"Blended learning and motivation;
An examination of Student Perceptions".

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ABSTRACT

Blended learning (BL) continues to evolve in pedagogy as theorists conceptualise pathways for students to engage with course materials. It is important to establish theories to inform future developments in BL to facilitate learning styles and learning objects. However, implementing theories into effective teaching and learning practice is a constant challenge for stakeholders, as students face many barriers while they adapt to higher education. Multiple influences propel or deter student participation with the learning process. Therefore, motivating students to participate in BL requires analysis and discussion. This Mixed Method research study explores first year undergraduate students' perception of BL and investigates the positive and negative influences impacting their motivation to engage with learning. The sample population of 1,764 first year students at Galway-Mayo Institute of Technology (GMIT) were surveyed, returning a response rate of 29%. The questionnaire was formatted through Survey Monkey, communicated through college emails, and analysed using Microsoft Excel and SPSS software. The survey involved ranking and rating questions on student perception of BL over a thirteen week period. The survey included an open question seeking student recommendations on how to enhance motivation to learn during their programme of study. Findings highlight the fact BL does impact motivation to engage with learning. However, barriers to engage with learning remain as students continue to face many challenges. Many students suffer in silence and this research gives these students a voice. Students call for collaboration between management, teachers, and students alike to advance the teaching and learning process. The study confirms that students have different learning styles, are responsive to appropriate learning objects, and require training to adapt to BL environments.

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The research is dedicated to my mother Theresa Morrissey

and in the memory of my father

Richard Morrissey 1936-2007

‘An education is no burden to carry’.

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List of Acronyms

AHELO	Assessment of Higher Education Learning Outcomes
ANOVA	Analysis of variance
BBC	British Broadcasting Corporation
bcc	Blind carbon copy
BL	Blended Learning
CAO	Central Applications Office
CBL	Collaborative based learning
CD-ROM	Compact Disc Read-Only Memory
GMIT	Galway Mayo Institute of Technology
HE	Higher Education
HEA	Higher Education Authority
HEI	Higher Education Institute
ISSE	Irish Survey of Student Engagement
IOT	Institutes of Technology
IT	Information Technology
LIS	Learning and Innovation Skills
LO	Learning object(s)
LS	Learning style(s)
MOOC	Massive open online course

List of Acronyms continued

NQF	National Qualification Framework
PBL	Problem Based Learning
RQ	Research Question
SCORM	Sharable Content Object Reference Model
SPSS	Statistical Package for the Social Sciences
SQ	Survey question
TEL	Technology Enhanced Learning
VARK	Visual, Aural, Read/write, and Kinesthetic
VLE	Virtual Learning Environment

Glossary

Blended learning: an opportunity in teaching and learning to tailor the integration of face-to-face classroom and Web 2.0 technologies to meet the needs of students

Collaboration: teachers facilitating the process of students working together to learn and build knowledge

Digital immigrants: are people born pre the mass influx of digital technology, and adopting it sometime later (The Open University, 2014).

Digital natives: are people born post the mass influx of digital technology, approximately 1990, growing up with an awareness and appreciation of technology (The Open University, 2014).

Experiential learning: learning from experience (Mayes 2015, p.10).

Learning objects: are digital syllabus resourced tools interactively engaging with students to achieve learning outcomes independently online, or in support of traditional classroom settings (Churchill 2012, pp.136-148).

Learning outcomes: define the content of the curriculum (Race 2001, p.21)

Learning style: a students preferred approach to learning

Likert scale: is used in questionnaires allowing participants to select from a number of options in a scaled format

Media: Latin plural for medium, a mode for delivering course materials

Glossary continued

Moodle:	Virtual Learning Environment
Motivation:	a reason to do something, in this case for learning
QUAL+Quan:	Mixed method design with a greater emphasis on qualitative over quantitative research
VARK:	Visual, Aural, Read/write, and Kinesthetic sensory modalities that are used for learning information
Web 2.0:	The term given to the advancement from WWW delivering technologies creating online environments where people engage and share information online.

CHAPTER 1
INTRODUCTION

1.1 Overview

The objective of Chapter 1 outlines the research topic, the purpose of the study, the research scope, and the plan of development. The chapter provides the reader with the rationale for the research and an insight into the remaining chapters. In so doing, the reader will be able to relate to the aims and objectives of the research.

1.2 Research topic

The research topic is blended learning (BL) and motivation. New to teaching in higher education, intrigued by technology, and the challenges facing first year students, the researcher sought to achieve student perception of BL. During the summer of 2016, the author's experience of conducting a repeat examination workshop for first year students generated curiosity for the research topic. The provision of video recordings to support exam revision, and whether or not it benefited student motivation, engagement and learning, was raised as a research question which merited further exploration. An investigation was conducted into video recordings as learning objects (LO) to aid student academic development. This investigation resulted in concerns regarding the narrow depth of literature available. Therefore, the thought process was broadened to researching BL and motivation.

Monteiro and Morrison (2014, p.566) argue that BL is complex, versatile, and multi-layered, provides learners with an opportunity to move from surface learning to deeper learning, develops collaboration among students, provides flexibility into learner application, and enables learners to become independent in taking responsibility for their learning. Fearon et al (2012, p.19) describe BL as the combination of e-learning objects and face to face interaction to support student achievement of learning outcomes. From a motivational perspective Deci and Ryan (1985, p.253) argue for choice for students in their efforts to

engage with learning. While adapting to third level education students face many challenges that impact on their ability to engage effectively with pedagogy. Challenges of finance, skills, resources, and peer association are some barriers over which students have little or no control at times. Other challenges to engagement include institutional aspects such as course relevance, resources, and support, factors which potentially demotivate students. If addressed effectively solutions to overcome barriers may encourage student learning and participation by enhancing motivational opportunities.

The research investigation gives a voice to the first year student population at Galway-Mayo Institute of Technology (GMIT) who were formally exposed to BL in semester 1 of the 2016/2017 academic year. The introduction of software at GMIT to support in-class teaching of the topic Academic Integrity provided a platform on which to explore BL and motivation. Academic Integrity is part of the syllabus of the mandatory module Learning and Innovation Skills (LIS), formerly known as 'Learning to Learn'. The purpose of the LIS module provides students with the necessary skills to adapt to third level teaching and learning through critical thinking, problem solving, communication and collaboration. Learning objects, learning styles and formal assessment form part of the new resources on the LIS module hosted by Moodle, GMIT's Virtual Learning Environment (VLE).

Currently, there is no formal evaluation regarding student perception of the BL format, thus questioning whether or not students perceived motivational benefits associated with the BL initiative. Literature has indicated that BL has a positive impact on student motivation. Institute policy is vague in referencing BL, with no direct associated policy. Analysis of student engagement with teaching methods, positive or negative, may provide institutes with data on how to meet the challenges facing key stakeholders; the institute, the teachers, and the students.

1.3 Research Purpose

The purpose of the research explores student perception of BL and motivation. Therefore, to provide an initiative to seek information the following research question was devised to guide the research process:

> 'What are students' perceptions of the potential impact of blended learning on their motivation to engage with first year undergraduate course material in a third level institute?'

The rationale for the research was to align student perception of BL and motivation with previous research. The hypothesis that BL has a positive impact on motivation to engage with learning material required testing. However, while literature may advocate for the positives of BL integration in higher education, what are GMIT student's thoughts on this relatively new approach to teaching and learning? Additionally, any concerns from student data, following investigation of their participation with the LIS module, may provide insights into how BL can be tailored to the needs of the students at a micro level. Furthermore, student data on what already works is just as important as recommendations for improvement. Lightner-Laws and Lightner (2013, p.224) argue that limited financial resources during a period of economic austerity, coinciding with student demand for changing approaches to teaching, mean that education institutes require the successful adoption of BL to motivate learning. Students are the consumers of third level education, and are the sole reason for teaching.

1.3.1 Theory underpinning the research:

The evidence in Abeysekera & Dawson (2015, p.4) and Liu et al (2012, p.353) recognise Motivational Theory as the theoretical framework which underpins this research. (Beard 2009, p.7: Gauss & Urbas 2003, p.501) argue for the role of constructivism, identifying active participation with LO as a means to create motivated learners, as students navigate their learning styles and proceed through online activities. Furthermore, Mayes (2016, p.6) aligns motivation and constructivism, with the former a key element for student engagement with course material for progression to independent learning.

1.3.2 Research objectives:

The following are key objectives of the research:

- To determine student choice of learning style
- To ascertain the importance of learning objects
- To explore first year student readiness to collaborate with on-line resources
- To compare student preference of blended learning media
- To identify barriers and influences to motivation
- To quantify blended learning's impact on student motivation to learn

To address the aforementioned research objectives, three sub-research questions were created. The purposes of the questions related to student perceptions and were designed as follows:

1. What are students' preferred styles of learning, and how do they perceive blended learning to support these styles?
2. According to students, what motivates them to engage with course material, and what characterises barriers to such motivation?
3. How do students perceive the impact of blended learning on their motivation to engage with course material?

