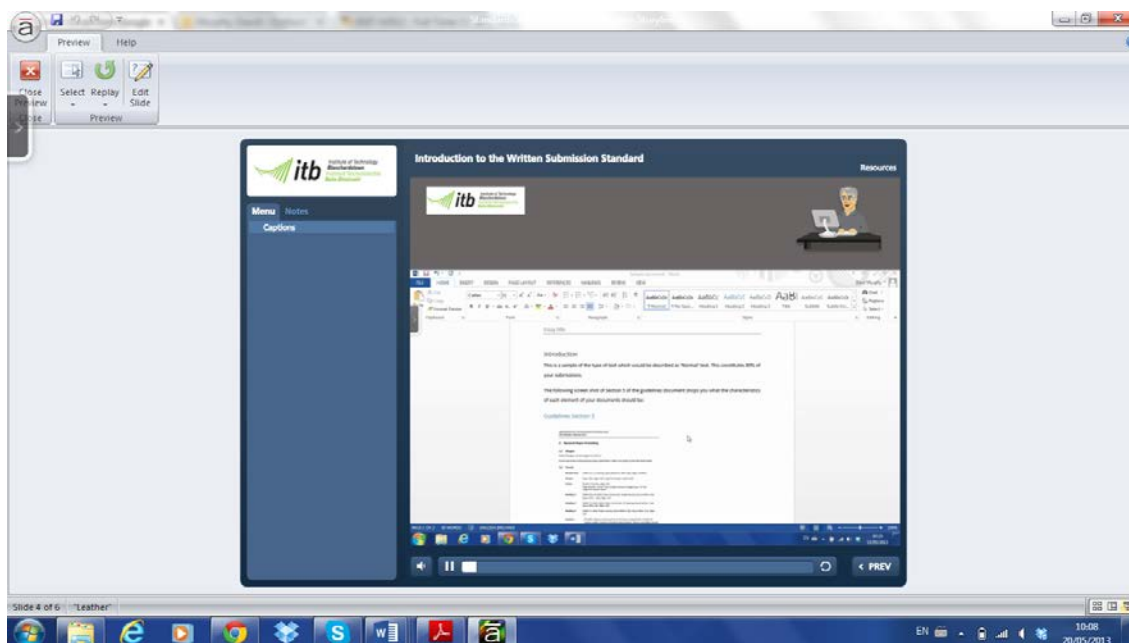


The learning object uses both an audio and written interface to explain the techniques. Students can read the notes while listening to the audio explanations. The 'Resources' option allows the student to refer to PDF versions of the departmental standard and its essential elements at the same time as they are listening to the explanations of the techniques.





At the end of each explanation a link is provided to a screencast which demonstrates how to use the technique in Microsoft Word 2013. This version of Word is being installed in the college during the summer months of 2013 and will therefore be the version students will use during the academic year 2013/14. An example of the interface used for the screencasts is shown below:



The Learning Object was produced using Articulate Storyline. Initially the screencasts were produced using Camtasia, which is a specialised software tool used for capturing videos of interactive screen sequences. It was found that this product is very effective for this purpose and that the quality of the videos produced are excellent. The aim of the project was to develop an interactive model whereby the purpose of the techniques involved would be explained first and then a link would be provided to the appropriate screencast. Camtasia seemed limited in this respect and we then used Articulate Storyline to develop an eLearning Module which had the screencasts integrated directly within the project explanatory lecture slides. However, while this proved to be very effective as an overall approach, the quality of the embedded screencasts, while acceptable, was not as good as those produced using Camtasia. Further work is needed to explore the most effective method to allow for an improvement in the quality of the screencasts when embedded directly or linked to an Articulate Storyline project.

## Pilot Use of RefWorks in Third Year Research Projects

**Authors:** Ann Murphy - Lecturer in Business Studies

Áine Lynch - Librarian

Having completed a number of research projects, in Business Information Systems, Systems Analysis, Systems Design, Information Management and Object Oriented Analysis and Design, over the first five semesters of their course, the students of the BBS in Business and IT have a high skill-base in both citation and the production of Bibliographical material. The students are required to meet the Business Departments Referencing Guidelines which are based on the Harvard Referencing Standards. As the Citations and Bibliography section on the referencing tab in Word 6 did not include the Harvard Referencing Style, citations and the generation of bibliographies have been manually created.

In order to complete these requirements professionally, students have been taught the appropriate techniques, for example, they are familiar with splitting their screens in word, enabling them to add to their bibliography as they write and with the use of 'autocorrect' techniques to cite efficiently within their research reports.

The purchase of Refworks™, an 'online bibliographic management program that allows users to create a personal database of references and generate bibliographies in a variety of formats', by the Library opens up a powerful tool for students to keep track of reference material for all their research projects. The Library has set up a specific output style, in Refworks, complying with the Business School's Referencing Guidelines.

Students on the E-Business module for BN103/010 were trained in the use of RefWorks. Prior to the submission of their research projects, a session was arranged to enable the students to give feedback on their use of Refworks.

Overall it was found to be a very useful tool, when accessed on campus, saving a considerable amount of time, in particular where article citation references could be exported directly into RefWorks. Using the Library's ONE SEARCH input box was crucial to this, as this is the only manner by which book details can be exported into Refworks.

