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DIT Teaching Fellowship Reports 2015–2016

College of Arts and Tourism

College of Business

College of Engineering and Built Environment

College of Sciences and Health

**Supporting the Strategic Themes of Diversity,
Modularisation and E-learning**

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Foreword

This publication provides a collation of reports of research conducted as part of the 2015–2016 DIT Teaching Fellowship scheme. The DIT Annual Teaching Fellowships were established in 2009 as part of Cycle II of the HEA’s Strategic Innovation Funded Enhancement of Learning (EoL) strand of the Dublin Region Higher Education Alliance (DRHEA).

The aim of the DIT Teaching Fellowships is to support key college based educational research projects linked to the Institutional Learning, Teaching and Assessment strategic priorities. (See Appendix A for the DIT Learning, Teaching & Assessment Strategy, approved in December 2014). The title of “Teaching Fellow” is awarded to an individual or a team, nominated by the college and who would undertake a research project to support the enhancement of learning and/or curriculum development at a programme, school or college level over a one academic year period. It is intended that evidence gathered from the studies will be utilised to inform relevant policy, practice or similar institutional research activities into the future. This is of particular relevance as we look forward to the imminent merger between Dublin Institute of Technology, Institute of Technology Blanchardstown and Institute of Technology Tallaght, Dublin and the application for University status as a Technological University in the future.

The establishment of Teaching Fellowships has been a very successful venture for the DIT and the projects are now financially supported by the DIT. However, this would not have been possible without the generous support provided through the Directorate of Digital Campus and Learning Transformation and the four institutional Colleges. This funding has enabled the successful completion of over 50 Fellowship projects over the last five years with the resultant research outputs helping to inform both policy and practice across the Institute. This level of success is, in part, due to the enthusiasm and dedication of all the award recipients and the DIT staff who have supported the Fellowship projects throughout each academic session. I would also like to thank the College Heads of Learning Development and/or local Awards Contacts, my Learning, Teaching and Technology Centre colleagues who have supported the Fellows over the last year, and Dr Claire McAvinia who has been responsible for collating this report publication.

Dr Jen Harvey, Head of the DIT Learning, Teaching and Technology Centre

Summary Overview of 2015–2016 Projects

College of Applied Arts and Tourism

Clíona Doris: Conservatory of Music and Drama



“Scoring History” with the Vanbrugh Quartet: Developing an Online Archive and Teaching Resource

DIT Conservatory of Music and Drama and the National Concert Hall are collaborating on a three-year residency for the internationally renowned Vanbrugh String Quartet. Six series of themed concerts explore a wide range of music, including Scoring History curated by composer Ian Wilson, quartets by Haydn, Schubert and Beethoven, Ireland 1916–2016 and the full cycle of Shostakovich quartets. The Teaching Fellowship provides the opportunity to develop an online education resource relating to and deriving from the residency, which interweaves archival concert recordings, profiles, interviews, social and cultural context, and analysis of the musical works. The outcome will be a resource which will be utilised by a wide range of student cohorts and lecturers, as well as engaging with a wider national audience through The National Concert Hall. There is further scope to utilise the resource to deliver online continuing professional education and elective programmes in cultural studies, music history, music performance and music appreciation.

The Vanbrugh Quartet are Gregory Ellis, Keith Pascoe, Simon Aspell, and Christopher Marwood.

College of Business

Ruth Casey: School of Marketing and Finance

Marc Gallagher: School of Languages, Law and Social Sciences



Communication Practices in Technology Companies

It is contended by Johnson *et al* (2015) that the skills or competencies that are required of business graduates by technology companies, range from the ability to communicate complex information about global issues in ways that are accessible to and connect with the general public, to problem-solving and project-based interaction. This represents a shift in the type of communication practice that now characterises the technology company, with its focus on “agile” frameworks of teamwork. This report examines the context for this development and explores the role of assessment and pedagogy in preparing the student for these communication competencies, from the perspective of the technology company.



Rowena Hennigan: School of Retail and Services Management



The Design of E-Learning Resources for Part time Distance Education Students

The QQI Statutory Quality Assurance Guidelines for Flexible and Distributed Learning recommend “learner experience context” as the approach to design of e-learning resources. DIT advocates a student-centric approach to applied learning. Many DIT students are undertaking study at a distance and therefore the “flipped classroom” approach is recommended i.e. students can view lectures at home via pre-recorded video or audio files, with supporting materials and then use class-time to carry out hands-on exercises allowing individual support from their lecturer or teacher while in class. This project will work to “Improve the e-learning resources available for students on the Postgraduate Diploma in Global Business”, the educational component of the Ibec Global Graduates programme which is managed and delivered by DIT, College of Business. There will be three key benefits accruing from the project. Firstly it will ensure an improved learning experience for students on the Postgraduate Diploma in Global Business. Secondly it will create structures and processes for e-learning, which can be utilised on other College of Business programmes, building an infrastructure for future distance learning or blended programmes. Thirdly it will provide lecturers within the College of Business, with the knowledge and skills required for effective e-learning usage across all of their modules.

College of Engineering and the Built Environment

Eric Bates: Construction Skills, Dublin School of Architecture



Providing Digital Resources to Enhance Graduate Attributes

It has been shown through international research that graduate attributes are an essential part of a person’s career and self-development. These not only benefit the individual but also impact positively on the individual’s role in society. It is the intention of this research to focus on these key graduate attributes and develop digital resources that can assist lecturers in higher education who deliver modules aimed at developing professional skills and graduate attributes. The benefits of this project will be threefold. Firstly, the student will gain skills in critical areas deemed to be essential for both the workplace and their personal development as individuals in society. Secondly, DIT will be at the forefront of student care and development from a holistic point of view where the lifelong learning skills of the student are firmly grounded in real world activities. Finally, employers will gain from having a more rounded employee who can contribute positively to workplace activities.

College of Sciences and Health

Steve Meaney: School of Biological Sciences



Feedbackly – A Tool for Collecting Real-time Feedback on the Student Experience

This project will address a deficit in the ability to gather data on the student experience in real time. This is data that is not currently available for real-time analysis and for which there is a pressing need. The objective of this project is to pilot a real-time feedback collection system with a simple user experience and automated analytics. Students anonymously express their overall “satisfaction” with their experience on a scale from “Great” to “Terrible”. They can do this at any time during their studies and as many times as they like. Each timestamped response is then processed and aggregated to provide an overall experience score for a programme, school, college or institute as required.

Maria McNeill: School of Physics



The Planning and Development of an Education Framework for Practice Educators within Health and Social Care Professions

This project seeks to identify training needs for practice educators supporting students on clinical placements and develop a framework to meet those needs. The proposed framework will outline a staged, developmental approach to provide a continuum of learning for practice educators and will be transferable to other degree programmes within DIT such as Biomedical Sciences, Human Nutrition and Dietetics, Optometry, Ophthalmic Dispensing and Social Care.

Luca Longo: School of Computing



Informing Instructional Design by Cognitive Load Assessment in the Classroom

The main objective of this research activity is to explore the impact of a mobile/web-application on the enhancement of teaching and consequently learning. The software, which has already been developed, measures the cognitive load imposed on students by a certain teaching activity and teaching style. The rationale behind this research activity is that the quantification of cognitive load of students after any teaching activity can be used by lecturers for effective instructional design. In particular, if the distribution of cognitive load indexes of students highlights their cognitive overload, then this information can be used by the lecturer for considering design alternatives to the instructional material or the teaching style.

College of Applied Arts and Tourism

1 “Scoring History” with the Vanbrugh Quartet: Developing an Online Archive and Teaching Resource

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Abstract

DIT Conservatory of Music and Drama and the National Concert Hall collaborated on a three-year residency for the internationally renowned Vanbrugh Quartet from 2014–2017. Six themed concert series explored a wide range of chamber music, including “Scoring History” curated by composer Ian Wilson, a Haydn and Schubert Series, Mozart and Brahms Chamber Music, the complete cycle of Beethoven String Quartets, Chamber Music of Ireland 1916–2016 and a Russian Season. An online archive and educational resource relating to and deriving from the residency, interweaves archival concert recordings, profiles, interviews and contextual information on the musical works.

Keywords: *scoring history; online music resource; Vanbrugh Quartet; DIT Conservatory of Music and Drama; National Concert Hall Dublin*

Introduction

DIT Conservatory of Music and Drama and the National Concert Hall collaborated on a three-year residency for the internationally renowned Vanbrugh Quartet from 2014–2017. Six themed concert series explored a wide range of chamber music, including “Scoring History” curated by composer Ian Wilson, a Haydn and Schubert Series, Mozart and Brahms Chamber Music, the complete cycle of Beethoven String Quartets, Chamber Music of Ireland 1916–2016 and a Russian Season.

The Fellowship project provided the opportunity to archive and develop the residency beyond 2017. The online archive and educational resource relating to and deriving from the residency, interweaves archival concert recordings, profiles, interviews and contextual information on the musical works. The Teaching Fellowship resourced the infrastructure for the initial development of the website, continuation of the archive recordings and high quality audio-visual recordings for selected performances for the Beethoven String Quartet Cycle and the final Russian Season.

The BBC’s *Ten Pieces: Get Creative with Classical Music* online music education resource was an inspiration for this project. However, the BBC project was aimed at primary and post-primary cohorts, whereas this project is aimed at third-level and continuing education cohorts. However, teaching resources for post-primary school cohorts could easily be developed to enhance the audience for the project.

The “Scoring History”¹ project aligns with national strategy to build on digital capacity and addresses the following three vision aims contained in the publication *Teaching and Learning in Irish Higher Education: A Roadmap for Enhancement in a Digital World 2015–2017*:

- “Digital platforms, resources and tools are utilised to enhance teaching, learning and assessment, to connect teachers and students, and to increase the level of quality of learning-related communication.
- Students will have access to a range of technological supports and resources to enhance their learning in a manner that enables them to become lifelong learners in the digital world.
- Teachers will be fully enabled to use digital technologies/resources where appropriate, in order to enhance student learning with their disciplines.”²

¹ “Scoring History” is used by kind permission of Ian Wilson as the title for his curated concert series in 2014, which was the inaugural season of the Vanbrugh Quartet’s Artists in Residence programme at the National Concert Hall.

² National Forum for the Enhancement of Teaching & Learning (2015) *Teaching and Learning in Irish Higher Education: A Roadmap for Enhancement in a Digital World, 2015–2017*. Retrieved from <http://www.teachingandlearning.ie/a-roadmap-for-enhancement-in-a-digital-world-2015-2017/>

Dublin Institute of Technology established the Directorate of Digital Campus and Learning Transformation in July 2016 and the project also supports the key goal:

“To unlock the collaborative potential of the individual functions in order to successfully create and support learning transformation opportunities enabled by technology where appropriate.”³

The overall concept provides an imaginative context to present the artistic practice work of the Conservatory to new audiences and is representative of the Conservatory’s strong engagement with cultural institutions and partners, such as the National Concert Hall and the Vanbrugh Quartet. The following strategic aims for the Conservatory are being realised through this project:

The Conservatory promotes itself and Ireland’s culture and creativity locally, nationally and internationally. Working with partners, the Conservatory widens access to the performing arts in Ireland.⁴

Project Partners

The **Vanbrugh Quartet** arrived in Ireland over thirty years ago in 1986 as RTÉ’s quartet in residence. Since then, the Quartet has sustained an extensive career in performance, recording and music education, both within Ireland and internationally. The members of the Vanbrugh Quartet (Gregory Ellis, Keith Pascoe, Simon Aspell and Christopher Marwood) were appointed as Lecturers in Chamber Music at DIT Conservatory of Music and Drama in 2009. In 2016, the Vanbrugh Quartet received “The National Concert Hall Lifetime Achievement Award” in recognition of its significant contribution to chamber music performance in Ireland.

The National Concert Hall is one of the Ireland’s National Cultural Institutions and presents over 1,000 events each year in the Main Auditorium (1,200 capacity), John Field Room, Kevin Barry Room and Studio. Its mission is to “foster and celebrate the appreciation, knowledge and enjoyment and pure love of music as an integral part of Irish life”.⁵ Established in 1981 on the site of Dublin’s “Great Exhibition of Arts and Manufactures” in Earlsfort Terrace, the National Concert Hall is the home of several national music organisations, including the RTÉ National Symphony Orchestra, Chamber Choir Ireland, Irish Baroque Orchestra, Music Network and Music Generation.

DIT Conservatory of Music and Drama was established in 1890 as the Dublin Municipal School of Music. In 1963 it became known as the College of Music and joined Dublin Institute of Technology (DIT) in 1978. Today the renamed DIT Conservatory of Music and Drama provides quality performance-based arts education encompassing a Junior Conservatory, undergraduate and postgraduate degree programmes and the Research Foundation for Music in Ireland. It offers programmes in classical, jazz and Irish traditional music performance, composition, musicology, music education, opera, drama and, in association with partner colleges, rock and pop music, music theatre, and scoring for film and visual media. The Conservatory will move to a purpose-built facility for the creative and performing arts within the new DIT Grangegorman campus.

³ Dublin Institute of Technology. The Digital Campus and Learning Transformation Directorate. Retrieved from <http://www.dit.ie/dclt/>

⁴ DIT Conservatory of Music and Drama Strategic Plan 2015–2018.

⁵ The National Concert Hall. Retrieved from <https://www.nch.ie>

“Scoring History” Website

The development of the website as a learning and teaching resource continues as the project develops beyond the lifetime of the Fellowship and National Concert Hall Residency. At present, it documents the residency through concert programmes, recordings, interviews and background information. The website is due for publication before the last concert of the residency in June 2017. This coincides with the retirement of first violinist Gregory Ellis from the Vanbrugh Quartet and so the archival nature of this project has a deeper significance.

Proposed Future Work

Further complementary teaching resources will be added to the resource and will reflect the requirements of users. The online resource can be utilised by a wide range of student cohorts and lecturers, as well as engaging with a wider audience. There is further scope to utilise the resource to deliver online continuing professional education and elective programmes in cultural studies, music history, music performance and music appreciation.

The project would not have been realised to this point without the Fellowship support and there are several longer-term strategic aims for the project including:

- To provide a lasting record of an ambitious artistic practice project undertaken by the Vanbrugh Quartet, DIT Conservatory of Music and Drama and the National Concert Hall.
- To disseminate an example of the Conservatory’s artistic practice research.
- To utilise artistic practice research as a teaching resource, underpinning the linkages between scholarship and teaching.
- To provide on-going teaching resources to students and lecturers in the subject areas of musicology, music appreciation, music performance and cultural studies.
- To develop elective modules utilising the online resource.
- To develop online continuing education programmes utilising this online material to engage with wider society.