1.3.3 Research concepts and variables

The importance of establishing the key concepts and variables allocates efforts to the literature review and focuses the research design.

Key concepts identified:

The key concepts identified within the research question are blended learning and motivation. Similarly, perception and impact require definition.

Key concepts defined:

Perception: is defined by Pearsall (2001, p.1059) as 'a way of regarding, understanding, or interpreting something'.

Impact: is defined by Pearsall (2001, p.710) as a 'marked effect or influence'.

Blended learning: is the integration of the traditional classroom with e-learning in support of student learning.

Traditional classroom: involves face to face engagement in a physical context, usually a classroom or lecture hall. Weller (2009, p.184) defines the traditional classroom as a teacher-centred learning environment, where student engagement is passive in nature.

E-learning: decentralising knowledge through the introduction of learning objects and Web 2.0 technology, creating a student-centred learning environment (Weller 2009, p.184).

Motivation: Zimmerman (2000, pp.84-89) interprets motivation in learning as the effort that one applies to satisfying goals.

Research variables identified:

Regarding the proposed research question, intrinsic and extrinsic motivation as the *dependent variables*, will or will not be impacted by BL, the *independent variable*.

Other variables include age, readiness to learn and self-regulation, gender, school of education, learning styles, learning objects, student collaboration and engagement, teaching media, quality, design and coordination of technology. Additional variables associated to the topic, but outside the scope of this research include student attendance, student cognitive load, high and low achievers, learning outcomes, discipline, and knowledge retention and transfer. Furthermore, for the purpose of this research student nationality, diversity, regularity and statutory union bodies are omitted.

1.4 Scope of Research

The purpose of the research is to explore what impact, if any, BL has on student motivation in Higher Education (HE). To acquire the relevant data the research surveyed the first year student population of GMIT. As of November 1st 2016 there were 1,764 registered first years across five campuses (See Appendix 1). GMIT is a third level institute with approximately 5,612 full-time and 1,139 part-time students. Schools within the institute include Business, Engineering, Science and Computing, and Tourism & Arts. The schools of Engineering, Science & Computing, and Tourism & Arts have a greater practical focus in comparison with the School of Business. Therefore, student differentials on perception are expected with regard to learning styles, preference for LO, and understanding of teaching media. The research was conducted during semester two of the academic year 2016/2017. Access to the first year student population was limited to the early weeks of the semester, as the researcher was conscious of student commitments to their studies inclusive of continuous assessment deadlines. The survey was issued on Tuesday January the 31st with a response deadline of Tuesday February 14th. This time frame allowed for sufficient analysis of the data before the research submission deadline of May 26th 2017.

1.5 Plan of development

The research compilation includes six chapters aligned to answer the research question regarding student perception of the potential impact of BL on their motivation to engage with course material. Following this chapter on introduction;

- Chapter 2, Literature Review, provides an overview of the relevant literature surrounding BL and motivation which creates a detailed repository of information that describes and conceptualises the key variables of the research topic. Theorists and case studies are reviewed to justify the rationalisation for the study and to investigate theories of BL and student motivation to engage with course material.
- Chapter 3, Methodology, presents a Mixed Method approach to the research design in reflection of the research question. The chapter outlines the justification for the method chosen to gather the data and to establish the sample population. Additionally, the challenges faced in compiling the survey questionnaire through piloting, issuing, collecting, and analysing the data are presented. Ethical concerns are considered and protective measures outlined to maintain ethical standards.
- Chapter 4, Findings, presents data from the survey in a series of charts, graphs, and tables. 504 respondents from a total of 1,764 registered first year students represents a 29% response rate. The high quality of the data has established a credible voice for student perception from the first year population. Both Microsoft Excel and Presidion SPSS software, outlined in Chapter 3, were used to analyse the survey data. The qualitative element of the questionnaire, via question seventeen, allowed students to portray their own construct of what BL means to them by outlining recommendations for possible improvements in teaching and learning.
- Chapter 5, Discussion, relates the findings from Chapter 4 with the review of the literature from Chapter 2 for the purpose of answering the research questions. The

structure of the discussion is based around the three sub-research question that represent the objectives in establishing what are students' perceptions of the potential impact of BL on their motivation to engage with first year undergraduate course material in a third level institute. Themes from the findings are discussed under each sub-research question ranging from 'Strategically tailoring school curriculum to learning styles can initiate motivation to engage with learning' to 'Room for improvement in blended learning implementation'.

- Chapter 6 summaries the research providing recommendations for GMIT to enhance blended learning and motivation, a national perspective, a review of research limitations, and concluding remarks.

1.6 Conclusion

Completing a research topic involves time and effort. To effectively answer the research question requires a detailed and planned approach, as outlined above. Each chapter, although complementary to each other, is treated as a unit requiring equal clarity and focus. This enables a systematic investigation to take place, with effective use of resources, and the completion of the report to satisfy the aims and objectives of the research. Chapter 2 commences the process with a comprehensive analysis of the literature.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Chapter 2 assimilates and evaluates the two key topics of this research, namely blended learning (BL) and motivation. The following paragraphs outline definitions and challenges associated with traditional classroom and Web 2.0 technologies. The chapter explores literature, case studies, the background, evolution, and impending developments of BL. Student motivation in pedagogy is conceptualised and categorised by reviewing theories and analysing prior research. Additionally, third level higher education policies are examined to determine their alignment, or not, between teaching and learning strategies, resources, and student engagement and perception of BL.

2.2 Blended Learning

2.2.1 Historical background of blended learning

BL has been a developing process within education. However, Pappas (2015) identifies workplace industries as the first to benefit from implementation of BL. Companies developed videos to communicate induction and training to new employees. Evolving from a training initiative in industry in the 1980's and 1990's higher education gradually began to use CD-ROMS, otherwise known as BL, to deliver knowledge in support of classroom activities. Weller (2011, pp. 85-95) argues that the rapid advances in technology through Microsoft applications, Virtual Learning Environments (VLE), online tutorials, and Massive Open Online Courses (MOOCs) have created a paradigm shift in how teaching and learning is perceived. Therefore, the evolution of BL has, at times, made it difficult to characterise its meaning and definition.

2.2.2 Characterising blended learning

Dickfos et al (2014, p.191) argue that defining BL is challenging due to it being under-studied and due to the range of teaching and learning strategies involved. Fearon et al (2012, p.20) describes BL as traditional classrooms supported by other resources, usually involving technology. Similarly, Garrison and Kanuka (2004, p.96) define BL as 'the thoughtful integration of classroom face-to-face learning experiences with online learning experiences', reflecting the understanding of this research study. Additionally, the integration of lectures and online resources allows for the potential to harness engagement between teacher and student. Fleck (2012, p. 398) while acknowledging the broad view of BL, identifies its value to pedagogy insofar as it offers greater opportunities to engage in learning through WEB 2.0 technologies.

In theory BL is similar to the initiatives of the Open University distant learning programme offerings in England developed since the late 1960's. At that time BL students were supported outside of the classroom by broadcasting teaching syllabi through the BBC, with course materials received by post. So and Brush (2008, p.321) aptly describe this historical development in learning as first generation BL where collaboration was evident, but not to the extent now afforded by online access. BL presents many possibilities in the approach to teaching and learning, with the development of knowledge through acquisition, inquiry, discussion, practice, collaboration and production (Laurillard 2014, pp. 9-14). Oliver and Trigwell (2005, p.18) outline the importance for clarity when choosing to apply a BL approach in an educational context.

BL, with multiple definitions, encompasses numerous media types in teaching and learning. Educators responsible for programme development and implementation could adopt a holistic view of BL in order to accurately match the needs and requirements of the learner with the available resources of the institute. Blending teaching and learning strategies can incorporate

the best advantages of media, classroom, online learning, learning theories, and pedagogical objectives to create learning situations for students (So and Brush 2008, p.321). However, a critical culpability with the term BL is whether it is used from a teaching or learning perspective. The lack of a generic definition of BL can lead to misunderstandings between key stakeholders with regard to what they wish to achieve for learners, and what learners perceive BL to be. The objective of this research study is to establish student perception of the impact of BL on student motivation to learn.

2.2.3 Definition of traditional classroom

So and Brush (2008, p.318) describe the traditional classroom as an environment where engagement is possible between teacher and student, and student and student. Conversely, Reimann (2004, p.10) argues that the speed at which lecturers conduct their teaching, either on whiteboards or PowerPoint slides, can lead to confusion and disengagement of students, as they try to keep pace. Therefore, the general outcome for students is one of surface learning, inhibiting progress to reduce the proficiency gap between teacher and student. Moreover, Fleck (2012, p.398) argues that advances in technology integration with information may further lessen the need for the physical classroom. Virtual classrooms, podcasts, and social media platforms are delivering alternative means to acquiring knowledge (So and Brush 2008, p.320). Technology is not a substitute for teaching, but an additional mechanism to improve the learning environment. Arthur C. Clarke (cited in Mitra 2010) argued that 'teachers that can be replaced by a machine should be'. However, similar to other educational resources like books and the simple pencil case, technology is just another option to aid the educational development of students. This research seeks student perceptions of the classroom, as part of BL.