However, the following issues were raised:

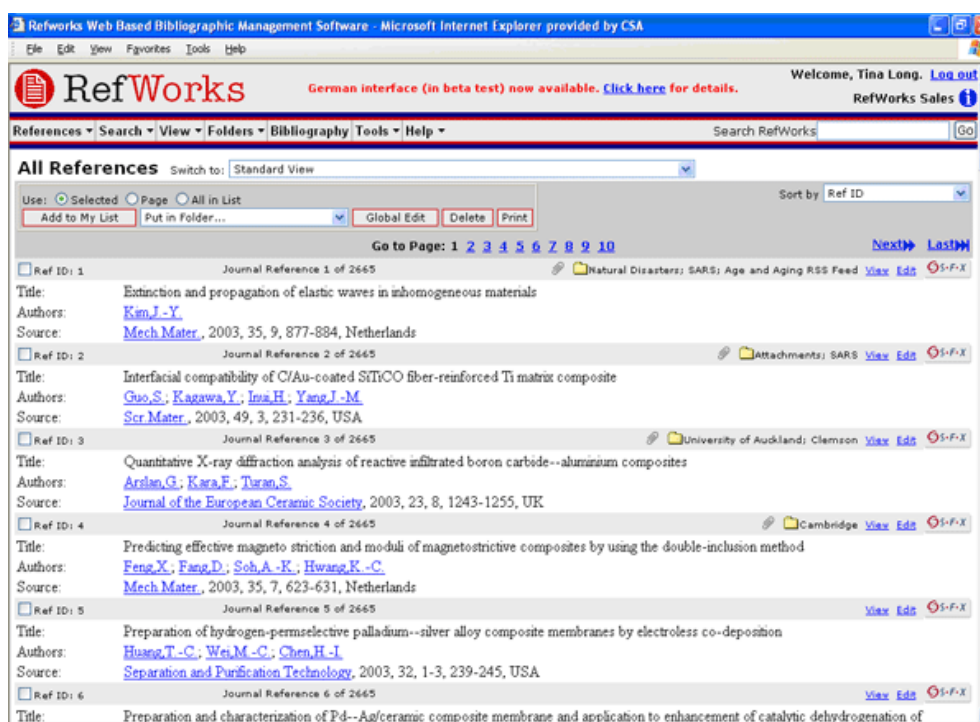
1. Government articles and reports are not included.
2. Most of the references needed to be typed into Refworks.

This caused a lot of problems if material was copied and pasted into the form fields rather than direct typing.

3. Error messages when accessing Refworks off campus
  - a. Unable to export citations
  - b. Malware may be found

4. Difficulties with exporting citations from Emerald Database.
5. The Reference List/Bibliography had to be carefully proofed to ensure that it complied with the guidelines. Expertise in the requirements is necessary to complete this effectively.

The overall feeling from the students was that Refworks is a useful tool for 3<sup>rd</sup> and 4<sup>th</sup> year students who are well versed in the required style for the citations and Bibliography. From a Lecturer perspective, it would not be recommended for 1<sup>st</sup> or 2<sup>nd</sup> year students.



## Sharing Practice - A Collaborative E-learning Experience

**Authors:** Lavinia Mclean - Lecturer in Social Care

Emmett Tuite - Lecturer in Social Care

**Contributors:** Raymond Watson, Course Director, Applied Social Studies, Open Training College, Dublin & Gerry Clarke, Lecturer in Applied Social Studies, Open Training College, Dublin.

### Overview

This initiative was intended to support the development of a student based community of practice (C.O.P.) for applied social care students across the Institute of Technology Blanchardstown, Dublin, The Open Training College, Dublin and St Michaels House. A unique feature of this project was the opportunity for shared learning between students in two separate institutions and across a number of different social care organisations. This opportunity was facilitated through creating a shared, moderated on-line space using linked moodle sites. It was intended that the differing approaches taken to teaching and learning in the two institutes could be merged to create a dynamic space, adding value to the student and staff experience in both institutions. This initiative ran as a pilot programme providing significant learning regarding the challenges and benefits involved in adopting a shared support model for students in social care practice training and education.

A key component of this approach was be cross institutional peer-to-peer support which can be developed through the use of on-line forums, discussion boards and the posting of media to enhance student understanding of the social care practitioner role. Content and focus was driven by staff and students in both institutions with an emphasis on enhancing student participation.

### Specific Themes

- A) Peer-to-peer student support on-line.
- B) Facilitation of deeper levels of learning (through collaboration)
- C) 'New' knowledge and Synergy created by student COP's online.
- D) Knowledge of the value of professional social care COP within Ireland.

It was intended that the differing approaches taken to teaching and learning in the two institutes could be merged to create a dynamic space where students and staff could engage with each other in a supportive and challenging fashion. The project ran as a pilot programme for six weeks and clear outcomes were evident in relation to learning, support and collaboration for students in social care practice training and education.

The team utilised Salmon's (2000) model to measure how this innovative approach affected student participation on-line. Salmon's (2000) model of e-participation is primarily a tool that allows educators to identify the appropriate technological and online social supports required to support a

student in online participation. This project measured student attainment across a range of levels within the model to establish how efficient and effective supports provided by the colleges were and to identify student progression based on Salmon's five levels.