Dissemination

The project website will be linked to the DIT Conservatory of Music and Drama’s website (www.dit.ie/conservatory) and as a research project on the “Research Foundation for Music in Ireland” website (www.musicresearch.ie) based at the Conservatory. Dissemination through the collaborative partners in the project, the National Concert Hall and the Vanbrugh Quartet, will be developed. As teaching resources are developed, these will be disseminated through appropriate education networks and through papers at academic and educational conferences. The project features in a conference paper entitled “The Vanbrugh Quartet in Ireland: A Survey of Concert Programmes, Recordings and Collaborations, 1986–2017” for the Society for Musicology in Ireland 15th Annual Plenary Conference at Queen’s University Belfast in June 2017.

Residency Artistic Programme 2014–2017

Prior to the Fellowship commencing, there were three series of concerts as part of the artists in residency programme at the National Concert Hall. Archive recordings and other associated materials from these concert series (programmes, publicity, interviews) formed the basis of the source material for the Fellowship project.

A summary of the artistic content of the first three seasons is outlined below.

Autumn 2014

“Scoring History”, curated by Irish composer, Ian Wilson, provided a survey of the string quartet repertoire over a two hundred year period. The season included performances of six quartets by Ian Wilson, as well as repertoire by Schubert, Beethoven, Dvorák, Kurtág, Debussy, Stravinsky and Shostakovich, around the themes “Folk”, “Distant Lands”, “Conflict” and “Solitudes”.

Spring 2015

The Spring 2015 series partnered String Quartets by Haydn and Mozart, as well as a performance of Schubert's *String Quintet in C major*, D. 956 (Op. posth. 163).

Autumn 2015

Mozart and Brahms were the composers featured in the Autumn 2015 series. Each concert opened with a Mozart String Quartet and then the Vanbrugh Quartet were joined by guest musicians to perform Brahms' *Viola Quintet in G major*, Op.111, *Clarinet Quintet in B minor*, Op.115 and *String Sextet No.1 in B flat major*, Op.18.

With the Fellowship award in 2016, there was capacity to continue the archival audio recordings and the additional opportunity for professional video recordings of some concerts, which greatly enhanced the online resource. As RTÉ recorded the "Composing the Island" series, the emphasis was on the Beethoven and Russian seasons in this regard.

The final three seasons are outlined below.

Summer 2016

In May and June 2016, the Vanbrugh Quartet performed the complete cycle of Beethoven Quartets over six concerts. This significant series was part of the opening season in the newly refurbished Kevin Barry Room at the National Concert Hall.

Autumn 2016

The penultimate contribution to the residency was included in the historic centenary project "Composing the Island: A Century of Music in Ireland 1916–2016" which took place over three weeks in September 2016 at the National Concert Hall in collaboration with RTÉ. The Vanbrugh Quartet performed three concerts as part of this series featuring music by major Irish composers, including Hamilton Harty, Frederick May, Ina Boyle, as well as contemporary works by Deirdre Gribbin, John Kinsella and a première performance of *Wayfarers* for choir, soloists and string quartet by Ian Wilson. The performances were recorded by RTÉ for radio broadcast.

Spring/Summer 2017

The final season in Spring/Summer 2017 celebrated the string quartet compositions of Russian composers. Each of the five concerts married a performance of a Shostakovich String Quartet with a work by Borodin, Prokofiev, Taneyev, Schnittke and Tchaikovsky.

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- The National Concert Hall. Retrieved from <https://www.nch.ie>

College of Business

2 Communication Practices in Technology Companies

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Abstract

It is contended that the skills or competencies that are required of business graduates by technology companies, range from the ability to communicate complex information about global issues in ways that are accessible to and connect with the general public, to problem-solving and project-based interaction. This represents a shift in the type of communication practice that now characterises the technology company, with its main focus on “agile” frameworks of teamwork. This report examines the context for this development, and explores the role of assessment and pedagogy in preparing the student for these communication competencies, from the perspective of the technology company.

Keywords: *communication practices, competencies, technology companies, teams, pedagogy*

Introduction

Anecdotal evidence would suggest that communication practices among employees and management in the technology industry remain to a large extent under-examined and, as a result, are not fully understood. Thus, some uncertainty remains at the centre of discussions on the issue of how precisely those working in the sector communicate and to what extent these modes of communication enhance or inhibit organisational success. This paper seeks to address this question.

Method

A number of reports on developments within the technology industry, and more specifically on changing modes of communication in the hi-technology company, have been published within the last five years. This study conducted a review of literature in order to examine the nature of these changes. Following the main findings from this investigation, this report makes a number of recommendations. These include conducting a more comprehensive survey of the DIT current offering of programmes and communications modules in light of the requirements of technology companies.

Discussion

Defining Communication

It might first be useful to consider the very nature of the term “communication”. There are, it is generally agreed, significant problems in any attempt to define communications. Losee (1999) explains that “hundreds of explicit and implicit definitions of communications have been published in the communication and related literature for use by scholars and practitioners trying to describe, predict and understand communicative phenomena”.⁶ From the

⁶ Communication phenomena in this instance might include: unmediated face-to-face conversation, turn-taking, the use of metaphor (conventional, poetic and conceptual) the employment of various registers, paralinguistic choices, contextual and cultural sensitivity, and the utilisation of schema and scripts.

interactional perspective, it is generally held to be the process by which people interactively create, sustain and manage meaning. It may also be described as an interlocking linguistic, cognitive, social, affective and non-verbal process.

Koschmann (2012: 2) makes a distinction between traditional views of communication as simply the transfer of information (the so-called “code model” deeply entrenched within Western discourse, scholarship and practice) and a more recent conceptualisation of communication understood as a process that shapes our social reality. For the latter, communication is fundamentally about “continually creating and negotiating the meanings that shape our lives” (ibid.: 2).

Organisational Communication

In the organisational context, Conrad and Newbury (2011) citing Hynes (2005) propose that core functions such as planning, organising and leading staff depend on effective communication. Traditionally, formal hierarchical communication within organisations has been beset with problems such as information-ownership, environmental, semantic and physical barriers, authority structures, job specialisation, power relations and intercultural differences – all of which have affected organisational activity and output. Garner et al. (2016) explain that this has given rise to study of supervisor-subordinate communication, diversity (including *inter alia* intercultural communication), technology, corporate communications, organisational socialisation, organisational change and crisis/risk communication, and acknowledge the work of Miller (2005), Putnam & Boys (2006), Allen, Gotcher & Seibert (1993) and Redding (1985) in these areas. Garner et al. (2016) also outline the spectrum of theoretical frameworks emerging from analyses of communication within organisations conducted from 1994 to 2013 – leader-member exchange theory, structuration theory, systems theory, media richness theory, and social identity theory amongst others – yet remark that these fail to address how internal communication makes organisations more effective. This point has also repeatedly been made by Welch & Jackson (2007) and Smidts et al. (2001).

Studies of communication modalities in organisations have tended to focus on the impact of globalisation on the team dynamic; these discuss how communication within and among virtual teams has become necessarily complex due to the constraints of geography, time and space (Accenture, 2005; Behrend & Erwee 2009; Behrend & Erwee 2009; Griffith et al, 2003; Intel Corporation, 2004). Siebdrat et al. (2009) remark that the types of communication challenges that this presents for the team include the absence of co-location, reduced trust, the inability to establish common ground and communication barriers. These challenges are experienced by both the teams and their managers, leaders or facilitators, where communication and collaboration is hindered by a difference in cultural backgrounds, difference in languages and in organisational culture.

For Siebdrat et al. (2008) dispersion and its impact on communication practices is not only a matter of degree but also of kind; they argue that spatial separation across the hall or worldwide can affect the extent of collaboration and communication.⁷ Malhotra et al. (cited in Ebrahim et al, 2009) identify a number of possible solutions to what is described as the “dark side” of virtual teaming; they suggest that in order to enhance the effectiveness and efficiency of virtual teams, i.e. improve their internal and external communication leadership, the key is communication.⁸ The leader must be capable of articulating the vision for the team, aligning team members and facilitating the formation of strong highly motivated coalitions, etc. Looking to the hi-tech organisation, Garner (2016) states that many now engage in practices such as organisational change management and self-managing teams. These are described as “novel”, and reflect the response of the technology company to increased levels of globalisation.

⁷ See Siebdrat et al. (2009) for a discussion of the value and challenges of working in the virtual team environment.

⁸ By “communication”, Malhotra et al. mean what Kalla (2005,) citing Bovée and Thill (2000), calls “effective communication” – the achievement of shared understanding.

Communication Practices

Notwithstanding discussions of communication in the organisational context, the precise nature of communication practices within the technology industry remains largely unexamined. For the purpose of this report we will use Zakrzewska-Bielawska's (2010) lengthy definition of the hi-tech industry to mean companies with a high demand for scientific research and intensity of R&D expenditure, with high levels of innovation, fast diffusion of technological innovations, fast process of obsolescence of the prepared products and technologies, and high levels of employment of scientific and technical personnel. As part of this definition, Zakrzewska-Bielawska (2010: 94) notes how the hi-tech industry is characterised by high capital expenditure and a high rotation level of technical equipment which is replaced by more modern and innovative devices; intense, strategic domestic and international cooperation with other high technology enterprises and scientific and research centres, the implication of technical knowledge in the form of numerous patents and licences, and an increasing competition in international trade.

Describing these hi-tech organisations as "socio-technical systems", Brooks & Rawls (2012) remark that there is as yet no systematic understanding of the interrelationships between social and technological elements. This is largely due to the pace of technological innovation, and pace and scale of globalisation which continue to change the contexts within which newly graduated recruits work. The workplace today is information-laden and graduates are expected to have multiple competencies to allow them to interact successfully.

This is reinforced by Conrad & Newberry (2011) who state that business managers and educators perceive a strong communication skills repertoire to be extremely valuable to employees and organisations. Communication competence plays a critical role in career and organisational success (Roebuck, 2001; Certo, 2000; Rushkoff, 1999; Dilenschneider, 1992). Despite this, Conrad & Newberry (2011) maintain that there is a lack of a strong communication skills repertoire in graduates entering the workforce.

More recently, and specifically in the context of the Irish economy, a number of reports have emerged, within the last decade or so, which examine the importance of communication in the workplace. A FÁS report of 2003 detailed the critical skills required by companies in all industry sectors in Ireland. At that time, oral communication topped the list. Eleven years later, Archer Specialist Recruitment (2015: 27–29) stated in their report on future trends and predictions that top candidates will need to possess strong communication skills, and that those with advanced communication skills and stronger soft skills⁹ will have the edge.

In their 2012 industry report, Forfás looked at the skills needs for high-ICT competencies and reiterated the critical importance of good communication skills. They state that all [management] capabilities are underpinned by "generic" skills: by this they appear to mean strong communication skills.¹⁰ Springboard (2016) makes the case that transferable "people skills" are increasingly important in the context of cross-enterprise competencies.

Griffin et al. (2012) contextualise changes to the operational structures of technology companies in terms of shifts in the global economy. They cite Kamarkar and Apte (Griffin et al, 2012), who describe one shift as being from the manufacture of goods to the provision of services, and explain that this is particularly visible in the world's largest economies where services now account for more than 50% of GDP. However, Griffin et al. argue that a more significant shift has been from an economy based on material goods and services to one based on information and knowledge. In response, the structure of companies and the nature of work has changed. Organisational structures have become flatter, decision-making has become decentralised, information is widely shared, and work arrangements have become

⁹ That is, those business graduates with the capacity to share/exchange their meaning more effectively than others.

¹⁰ In addition to core business skills/knowledge a core set of "generic" skills is recommended including communication. It is assumed that young graduates are already to a greater or lesser degree "digitally literate" (Forfás, 2012).

flexible. A key indicator of this requirement for flexibility is the change to the team structure. Workers now form project teams across organisations and there is increased use of self-managed teams.¹¹

As a result of these developments, the skills required of the worker by technology companies have also changed. Autor et al. (2003) state that as information and communications technology (ICT) is taken up by a firm, computers will substitute for workers who perform routine physical and cognitive tasks, but they will complement workers who perform non-routine problem-solving tasks. These communication tasks can include responding to discrepancies, improving production processes and coordinating and managing the activities of others (Autor et al., 2003). These are considered to involve a higher skills set than before, as they require the worker to be able to respond to complex problems, to communicate effectively, to manage information, to work in teams, to use technology and to produce new knowledge (Lisbon Council, 2007). As illustrated in Table 2.1, Price et al. question the relevance of pedagogical and assessment methods used by educational institutions to prepare the student for these skills and competencies required by the technology company.

Standardised Student Assessments	Tasks in the Outside World
Assessments are designed primarily to measure knowledge of school subjects and these are divided by disciplinary boundaries.	Subject knowledge is applied within and across disciplinary boundaries along with other skills to solve real world problems, create cultural artifacts, and generate new knowledge.
Students are assessed on their ability to recall facts and apply simple procedures in response to well-defined, pre-structured problems.	People respond to complex, ill-structured problems in the real world contexts.
Students take the exam individually.	People work individually and in groups of others with complementary skills to accomplish a shared goal.
Students take a “closed-book” exam, without access to their notes or to other sources of information, and use only paper and pencil during the assessment	People use a wide range of technological tools and have access to a vast array of information resources. The challenge is to sort through the resources to find relevant information and use it to analyse problems, formulate solutions, and create products.
Students respond to the needs and requirements of the teacher or school system.	People respond to official standards and requirements, and to the needs and requirements of an audience, a customer, or a group of users or collaborators.

Table 2.1: Gap between assessment and work practice, from the perspective of the technology company
Source: Timms et al. (2011)

Griffin et al. (2012: 7) contrast these assessment methods, described as “traditional”, with “new, technology-based learning environments”. They cite the work of Kozma (2003), who describes how students work in groups to specify their own research topics, search the web for related information, use data-loggers to collect science data or web forms to enter survey data, use databases or spreadsheets to analyse the data, use e-mail to communicate with outside experts, and use word processors, graphics software or presentation software to prepare reports. Even in 2010, these were described as “novel” classroom approaches.