2.2.4 Definitions of technology-enhanced learning

According to Kirkland and Price (2013, p.6) Technology-Enhanced Learning (TEL) is the integration of information through technology to support teaching and learning. Similar to BL there is sometimes a lack of clarity in definition, as it has become an umbrella term for eLearning and computer-based learning. Additionally, Bayne (2014, p.6) argues that to define TEL is merely re-iterating the definition of instructional technology or eLearning. Laurillard (2008, p.521) defines TEL as a tool to aid the progression of pedagogical initiatives in an increasingly demanding global environment. According to Henrie et al (2015, p.41) the ultimate test of BL is whether or not the integration of WEB 2.0 technologies enhance student engagement and motivation. Therefore, while the use of WEB 2.0 technologies in TEL conjure up theoretical potential benefits for the learner, its true benefit to pedagogy will only transpire if effectively aligned with, and in, teaching and learning practices.

What does the future hold for technology-enhanced learning?

Kleinveldt et al (2016, p.63) argue for BL to embed the support of TEL on the Blackboard VLE. The qualitative study interviewed a sample of 9 lecturers from a faculty of 25, and the librarian associated with supporting first year students on a curriculum programme at Cape Peninsula University of Technology. Findings indicated that students benefited from the working relationships between lecturers and librarians in support of TEL implementation on Blackboard.

However, the librarian questioned student interest in VLEs as a communication tool. Students preferred Facebook and Google as the medium for communication, and source of information. Moodle and Blackboard VLEs, sometimes viewed as mere management and electronic filing of programme syllabi, lack student appeal to encourage engagement.

Moreover, Facebook can create the environment for student-centred learning through social interaction. Conversely, Alt (2015, p.112) argues that while social media technology has the potential to enhance technology's integration with education, it has yet to be formally aligned with teaching and learning theories and strategies. Furthermore, O'Donnell and Sharp (2011) surveyed 320 students in Dublin Institute of Technology (DIT) and Trinity College Dublin (TCD) on their perception of engaging with TEL. Similar to the purpose of this research the survey included 27 statements using a five point Likert scale and two qualitative questions in a mixed method QUAN+qual approach to research design.

In the research 294 students surveyed identified benefits from the integration of technology into the teaching and learning environment. However, many students pointed out that although they gained pedagogically from digital interactions, they believed that it should not be at the expense of discounting the traditional face-to-face student teacher engagement. This promotes the principle of BL and the influence of multi-media delivery to motivate students to participate in curriculum content. One student stated 'I think that learning essentially remains the same, technology just makes it an easier means to the same end (p.5)'. TEL may afford flexibility to the way students prefer to learn, when to learn, and at what pace, but the humanistic dependability of the teacher is just as important as ever.

As new governing policies are fixated on costs of curriculum delivery, there may be solutions found in transferring more content online (Hennessy, 2014). O'Donnell and Sharp (2011, p.8) found that 86% of TCD's students and 80% of DIT's students believed that course work made available online, benefited their capacity to learn and engage with course material. Greater scope to understand and to develop their knowledge evolved within the classroom environment. This draws parallels with flipped learning where the teaching is conducted through digital media, and the homework is done during class time.

Flipped learning

Bergmann and Sams (2013, p.16) describe flipped classroom as introducing material prior to class, usually online, and allowing the in-class time to lead topic related discussion. Surface learning begins with online participation, with deeper learning achieved in the classroom. This approach to teaching and learning places trust in the student to engage with curriculum outside normal class time. Students who engage are prepared to ask the necessary questions face-to-face to achieve a deeper understanding of the topic. O'Donnell and Sharp (2011) argue for the support of BL incorporating online technology and lectures in an Irish higher education context. Their study found that students equally embraced the influences of online and offline learning on each other to motivate engagement.

Conversely, flipped learning at undergraduate level is not ideally suited for student responsibility of independent deeper learning outside the remit of the classroom (Bergmann and Sams, 2013). Flipped learning is better aligned to the surface learner whereby students can engage with principles and concepts. However, Al-Zahrani (2015, p.1138) queries the potential of flipped learning to create higher order learning. Providing students fulfil their responsibilities, and teachers facilitate discussion, flipped learning can enhance student development. Additionally, if barriers to class attendance are negatively impacting learning, online access could motivate alternative means of student engagement.

The National Forum for the enhancement of Teaching and Learning (2015, p.27) survey found that 94% of teachers believe TEL to be an essential part of teaching into the future. Furthermore, (Haslam, 2017: Mitra, 2010) explain the potential for synchronous and asynchronous learning. The former requires both teacher and students to be present for instruction to occur, while the latter enable learners to view material at their own time and pace, thus creating an environment for self-regulated learning. Additionally, the mere active nature of online synchronous engagement may replace the passive nature of the traditional

classroom delivery (Abeysekera and Dawson 2015, p.11).

Challenges to technology-enhanced learning

Challenges to engage with TEL are numerous. It is important to establish the order of the barriers to engagement from both the stance of the teacher using technology as the medium of delivery, to the student engaging with content in, and through technology. It is often mistaken that students are the sole bearers of barriers to TEL.

Teacher

Fleck (2012, p.408) argues that 'custom and practice' of teaching fraternities can prevent BL from reaching its potential. Changing archaic traditional teaching practices is outside the control of students, who continue to seek the benefits of online engagement (FutureLearn, 2016). Ertmer (1999, p.48) from a teaching perspective identifies two distinct groups of barriers to TEL that impact teaching integration, namely first order and second order. The distinction between first and second order is the provision of resources in the former and changing 'the way we do things' from years of routine in the latter. Therefore, an educational institute can create first order barriers for teachers through a lack of sufficient investment in technology to enable teachers to engage in an online capacity. Furthermore, on-line teachers can create second order barriers through a lack of belief in their abilities to monitor, facilitate, and engage with technologies such as VLE's. Teacher focus is important as first and second order barriers can have a negative impact on student engagement with learning. The relevance of a teacher focus in this research is to ascertain whether programme implementation of BL teaching strategies is actually enabling opportunities to create student motivation.

(Costley and Lange 2016, p.176: Beard 2009, pp.1-17) demonstrate the additional role that teachers now have as instructors of online learning environments. They do this by measuring student satisfaction and perceived learning. Their findings conclude that as instructors moved from low to high levels of control, average measures of perceived student learning increased. The dilemma for many teachers has been whether to view technology as an aid to their current delivery style, or another element which they must use to keep pace with their peers (Ertmer 1999, p.49: 2007, pp.73-76). Teacher training is paramount to overcome second order barriers.

The Hunt (2011) strategy and policy document call for up-skilling of teaching practices, including delivery of content, assessment, and student engagement. Furthermore, Lowther et al (2008, p.197) argue that after thirty years of technological evolution, education is far removed from the potential benefits of TEL integration. In some instances, use of technology does not extend beyond word processing. Their study found the traditional barriers of yesteryear still prevalent, including lack of access to computers, creation of adaptable material, and the belief of teachers to facilitate technology. Conversely, Ertmer et al (2012, p.432) acknowledge a growing change in teacher mind-set. Access to hardware, software, and Wi-Fi has dramatically improved. Similarly, teacher beliefs and attitudes toward technology integration have evolved with an increase in support and training networks. Donnelly (2010, p.351) argues that student demand for improvements in technological integrations has increased the pressure on teachers to overcome second order fears through continuous professional development. Similarly, the role played by fellow peers, acting as champions in TEL, are encouraging teachers with computer phobia to challenge their fears. While there is a decrease in second order barriers, teacher demand for ample resources has returned the focus to first order barriers. Many teachers praise the support of eLearning champions within their institutes (Donnelly 2010, p.352). Rosenberg (2001, pp. 77-84) describes eLearning

champions as key players in leading institutional change to embrace technology by sharing information through informal training. However, a lack of formal training and up-skilling through the provision of appropriate time schedules has impeded the progress for TEL integration (National forum for the enhancement of teaching and learning 2015, pp.20-23). Teachers with a competent use of technology in their delivery methods, to create better learning environments, tend to highlight time as the prominent barrier. This appears to indicate that second order barriers of low confidence levels and knowledge of the challenges of TEL implementation, are as much obstacles to BL progression as first order factors of training and resources.

Student Perspective

O'Donnell and Sharp (2011, p.4) identified that 92% of students surveyed believe that BL has a positive impact on student motivation to engage with education. Student preference for face-to-face engagement, aligned with appropriate technology to enhance learning, was evident. Therefore, technology is not an alternative to teaching, but a platform to enhance modern day teaching and learning strategies. However, students' lack of appreciation for time management leads to barriers of engagement with technology (FutureLearn, 2016). Therefore, mapping teaching and learning strategies to technology is requisite to reap the benefits of Web 2.0 applications.