### Outcomes/Student experiences

- Engagement was high, the unique material and methods were very effective in engaging the students
- Students who were more prominent in the early stages continued to have a high level of involvement throughout the project.
- There appears to be something of a 'critical period' for establishing the community of practice and getting people involved (as with any other group).
- Students cited sharing practice experience and learning about other peoples practice experiences as being the main reason for involvement.
- Student's consistently stated preference was for up-scaling of the project (seeking a bigger project, running for longer & in the case of about 30% of students that it also be assessed).
- Students evaluated the project overall in very positive terms.

### Future Development

- Potential to extend the network, across more students/courses/colleges and practice setting
- Despite high levels of engagement and interest there was a lack of synergy/output from the students, this may be the focus of some further project work which will emphasise outcomes to a greater degree than process. This needs to be balanced against risks of undermining collaboration as a result of focusing strongly on outputs.
- Students felt their involvement in the collaboration project significantly extended their learning.

### References

Salmon, G. 2004. E-moderating: the key to teaching and learning online, 2nd edition, London: Routledge.

***We would like to acknowledge the invaluable contribution to this research of our friend and colleague Gerry Clarke who passed away in June 2013***

# Reverse Engineering, Information Resources and Modelling: Contemporary Teaching and Learning in Mechatronic

**Author:** Dr. Mohamad Saleh- Lecturer in Engineering

This paper highlights the effectiveness of implementing reverse engineering, information resources, modelling and simulation approach to successful contemporary teaching and learning in Mechatronic Engineering. The material presented in this paper is part of ongoing research in engineering education and is an expanded version of a lead paper reported in [1]. Practical examples are illustrated to explore the aspects, the practicality and the flexibility of this educational method. These examples are based on the Author's previous works/supervision.

## Reverse Engineering

Reverse Engineering is an approach that focuses on the design analysis of the existing products, without the availability of the relevant technical documentation or information. This is to investigate the specifications, cost, operation, manufacturability, reliability, limitations, functions and other information of these products and their parts in order to further develop a competitor's product. Reverse engineering can be seen in software as well as hardware products. This converse approach is important in a variety of manufacturing processes, since CAD models are often unavailable and unusable for complex mechanical parts and organic shapes [2]. The process of reverse engineering and product design, as a practical guide for undergraduates, graduates and practicing engineers is well documented in textbooks [3] and [4]. However, the general concept of reverse engineering, as shown in Figure 2, is to enhance the understanding of the subsequent work [5].

Figure 1 shows that the traditional design process goes from specification, through developing the concept, to implementation. However, reverse engineering in product development goes from the implementation of the existing design, through the design concept, to the design specifications. In traditional product development, over 70 per cent of the final product costs are determined at the design stage [6]. Thus, reverse engineering can be a very efficient and cost effective technique in businesses, systems and products, which need constant renovations, and further developments in an indigenous environment [7].



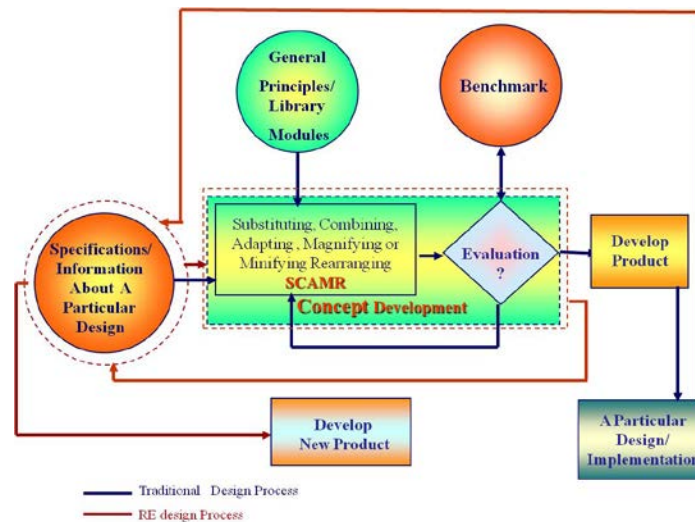


Figure 1

### Example 1: Reverse engineering of a shear machine

This project was given as a final year project for mechatronic students and supervised by the Author. The objective of this project is to developed innovative skills in learning and applying mechatronic knowledge in real engineering problem.

The machine was an old style shear machine for cutting rods and some profiled metals without any safety or control mechanisms. The machine was reversed into a new controlled safe shear machine with further concepts and applicability. Figure 2 illustrates the machine before and after development. Recently, a similar machine has been developed in ITB as a final year project in Mechatronics under the supervision of the Author.