The findings from a project on digitisation in the telecommunications industry, was presented to the World Economic Forum in January 2017. This project was launched in 2015 and involved the participation of companies across the telecommunications industry, as well as leaders from the World Economic Forum and Accenture. The report confirms

¹¹ This finding is part of a collaborative project entitled “The Assessment and Teaching of 21st Century Skills” which was coordinated by Griffin et al. (2012) and underwritten by Cisco, Intel and Microsoft, and six participating countries.

earlier emphasis placed by Griffin et al. (2011) on skills such as problem solving, but goes further to argue that companies need to reform company culture in order to attract digital talent. Part of the reason that businesses need to innovate is because customers have very different expectations of service provision than in the past. As a result, technology companies need to provide digital tools to improve customer experience of a product through personalisation and digital customer service options.

Two case studies are cited in the report that give an insight into changing communication practices in the telecommunications industry in response to customer demand for innovative products. First, Google, whose project “Loon” involves sending a network of balloons into the stratosphere in order to provide a more sophisticated level of coverage to consumer devices. The project was piloted in New Zealand in 2013, and further launches are planned for Indonesia, Brazil and Australia. Crucially, the success of this project has relied on global teams to project manage the concept and implementation of “Loon” using technology and communication tools.

Similarly, GiffGaff, a UK-based mobile virtual network operator has decided to eliminate the call centre-based customer service model. Instead, the report describes how the company has developed an online community where its own members are sharing and resolving queries. This method is proving to be successful, as it has been able to increase customer engagement with the product. However, the authors of the report warn that while these are two success stories, the telecommunications industry faces significant skill gaps. They argue that these go beyond a mere shortage of digital skills and an ageing workforce, as a more fundamental change is required in the way that incumbent companies address the talent question going forward – especially when viewed in comparison to digitally native businesses.

Communication Competencies

If we agree with Argyle et al. (1981) that by a socially skilled behaviour we mean that behaviour which is effective in realising the goals of interaction, we might reasonably expect the university experience to have provided graduates with such competencies on entering the workforce. However, Kilov & Sack (2009) maintain that in many cases there is a difficulty in transferring knowledge and skills from the classroom to the organisation, and that communication between graduate and IT expert regarding the sharing of “domain knowledge” is key to understanding why this problem is arising. The impact of this problem will be felt by the organisation through an inability to achieve strategic targets in a timely manner, which will have a knock-on effect on consumer confidence.

More recently in the context of information communication technology and particularly in the realm of software development – a major component of Ireland’s export industry and the business of both indigenous and foreign firms – the concept and philosophy of “agility”¹² and its derivative practices has arisen where unmediated face-to-face communication plays a central role. Anecdotal evidence would suggest that agile-like practices are becoming prevalent in the hi-tech sector for the resolution of problems and decision making. Given the increased emphasis on the virtual team, it is somewhat ironic that central to “agility” is face-to-face interaction, demanding greater interpersonal communicative competencies.

¹² “Agility” provides for a relatively novel non-hierarchical context where communication practices eschew traditional top-down hierarchical behaviours with inbuilt power relations and power structures, and lend themselves towards what may be described as ‘agile-like anencephalic modes/modalities’.

Conclusions

Many definitions of “communication” subscribe to the code-based transmission model (Daft, 2015; Griffin, 2014; Stoner et al. 1995), which fails to appreciate the essence of communication in the workplace: the exchange of meaning. This report has shown that it is the context of the organisation that allows a differentiation between communication in general, and communication within industrial contexts in particular. Rapid technological change has changed the business environments in which graduates now operate; the emergence of virtual team-work and the increasing digitalisation of the workplace now places novel demands on these information workers. Despite a plethora of studies, precisely what communication practices in the technology workplace comprise, remains a matter of continuing debate and requires further research.

Recommendations

While there has been a shift in teaching practice from the classical model of lecturing to more interactive models to facilitate the development of problem-solving skills through a problem-based learning approach (PBL), for example Johnson et al. (2015) argue that teaching practice needs to go much further so that the university classroom will start to resemble “real-world work and social environments that facilitate organic interactions and cross disciplinary problem solving”.

In light of this, the authors make the following recommendations:

- 1 A survey should be undertaken to examine what communication competencies are being developed through communication modules across the Institute, and how comparable these are with the requirements of our graduates, by the technology sector. Following from this exercise, it is suggested that a roundtable discussion with communication lecturers is held in order to review the findings from the survey, examine what kind of teaching model and learning culture would develop these competencies more fully, and discuss the role of the communication lecturer in this process.
- 2 A comprehensive, college-wide survey is required to determine what communication competencies are being developed across non-communication specific modules. Notwithstanding the different attributes required of the marketing graduate compared with the finance graduate, for example, there is a need to identify what models of pedagogy and assessment are being employed across non-communication subjects, which indirectly support the development of communication competencies in our graduates.
- 3 Following from this, it would be instructive to determine the nature and types of learning environments and teaching model(s) that colleagues across the institute have found to be most conducive to promoting the transfer of learning.
- 4 A final recommendation would be to carry out a survey of business professionals operating within the technology sector to elicit suggestions about how a cross-faculty business communications curriculum might be adapted to meet the needs of business.

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3 The Design of E-Learning Resources for Part-time Distance Education Students

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Abstract

This research assessed the current e-learning provision for Ibec postgraduate students at DIT. The current e-learning resources are delivered using Webcourses (Blackboard), which is the Institute's Learning Management System (LMS).¹³ The first stage of the research involved an audit of the existing e-learning resources on Webcourses, discussions with colleagues and a review of the e-learning literature. This research indicated that there were **five key elements** required in the programme's e-learning design, namely: user experience, assessment, module content, interactivity of content and the updating of module content. A number of amendments were made in order to provide standardisation and to enhance the user experience. During the programme committee review meetings with student representatives details of the e-learning design project work were shared to keep students informed of the developments.

The second part of the research involved a student survey to ascertain students' views on the five key elements and to measure student satisfaction and feedback. The research validated the five key elements which should be used for effective e-learning design. Five recommendations are made to the institute: (1) provide further details to support the five key elements, (2) include support material to assist programme and teaching staff in developing and implementing these elements in day-to-day activities, (3) continue to improve e-learning design and (5) regularly collect feedback specifically on the e-learning/LMS provision for the Ibec Global Graduates programme.

Keywords: *e-learning; distance education; e-learning design; learning management system (LMS); virtual learning environment (VLE); distance education students; blended learning; virtual learning*

Introduction

The Ibec Global Graduates (IGG) programme was developed in 2015 as a rebranding and redesign of the Export Orientation Programme (EOP), which had run successfully since 1983. The programme involves both a structured work placement and a formal educational programme delivered by DIT. Students are grouped into a Food and Drink cohort (as the programme has a long history in the food and drink industry) or a cross-sectoral cohort (with a large representation from multinational companies and tourist bodies). The majority of placements involve an overseas work placement, with students operating in over 35 countries globally. The qualification attained is a Postgraduate Diploma in Global Business.

Currently (April 2017) there are 118 students registered on the programme, with 64 registered for the general programme and 54 registered for the Food and Drink programme. Cohorts of students begin up to four times a year, normally in January, June, August and October. The programme is offered using a model of Flexible and Distributed Learning (FDL).

In their guidelines document on Flexible and Distributed Learning the Quality and Qualifications Ireland (QQI) define FDL as:

¹³ Webcourses is the Virtual Learning Environment used within DIT, providing students with a blended learning experience. It runs in the Blackboard 9.1 environment. See <http://www.dit.ie/lttc/webcourseslogin/student/>

A programme or module that offers a wholly at a distance, on-line, or blended learning experience, rather than requiring the learner only to attend classes or events at particular times and locations. Typically, it may not involve face-to-face contact between learners and tutors but instead uses technology such as the internet, intranets, broadcast media, CD-ROM and video, or traditional methods of correspondence – learning “at a distance”.(QQI, 2015)

The IGG Students attend DIT in person 1–2 times during their placement, attending classes for 2–3 weeks – usually at the commencement of their placements. During these sessions the distance/distributed learning part of the programme is explained.

QQI also recommends that “Learners are supported to make informed choices about participating in a FDL programme; and to develop the necessary independent study skills to successfully progress towards becoming an autonomous learner”. Adding that “The benefits of flexibility offered by FDL for learners is balanced by its demands for autonomy, commitment and self-regulation. It is important that learners understand how FDL may differ from previous learning experience; that they are appropriately prepared for it; and that their progress and engagement is monitored, encouraged and supported”.

IGG students have the distance element of their course delivered using DIT’s Learning Management System (LMS), which is also known as a Virtual Learning Environment (VLE). This system is called Webcourses. Enrolled students are given access to the system from course registration and encouraged to spend time getting to know the system’s interface and navigation. From a programme management and individual lecturer perspective the content provided via Webcourses must work with the LMS’s structure, functionality and limitations.

Outline of Project

Part One – Audit of Webcourses content

To understand the IGG student view and experience of the LMS, a programme level audit was carried out in February 2017 to assess the content available at that time. It was noted that a standard navigation did not exist across the different cohorts. Please see Appendix 3.1 for the full audit summary table.

Output 1 – Standardise programme navigation items

It was recommended to standardise the navigation items where possible; see findings below with an image of how the navigation looks in-situ on Webcourses.

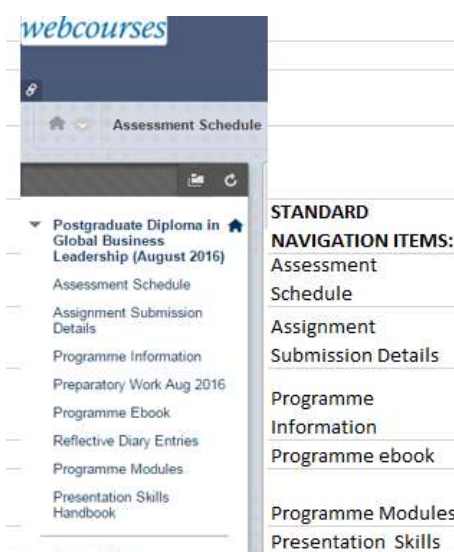


Figure 3.1: Standard navigation items required

During the following months navigation items were standardised over the cohorts in progress. This means that a uniform view is presented across the various interfaces for each programme on Webcourses and enables teaching staff to replicate the navigation, utilising it for new cohorts. There is also a student user-experience benefit, providing a unified view to the student.

Output 2 – Make assessment schedule the default “home page” for programmes

It was decided that all programmes would have the assessment schedule and key dates calendar as the landing page, i.e. the first page that students see upon opening their programme section on Webcourses. This ensures key dates and assessment deadlines are clearly visible.

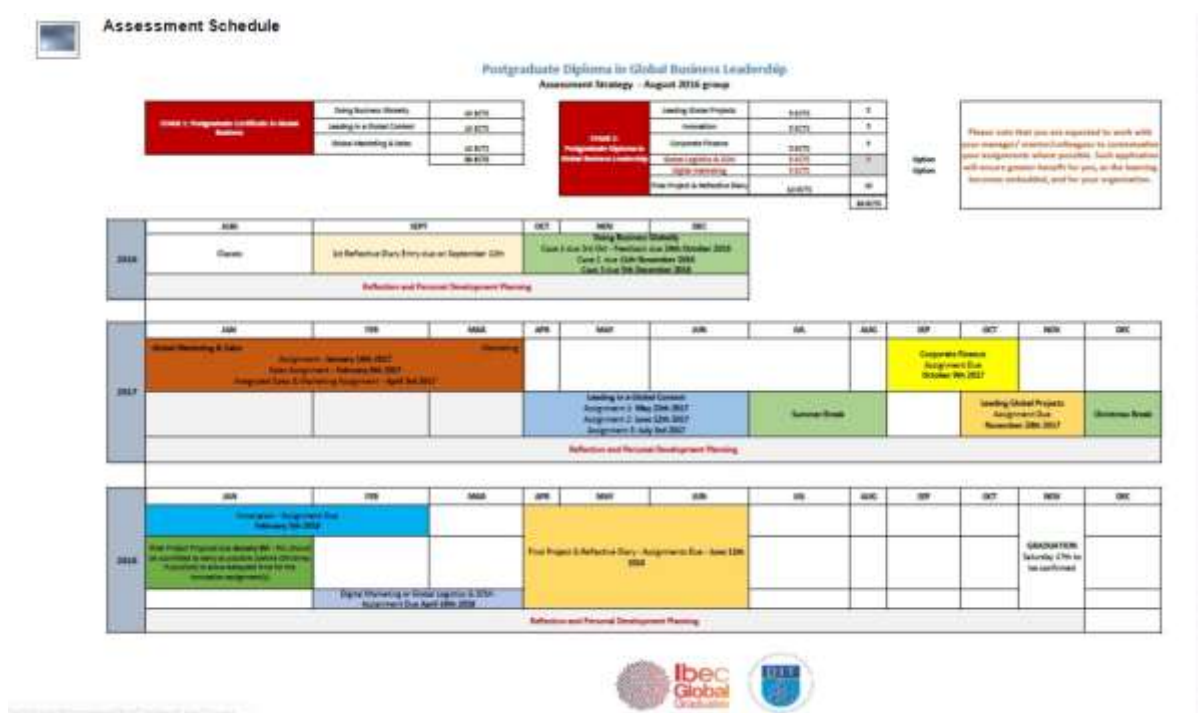


Figure 3.2: Assessment schedule for programmes

Output 3 – A list of five essential elements were compiled

During the literature review in relation to best practice in e-learning design Steen’s 2008 paper on “Effective e-learning design” gave clear guidance; “There is no one-size-fits-all approach to the design of e-learning. Each course is unique. However, there is a general process whereby the designer balances the elements involved. If the designer does everything correctly, there is a greatly improved chance that the result will be effective e-learning”.

The author decided to identify the key elements from a programme level that could be influenced and improved. Further advice was provided by Brown & Voltz (2005), who recommended three clear areas to focus on: the training material itself, the experience and interactivity of that material, and the feedback channels available to learners.

The five essential elements compiled for the IGG e-learning design, include three items (numbers 1, 2 and 4) that are related to module content, quality and user experience on the LMS. Communication with DIT staff is via direct email and also via messages on Webcourses, this relates to item number 3 being kept up to date. The final essential element for the IGG course was Assessment Methods as all assessments are posted on Webcourses.

The final list of the five key elements is the following:

1. Module Content – the detail and quality of content on Webcourses
2. Interactivity of Content – variety including videos, e-books, web links etc.
3. Updating of Module Content – timeliness and being kept up to date
4. User Experience – format and structure of content on Webcourses
5. Assessment Methods – the detail and quality of content on Webcourses

To validate these five key elements a student survey was conducted.