Student ability to communicate socially through technology is not directly transferable across learning practices. However, finding the link between social media platforms and teaching could create new opportunities to motivate learners to engage with content. Additionally, (Holley and Oliver 2010, p.693-694: Klein 2009) argue that students lack confidence to engage with on-line activities. The authors identify the difference between mature students, digital natives, and digital immigrants. Prenksy (2001, pp.1-6) describes digital natives as students of today who have grown up with technology as part of their everyday lives.

Learners born pre the digital age are known as digital immigrants. The influence of WEB 2.0 technologies on digital natives' learning process has given them a perception of information being readily available, and easy to access.

To some degree the digital native's patience regarding an expectation for the speed of access to learning materials would be limited to that of the digital immigrant's perception of having to invest time in sourcing and acquiring knowledge. Therefore, understanding the stance on learning between digital natives and digital immigrants is paramount in a teaching and learning context. Each student cohort, mature, digital immigrant, and digital native face different barriers to education varying from work and family commitments for the mature students, inadequate technical skills for the digital immigrants, finances, self-efficacy, peer relationships, and social history for the digital native (Holley and Oliver, 2010, pp.693-700).

Prior experience of mature students of positive encounters with education can propel progress in an online BL context. However, first time experiences of higher education without a family history network of higher education integration can impede progress as students drop out (Holley and Oliver 2010, pp. 693-700).

The purpose of this research is to carry out further analysis of first year student perception of the process of BL. The research findings may garner new ideas to propel its progress and effective implementation. The research examines student perception of the media employed by the institute to motivate engagement with learning.

2.2.5 Collaboration in blended learning

Leadbeater (2010) defines WEB 2.0 technology as a platform for two-way online communication, allowing for collaboration through voice, creativity, and video. Furthermore, Anderson and Garrison (1995, p.186) describe the traditional delivery of teaching as one way transmission with little or no evidence of any form of teacher student interaction. Donnelly (2010, p.350) outlines the promise of BL as opportunities for 'increased learning, a reduction for the need for 'brick and mortar', increased engagement, collaboration and higher quality learning'. Moreover, Dalsgaard (2016, p.252) argues for the potential of Facebook as a communications hub for teacher-student, and peer assisted learning through collaboration. However, Osguthorpe and Graham (2003, p.228) argue that the structure of BL, regarding the proportion of offline to online engagement, will vary based on instructor experience, resources, and student profile.

Holley and Oliver (2010, p. 694) argue that teachers and classroom management must view technologies as opportunities to provide expansive learning for their students. Their research related to two case studies in a British university, interviewing different samples of students exposed to face-to-face traditional classroom and online teaching environs. Findings related to the importance of the student profile entering higher education. Students better prepared from previous life and learning experiences tend to adapt better to collaborating in BL, than students ill-equipped from past learning experiences. National forum for the enhancement of teaching and learning (2015, pp.25-26) indicates concerns regarding teacher perception of student technical skills with information technology. Kotler et al (2015, p.81) identifies today's student cohort as Millennials. Their demographic label assumes that they are technologically savvy, otherwise known as digital natives. The myth that digital natives, having evolved with technology, are best equipped to collaborate academically is misconceived (Livingstone and Haddon 2009, pp.27-29: Margaryan et al 2011, p.436:

Monteiro and Morrison 2014, pp. 564-588: Smith et al 2013, p.115). Learners require training and motivation to truly engage in a learning community. Furthermore, Monteiro and Morrison (2014, p.565) argue for 'an emphasis on the process of learning, not simply on the product' of learning. Secondary level students, entering third level education, come from a learning environment where individual learning is dominant; curriculum is directed rather than discussed, thoughts are shaped rather than cultivated. The requisite skills to adapt to higher education including group work, knowledge sharing, and self-confidence are lacking. The progression to higher education can result in a culture shock to students, many of whom get lost in the transition. Teachers are not immune to the shift in learning either, as they sometimes struggle to apply effective collaborative strategies.

The ability to engage online is influenced as much by acquiring the knowledge and practical experience to engage, as it is on degrees of cognitive load in the learner (Laurillard 2014, pp. 9-14). The variable of cognitive load was not investigated in the research. However, the potential of technology to create collaboration among third level students with the tools of the learners' culture, for example Facebook, can propel motivation to engage with course materials. Frith and Frith (2012, pp.303-304) outline the role of meta-cognition within a learning environment. A learner's intuitive ability to recognise and speak about their mental thoughts in attempting to make sense of the task facing them can invite peers to collaborate in the process to proficiency. (Klein 2009: Monteiro and Morrison 2014, p.566: Osguthorpe and Graham 2003, p.229: So and Brush 2008, p.320) identify potentials in BL to build collaboration reflecting social constructivism through communities of practice. McLeod (2007) credits the work of Vygotsky as underpinning the activity theory of Engeström insofar as establishing the term Zone of Proximal Development.

Technology has allowed for a paradigm shift insofar as learners are no longer beholden to the voice of the lecturer. The classroom is no longer the gatekeeper of knowledge (Weller, 2011). Technologies have advanced online engagement to propel pedagogical theories of connectivism and activity. Teachers and programme developers sometimes overlook the potential of teaching students how to learn in a collaborative environment. Gauss and Urbas (2003, p.507) argue for communication channels to be embedded within the SCORM package to enable instant dialogue on topic related content. This would encourage peer-assisted and tutor facilitated discussion, opening channels for feedback and deeper learning.

However, an abundance of skill and intellect can serve little purpose for achieving personally-set goals, if there is insufficient desire from within the individual to maximise potential through collaboration. The greatest challenge facing TEL and institutes of higher education is to create the classroom environment on-line, establishing teacher and student collaboration for a constructivist approach to teaching and learning.

The research seeks current student recommendations to enhance motivation for students to engage with blended learning programmes. Additionally, review of literature will provide insights into learning theories, learning styles, and learning objects that foster a framework for engagement, motivation, and collaboration between students and course material

2.2.6 Learning theories, learning styles and learning objects

Students' possess a learning style (LS) they believe is best suited to engage with course material. Programme designers may facilitate learners with learning objects (LO) to aid their interaction, engagement, and understanding with learning content. The alignment of learning theories, styles, and objects is essential for student success in higher education.

Learning theories

'Learning is anything but a cut-and-dried process' (The Psychology of Learning, 1967, p.645). Learning incorporates many theories and characteristics. According to Weller (2011, p.86) advancement of WEB 2.0 technologies has shifted the focus of learning from a theory of behaviourism to constructivism due to relative ease of access to information, and depth of knowledge available. Mayes (2015a, p.4) defines the theory of behaviourism as the outcome of the association of two events or elements. One event or element can be a stimulus to create a reaction in the other. The cognitive theory on learning focuses on the importance of understanding (Mayes, 2015b, p.3). Therefore, while behaviourism accepts the associations between objects, constructivism through the cognitive process seeks understanding.

Gauss & Urbas (2003, p.501) argue for the theory of constructivism to enhance learning through the use of interactive technologies. Mayes (2016, p.6) aligns motivation and constructivism, with the former a key element for student progression to independent learning. Learning is rarely confined to the reaction between two stimuli alone, juxtaposing the early pedagogical beliefs of a behaviourist perspective. (Engeström 2010, p.75: Lancaster University, 2002) argue that learning is an activity associated with culture and to ignore the context and environment where learners exist is to undermine motivation in learners. Therefore, reflecting the purpose of this research study analysis of data from first year student perception of BL and motivation may influence choice of teaching and learning strategies.

Oliver and Trigwell (2005, p.22) explain variation theory which partly underpins this research. Student learning can result from exposure to one medium even if orchestrated in multiple media delivery, be it teacher, technology, or librarian. TEL can provide instantaneous feedback allowing continuous participation and whetting of appetites for self-regulated learners to engage further with learning content (FutureLearn 2016). Additionally, while providing feedback, technology can act as a resource equally testing learners on knowledge and skills-set (FutureLearn, 2016). Laurillard (2016) argues for the potential to instigate student motivation by using a classroom example of technology effectively being implemented in BL. Whether as an online support, or an in-class tool to promote learning beyond textbooks, the future of learning theories must be cognisant of Web 2.0 technologies. Instant feedback from technology can prolong student engagement and maintain motivation with learning content.

Therefore, matching learning theories to LS and technology can enable students to learn at a pace that suits their style, which may not be viable in the case of a classroom environment alone. Investigating student perception of choice of learning styles is an objective of this research.