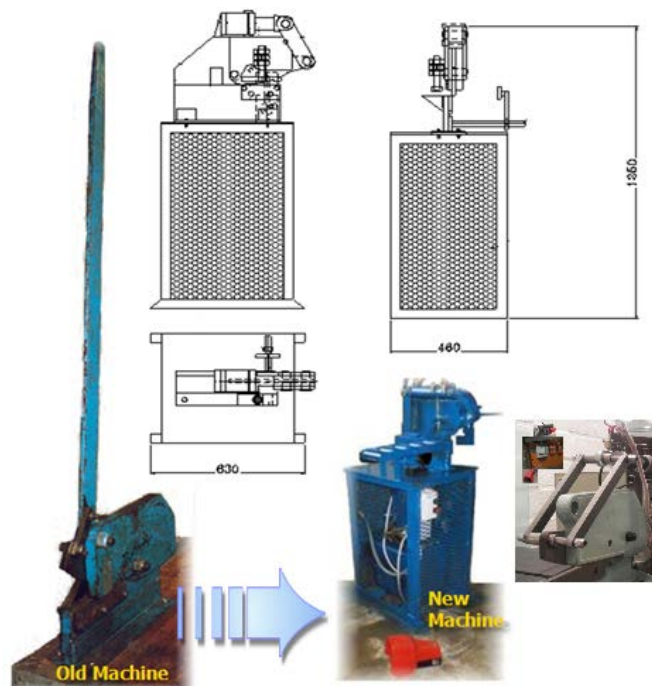


Figure 2

## Information Resources

In this new contemporary era with the explosion and proliferation of information, the role of teachers/lectures and students has become a challenging one. In that both students and lectures should be equally responsible for the learning process where the role of teacher/lecturer, instead of teaching knowledge, is to transfer and introduce information resources. With this in mind, there has been great concern about the reading interests and reading enthusiasm among engineering students. Latest survey on university students shows that students who surf online everyday spend more time playing games and chatting to their friends [8]. Overall, it is noted that some of these students never buy a book and their online costs is 4.2 times higher than the cost of their textbooks. Although the Internet is free for everyone to use, it makes for subjective rather than objective reading. Therefore, to make the best use of the Internet and make surfing online more productive and effective among Engineering students, a purposed designed system of Engineering information resources should be available online for Engineering students in different Engineering disciplines. This is very important when it comes to teaching and learning Mechtronic Engineering, which is heavily based on a complicated network of information.

### Example 2: Online Engineering information resources

Figure 3. shows a snapshot of the homepage of The International Network of Flexible Learning in Engineering ([www.infle.org](http://www.infle.org)). Recently, this website was developed and designed by the Author as an engineering repository information resource in an effort to fulfil the requirements for contemporary teaching and learning in Engineering.



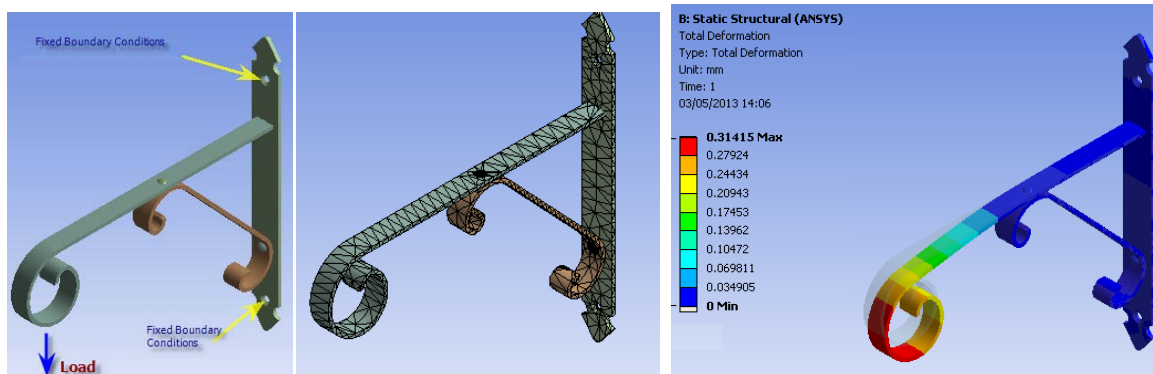
Figure 3

## Modelling and Simulation in Engineering

Modelling in Engineering is a technique used to predict the behaviours of an engineering system/problem. There are two types of engineering modelling: theoretical modelling and empirical modelling. Theoretical model normally uses rules, equations and constraints to resemble the behaviour of a real system. Empirical model is an experiment which involves trials and errors on a prototype in order to govern the behaviour of a system using engineering statistics. However, simulation is the process when computer technology is used to execute a model in order to produce its behaviour and performance. In Mechatronic Engineering, there are a number of computer aided tools used for modelling and simulation. These are Labview, ECAD, CAD/CAM, Matlab, Finite Element Analysis (FEA), to name a few. Finite Element Analysis is probably the most commonly used numerical modelling and simulating technique in mechatronic product design and analysis [9]. Also, FEA is a powerful technique for product refinement and optimisation.

### Example 3: Finite Element modelling for a flower pot holder

This product was designed by the Author for first year mechatronic students at The Institute of Technology, Blanchardstown. Emphasis was placed on the design optimization, quality, design refinement, and manufacturability of this product, according to International Standard ISO. Figure 4 shows the finite element modelling and analysis, loading conditions, mesh topology, deformation and stress and strain contour after loading. The analysis shows that this structure behaves well at maximum static load of 40 Kg.