Part Two – Student Survey

In April 2017 a student survey was conducted with the following objectives:

- To measure student satisfaction with the current Webcourses provision
- To ask students to rate and rank the proposed five key elements
- To obtain general feedback on the current Webcourses provision

Ultimately the research findings would feed into the guidelines on a student-centric design for the programme on Webcourses. The research sampled 39 students and 17 responses were received. Student representative input was also requested during the regular programme review meetings to gauge the response to amendments and gather student feedback.

Research Finding 1 – Satisfaction level

Question asked: How satisfied or dissatisfied were you with the e-learning (Webcourses) experience on this course?

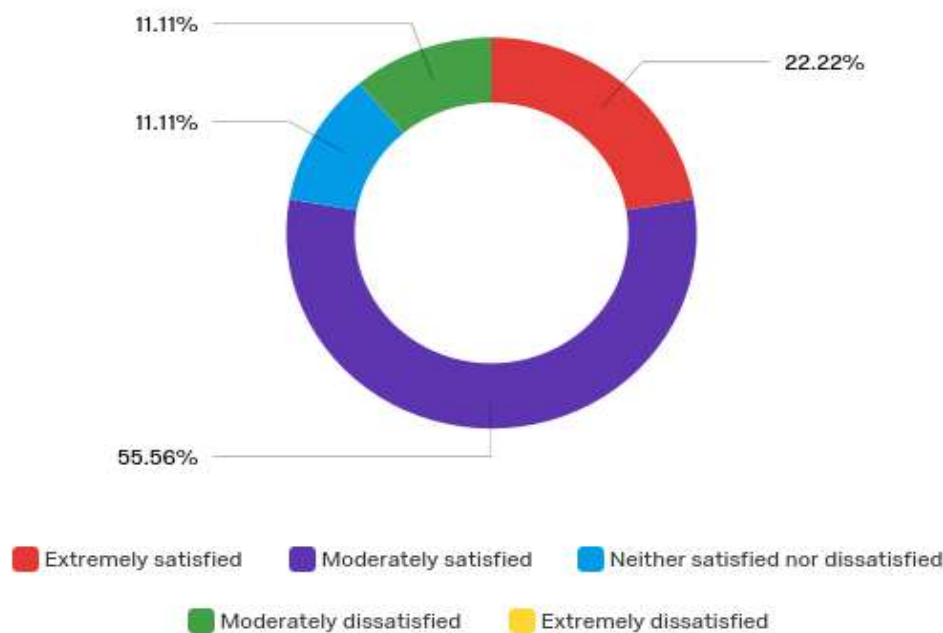


Figure 3.3: Satisfaction level with e-learning experience

No respondent expressed extreme dissatisfaction. Some 66% of respondents were either extremely or moderately satisfied with the current Webcourses provision.

Research Finding 2 – Importance ranking of “five elements in e-learning design”

Question asked: In terms of your e-learning (Webcourses) experience please rank the following criteria (from 1–5) in order of importance for module content. You can move the choices around to order them.

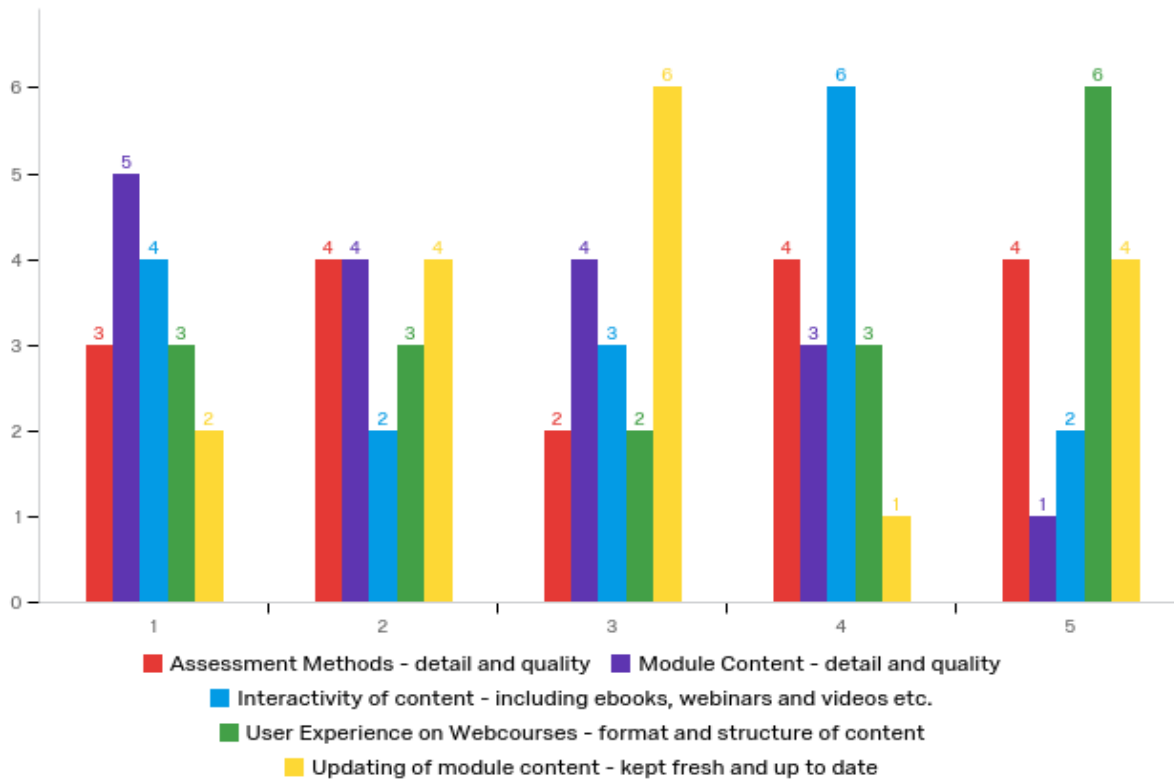


Figure 3.4: Ranking of key criteria in relation to module content

#	Question	1	2	3	4	5	Total					
1	Assessment Methods – detail and quality	18%	3	24%	4	12%	2	24%	4	24%	4	17
2	Module Content – detail and quality	29%	5	24%	4	24%	4	18%	3	6%	1	17
3	Interactivity of Content – including ebooks, webinars and videos etc.	24%	4	12%	2	18%	3	35%	6	12%	2	17
4	User Experience on Webcourses – format and structure of content	18%	3	18%	3	12%	2	18%	3	35%	6	17
5	Updating of Module Content – kept fresh and up to date	12%	2	24%	4	35%	6	6%	1	24%	4	17

Table 3.1: Responses

Respondents ranked the five key elements as follows (using the rank position of number 1):

Based on the ranking for number 1, i.e. which got placed as most important, here are the results:

1. Module Content – the detail and quality of content on Webcourses (29%)
2. Interactivity of Content – variety including videos, e-books, web links etc. (24%)
3. User Experience – format and structure of content on Webcourses (18%)
4. Assessment Methods – the detail and quality of content on Webcourses (18%)
5. Updating of Module Content – timeliness and being kept up to date (12%)

The respondents validated the importance of individual module content, interactivity of that content and the overall user experience on the LMS as the paramount elements.

The research validated the five key elements which should be used for effective e-learning design.

Research Findings – Qualitative Feedback received suggested improvements to LMS

During Part Two, qualitative feedback was gathered in two ways. The first was via the regular programme committee review meetings with student representatives, normally six students attend representing a total of five cohorts. Extensive meeting notes gather feedback on the programme in general but also sought to specifically get feedback on the Webcourses provisions and the ongoing amendments and improvements.

A sample of this feedback can be seen in Appendix 3.2.

Recommendations to DIT

Five recommendations are made to the institute: (1) provide further details to support the five key elements, (2) include support material to assist programme and teaching staff in developing and implementing these elements in day-to-day activities, (3) continue to improve e-learning design, and (5) regularly collect feedback specifically on the e-learning/LMS provision for the IGG programme.

To support the five key elements for effective e-learning design, the project found the use of the audit process an important and efficient way to assess and review. A process of auditing an e-learning provision is also encouraged and recommended to other teams and departments at the Institute.

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Appendix 3.1

Audit Summary – February 2017

<u>Group</u>	<u>Date</u>	<u>Assessment Schedule</u>	<u>Assignment Submission Details</u>	<u>Programme Information</u>	<u>Programme E-book</u>	<u>Programme Modules</u>	<u>Presentation Skills</u>
IGG	Oct. 15	X	X	X	X	X	X
Food & Drink	Jan. 16		X		X	X	X
Food & Drink	Jun. 16	X	X	X		X	X
IGG	Aug. 16	X	X	X	X	X	X
IGG	Oct. 16	X	X	X	X	X	X

Appendix 3.2

Sample of feedback from Student Representatives at Programme Committee Review Meeting – 24 February 2017

Webinars

Webinars were discussed in detail. XXX agreed that XXX webinar for Doing Business Globally was quite helpful as it contained guidelines on writing case studies and many students were completing case study assessments for the first time. XXX noted that XXX webinar for 'International Market & Trade Research' was also very useful. XXX noted that a webinar with a recap of module content would not be of interest to her personally and that she would rather a webinar explaining the specific assessment. XXX noted that any students come from non-business backgrounds and as a result a recap of the module content was often very useful. XXX agreed to investigate the possibility of one pre-recorded webinar featuring a recap of module content, along with a separate live webinar focused on the assessment brief. XXX suggested that a table of contents be used to allow students to skip forward to relevant sections of the webinar.

Sample of Feedback from the Online Survey in April 2017

In relation to question 3 above, are there any comments or feedback you would like to add:

-
- Overall the way the course was laid out was very helpful, especially the labs given when we were in DIT which helped a lot with the projects for this module. However some of the content on Blackboard were insufficient and I would have liked to have seen more articles about design, responsiveness etc.
-
- I think the e-learning system is good and easy to use.
-
- All of the above choices are equally as important but since we have to do a lot of our work online improving UX is needed as it can sometimes be difficult to find a reading or assessment brief that we know is online. Again interaction is also important as we are not in a classroom it is harder to keep us engaged so more videos/webinars are needed. Also, content needs to be freshened up. I know the theory doesn't change all that much but examples can, so it would be great to keep it relevant to the times we are in.
-
- Greater access to e-books.
-
- The quality has improved since Web Courses started to be used properly by lecturers, i.e. content uploaded on time and grading/feedback offered through Web Courses and not by email

College of Engineering and the Built Environment

4 Providing Digital Resources to Enhance Graduate Attributes

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Abstract

The objective of this Teaching Fellowship research project was to provide digital resources for students that could potentially enhance graduate attributes. This study was conducted during one semester and concentrated on one aspect of graduate attributes which was presentation skills. A video was scripted, shot and edited that demonstrated a rather inept presenter making a poor presentation. This video was then used in a Communications module specifically during the sessions that focussed on presentation skills. Background data on the participants' experience of formal presentations was gathered to provide a snapshot of their level of previous experience. The video was used to provoke discussion and engagement from the students. Following the lectures the students were canvassed for feedback. The video successfully provoked an awareness of the requirements in making a formal presentation and is now available as a digital resource. It is recommended that further research be carried out to determine the efficacy of utilising videos in the classroom to improve learning.

Keywords: *graduate attributes; presentation skills; social media; communications*

Introduction

In 2007, the DIT Academic Council approved a recommendation that “all programmes will provide students with a range of opportunities to develop, practice and be assessed on an agreed range of employability skills or graduate attribute” (DIT, 2007: 12). This project attempted to feed directly into such an undertaking through its student centred commitment and values placed on the development of graduate attributes and potential curriculum implementation Institute wide. The Higher Education Strategy Report (2011: 35) asked “what are the right skills for the graduates of 2015 and of 2030 and what mix of skills should we pursue as learning outcomes of higher education?” The report calls for increased attention to be paid to core skills such as team working skills and communication. It is the intention of this research to focus on these key graduate attributes and develop digital resources that can assist lecturers in higher education who deliver modules aimed at developing professional skills and graduate attributes.

DIT is committed to the enhancement of the student experience. This is evidenced through the DIT Strategic Plan 2016–2018 where it is explicitly stated that the DIT will provide “a distinctive, high quality, experiential student experience”. This research has the potential to provide just such an experience for the students while also placing DIT at the forefront of student care and development from a holistic point of view where the lifelong learning skills of the student are firmly grounded in real world activities.

I teach a module entitled “Communications” on a Level 7 Ordinary Degree programme. Within this module there is a strong emphasis on presentation skills reflected in the assessment. The module is weighted thus: 70% for written reports and 30% for a presentation. Traditionally I have noticed that a large percentage of students tend to avoid the presentation and will instead focus on the written reports. When asked afterwards as to why they adopted this strategy the answer usually revolves around fear of presenting or lack of confidence. It is hoped that utilising digital resources in the presentation lectures may also encourage students to participate fully in presentations.

Research Outline

The project had four distinct phases with deadlines in order to produce a video that could be used in the second semester of the academic year when the Communications module was delivered.

Phase 1

Initially this phase was to occur during semester 1 and produce two videos focussing on presentation skills. One video would demonstrate a poorly prepared presenter and a poorly prepared presentation. The second video would show a competent presenter and a well thought out presentation. The first video was scripted, shot and edited and made ready for use. Unfortunately due to time constraints the second video was not made although the script and production plan were done. It is expected that this video will be produced at some stage in the near future.

Phase 2

Students were given out a pre-lecture questionnaire (see Appendix 4.1). The sheets were given out and collected a week before the planned lecture on presentation skills. This was done in an attempt to gather some background information regarding their experience of making presentations. There were 18 students in the group (n=18) with 16 being school leavers and two being non-standard entrants where non-standard entrants are classified as anyone over 23 years old.

Phase 3

During this phase the video was used in class. The video was integrated into a lecture concentrating on what constituted a good presentation and what good presentation skills looked like. To begin the students were split into groups of three and given out a worksheet (see Appendix 4.2). The worksheet asked the students to list the elements that went into making an excellent presentation. There were ten spaces for responses and students could turn the page over and continue the list overleaf.

Phase 4

This phase occurred two weeks after the lectures and involved gathering feedback from the students. Please see Appendix 4.3 for feedback sheet.