Learning styles

Song (2002, p.444) argues that 'students' learning processes are still something of a mystery'. Steen (2008), while defining effective e-Learning design as the integration of teaching and learning theories, Web 2.0 technology, and knowledge of course material identifies the importance of how students engage with learning. The design of e-Learning as an interactive tool must take into account the LS of students. Honey and Mumford (1986, pp.10-15) categorise LS as activist, reflector, pragmatist or theorist. However, Stokes and Wright (2015, p.62), and for the purpose of this research, define LS using the VARK model. Learners tend

to prefer a particular LS identified by VARK as either one of the following; Visual, Auditory, Reading/Writing and/or Kinesthetic.

Stokes and Wright (2015) in their studies of student engagement with economics used the VARK model to investigate student LS. Working with a sample population in a mixed method approach, evaluation reports and online surveys were used to gather data. Regarding VARK findings concluded that the provision for different LS has a positive impact on motivation, increasing student engagement with learning. If a learners' particular style is not reflected in the teaching methods being employed, the result can lead to demotivated students who do not engage with learning. In this regard, Van der Merwe (2007, p.126) encourages teaching practices to enable learners to multi-skill in their strategic approach to learning.

Rather than being restricted by one learning preference, learners should be encouraged, if and where possible, to become familiar with and adopt additional LS. Fleming (2013) concurs that students are capable of being multi-modal regarding learning preference. This is one of the advantages afforded by a BL approach, insofar as enhancing teaching and learning across a range of LS.

The research will investigate student perception of VARK as part of a BL approach in order to support and enhance student motivation and engagement with learning content. The greater the level of student interaction with learning activities, the greater the likelihood that motivation impacting learning increases. The provision of learning objects on course programmes can provide options for students to apply their learning style.

Learning objects

The influence and perception of learning objects as a part of BL to create motivation in the student to engage with learning is an objective of this research. (Churchill 2012, p.137: Liu et al 2012, p.355) argue that learning objects (LO) have a significant role to play in the process of learning, particularly with regard to initiating motivation to engage with curriculum outside the confines of the traditional classroom. For the purpose of this research study LO are identified as key learning resources for students within the Learning and Innovation Skills module. Student perception of same is relevant to advance BL for adult learners.

Hodgins (2002, p.76) defines LO as reusable chunks of learning, designed in a manner that allow the student to interpret learning concepts that form part of course material, at their own pace. Farha (2009) compares learning outcomes from different student cohorts with, and without, the assistance of LO. Farha (2009, p.2) defines a LO as 'a subject matter-specific learning resource … which can be reused and … combined with other learning objects to form larger pieces of instruction.'

The growth of and demand for TEL by learners, has brought new pressures on higher education institutes to map teaching strategies with digital resources (Hunt, 2011). Farha's study (2009) questions the fundamentals of LO and whether they exert a positive influence on learning. The study is similar in context to the LIS module used in this research project by using LO through a VLE, in this case Blackboard. Results from 226 responses, comprising of 98 participants in the control group, which was only exposed to a traditional textbook, and 128 in the experimental group, indicated that experimental group's exposure to interactive LO achieved results three times greater than control group. Variables of gaming experience, gender, and age had little or no significant impact on task performance. Learner preference indicated a dislike towards learning through reading, as only 9 (7%) of the experimental group opted for this medium of learning.

The study demonstrates that LO are beneficial, in the appropriate setting, to enhance student engagement with a module. Farha (2009) calls for additional research regarding the motivational implications extrinsically inflicted on students, albeit by teachers who use technology, but who are less enthused by its application. The research concludes that teachers should not fear LO, but integrate these tools to contribute to an evolving pedagogical practice. One such learning object is online quizzes.

Online quizzes

Van der Merwe (2007) highlights student preference for multi-choice questions (MCQ's) as a LO to develop deeper understanding of learning content. Quizzes have the power to stimulate the curiosity of learners to partake in learning. Additionally, the provision of instant solutions to multi-choice questions, even if the incorrect answer is chosen, provokes a thought process to engage with learning, unlike True or False question scenarios (Van der Merwe 2007, p.131: Dylan 2011, p.12).

This reflects Armellini's (2016) argument regarding the teaching approach on assessment in the context of either a 'for' 'of' or 'as' learning strategy. Creating efficient and effective learning opportunities through technology can motivate students to engage 'for' learning rather than the fear of the traditional testing 'of' learning approach. In many traditional scenarios feedback is often late, resulting in little or no positive opportunity for further student engagement. Regarding online quizzes, feedback is instant. Data analysis points to a positive influence of technology by making modules more appealing to learners (Van der Merwe 2007, p.131). At a minimum, eLearning quizzes supported in class teaching and enabled opportunities for self-learning. Furthermore, (McDaniel et al 2012, p.19: Andergassen et al 2014, p.23) argue that learners who engage with online quizzes prior to formal examination benefit in performance when compared to non-participants. Making

quizzes available for multiple attempts and providing feedback encourages students to collaborate with learning materials.

McDaniel et al (2012) carried out two experiments on testing two different groups, one during a semester with 16 students, and the other on a summer programme with 27 students. Both groups were provided with quizzes, MCQ's, and read-only materials in support of textbook indicative syllabus. End of term exam questions were categorised into questions identical to the quizzes and questions related to the materials, but not formatted as quiz questions. Data analysis identified a mean average of 3.22 attempts of online multi-choice quizzes for the group. Additionally, as quiz attempts increased so did task performance (McDaniel, et al 2012, p.20). Similar studies by Faria et al (2015, p.42), albeit with 454 students, argue that 'online multiple choice quizzes encourage students to engage more frequently with the learning material.'

Developing resources to support students to adapt to higher education is as much the responsibility of policy makers as teachers. This is especially the case, given the limited budgets to invest in and to maintain online educational resources. Similarly, the technical ability to gain access to, and converse in an online environment presents new challenges for BL. Although the importance of BL to promote learning was documented at GMIT, further investigation found policy lacking regarding BL implementation. While it is important to recognise the potential of BL to impact motivation to learn, it is ineffective should inadequate resources be provided to engage successfully. Furthermore, insufficient support from policies at the Higher Education Authority (HEA) and Higher Education Institutes (HEI) fail to provide the necessary guidance and initiatives for advancing BL.

2.3 Research policy studies

The research is set in Galway-Mayo Institute of Technology. Policies relevant to higher level education require inclusion regarding the level of awareness, support or otherwise, of the teaching and learning environment in a BL context. Research can inform future policy about student perceptions of BL, and the challenges which students face as they participate in BL. This research will propose recommendations for the possible enhancement of student motivation to engage with higher education course material.

2.3.1 National Strategy for Higher Education to 2030

The report argues for best practice teaching methods to become the norm, rather than the target. Other than students being passive listeners Hunt (2011) argues for teachers to create environments through e-Learning where discussion, problem based learning, and collaboration are to the fore. In future higher order learning skills will increasingly be demanded by employers. Teachers become facilitators to expand knowledge. The report recognises the continuance of the traditional classroom setting. However, students will demand flexibility in their learning, which requires a response by practitioners. BL is therefore expected to play a major role in the future of education.

2.3.2 Higher Education System Performance Report

The Hennessy (2014) progress report indicates that funding is critical to fulfil policies outlined in the Hunt (2011) report. Technology is expected to play a central role in changing teacher practices. However, this change will be gradual without the necessary funding of technical resources to deliver on policy; this can be seen as a first order teacher barrier. Similarly, a decrease in staffing to student ratios at a time when change is a pre-requisite is not enhancing the mood for change in teaching practice. Therefore, unless funding is taken seriously, BL will have little impact on student motivation, simple because it is not given the resources to achieve results.

2.3.3 Learning for Life: White Paper on Adult Education

The paper advocates for greater awareness by adult learners in the provision of flexible on and off campus learning (Department of Education and Science, 2000, p. 140). Heretofore, traditional classroom settings were the mainstay with the provision of distance learning being provided either by The National Distance Education Centre, or the Open University. The paper argues for 'expanding the range of delivery modes and adopting more adult friendly pedagogies' (Department of Education and Science, 2000, p. 141). However, the paper fails to clearly outline the role of technology, and how to prepare learners for integration to the third level learning process. Analysis of the seventy page document, Action Plan for Education 2016-2019, reveals that the term "blended learning" is only mentioned once (Department of Education, 2016). Although the document refers to "investment in technology" the Action Plan for Education 2017 has no explicit reference to BL (Department of Education, 2017). In order to motivate learners programme structures need sound polices to be adopted to cater for the ever changing education sector.

2.4 Motivation

Afip (2014, p.35) argues that the study of motivation and its role in pedagogy is essential to understanding how learners perceive themselves in education, and the challenges they face. MacGyvers et al (2001, p.321) state that 'motivation plays a major role in students' academic achievement, and motivational problems can seriously undermine learning'. Learners can be passengers in the teaching and learning process, not knowing why or even how they find themselves on an educational programme. However, students with an inherent reason to learn are far more likely to achieve academic performance (MacGyvers et al, 2001).