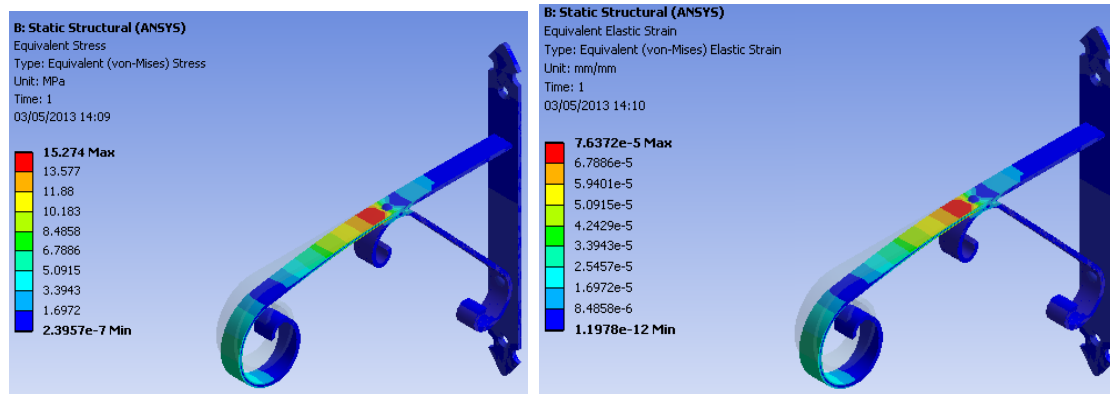


Figure 4

## Conclusion

Perhaps, it fair to say that the traditional stereotypical method of teaching in mechatronics, based on the existing delivery method, is lagging behind the rapid developments in today's technology. However, the proposed reverse integrated delivery method that has been highlighted in this paper could be an effective approach to studying mechatronics for contemporary time.

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8. LiBai-lu , Reasoning on China's contemporary design education, *IEEE, KAM*, 2011, pp 559-562.
9. Mohamad Saleh "A practical use of finite element analysis for rapid design and analysis". *International Conference AMPT99*, Dublin City University, August, 1999

## Using Flipped Learning to allow collaboration and constructivism in the class for a module in sustainable technology

**Author:** Robert Hickey - Lecturer in Informatics and Engineering

### Aim of the Study

To improve teaching practice and delivery methods for a module in Sustainable Technology. Moving away from the traditional chalk and talk to a more student centred approach to teaching and learning.

### Methods

Within an action research approach data was collected using a Likert questionnaire , student comments and teacher-researcher observation.


### Pre-recorded PowerPoint Lessons Placed on YouTube

The PowerPoint presentations usually delivered in the lecture were pre-recorded with voiceovers using the "record slideshow" tool on the "slide show" Tab in PowerPoint. The PowerPoint was then simply saved as a windows media video file. The video files were then uploaded onto a YouTube channel and linked to, through the module moodle course. The students where then directed to view the lessons online prior to attending their weekly lecture. These videos were used to replace the standard didactic lecture and more importantly to free up the face to face time in the class to allow the students to engage in more active learning activities.

### 1st In-class Activity, Worksheet Based on Content of Pre-recorded Lessons

At the beginning of each weekly 3 hour class the students were given a worksheet to complete. These were aligned to the learning outcomes for the weekly lesson e.g. list, state, describe or sketch an item or regulation. It was hoped that filling out the worksheets would help the students remember what they saw and heard in the video lesson. Thus making them spend time thinking and focusing on the lesson topics. When the worksheets were completed the students were asked to share their work with each other. This was to help fill in any blanks they may have left in their worksheets and to validate their answers through peer collaboration.

Worksheet

 Institute of Technology  
Blanchardstown  
National University of Ireland  
Dublin

Module	Sustainable Technology 2
Subject	Construction
Topic	Airtightness in Buildings
Lesson	No 9
Worksheet	No 9
Directions	The answers to these questions are contained in your notes on Airtightness in Buildings. I recommend that you read the question, find the answer and then write the answer out for each of the following. This will facilitate you to achieve the learning outcomes for the lesson.

1. State 3 reasons why airtightness is important.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

2. State the airtightness limit for a dwelling as set out in TGD Part L 2011.

\_\_\_\_\_

3. State the 2 main reasons for air infiltration and exfiltration in buildings.


1. \_\_\_\_\_

2. \_\_\_\_\_

## 2nd In-class Activity. PMI Sheet, Pluses, Minuses and Important Points

Next the students were given a PMI sheet. The directions on the sheet were e.g. “Using numbered bullet points list what you think are Pluses, Minuses and Important points about building materials when it comes to the thermal performance of the building”. The students were asked to focus only on the Pluses for 2 minutes, then the Minuses for 2 minutes and finally the important points for 2 minutes. This was to allow the students to explore the topic of the lesson through focusing their thoughts.

Topic Sheet  
For Lateral or  
Creative Thinking

 Institute of Technology  
Blanchardstown  
National University of Ireland  
Dublin

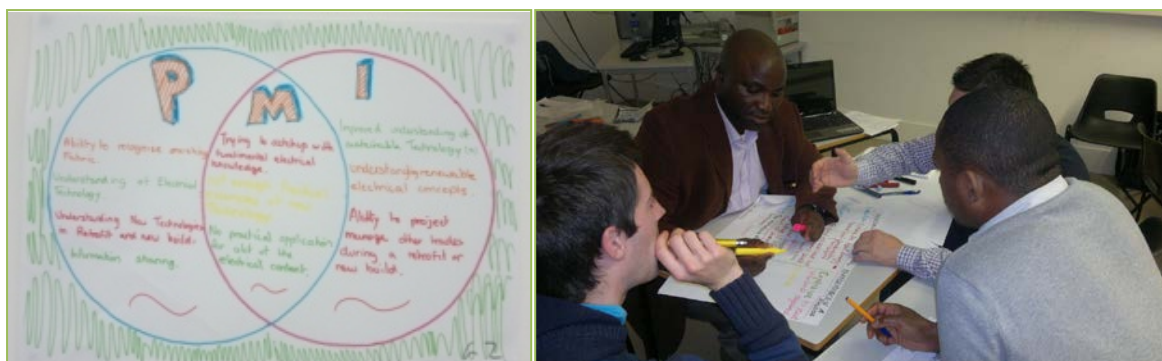
Course	Energy Efficient Domestic Retrofit Technology
Module	Sustainable Technology 2
Topic	PMI for Building Materials
Lesson	No. 2
Directions	Using numbered bullet points list what you think are Pluses, Minuses and Important points about Building Materials, when it comes to the thermal performance of a building.