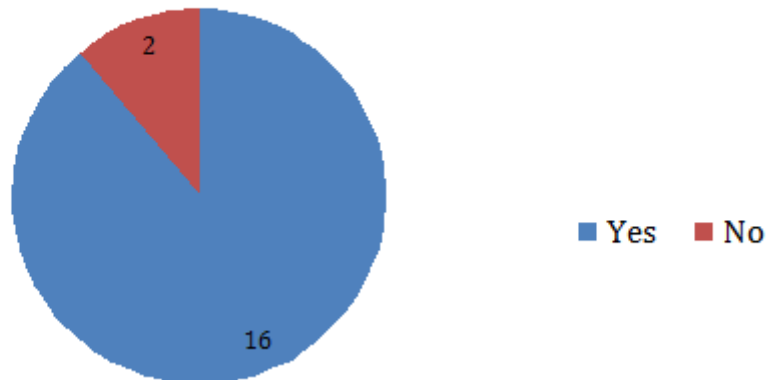
Results and Discussion

To begin, the pre-lecture questionnaire will be analysed and discussed. This will be followed by the Presentation Worksheet and finally the Video Feedback Sheet. On the two days that this research was carried out there was full attendance, so in all cases the participants were 18 (n=18).

Pre-Lecture Questionnaire

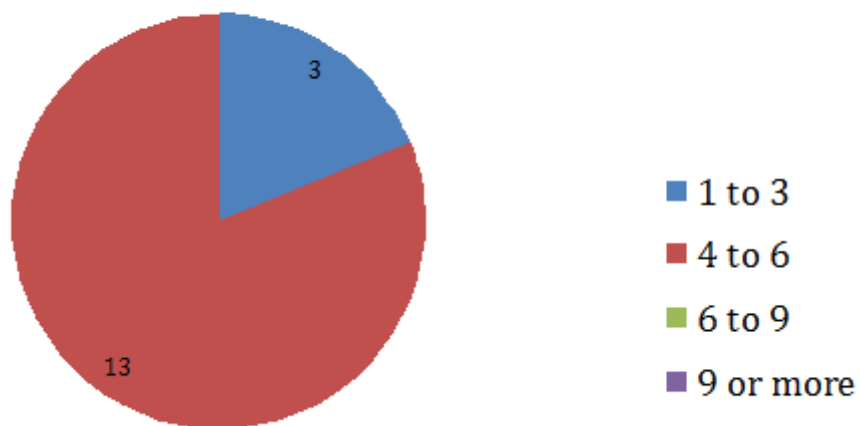
The pre-lecture questionnaires were utilised to gather background data on participants. Question 1 asked if they had ever done a formal presentation previously. The results can be seen in Figure 4.1 and showed that 16 out of 18 students had done a formal presentation previously.

Figure 4.1: Have you ever done a formal presentation?



Question 2 asked how many formal presentations the students had done. It can be seen from Figure 4.2 that nobody had presented more than six times and the majority of the group (n=13) had done between four and six presentations. Following the collation of the results the students were asked in what context their presentations had taken place and the answers indicated it was part of their Leaving Certificate studies.

Figure 4.2: If yes, then how many?



Question 3 asked if the student enjoyed doing formal presentations. Figure 4.3 shows the overwhelming answer was no with two students indicating they didn't know. It is safe to assume these two students are those who previously answered they had never done a formal presentation and thus did not know if they enjoyed them or not.

Figure 4.3: Do you enjoy doing formal presentations?



The last two questions on the questionnaire attempted to gather qualitative data. Data collection that is qualitative in nature includes in-depth interviews, usually involves words and/or images and open ended questions (Johnson & Christensen, 2008). This research used two open ended questions.

Question 4 asked “What is the most appealing aspect of doing a formal presentation?” The majority of the responses were clear and can be summarised as there being nothing appealing about doing a presentation. One divergent answer indicated “it’s a change from the usual stuff”. This in itself does not show any particular appealing aspect of presentations but rather only that they are a break from the normal routine.

Question 5 asked “What is the least appealing aspect of doing a presentation?” There were many diverse responses here. One of the more common responses can be summarised as the fear of looking foolish. This fear is surprising given the majority of the class are school leavers aged between 18 and 19 years old and seemed quite comfortable with each other having spent a full semester in the same class. Coupled with their age is also the fact that most of them have already done at least one formal presentation.

Presentation Worksheet

The class began with students being put into groups of three. Names were randomly selected and there were six groups. Each group was given a copy of the presentation worksheet and asked to produce a list detailing what elements go into making an excellent presentation in order of importance. Anything they thought of any value was to be included. The sheets were collected after 15 minutes and the class then began. When the class was finished the worksheets were analysed and the feedback was summarised into themes. Three strong themes emerged: the first was to speak loudly; the second was to try being funny; and the third was to ensure that no swear words were used. From follow on discussions it became apparent that some of the participants had attended weddings and were thinking in terms of wedding speeches. Other had taken part in team sports and were members of winning teams and were thinking of acceptance speeches.

Once the worksheets were collected the video was then played through a multimedia projector onto a large screen. The finished video was four minutes in duration and shot from the perspective of a person sitting in a tiered classroom. A man walks into the classroom and sets up to make a presentation from a podium in the corner. There are delays as he tries to cope with the computer and he makes many impatient noises as he struggles to get the computer up and running. Eventually the screen comes on and he can begin his presentation. It becomes apparent that he is introducing the class to a module he will be teaching to them. The non-verbal communications of the lecturer are poor as he repeatedly looks out of the window, at the floor, and does not make good eye contact with the students. He is generally fidgeting in an obviously overly nervous manner. His clothes are also inappropriate for the setting as is wearing sports style or leisure wear more appropriate for a visit to the gym than a classroom. The presentation itself is poor and it becomes obvious that the presenter did not prepare the slides as he is unaware of what is coming up on the slides. He continually reads the slides rather than actually presenting his subject matter.

Once the video was completed the presentation worksheet was once again handed out to the same groups and they were asked to complete them again. There was very little time and the groups did not have time to interact with each other. This time the responses were fairly consistent across the groups. The themes that emerged were many and included the following main themes: dress appropriately; be confident; speak clearly and loudly; prepare your own slides; practice your presentation, check the technology beforehand. The responses were more varied the second time around and were relatable to making a presentation rather than a speech.

Evaluation

Based upon the responses from the Presentation Worksheet the use of the video prompted a more interactive and thoughtful response from the students. Having seen the video, which emphasised the effects of both poor preparation and a poor presentation, the students were in a position to identify best practice for making presentations. However, it has been my experience that students always like seeing videos in the classroom and videos can in fact become distracting rather than helpful. Two weeks after the video was used in the classroom the video feedback sheets were given out to ascertain the usefulness of the videos (see Appendix 4.3). During this session there were only 16 out of 18 participants present (n=16). The sheets were handed out and the students were given time to fill them out. The lecturer left the room during this time and all the sheets were collected by the class representative and placed on the podium in the room. No identifying marks were made on the sheets. The participants were asked to be honest in their responses.

Statement 1

Statement 1	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
Videos are useful in a lecture.	5	4	3	2	1
	75%	25%			

Table 4.1: Statement 1 Results

There was complete support for this statement with 12 responses indicating “Strongly Agree” and four indicating “Agree”. There was a comment box in the questionnaire and students were encouraged to provide comments if they had any. Some of the remarks were “you should encourage more lecturers to dos tuff like this” and “two hours is too long to sit here writing and listening, a video breaks the monotony of a lecture”.

Statement 2

Statement 2	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
Videos can help my understanding of a topic.	5	4	3	2	1
	62.5%	25%	6.25%	6.25%	

Table 4.2: Statement 2 Results

A more varied response was elicited through statement 2. There was a majority agreeing with this with 10 indicating “Strongly Agree” and four indicating “Agree”. Comments from those who strongly agreed included, “I learn better when I see it” and “a picture tells a thousand words”. There was one response which indicated “Don't know” commenting “I have no way of telling if the video helped without a test”. Finally one participant marked “Disagree” and wrote “I much prefer to read and learn than view and take it all in. There is less pressure when you are writing.”

Statement 3

Statement 3	Strongly Agree 5	Agree 4	Don't Know 3	Disagree 2	Strongly Disagree 1
This video helped me develop my presentations skills.		68.75%	25%	6.25%	

Table 4.3: Statement 3 Results

Statement 3 was essentially asking the students to reflect on their learning and indicate whether they thought the video had helped. The consensus was that it had helped with 11 indicating “Agree”. Comments here included “I always knew about wearing proper clothes but seeing the fella in the video wearing such wrong clothes really made the point strongly” and “Seeing the presenter making all those the mistakes was clever – it was so obvious what was wrong! I think that will make it easier to remember how to do it right”. There were four who responded “Don’t Know” and some of the comments included “It certainly made me think about making a presentation but I don’t know if it will actually help me make a better presentation. I suppose I know what not to do now” and “Not sure here, maybe when we do the presentations I could tell you better”. Finally there was one participant who indicated “Disagree” and he commented “It is practice that makes perfect, not looking at someone else doing it.” It is interesting here that none of the respondents indicated strong agreement that the video helped develop their presentation skills.

Conclusions

This research set out to provide digital resources in the form of videos for students in an attempt to enhance their graduate attributes. A home-made video was scripted and produced and is now available as a digital resource. Determining the efficacy of the videos in terms of graduate attributes is unclear. It is without doubt that the majority of students liked seeing videos used in the classroom and also that the majority agreed that the videos helped develop their presentations skills. However, at the time of writing the assessment has not occurred and there is no control group to compare the results from this group with. Future research may possibly look at assessing a group first as a comparator and then utilising this video, and perhaps the video that was planned but not made, and an attempt to determine if the use of videos has any real impact.

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Appendix 4.1

Pre-lecture questionnaire

Q1: Have you ever done a formal presentation? Yes/No (Please circle as appropriate)

Q2: If yes, then how many? 1–3/4–6/6–9/9+ (Please circle as appropriate)

Q3: Do you enjoy doing formal presentations? Yes/No/ Don't know. (Please circle as appropriate)

Q.4: What is the most appealing aspect of doing a presentation?

Q5: What is the least appealing aspect of doing a presentation?

Appendix 4.2

Presentation Worksheet

Group: _____

You have been asked to produce a list detailing what elements go into making an excellent presentation. Please list your responses below in order of importance with Number 1 being the most important and so on.

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Appendix 4.3

Video Feedback Sheet

This sheet is designed to measure your attitude towards the use of videos in the classroom. Place a mark in the box you think corresponds to your response to the statement. Example, if you select 5 it means you Strongly Agree with the statement, if you select the number 3 it means you neither agree nor disagree and if you select number 1 you strongly disagree with the statement.

Statement 1	Strongly Agree 5	Agree 4	Don't Know 3	Disagree 2	Strongly Disagree 1
Videos are useful in a lecture.					
<i>Comment</i>					
Statement 2	Strongly Agree 5	Agree 4	Don't Know 3	Disagree 2	Strongly Disagree 1
Videos can help my understanding of a topic.					
<i>Comment</i>					
Statement 3	Strongly Agree 5	Agree 4	Don't Know 3	Disagree 2	Strongly Disagree 1
This video helped me develop my presentations skills.					
<i>Comment</i>					

College of Sciences and Health

5 Feedbackly – A Tool for Collecting Real-time Feedback on the Student Experience

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Abstract

In higher education institutes feedback is collected via various formal (e.g. quality assurance processes) and informal (e.g. one-to-one discussion) methods. A core distinction between these approaches is the immediacy of informal feedback set against a slower, but potentially more powerful, formal feedback mechanism. This project aimed to explore a real-time mechanism to explore the student experience, using a simple data entry point connected to a web-accessible dashboard which summarises the data. A prototype was successfully developed and deployed, and collected feedback from students across the College of Sciences and Health. The system was broadly used by students, with more than 500 users engaging with the system in the three-month trial period. The overall rating of the student experience in DIT was 3.18, with 5 as the maximum. A limitation in data collection was the requirement to remind users to participate, likely due to the system not being embedded in programmes across the College. These results are discussed in the context of the potential for a broader roll-out with an enhanced student interface.

Keywords: *feedback; real time; student experience; Feedbackly*

Introduction

Feedback is an essential component of the modern educational experience, and is well recognised as essential for learner success (Hattie & Timperley, 2007). The development of quality assurance processes and the greater emphasis on student as “customer” has led to a greater emphasis on the ability of a student to influence their educational environment and experience (Tight, 2013). The introduction of the Irish Survey of Student Experience (ISSE) has placed the overall student experience under additional scrutiny, particularly as the results of ISSE will be made publicly available and may influence the decision of a prospective student to attend an institute (Irish Survey of Student Engagement, n.d.).

Currently, formal feedback processes typically seek to gather feedback at a very limited number of points throughout the academic year. For example, feedback in a DIT context is typically gathered during programme committee meetings (two per academic year, generally mid-semester) as well as at the end of a module using standardised reporting templates (the Q6a and Q6c), which ultimately feed into the programmatic Q5 form. A key limitation is the timing of the data collection, most obvious in the case of the end-of-module Q6a – the module is now complete and students are providing summative feedback when it is no longer possible to implement a change or an improvement, notwithstanding the ongoing informal feedback from students. From a broader perspective, the facets of student life that are explored by the ISSE survey and which strongly influence their experience are also unavailable via current data collection methodologies. This general approach is at odds with a generation of students who, for good or bad, are culturally acclimated, via social media, to more immediate feedback and real-time interaction (Przybylski, Murayama, DeHaan, & Gladwell, 2013). It should be noted that there is some activity in this technological space. Unitu (<https://unitu.co.uk/>) have developed a commercial application featuring real-time feedback, which is designed to operate as a more traditional collaborative messenger system linked with a customer response management interface.

The lack of processes within the institute to collect real-time, dynamic data describing the student experience impedes the development of other systems to accept, analyse and integrate this information with other data (e.g. assessment scheduling). In the context of the student experience, this limits a HEIs ability to address issues which may impact the day-to-day academic experience of a student, a feature which is given such weighting in the ISSE survey. The overall aim

of this Teaching Fellowship was to develop a working prototype of a real-time system to collect information on the student experience using readily available tools and automated data aggregation.

Outline of Project

The design ethos underpinning this project was to make the real-time solution as simple and accessible as possible, such that the technology was available to any academic or HEI, irrespective of their computer skills. The main conceptual model of this system, called Feedbackly, is shown in Figure 5.1 below. Briefly, it consists of a Google form as a front end, which has a very simple anonymous data input form and the data collected is fed into an associated Google Sheet file. This raw data is then processed to calculate a running average of the daily response, based on the total number of responses up to that time point for that day, and the result is posted to a separate page of the Google Sheet file. These data are then plotted in real time using Infogr.am which converts the initial data into a graphical output. The individual anonymous responses and the daily aggregate are updated every minute and the output is available online.