Zimmerman (2000, pp.84-89) interprets motivation in learning as the effort that one applies to satisfying goals. Broadly speaking, motivation can be divided into two categories: intrinsic and extrinsic. Ryan and Deci (2000, pp.56-61) distinguish between intrinsic and extrinsic motivations. Intrinsic motivation is influenced by inner desires of the individual to engage with resources, without a stimulus. However, extrinsic motivation to engage with learning is due to the presence of another variable. Additionally, Deci et al (1991, p.327) argue that categorising motivational factors should not ignore the inter-dependence, which may exist between humanistic factors and external factors. The level of student engagement towards education reflects how the students see themselves perform in the process of learning, and in their cultural setting (Engeström, 2010). Therefore, within the context of this study exploring findings from first year student perception of the influence of BL in an intrinsic and extrinsic motivational context can support advances in teaching and learning.

Van der Merwe (2007) investigates the impact BL has on student motivation through on-line engagement and the face-to-face classroom. He argues that generally an improvement in motivation leads to improvements in performance. Mixed method research investigates the impact on student motivation, by providing students with a BL environment inclusive of LO

(Van der Merwe, 2007). The BL facility was offered to all 225 economic students at Durban University of Technology. While 86 students accessed the online element of the BL approach, only 16 (18%) engaged with the survey. Time constraints, insofar as the learner keeps pace with the main stream traditional classroom lecturer, are removed in the TEL environment where students can engage with tasks at their own pace. Findings indicated that technology alone is not enough to stimulate motivation. However, the constructive alignment of resources, tasks, and assessment through TEL enables the creation of an authentic learning environment for learners to prosper from their efforts of engagement with the module. Furthermore, statistical analysis confirmed that the integration of online technologies in a BL format positively impacts student motivation.

The traditional classroom environment, sometimes limited insofar as creating peer assisted support and flexibility of engagement, can through BL incorporate technology to develop opportunities to nurture motivation through feedback (Monteiro and Morrison, 2014). Monteiro and Morrison (2014) applied a mixed method approach consisting of questionnaires, interviews, and observations to explore the challenges of motivating effective learning in a collaborative BL setting of undergraduate second year business students at Macau University China. The participants come from a second level environment where they are taught 'what to think, when to think and how well they have thought' (p.568). Similar to the context of this research, the switch to student-centred learning required students to take ownership of their learning while teachers became responsible for facilitating the process of change from second to third level education. Over this short time span, the pilot group, having received training in collaborative skills declared small and progressive developments in BL and engagement. The pilot group benefited from training in online engagement, activities, and collaboration. Monteiro and Morrison (2014, pp.575-577) noted that student self-learning and motivation were not overtly impacted by the use of BL.

Van der Merwe (2007) concurs with these findings insofar as BL may not motivate intrinsic values to learn, but the creation of new media to converse with curriculum can allow modules to be more interesting, therefore supporting student extrinsic motivation to engage with course material. The study refers to the teacher's important role in student adaption to BL. Instructors must be aware of this key implication when integrating a BL initiative.

Constructive alignment of student expectations, tasks, assessments, and learning outcomes is essential to achieve desired performance (Biggs 1996, pp. 348-350: Biggs and Tang, 2011: Chen 2007, pp.73-76: Kleinveldt et al 2016, p.63). Furthermore, Keller's (2010, p.4) ARCS model approach to motivation aims to establish learner curiosity through creating 'Attention', maintaining 'Relevance' of learning content between the learning activities and the real world, building belief through 'Confidence', and continue the cycle of engagement with the values of student 'Satisfaction' on achievement from efforts employed. Additionally, Monteiro and Morrison (2014, p.586) identify the role of maturity with its influence on the degree to which participation with BL advances over the duration of a module. The research study indicated positive outcomes from learner exposure to BL, motivating peer assisted support, ownership of learning, and realisation of different perspectives on the learning process.

The importance to this research is to identify the key positive elements during the administration of learning that contribute to improvements in student intrinsic and extrinsic influences, by asking students to respond to specific learning statements, stated in the survey questionnaire and outlined in Chapter 4.

2.4.1 Intrinsic motivation

Maslow (1966, cited in Fadiman 2010, p.3) argues that people have values or perceptions of the environment in which they function. Furthermore, regardless of the intensity of individual values and perceptions, they exist within each and every person (McClelland 2010: Paechter et al 2010, p.227). The value is directly linked to the level of motivation exerted. Mayes (2016, p.6) identifies the role of motivation in independent learning whereby its influence on achievement is just as powerful as academic prowess.

Guass and Urbas (2003) argue that intrinsic motivation has a positive impact on learning outcomes and assessment. Their research focuses on digital design, navigation, and learning objects to establish whether the integration of technology stimulates motivation in the learner. Guass and Urbas (2003, p.499) identify that, in general, LO are vast and varied, therefore difficult to test and compare subjectively their impact on learner intrinsic motivation. However, their studies use of a Sharable Content Object Reference Model (SCORM) package embedded on a VLE generates a structured approach to the use and share-ability of LO. The structure of the content allows it to be shared, but importantly prevents altering its layout and set-up. The SCORM package is similar in context to the research of this study in relation to the presentation of course materials of the LIS module on the Moodle VLE. With reference to researching, SCORM can ensure uniformity in delivery of learning resources.

The investigation into the engagement with a SCORM package from different student cohorts establishes validity and credibility, due to the structured design (Gauss and Urbas, 2003). Similarly, and in mirroring the purpose of this research, Gauss and Urbas (2003) use LO in conjunction with face-to-face teaching, representing a BL approach. Gauss and Urbas (2003, p.500) highlight a key value of BL, that being the synergy created between the traditional classroom environment and use of LO and technology. The rigidness of a SCORM package during learner engagement can benefit the learner with lesser knowledge of content, as there

is a step by step scaffolding process to build and acquire understanding. There is a disadvantage whereby those learners with some degree of knowledge may become discouraged from engaging with content because they find the pitch of the curriculum unchallenging. However, those with an intrinsic motivation to achieving learning goals use the structured approach to improve on test performance. The study indicates that, although knowledge is essential to achieving learning outcomes, the role of intrinsic motivation carries weight in developing deeper understanding and learning of the curriculum.

Gauss and Urbas (2003, p.507) stress the need for further research into the importance of design and navigation to engage the learner. This thesis student examines whether or not the media of Moodle, Classroom, and Library workshops complement engagement with learning, by examining their influence on students' intrinsic motivation. Similar to Gauss and Urbas (2003), an objective of the research regarding the relevance of animations as a LO on the LIS module, this study suggests that the development of animations and 'stories' can enhance interaction and motivation. Animations and stories must be relevant to learning content, otherwise learners disengage. Although the use of LO provide an alternative choice to learner engagement, the characteristics of student motivation to engage with LO must be central during the development and design of activities.

In the context of education, students' progress quicker when they take ownership of their own learning, thus advancing as self-regulated learners (Zimmerman 1990, p.4: Kelly 2005, p.78). Baumeister et al (2009, p.4) define self-regulation as 'regulation of the self by the self'. Additionally, Iyengar and Lepper (1999, pp.349-350) argue that inhibiting the choice of learners is detrimental to their motivation to engage with learning content. Removing choice of what to learn, and how to learn, disregards the power of the learner to make their own decisions, in turn depleting their intrinsic motivation to engage. Conversely, Hirschfeld et al (2008, pp.158-159) argues that without intrinsic motives extrinsic factors will have little

impact on learner performance. However, unrealistic intrinsic motives, where learners pitch their capabilities above their limitations can cause negative consequences for learning progress. There must a clear distinction between learner confidences in pursuit of achievement held by intrinsic values, and the extrinsic motivational factors influencing the goal of accomplishment.

2.4.2 Extrinsic motivation

Extrinsic motivational factors concern elements external to the learner psyche that encourage or deter engagement with course material in BL (Yoo and Huang 2013, p.156). Learners may choose to study independently, however it is difficult for learners to isolate themselves from the environment in which they learn (Vallerand 2000, p.313). Interaction with the elements surrounding the learning process will determine either a positive or negative impact on learners' intrinsic values and beliefs. Additionally, Deci and Ryan (1985) argue that intrinsic motives are not enough on their own for learners to reach their potential. Regardless of the level of influence from extrinsic factors their input impacts the individual student's learning experience. Furthermore, the extrinsic motivation factor to attend class for the purpose of gaining information to pass the mandatory exam, rated higher on student agendas than attending class for the purpose of learning (Gauss and Urbas, 2003).

One of the objectives of this research is to establish to what degree these factors play a role in students' motivation to engage with course content via BL. Extrinsic motivational factors include, but not exclusively, course design, layout and access, peers, digital technical skills, finance, influenced by learner experience, teaching environment, and learning environment.