Pluses	Minuses	Important Points

## 3rd In-class Activity, Creating a Poster Presentation in Groups Based on the Students PMI Sheets

The students were then divided into groups of 4 and given A2 sheets of paper and a selection of colour markers. They were asked to create a poster summing up the main ideas from their collective PMI sheets. Each group then presented their posters to the rest of the class with Q and A after each one. A digital photo of each poster was taken using a camera phone and placed on moodle after each class as a learning resource and reference for the students.





#### 4th In-class Activity, Mind Map Based on Content of Pre-recorded Lessons

In the last class activity the students were given a hand-out of a blank Mind Map centred round a specific question. E.g. discuss 4 positive + 4 negative implications that your choice of materials and sizes will have on the thermal Performance of a floor. The students were able to use the poster presentations hanging on the walls of the class room from activity 3 to help them complete their Mind Map. The Mind Maps were used later on by the students for a series of CA essays based on the same question.

#### Students Comments

##### Class Activities

- *"Through the group work I was able to exchange ideas and learn more"*
- *"I find it easier to learn in a group"*
- *"It was good to share ideas and knowledge"*
- *"The photos on moodle helped a lot with my CAs"*
- *"Sometimes it is good to see an abbreviated version of important points"*
- *"Many hands make light work"*
- *"I learned a lot from the group work"*

##### Pre-recorded Lessons

- *"Seeing and hearing the names of things at the same time was really helpful"*
- *"Viewing the lessons more than once helped for studying and CAs"*
- *"With the videos I was able to understand a lot when doing my CAs"*

#### Findings

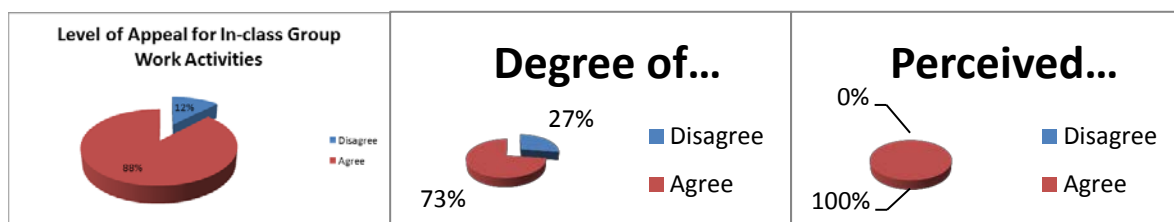
The students had access to all of the module learning content as before plus three hours of focused peer learning each week. The in-class lateral thinking exercises and peer collaboration enriched the students learning experience making it more flexible and student centred. Subsequently they were better equipped to complete their CAs and therefore achieve the learning outcomes for the module.

The 1st year students enjoyed the group work more than the 3rd year students, who seem to resist the change in practice from the didactic lecture which they were accustomed to. However all 1st year students and 65% of 3rd students found the group work effective for learning. Practically all of the students found the pre-recorded lessons effective for learning with a high level of appeal noted

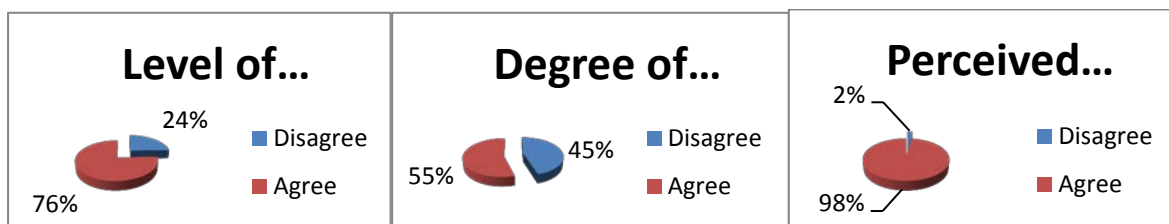
for this mode of delivery. However there was nearly an equal overall percentage split when it came to the student's preference for a pre-recorded lesson over a live face to face lecturer. It would appear that a lot of the students wanted their questions answered instantly when viewing the videos instead of waiting to ask questions in the class or spending time thinking about the topics and discovering answers for themselves. This could infer that the students were either unable or unwilling to have that internal dialogue or reflection which is required in order to attain deep learning.