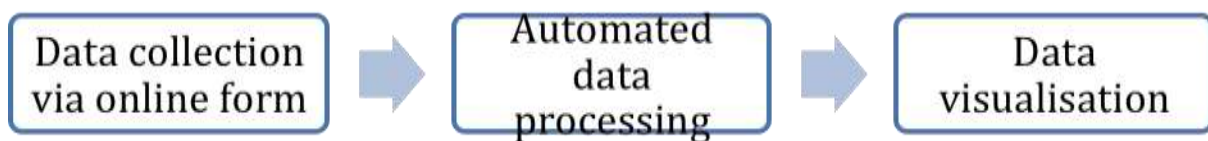


Figure 5.1: Conceptual model of Feedbackly

Note: Data is entered via a simple online form, processed and aggregated into global data that is then made available visually.

In keeping with the design ethos, the pilot student experience survey was designed to ask one simple question – How is your experience at DIT right now? – with a rating scale from terrible (one) to great (five). The simplicity of this input approach was inspired by simple swipe-based voting systems present on many smartphone apps and sought to emulate them in a simple format. Students were able to vote as many times as they liked, as each vote was anonymous and individually time-stamped. All participants were drawn from the College of Sciences and Health and invited via e-mail to class group lists.

Initially a time point of one day was selected for generation of averaged data, and a formula was developed which aggregated all data points which were greater than a given date. This provided a straightforward solution to processing the data which would be easy to implement using a template based approach. The final step was to generate visualisations of the data. A number of different platforms were explored on the basis of accessibility, cost and overall function with the online Infographic platform Infogr.am proving the best match for the requirements. A key advantage of Infogr.am was the ability to connect with data from Google Sheets in a straightforward way, and readily generate appropriate graphical outputs (Figure 5.2).



Figure 5.2: Sample graphical output of Feedbackly system

Note: Data can be visualised in both aggregate (Panel A, daily average with each column representing a single day) as well as by individual response (Panel B). The values and times of the individual responses can be displayed using a mouse-over approach. In each panel, five is the highest and represents a “great” experience at DIT. A decline in experience is noted in the pre-Christmas exam period, but there is some recovery during the early January session. This highlights the ability of a simple system such as this to generate useable data with day-to-day sensitivity.

The average score over the period surveyed was 3.18, or 64% of the maximum score of a “great” student experience. The minimum aggregated score of 2.6 was still above average, while the aggregated maximum of 3.5 indicates that there is room to improve the experience of students within the College of Sciences and Health.

One of the main limitations in the project was the requirement during the test period to remind students to participate, being cognisant of the fact that students are invited to participate in a broad range of online surveys and of the potential for survey fatigue. A planned component of the project was the development of an app to facilitate data collection. However, difficulties in organising access to simple, user-friendly systems proved difficult under the constraints of the DIT, with extensive dialogue required to organise the access to the required system(s). The pilot was thus focused on developing the data collection system. While an app may have been expected to increase accessibility,

the main driver to student participation is likely to be that this is a pilot which is not embedded in programmes at an institutional level (e.g. similar to the Q6a process). This is discussed further under the Recommendations section.

Evaluation and Conclusions

As described above, engagement remained a challenge for this pilot and regular reminders were necessary to ensure that the rate of responses was kept to a reasonable level. As the test period spanned exam sessions, it was necessary to be particularly careful in e-mail contacts with students. Given the simplicity of the system as it was finally deployed, it was felt that qualitative data collection would not be meaningful and attention was focused on the quantitative aspects in relation to use of the system by students. As shown in Figure 5.3, there was difficulty in ensuring sufficient regular interaction with the system to accumulate sufficient data for reliable analyses. There was significant variability between different days of the trial, from a high of 96 in one day to a low of zero responses (albeit typically weekends). There was no significant relationship between overall score and the number of responses on a given day.

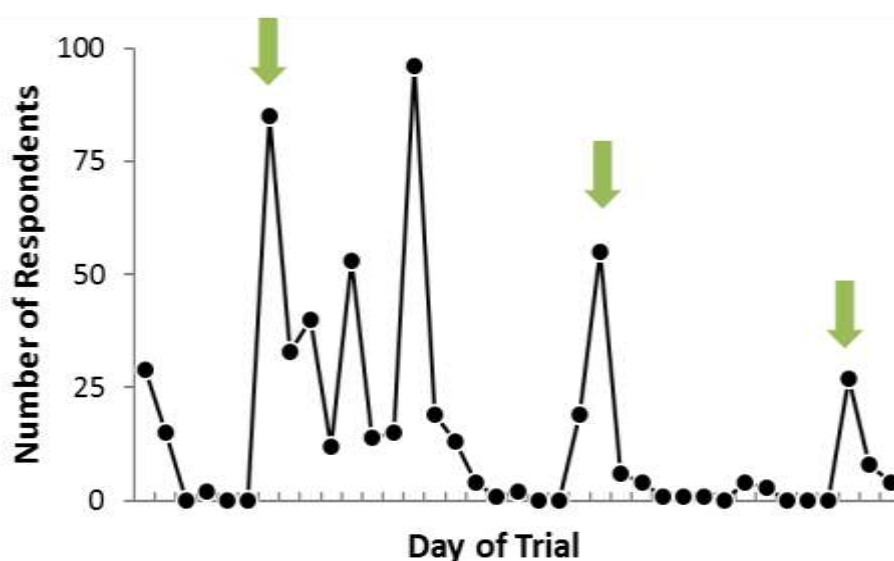


Figure 5.3: Effect of e-mail invitations and/or reminders on user response

Note: There was a relatively high variability in the number of responses logged into the system. The impact of reminder correspondence (green arrows) with the students is obvious from the spikes in the data series.

Based on the data accumulated during the pilot, it would appear that the system is a) functional and b) suitable for further enhancement and development to improve its usefulness. A significant advantage of the system is the ability to create multiple “views” of the overall data, in an accessible and easy to interpret format. There are some technical challenges in relation to mapping the data to a higher resolution (e.g. hour by hour) but these are potentially solvable. However, the ability to stratify the data at this level may be problematic from a workplace point of view, e.g. with regards to identifying a particular scheduled teaching session which is associated with a low score. The possibilities for development of this system are described in the next section.

Recommendations for DIT

The data from this pilot project indicates that the Feedbackly system may be used as a simple mechanism to collect and collate feedback in real time, suitable for presentation to staff and students of the Institute. In order to fully exploit this platform the following recommendations are made.

- Real-time feedback systems should be deployed across the institute, with a particular target on the first-year experience. This could be implemented as part of the existing extended induction session for first-year students and may contribute to retention. This cohort is also a particular target for the ISSE metrics, and so greater knowledge of the dynamics of the student experience during the initial weeks at DIT would be very valuable. Institutional and college support would be required to expand the capacity of the system and to provide training for staff (e.g. via the programme chairpersons forum).
- Consideration should be given to the development of similar processes to collate formal feedback in connection with the institute’s QA processes. This would facilitate a Q6 “dashboard” where both the quantitative and

qualitative responses from the students could be visualised in a straightforward manner (e.g. using automatically generated charts and graphs for the quantitative material, and an automatically generated word cloud which would highlight the most prevalent issues from a qualitative viewpoint). The approach would thus be able to streamline the workflow for the generation of QA reports for both the module and programme level.

- The college should consider supporting the development of a discrete mobile application to support this form of feedback, and the associated workflows, to create a mechanism for feedback which would be unique in the Irish HEI sector and would be evidence of the Institute's commitment to the student voice.

One of the challenges in relation to this project was the complexity of accessing cloud-based services that operate on a subscription model. Navigating the institutional process took several months and forced a significant narrowing of the scope of the project. Stemming from this, a general recommendation would be in relation to the Institute's facilitation of innovation – serious consideration should be given to developing an ability to be more responsive and agile, and able to access new developments in both software and cloud-based technologies.

Proposed Future Work

The most immediate concern is in relation to enhancing engagement with the year one tutors across the college to implement the current system for the 2017–2018 academic year. Embedding the system at an early stage in the academic life cycle is anticipated to improve uptake and use of the system and to provide a larger dataset suitable for more extensive analysis. To further develop the system it will be necessary to create a discrete mobile app that is capable of stratifying the students registered on the system by college, school and programme, while retaining the anonymity. The concept is that a student would register with the app by selecting their programme and year, with all subsequent data collected anonymously. This would permit interrogation of data at the programme, school, college and institute level, all of which could be presented visually via a dashboard similar to that described above. This does have the challenge of possibly identifying one or more particular teaching or learning experiences attracting a particularly low score, which is a barrier to this aspect of the development. As part of this development, an enhanced user interface will be developed, which is both minimal and capable of accepting voting using push notifications of specific thematic questions (e.g. experience of exam week). The ability of the approach to collate Q6 data will also be trialled in the 2017–2018 academic year, as a proof of principle study.

Dissemination Activities

At the current state of development, dissemination of the outputs of this work are planned at a local level. Following a broader roll out in September 2017, we would anticipate presenting the approach at an educational conference in 2018.

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6 The Planning and Development of an Education Framework for Practice Educators within Health and Social Care Professions

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Abstract

Providing quality placements for students in the hospital setting is an essential component of the BSc in Clinical Measurement Science degree programme at DIT. The practice educator (hospital supervisor) role involves mentoring and supervising students on placement. Prior to 2012 practice educators received no training to support this role. Current training involves one full day of generic education and a second half-day of discipline specific knowledge relating to projects, log books and assessments.

The aim of this research is to identify training needs for practice educators across the four disciplines and recommend an education framework to meet those needs. The proposed framework will be transferable to other degree programmes within DIT such as Biomedical Sciences, Human Nutrition and Dietetics, Optometry, Ophthalmic Dispensing and Social Care.

There are currently 41 sites offering clinical placements to the BSc in Clinical Measurement Science. In May 2016 the chief in each department was surveyed to gain an understanding of how placements were managed within the hospital setting. In all 38 of the 41 sites took part in the survey.

From the research it was clear that practice educators within Clinical Measurement Science have a desire for further knowledge and training to support their role. As the only education provider in the south of Ireland offering this degree programme it is incumbent on us to provide this post-graduate education. A 5 ECTS, level 9 module on practice education is currently under the review.

The implication of this research is great. Clinical physiology departments are understaffed and receive no additional resources for taking students on placement. Providing practice educators with on-going training and support will be critical to ensuring there will be enough placements in the future to meet the degree programme needs.

Keywords: *practice education; practice educator; clinical placements*

Background

The BSc in Clinical Measurement Science is a four-year honours degree programme with specialisation in four main disciplines, namely, Cardiology, Vascular, Respiratory and Neurophysiology Science.

Providing quality clinical placements for students of the BSc in Clinical Measurement Science at Dublin Institute of Technology (DIT) is an essential component of their qualification. Students graduate with a major in either Cardiology, Vascular, Respiratory or Neurophysiology Science. Clinical placements ensure students graduate with a level of experience that supports their employment as basic grade clinical physiologists. Students undertake eight weeks placement in each of three out of four disciplines in Year 3 and 13 weeks in their chosen discipline in Year 4 of the degree programme.

I am employed as the Practice Education Coordinator (PEC) for the degree programme. The main role of the PEC is to link with the hospital departments and arrange, coordinate and manage clinical placements for students. As departments receive no additional funding or staffing resources to take students, organising clinical placements can be a difficult task.

The PEC invariably relies on the good will of the department manager. This good will approach is neither reliable nor sustainable. Practice Placement Educators, are experienced clinical physiologists but most lack any form of training in the delivery of education, which often leads to an unwillingness to accommodate students. Clinical tutors, with post graduate qualifications in teaching and learning, are employed by DIT on a half time basis to support the placements by providing tutorials, specialist lectures, pre placement lectures, log book and project guidance to students on placement. However as the posts are half time, on site visits are limited except when issues arise. Therefore providing ongoing training and education for practice educators in the delivery of education to our students is essential to enable them to develop their own teaching and learning skills.

Research Title

The Planning and Development of an Education Framework for Practice Educators within Health and Social Care Professions

Aims and Objectives

The aim of this research is to identify training needs for practice educators across the four disciplines of Clinical Measurement Science, recommend an education framework to meet those needs, develop the programme within DIT and roll out to all practice educators within clinical physiology. The proposed framework will outline a staged, developmental approach to provide a continuum of learning for practice educators and will be transferrable to other degree programmes within DIT such as Biomedical Sciences, Human Nutrition and Dietetics, Optometry, Ophthalmic Dispensing and Social Care.

Drawing from a review of the literature and international examples of best practice, the development of an education framework for practice educators is proposed as offering a valuable contribution to the overall quality and safety in healthcare provision.

From the literature

Competency is identified as personal traits, characteristics or skills which can be shown to be directly linked to effective performance (Boyatzis, 1982).

From the literature, five areas of competency were identified:

- **Educational Competencies** – develop learning styles and models
- **Assessment/Evaluation Competencies** – encourage fair assessment, student learning and development
- **Professional Practice Competencies** – develop all practical skills of the student, reasoning skills, adhere to code of ethics, maintain own continuing professional development (CPD)
- **Supervision Competencies** – educate, mentor, identify learning goals
- **Management and Administration Competencies** – encourage effective induction, manage time effectively, implement quality improvement

There are many different tasks and roles required of practice educators to operate as competent mentors and supervisors and to respond to the varied needs of students. The *teacher as manager* model described by Romanini and Higgs (1991) outlines the three stages of clinical placement as:

- Preparation
- Implementation
- Evaluation

According to Romanini and Higgs (1991), practice educators have five roles when becoming learning programme managers. These are as the following:

- Task manager
- Group manager (if there is more than one student present)

- Individual development manager
- Environmental manager
- Overall programme manager

Other authors have expanded these roles to include those of role-model, colleague, teacher, evaluator, administrator, counsellor and researcher (McLeod et al. 1997).

Extensive work has been carried out by the Therapy Project Office since the publication of the report “Current and Future Supply and Demand Condition in the Labour Market for Certain Professional Therapists” (Bacon, 2001). On the strength of their work, other health and social care professions have received funding from the Health Service Executive (HSE) to employ Practice Education Coordinators. However, for many, the system still lacks structure. This research will endeavour to bring clinical physiology in line with the Therapy Professions Practice Education System.

Practice Education for the Therapy Profession

All therapy courses such as Physiotherapy, Occupational Therapy and Speech and Language Therapy are providing practice education and training for practice educators who facilitate their students on placements. The majority of the therapy courses provide training as annual education days on practice education topics that are requested formally via feedback forms etc., or informally by the practice educators. Most of these courses are organised and run by the practice education co-ordinators in conjunction with the practice tutors and regional placement facilitators, and generally are run as uni-disciplinary courses for their own practice educators. Most therapy courses provide this annual training/education on a “first come first served” basis and also use this forum to identify any further practice educator education needs.