First generation learners

Pinder and Blackwell (2014) argue that students face many challenges while attempting to embrace third level education. Their studies highlight inequalities associated with access to third level education as first generation students struggle to adapt. A first generation student is defined as the first person from their family to attend third level education. Challenges are not necessarily finance related, and, more often than not, stem from a lack of support and guidance from their family environment; there is little or no familial knowledge of what the adaptation process entails (Pinder and Blackwell 2014, p.45). Learners' intrinsic values maybe motivated by the desire to succeed in engaging with programme content. However, environmental factors can influence both negative and positive impacts on learner development. The home environment can act as a silent deterrent, as learners succumb to the emotional strain of limited finances. Similarly, environment can offer a psychological boost in confidence to propel the intrinsic desires of the individual to do better, and improve their futures, and that of their families (Frith and Frith 2012, p.291).

Therefore, while distinguishing between factors that influence learner engagement, it is paramount to establish the contextual settings and the social network that surrounds learners. This is important to the research insofar as understanding the factors that can influence student participation in and perception of BL.

The teaching environment

Kelly (2005, pp.77-78) argues that lecturers in higher education should stop and quiz students on their learning during class time. The goal of questioning student learning should be to serve as a guide to proactively change methods of teaching, and not to assume by student silence that content is understood. The influence of teachers as motivators can ignite confidence and belief, as learners may aspire to the values of their teacher to engage with

learning. The creation of additional communication routes to learning content will increase learning opportunities.

Students depend on face-to-face interactions when dealing with modules like maths and accountancy. Interpreting course content through an online environment proves difficult for some students. Interestingly, Lightner-Laws and Lightner (2013, p.226) argue that dropout rates are higher with online courses than traditional face-to-face courses. Teacher-student interaction can prevent student isolation due to difficulties in understanding content. However, self-regulated learners collaborating with online programmes can prosper through engagement if learner intrinsic goals to engage are not impeded by extrinsic barriers. It is possible that student readiness to learn influences intrinsic motivation, as goals, such as the desire to achieve potential, are personal. Challenges are seen as obstacles to overcome, rather than used as fears to prevent application to the learning process. Lightner-Laws and Lightner (2013) compare the different learning modes of traditional classroom, online, and distant media. The study investigates the variation in learning outcomes associated with students accessing content through alternative modes, while enrolled on the same module.

From a research perspective, Lightner-Laws and Lightner (2013, p.236) investigated the influence of offering BL at Master of Business Administration (MBA) level. The objective of the choice of a BL approach was to 'reduce the short comings of pre-set course delivery models and enhance a student's overall learning experience' (Lightner-Laws and Lightner, 2013 p.231). Supported by technical staff lecturers delivered in class teaching, streamed live, and ensured that all relevant material, including class recordings, were hosted on the VLE, Blackboard. The positive benefit to learner outcomes from the provision of multiple modes of delivery was evident in the research findings. Students were allowed to move between the different modes of delivery, depending on work and life commitments. This removed first tier barriers to engagement, allowing stimulation of intrinsic motives.

Moore et al (2008, p.57) argue that developing opportunities to expose students to various teaching and learning media can propel motivation in the learner to engage. Therefore, for this research, student participation in multiple teaching and learning mechanisms is important to establish their perception of BL.

Furthermore, Moore et al (2008, p.59) argue for transparency in communication between the expert teacher and the novice learner. Motivation-fuelled engagement could potentially transform the experience of learning for the younger student as they establish themselves in the teaching and learning environment. Bloom (1984, p.7-9) argues that teaching to groups should be as effective as tutoring to small numbers in motivating engagement. Enabling students to overcome tasks involves feedback on previous engagements to guide future learning and develop proficiency.

The learning environment

Bloom (1984, p.11) identifies the influence of peers in the learning environment. If carefully selected, peers can have a positive influence on the learner as they engage with content. Mayes (2015b, p.5) argues that although learning can progress independently, collaboration with peers and groups in a social context can influence motivation to learn. Holley and Oliver (2010, p. 694) argue for further research into student inequality. Some students have to work an average of fifteen hours a week to provide for their learning, in comparison to other students in a position to acquire on campus accommodation in proximity to learning opportunities. Pintrich (2000, p.544) identifies mastery and performance approaches to learning, the latter recognising both a positive and negative approach, depending on the mind-set of the learner and the context in which the learning takes place.

The mastery approach is intrinsic with the individual having a keen interest in the task at hand. The performance approach can be influenced in one of two ways. Firstly, the learner

may engage with learning performance on a competitive basis to outclass their fellow learners. Alternatively, the learner may overtly focus on the fear of losing face among their peers, because of a lack of knowledge and understanding of the learning resource. This normally results in negative engagement with material. The combination of intrinsic mastery of goals in a competitive learning environment may lead to more positive outcomes. However, with efforts afforded to outperforming peers, learners can be distracted and not fulfil their potential.

While learners potentially have multiple pathways to achieve learning, influenced intrinsically and extrinsically, an objective of this research is to identify student barriers to engagement.

2.5 Conclusion

For the purpose of this research project, BL is defined as integrating and supporting the face-to-face classroom content delivery with online resources, and library workshops. BL should be used from both a teaching and learning perspective. Maximising student choice to preferred LS is important for them to be motivated to engage in the learning process. However, to achieve long-term success the inner desire to learn for learning is a significant influence.

Reforming teaching and learning strategies should focus on finding a balance between TEL and the humanistic nature of the traditional classroom. Technology is just another tool in the repertoire of teaching and learning, but equally must be pedagogically mapped in support of learning. The integration of technology into the teaching and learning environment transfers the process from teacher-centred learning to student centred learning, dependent on intrinsic and extrinsic motivations to achieve learning goals. Policy reviews are paramount for the consummate implementation and advancement of e-Learning platforms. Establishing an understanding of what makes the student engage with course content shall provide proposals for teacher analysis of teaching methods. To nourish learner motivation requires astute teacher awareness of what stimulates student attentiveness to learning content. Third level institution awareness of motivational intrinsic and extrinsic influences on first year students exposure to BL are essential for successful engagement.

BL creates opportunities for learners to engage on a number of platforms, from classroom to online, from teacher to student, from student to student, encompassing motivational influences. Therefore, this research will investigate student perception of LS and LO as part of integrated technology resources with traditional teaching, and influences and barriers to engagement in order to support and enhance student motivation with course material.

CHAPTER 3
METHODOLOGY

3.1 Introduction

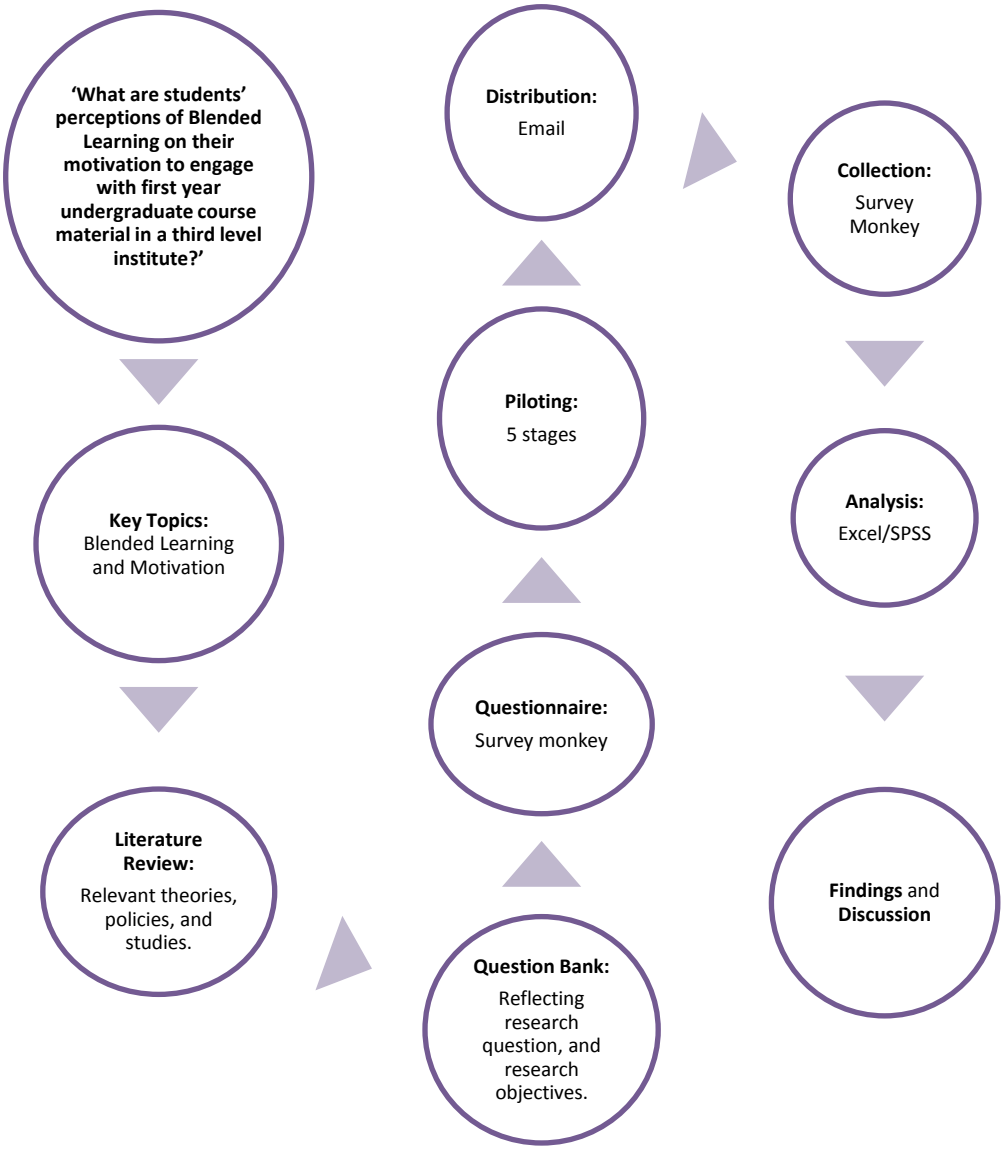
The research methodology organised resources to design a survey questionnaire that would satisfy research objectives and answer the research questions. The questionnaire was created following a literature review which highlighted the need for further research into blended learning and motivation for undergraduate students. A QUAN+qual approach was undertaken to address the key research variables and questions. The survey was created using Survey Monkey, piloted among lecturers and students, and communicated through email to the sample population. Survey Monkey collated the data and made the information available for export and analysis on Microsoft Excel and SPSS software. Ethical considerations were adhered to and research limitations addressed.