## Questionnaire Results

First Cycle Jan-May 2012 (1st year Energy Efficient Domestic Retrofit Technology Students) N.11

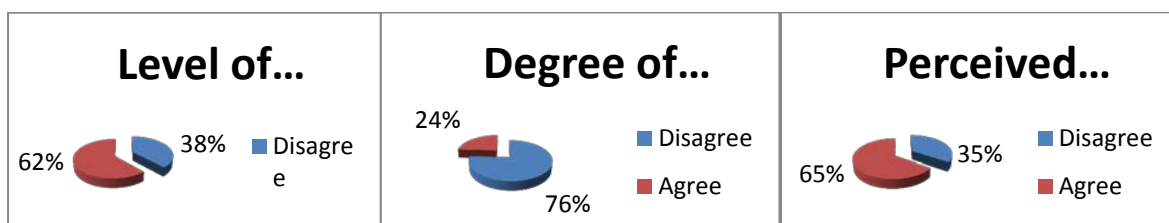


### Questionnaire Results for online recorded lessons

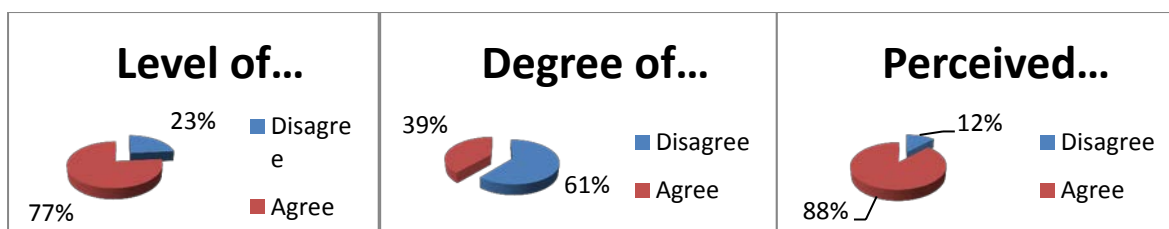


Second Cycle Sept-Dec 2012 (3rd year Sustainable Electrical & Control Technology Students) N.27

### Questionnaire Results for In-class activities



### Questionnaire Results for online recorded lessons



## Redesigning the First Year Experience

**Author:** Niamh O'Hora - Lecturer in Creative Digital Media

The *Design Thinking* process pioneered by design firm IDEO and the University of Stanford, was first introduced to me during Ewan McIntosh's workshop at ITB in December 2012. Attendees were asked how we might redesign the first year experience at ITB in response to a structured process that encourages creative innovation, and a way of planning differently to create more student-led learning experiences.

It became clearly apparent from the session that staff from all departments across ITB cared deeply about how our students experience life and study at ITB. Lots of great ideas emerged, including a suggestion that students can contribute to, and be positively affected by their physical environment.

Inspired by this suggestion, Creative Digital Media first year students developed mural designs for a workspace located in the D Block in conjunction with a Visual Communications continuous assessment project. They picked their favourite designs, and with the assistance of the ITB Estates team, students helped each other paint the murals in April 2013 with impressive results.

In addition to the ideas that emerged from the session, the *Design Thinking* process itself has been incorporated as a teaching and learning tool in the course. A second assignment asked students to follow the same the *Design Thinking* method as a mechanism to provide feedback on their own experience of first year. The culmination of their efforts has produced a series of typographic posters, which communicate ways students think the first year experience can be improved at ITB.

Mural Paintings: [www.creativedigitalmedia.ie/index.php/mural/](http://www.creativedigitalmedia.ie/index.php/mural/)

First Year Experience Posters: [www.creativedigitalmedia.ie/index.php/firstyear/](http://www.creativedigitalmedia.ie/index.php/firstyear/)



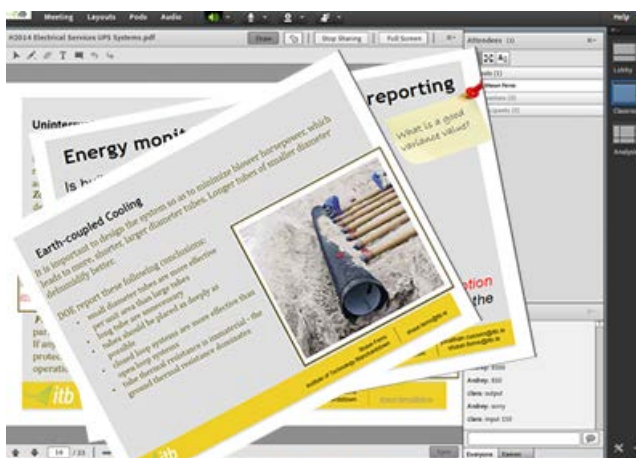
## Blended learning @ BSC in Sustainable Electrical Control Technology

**Author:** Shaun ferns - Lecturer in Informatics & Engineering

This was a delivery of two full-time modules on the BSC in Sustainable Electrical Control Technology in a blended learning format. The mode was carefully chosen as it was felt that it would meet students' expectations for utilizing and increasing skills in the use of technology, developing independent learning skills and offer increased flexibility and convenience. It would also allow an opportunity for faculty development and experimentation with new pedagogies and techniques whilst also retaining the face-to-face aspect.