The topics covered in these courses change each year and there is no formal follow-on through the courses. Recently, courses have been changing this practice and some of the new therapy courses have had a different structure in place from the onset. They are aiming to run courses each year at both basic and intermediate/advanced level. The basic practice educator course would repeat common themes, whereas the topics on the intermediate/advanced one day course change to meet the needs of the more senior practice educators.

Basic and Advanced Practice Education CPD Courses	
Trinity College Dublin	Discipline Specific
University College Dublin	Discipline Specific
Royal College of Surgeons in Ireland	Discipline Specific
National University of Ireland Galway	Multidisciplinary
University College Cork	Discipline Specific
University of Limerick	Multidisciplinary
National University of Ireland Galway	
Accredited Practice Educator in Occupational Therapy and Speech and Language Therapy	Two day single discipline workshop plus two modules from the faculty's multidisciplinary Masters in Advanced Healthcare
Certificate, PG Cert and Masters in Clinical Education	Open to all health and social care professionals
HSE Learning and Development Website	
Online training for practice educator	Available at www.hseland.ie Open to all health and social care professionals
UK	
PG Cert. in Practice Educators for Social Workers	Stage 1 – Enabling Work-Based Learning Stage 2 – Supervising a Learner in Practice

Figure 6.1: Overview of Available Courses

Practice Education Training for Clinical Measurement Science

Prior to 2012 no training was provided to practice educators taking our students on placement. Clinical tutors supported the role as much as possible. The first practice educator day was held in 2012 with large numbers attending. It coincided with the first employment of the practice education coordinator role for the degree programme. The next course was held in 2014 with approximately 30 delegates attending. It was provided again in January 2016 with 44 delegates and January 2017 with 56 delegates. This training involves one full day of generic training which includes talks on communication, supervision, effective feedback and reflective practice and other topics based on delegate feedback. A second half day is delivered which covers discipline specific training on log book, case study and projects requirement and clinical competency assessments.

Findings from this research will influence content for these events.

Methods

There are currently 41 sites offering clinical placements across the four disciplines to the BSc in Clinical Measurement Science: 16 Cardiology, 10 Respiratory, 8 Neurophysiology and 7 Vascular.

In May 2016, each department was surveyed to gain an understanding of how placements were managed within the hospital setting. Departments were notified in advance that all responses would form part of this research. As all responses were anonymous, no ethics approval was sought from DIT.

During the academic year September 2015 to August 2016, 30 third year students participated in three separate practice placements of eight weeks duration each (a total of 24 weeks per student) and 26 final year students participated in a 12 week long practice placement in their chosen discipline. Placement sites are predominantly in the greater Dublin area with some provided elsewhere around the country.

Findings and Discussion

Practice Educator/Student Ratio

Generally clinical measurement diagnostic departments with the exception of Cardiology and one or two larger Respiratory departments have low staffing compliments and this does not support 1:1 supervision. From the 41 sites surveyed, all departments adopted a shared model of supervision with either the chief or senior appointed staff member as the main supervisor responsible for weekly supervision meetings, sign off for log books and project supervision in combination with staff rotation for general supervision. The exception was fourth year projects which were supervised by the chief physiologist in each site.

Knowledge Skills and Support for Practice Educators

The 41 sites currently taking students were asked to outline what knowledge, skills and support they required to assist them in their role as practice educator. The response was divided between knowledge and support. Most departments required annual education days, discipline specific training, clear guidelines and feedback on how their department is doing. Specific requests included, train the trainer classes, project guidelines, research/statistics training, reflective practice and leadership skills, CPD points, protected learning time, and the provision of post graduate education. Others, focused on support, to involve HSE/DIT resources to support departments taking students in the form of additional senior staff and more hands on support from clinical tutors.

Accredited Practice Placement Educator

From the 41 sites surveyed, 38 responses were received. In all 23 indicated they would welcome the opportunity to become an accredited practice educator, a further nine indicated that while they would not wish to avail of this opportunity they considered it important and would appoint a senior member of staff to become accredited. Nine of those surveyed had not attended any practice education training and two stated they were not interested in attending any formal training on practice education; four did not respond to that question. From the feedback received 18 had attended the practice education day in 2016 and a further nine had attended the practice education day in the past.

New Developments Based on Research Findings

Over the past months, in response to the survey, a new practice education handbook has been developed and distributed to departments. In addition a reflective practice and writing handbook has also been developed and distributed. The 2017 event was held on 13th and 14th January. Following feedback and research findings this year's event was extended and improved to include more workshops, information on statistics, discipline specific training on log books and case studies, as well as a meet and greet session with DIT joint supervisors of final year projects. An external facilitator was employed to deliver a 90 minute session on Time Management.

Evaluation and Conclusion

From the research findings, it is clear that practice educators within Clinical Measurement Science have a desire for further knowledge and training to support their role. Most would like the opportunity to develop their skills to become accredited practice educators. Others within the departments who may not directly supervise students still have a need to develop understanding of the role of practice educator, and for those staff, undertaking the HSE learning and development online practice education modules may be sufficient. The CPD practice educator training now offered annually should be attended by practice educators responsible for direct student supervision. As 32 of the 41 sites surveyed expressed a desire to achieve proficiency in the delivery of practice education further post graduate education should be made available to meet those needs. A post graduate 5 ECTS module on practice education is currently under review.

One of the aims of this project was to provide education for practice educators that would be transferrable to other health and social care professions within DIT. It is clear that both the online training and annual CPD events all contain generic information that would fit this criteria. The same principle would apply to the post graduate 5 ECTS credit module on practice education. As for all health and social care professions, there will be a discipline specific element that will need to be made available to each discipline. Currently within DIT, Optometry, Biomedical Science and Nutrition and Dietetics provide annual CPD opportunities for their placement supervisors and from discussion would welcome the opportunity to have access to further post graduate education for their practice educators.

Recommendations for DIT

1. As an introduction to practice education, all departments taking students are encouraged to have all staff undertake the online practice education course through HSELand, the Health Service Executive's learning and development website. Topics include Education, Supervision, Assessment/Evaluation, Professional Development and Management/Administration
2. All departments taking students are requested to have the chief or appointed student supervisor attend the annual practice education day in DIT in January each year. Where more than one supervisor is in the department, the supervisors may rotate attendance.
3. Currently DIT has no formal accreditation process for choosing placement sites. Placements are sourced and managed by the practice education coordinator in consultation with the clinical tutors. Feedback from practice educators, clinical tutors and students during and post placements, are analysed to determine placement suitability. It is recommended that DIT should move towards accrediting practice placement sites.
4. To introduce an element of stability, it is recommended that DIT establish a memorandum of agreement with each department taking students. This would allow the Practice Education Coordinator to plan and arrange placements well in advance and allow students to source accommodation ahead of the usual college year rush. In practice, due to small staffing numbers and the absence of back fill for maternity and sick leave, this is not always practical. A very successful attempt was made this year when departments were surveyed in May to ask for a commitment to take students for the 2016/17 academic year. Some 38 of the 41 surveyed sites took part and to date only one site could not fulfil their agreement.

Proposed Future Work

1. In order to determine what competencies practice placement educators deem essential, desirable or not important a follow up survey will be distributed to all departments. Results from this survey will help to identify learning needs and content for the proposed new level nine practice education module. The module will be made available to other health and social care disciplines within DIT.
2. A practice education section for clinical measurement science will be developed on Webcourses and made available to each department taking students. This is currently in existence for Biomedical Sciences and an option for other health and social care groups.
3. The Department of Physics & Clinical & Optometric Sciences is currently developing a new website. A public, practice education information section will be included on this website.

Dissemination of Findings

- Results of this research were presented at the Lunchtime Teaching and Learning Session in DIT in October 2016
- Results of this research were presented to practice educators at the practice education event in DIT on 13th January 2017
- Results of this research will be presented at the next clinical measurement science team meeting in February.
- An abstract has been submitted for the International Practice Education Conference in Birmingham on 21st April.
- Results of this research will be presented at the Irish Institute of Clinical Measurement Science Conference in Athlone in May 2017.

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7 Informing Instructional Design by Cognitive Load Assessment in the Classroom

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Abstract

Cognitive Load Theory is an approach that considers the limitations of the information processing system of the human mind. It is a cognitivist theory that has been conceived in the context of instructional design. One of the main open problems in the literature is the lack of reliable models and technologies to assess cognitive load of learners, thus limiting the application of the theory in practice. This project was aimed at tackling this open problem through the use of a previously developed mobile, responsive web-based prototypical technology, to assess the cognitive load of students in a typical third-level classroom. It was also aimed at exploring the impact of such a technology to instructional design and the potential benefits it can bring to lecturers to improve teaching practices and optimally align their instructional materials to learners.

Keywords: *cognitive load theory; mental workload measurement; third-level classroom; instructional design*

Introduction

Cognitive Load Theory (CLT) (Sweller, Van Merrinboer, & Paas, 1998) has been conceived in the context of instructional and pedagogical design. CLT is an approach that considers the limitations of the information processing system of the human mind (Wickens, 2008). In particular, the cognitive capabilities devoted to the processing and retention of information, in a human learner, are limited (Miller, 1956) and this limitation can have a significant impact on learning. The intuitive assumption behind this theory is that if a learner is either underloaded or overloaded, learning is likely to be negatively affected (Figure 7.1).

In their seminal contribution, Sweller et al. (1998) proposed three types of cognitive load:

- intrinsic load – this is influenced by the unfamiliarity of the learners or the intrinsic complexity of the learning material under use;
- extraneous load – this is impacted by the way the instructional material is designed, organised and presented;
- germane load – this is influenced by the effort devoted for the processing of information, the construction and automation of schemas in the brain of the learners.

(Paas & Van Merrinboer, 1993)

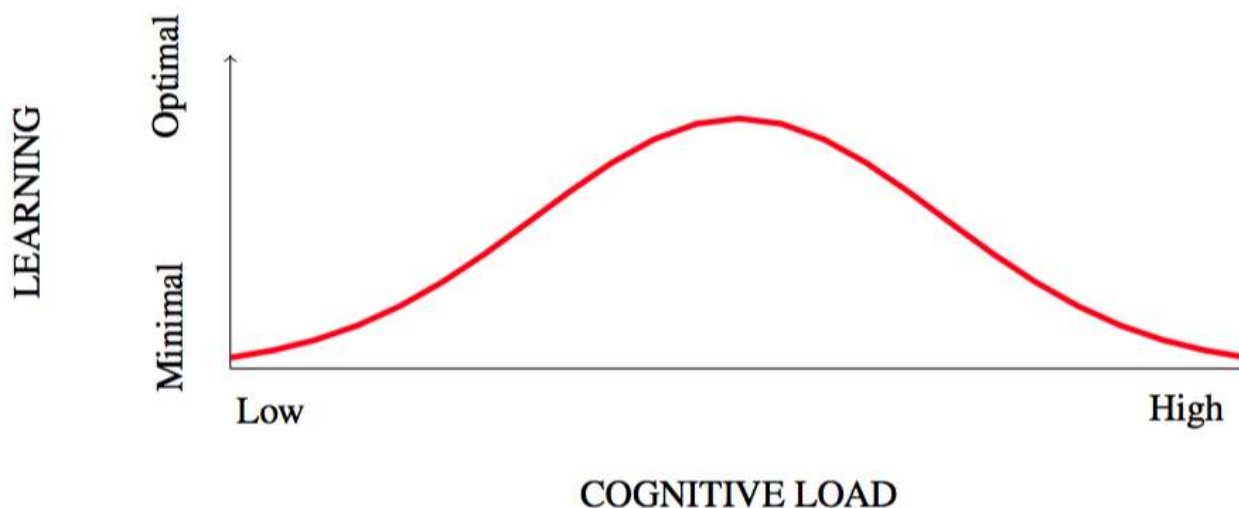


Figure 7.1: Relationships between cognitive load and learning

Intrinsic cognitive load is considered to be static, extraneous load should be minimised (Mousavi, Low, & Sweller, 1995) and germane load promoted (Debie & van de Leemput, 2014). According to Cognitive Load Theory (Sweller et al., 1998; De Jong, 2010), an acceptable cognitive load occurs when there is an equilibrium between the inherent complexity of the pedagogical material (intrinsic load), the means with which the material is transferred and transmitted to a student (extraneous load) and the volume of effort devoted by the student to absorb the new knowledge and allocate it with the existing one (germane load). In short, CLT has been conceived for designers eager to create instructional resources that are presented in a way that encourages the activities of the learners and optimises their performance, thus their learning (Chandler & Sweller, 1991). Unfortunately, the experience of mental workload is different on an individual basis (Longo, 2014), changing according to a learner's cognitive style, own education and training (Paas & Van Merrinboer, 1993). As a consequence, modelling and assessing mental workload is far from being a trivial activity (Longo, 2012, 2015, 2016; Rizzo, Dondio, Delany, & Longo, 2016). The main objective of this research activity is to explore the use of a responsive mobile/web-application, aimed at quantifying the cognitive load imposed on learners, in a typical third-level classroom, and to understand its impact and the benefit it can deliver to lecturers.

Outline of Project

A piece of software has been built by the author over the past number of years and it is aimed at assessing the cognitive load of students in a typical third-level classroom. In detail, this is a responsive web-based application that allows a lecturer to gather a set of psychological measures of learners through a set of questions and it assesses the cognitive load of each student in the classroom. The study received institutional research ethics committee approval with the requirement for individual student consent for participation. At the end of a teaching session, a lecturer can benefit from a dashboard (Figure 7.2) containing:

- general analytics about the class;
- a distribution of the overall cognitive load levels experienced by students ;
- a quantification of the three type of loads, as designed in the Cognitive Load Theory (intrinsic, extraneous and germane load).