The blended learning strategy was delivered with use of Moodle as the Virtual Learning Environment (VLE) and Adobe Connect for the delivery of online 'LIVE' lectures. The first module Electrical Services 2 (13 students) is traditionally delivered in a two hour lecture + two hour lab format; this was transformed with use of Adobe Connect for delivery of the lecture portion. The second module consisting of only the electrical component of Sustainable Technology 2 (36 students) is traditionally delivered as a one hour lecture; this was also transformed with use of Adobe Connect for delivery of the lecture portion. The 'chat pod', an area in Adobe Connect to instant message participants was used extensively to have questions answered during each lecture. The 'poll pod', which allows the presenter to create questions, or polls, for participants and to instantly view the results, was used at the beginning of each lecture to ascertain the location of each participant and to allow each participant an opportunity to rate the lecture .

The intention was to allow the recordings to be made available immediately after each lecture, though students were aware that this might not always be possible. For example this did not happen when two lectures became more of a discussion session and it was felt these were not suitable to be made available online. This reinforced the idea that it was of fundamental importance to attend the online lectures in order to achieve the greatest benefit from them. Although there



was access to lecture recordings, attendance at the online classes could be considered very high, averaging at 76% and 73% for the Electrical Services 2 module and Sustainable Technology 2 module respectively.

Students were surveyed at the end of semester to ascertain their opinions of the use of blended learning techniques on a traditional module for fulltime students. All 49 students were asked to complete a questionnaire with 26 students responding. Students when asked what aspects of the blended learning they found useful responded with the obvious responses, regarding flexibility in location and repeatability. The following statements were less expected;

- “the visual aspect, more people got involved when questions were asked, easy to ask questions, all questions answered”
- “they (the lectures) were interesting and well laid out and good interaction with the lecturer”
- “just as good as an ordinary lecture”

When asked what aspects of the blended learning they would alter students suggested that at least once a month a traditional face-to-face lecture should take place (even though they were meeting the lecturer during the lab). A large number also suggested an increase of the use of the poll function for questions/answers as opposed to using the chat box for that purpose. They were also queried if they would like modules delivered in a blended learning format in the future with 70 % giving indicating that they would, though only 54% suggesting that would be interested in taking part in a fully online module.



## Making business maths support web site slicker ... Ahem ... More accessible!

**Author:** Dr Colm McGuinness - Lecturer in Mathematics

**Contributors:** Dr Matt Smith- Senior Lecturer in Informatics

Feedback from students suggested that the business maths support web site (<http://bbm.colm.mcguinness.org/>) was hard to navigate in order to find materials.

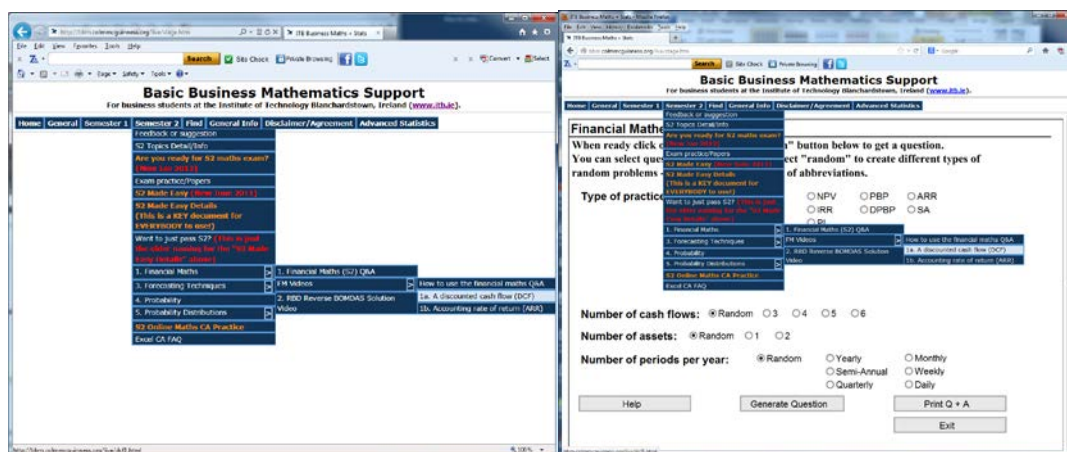
A bit of online research around web menu systems, and discussions with Dr Matt Smith suggested that jQuery, a JavaScript library for web interaction and animation, would provide the basis for a site facelift! As with many development projects the initial fast progress was soon halted in its tracks by differences in web browsers. The menu system development needed to take account of differing actions within different browsers, such as Internet Explorer, Firefox, Safari, Chrome, and others!

A considerable amount of the web site content is delivered via Adobe Flash, but the delivery of Flash differs across browsers, and the interaction of the new menu system with the Flash content was inconsistent across browsers. This was a “known” problem with Flash delivery within browsers, but it still was not simple to resolve. Within some browsers the menus and submenus would “disappear” behind any Flash content that was visible! Within Firefox this did not happen, and the menu system appeared to the fore of any other visible content, Flash or otherwise.

After a considerable amount of trial and error a solution, of sorts, was arrived at. Content is hidden as the menu system is accessed within most browsers, except within Firefox, where the menu system and Flash content work seamlessly in the manner that had been originally intended!

The new menu system has been in place since May of 2012, with further tweaking ongoing, as needed, as other developments occur. Feedback from students who had originally suggested some changes was positive.

Two screen shots of identical content: Left from Internet Explorer 9.0.8112 (notice the empty/hidden background), and the right from Firefox 18.0.2 (Flash background not hidden):





*“Learning and innovation go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.”*

**William Pollard**



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