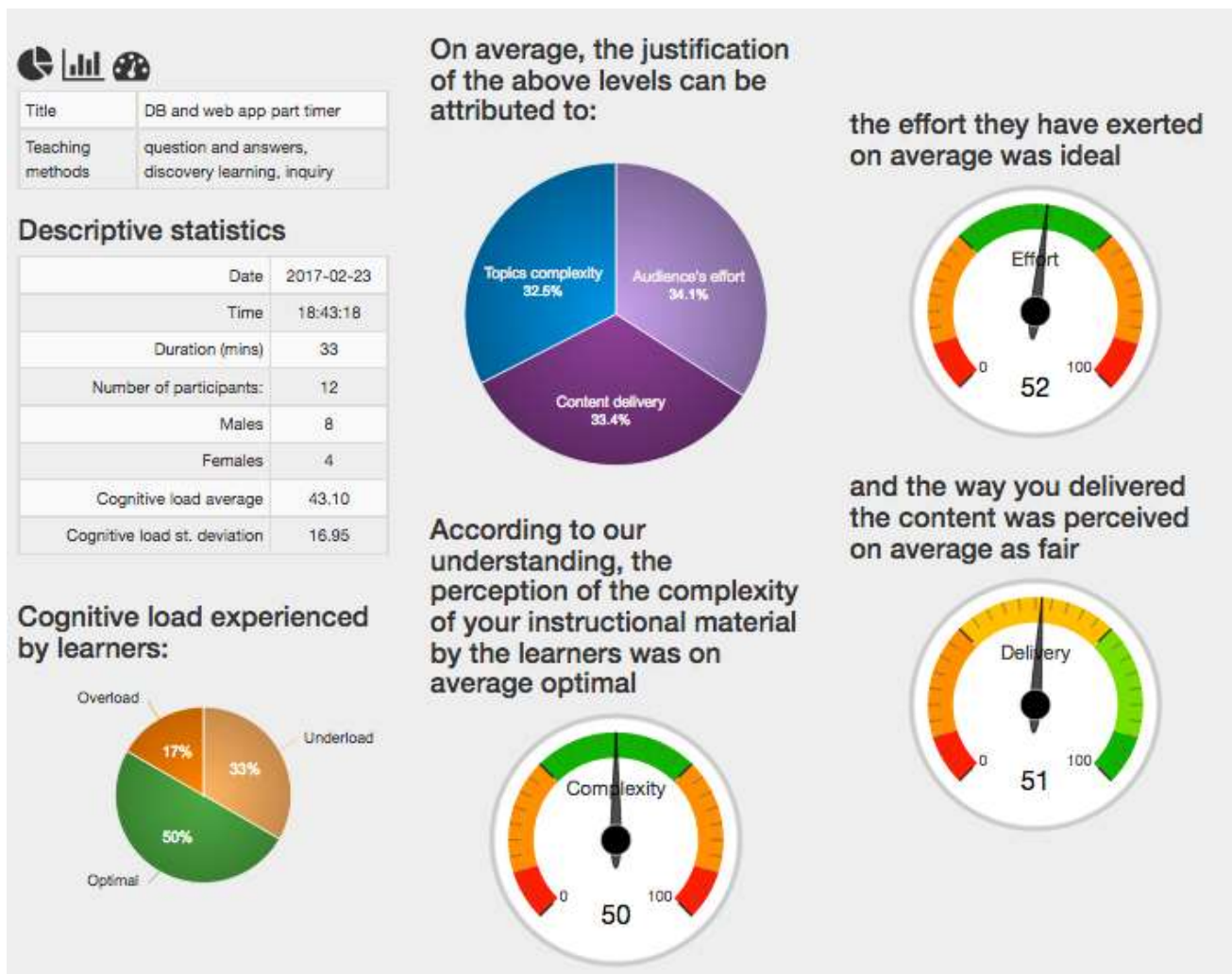


Figure 7.2: Dashboard of an application for assessing cognitive load of students in the classroom

The main benefits of the above learning analytics are to inform a lecturer of the cognitive load experienced by learners, their effort (germane load), the complexity of the instructional material delivered (intrinsic load), and the goodness of the teaching style and method employed in the classroom (extraneous load). All these three pieces of information can be used to better design subsequent classes. In particular a lecturer can get an indication of the complexity of the material delivered, whether it was high or low, whether a better method of delivery of information and knowledge should be tried or whether the learners needed more engagement.

The work programme of this research activity included the following steps:

- Preliminary technology application – application of the web-based technology in third-level classrooms with two identified lecturers in the School of Computing at DIT as well as three other lecturers abroad. These applications showed the impact of the technology on learners as well as giving a preliminary perception of its usability by lecturers and students.
- Preliminary data understanding – analysis of the preliminary data as collected by the designed technology. This activity was aimed at getting familiar with the collected data, to identify data quality problems, to discover first insights into the data, and/or to detect interesting subsets to form hypotheses for hidden information.
- Preliminary data preparation – This activity covered the construction of a dataset that allowed the generation of indexes of cognitive load using a pool of state-of-the-art mental workload assessment and computational techniques. The rationale behind this activity was to identify the most appropriate technique/s for the generation of cognitive load numerical indexes that are sensitive, diagnostic and valid.
- Preliminary future experimental design – The previous activities were instrumental to inform the design of a wider and more focused experimental study devoted towards the application of such a technology across different disciplines and classrooms in third-level institutions. It also highlighted that a preliminary training would be ideal to instruct lecturers on the appropriate use of such a technology.

- Preliminary design of promotional material – Following the preliminary data obtained and the design of future applications of the technology, it was necessary to sketch a set of promotional materials both for promoting the use of such a technology as well as demonstrating the potential benefits for instructional design at third-level institutions and in Higher Education.

Evaluation and Conclusions

The evaluation of the work carried out in this project included:

- the evaluation of the subjective feedback from the identified lecturers, within DIT, in relation to the usability of the proposed technology and its impact on their teaching dynamics. Additionally, feedback was given in relation to the impact of the indexes of cognitive loads, as generated by the technology, on teaching practices and on the enhancement of student experience and learning. This was a qualitative study that included interviews. The outcome of this activity highlighted some issues concerning the usability of the technology suggesting areas of improvement.
- the evaluation of subjective data, collected by the technology – this included the application of formal statistical and state-of-the-art analytical techniques on collected data. The first goal was to identify the best set of questions to ask students (using the technology) before and after a typical third-level teaching session. The goal was to remove redundant ones, amend some of them and in turn simplify the use of the technology itself. The second goal was to identify the most appropriate computational mental workload assessment technique/s for quantifying in real-time the cognitive load of learners in the classroom.
- the evaluation of the interest of stakeholder – this activity was devoted to exploring the interests of stakeholders generated by live demos of the technology. This gave an initial idea of how the community of educators positively reacted to the proposal of this novel technology and informed the definition of future activities.

Recommendations to the DIT

This project was mainly aimed at showing a promising novel technology to advance the science of pedagogy and to provide an instrument to lecturers to enhance the quality of teaching and learning. It was aimed at investigating an alternative technology that can be applied by lectures to obtain feedback, through the concept of cognitive load, on the students' experience. The project has the potential to widen access, and expand opportunities for learning and continuing professional development. Furthermore, it can promote self-assessment practices in the higher education sector, to lift local, regional and international collaborations to a completely new level. This project is aligned to the recent report *Education for Sustainability. The National Strategy on Education for Sustainable Development in Ireland, 2014–2020* (Department of Education and Skills, 2014), in which it has been mentioned that “Some of the challenges that arise in relation to Education Sustainable Development (ESD) in higher education are similar to those that were identified earlier in relation to the school system, and specially at post primary level”. Additionally, “lack of subject specific ESD content, concerns about the preparedness of lecturers to facilitate the type of participatory learning that is most frequently associated with effective ESD, and the need for a whole institution approach to ESD” has been identified as a core issue in third-level education. One recommendation to DIT is to push even further the exploration of new pedagogical methods and models aimed at enhancing the student experience and improving learning. The research activity conducted in this project will be of benefit to the DIT (Dublin Institute of Technology) and the TU4D (Technological University for Dublin) alliance because it empowers lecturers with learning analytics directly and rapidly employable for enhancing teaching practices and therefore customising the student experience as well as their learning. The technology used in the project, jointly employed with state-of-the-art cognitive workload assessment techniques has the vision to advance the science of pedagogy not only within DIT/TU4D, but potentially across several Irish and worldwide third-level institutions. This research project is aligned to the DIT institutional strategy to build digital capacity. In particular, the project is aligned to the vision highlighted in the reports on *Strategic and Leadership Perspectives on Digital Capacity in Irish Higher Education* (Devine, 2015) and *Teaching and Learning in Irish Higher Education: A Roadmap for Enhancement in a Digital World 2015–2017*, both commissioned by the National Forum for the Enhancement of Teaching and Learning in Higher Education. These two reports outline strategic and leadership

perspectives on building digital capacity across the Irish higher education sector, a clear message circulated also by the European Commission's recent (October 2014) High Level Group (HLG) report *New Modes of Teaching and Learning in Higher Education*.

In summary, the findings of the project clearly emphasise the importance of cognitive load measurement for evaluating instructional design alternatives, teaching practices and styles, and as a consequence enhance existing pedagogical models. The institute should continue its activities to support research and lecturers in improving teaching practices, learning, professional development and self-assessment. Additionally, it should consider incrementing the funding to similar activities to bring these small-size projects to the next level, aiming to achieve a wider impact. The project carried out in the context of this Teaching Fellowship was very time consuming considering the minimal level of funding assigned.

Proposed Future Work

The novel idea proposed in this project will represent a general and reusable research expertise. The preliminary framework that has been formed through the Teaching Fellowship initiative at DIT enabled several different research opportunities and activities. These included the involvement of Master and PhD students in the School of Computing, who started putting in practice the theoretical notions behind cognitive load measurement in education. These postgraduates started empirical evaluation of preliminary collected data towards the demonstration of the impact of cognitive load assessment in the field of teaching and learning. These activities are intrinsically long-term and nontrivial, given the complexity and the nature of the project and the phenomena under investigation (the construct of cognitive load). However, their investigation and application is likely to have a significant impact in the future. In the short-term, the recipient of this Teaching Fellowship will continue the current research started with postgraduate students, in the School of Computing at DIT, and work on aspects and techniques relevant to cognitive load measurement and assessment. In the middle-term, these activities will contribute to increase the research capacity of DIT, through its AIRC¹⁴ research centre, contributing to its national and international exposure. In the long-term, the recipient of this Teaching Fellowship wishes to provide the basis by which the various research findings and collaborations can be consistently collected and where further research can be built upon. The topic of this project is of such resonance that it might help the recipient of this Teaching Fellowship and his colleagues at DIT to attract further funding for high-profile research initiatives. The outputs of the project are significant to progress the work into a larger EU Horizon 2020 proposal, where the DIT School of Computing could play the role of the leading partner for Computer Science and the DIT/TU4D, playing the role of the leading partner for Education, Teaching and Learning.

Dissemination of Activities

A conference paper is planned, aimed at demonstrating the impact of such a technology on lecturers in third-level institutions as well as demonstrating empirically the impact of cognitive load measurement on learning. The development of an illustrative video is planned to show how to use the technology and demonstrate the potential it has for enhancing teaching practices and lecturers' self-assessment. Following this project, a research publication is also planned in a journal in the field of Education.

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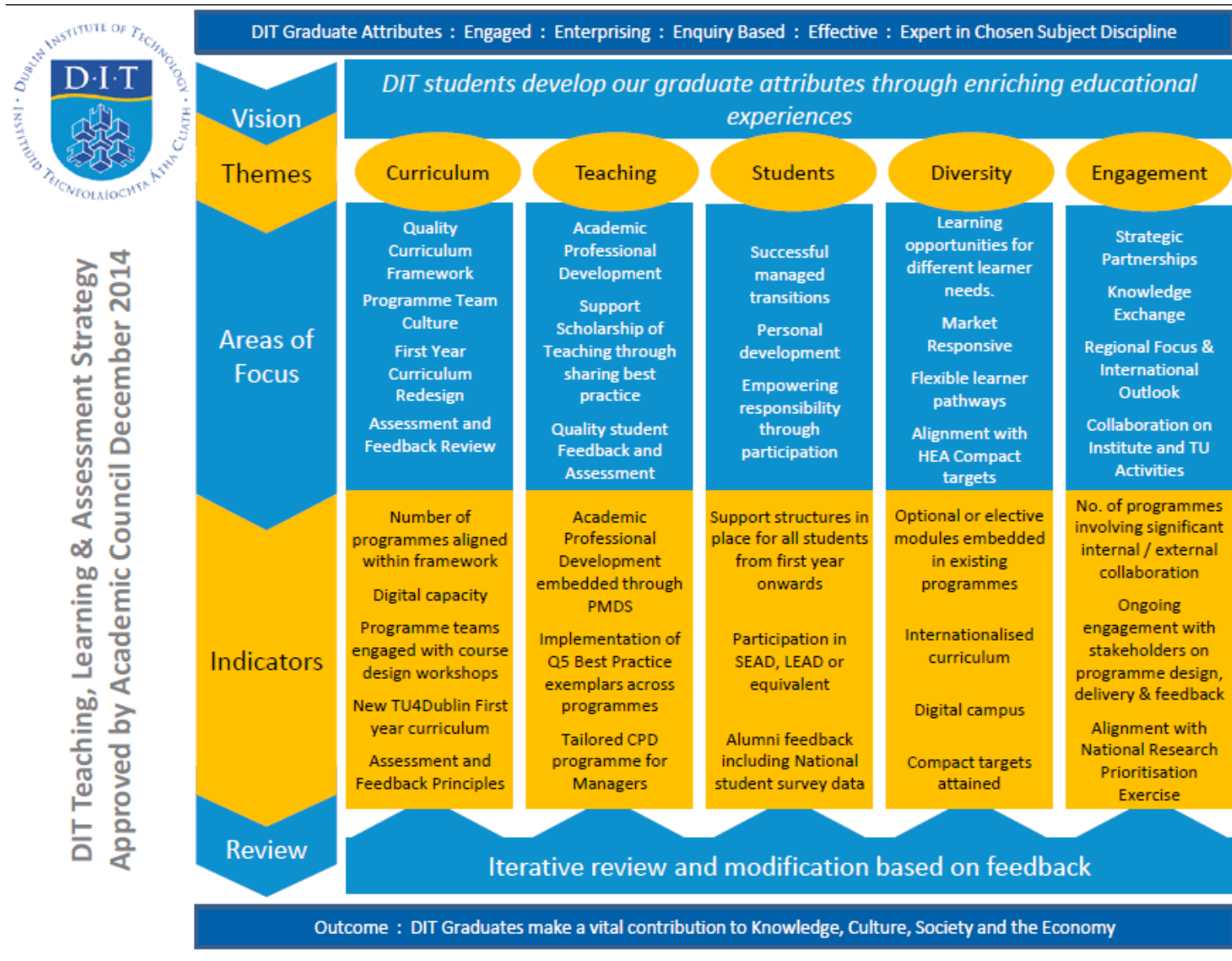
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Appendices

Appendix A



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