The objectives outlined in Chapter 1 of this research study aim to quantify first year student perception of BL, to establish variances, if any, between independent variables of age, gender, and school of discipline, thus determining whether or not blending learning motivates students to engage with learning. It was incumbent that decisions taken regarding choice of instruments used to collect data from the sample population reflected the purpose of the research in answering the research question, 'What are students' perceptions of Blended Learning on their motivation to engage with first year undergraduate course material in a third level institute?'

Subsequently, the research design process provided the data to integrate the literature review, methodology, findings, and discussion.

3.2 Research Design

O'Leary (2010, p.88-89) outlines the importance of methodological design insofar as creating a staged process to achieve a movement from questions to answers. The methodological design encompasses the research methodology, methods, and tools necessary to achieve the objective of the research, outlined in Chapter 1. The following flow diagram presents the approach undertaken by the researcher, identifying key stages in the design and development of the mixed method approach to the research methodology.



3.3 Justifying the method

The mixed method choice undertook a QUAN+qual approach to answering the research questions. The research questions and the review of the literature supported, by way of highlighting other similar studies, the decision in the approach and design of the research. It was paramount to align available resources to effectively collect, review, and report findings of the sample population. It would not have been feasible to interview a registered population of 1,764 first year students. Therefore, Survey Monkey was used to format, deliver, and collect, through email, the relevant data to answer the RQ's.

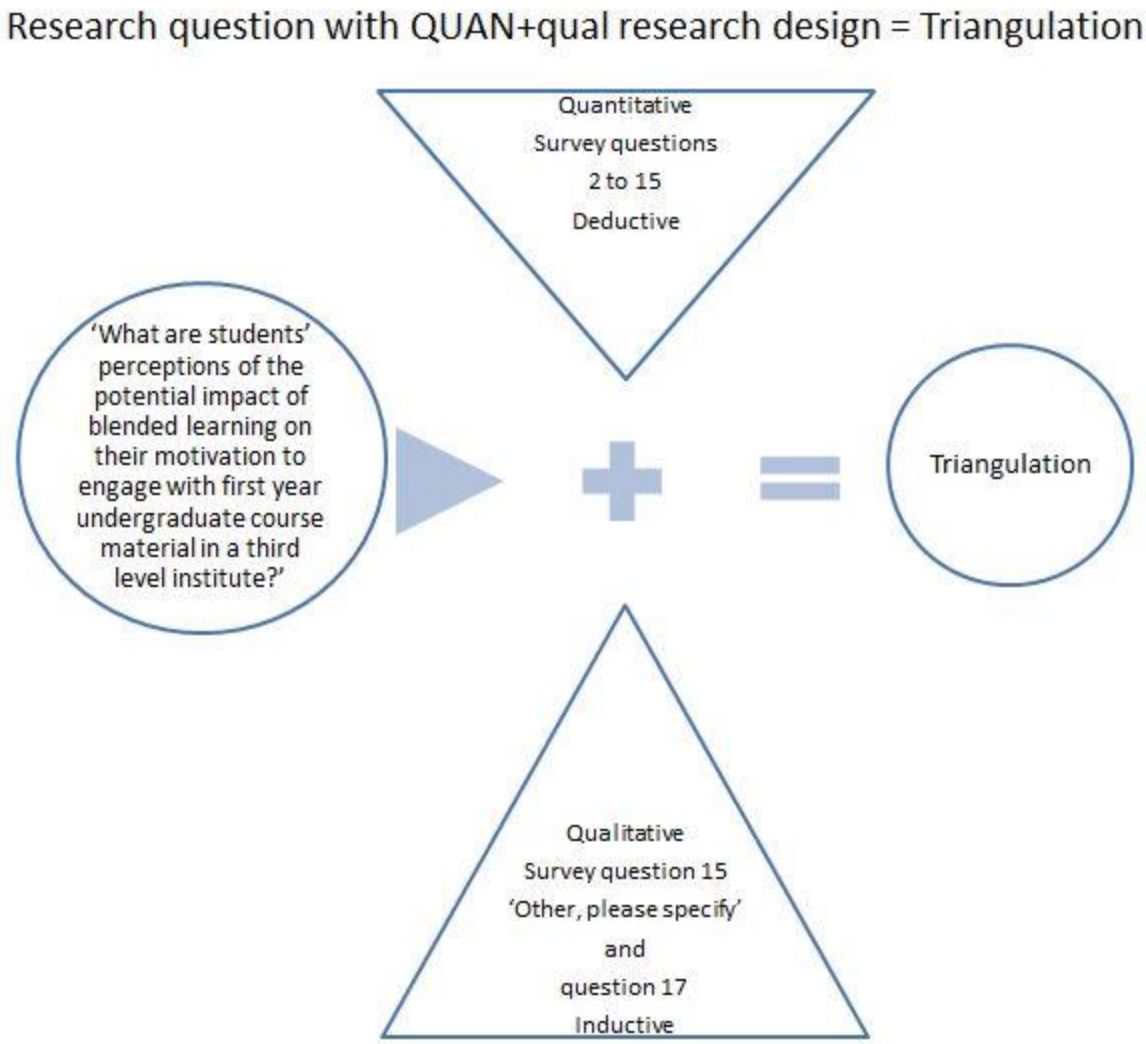
The literature review evidenced application of quantitative, qualitative, and mixed method approaches to research design. The QUAN+qual approach is similar to O'Donnell and Sharp (2011), outlined in Chapter 2. The QUAN+qual choice of method was justified by the volume of students, adequately representing the population. The research of Monteiro and Morrison (2014, pp.570-572), outlined in Chapter 2, adapted a mixed approach, conducting investigations over a minimum of two semesters, and in some cases over a number of years.

As a preferred choice for the purpose of triangulation, evaluation of the literature review highlighted that a mixed approach must consider the factors of time and finance (See Table 1). Additionally, Morrissey (2016) argues for critical analysis of the decision process in applying mixed method research. However, Creswell & Plano Clark (2009, p.211) describe triangulation as retrieving research from several sources to maximise validity. Monteiro and Morrison (2014, p.569) describe mixed research as 'parallel data collection and analysis … merging qualitative and quantitative data … to answer the research questions.' Holley and Oliver (2010, p. 695) argue that incorporating qualitative data allows participants to construct their reality on perception. Therefore, the interpretation of mixed methods will enable the sample population to 'voice' their concerns beyond numerical texts allowing for words

(Tashakkori and Creswell, 2007), reflected in part of question 15 and question 17 of the survey (See Appendix 2 for Survey Questionnaire).

The researcher recognises the opposing debate between positivism and interpretivism reflecting quantitative and qualitative methods respectively in representing the view on social reality. The interpretation of ontology and the researcher, views the quantitative and qualitative data as complementary to answering the research questions, rather than opposing aims and objectives as argued by Morgan (2007, pp.48-50). The researcher believes that ontological variable relationships and the epistemology power of statistical data, can be equally supported by surveyed participants' interpretation and understanding of social settings. In this study, research findings are used to test the hypothesis that blended learning has a positive impact on motivation to engage with learning material.

Table 1


Research question with QUAN+qual research design = Triangulation
Quantitative
Survey questions
2 to 15
Deductive
'What are students' perceptions of the potential impact of blended learning on their motivation to engage with first year undergraduate course material in a third level institute?'
Triangulation
Qualitative
Survey question 15
'Other, please specify'
and
question 17
Inductive

3.4 Sample and sampling procedure

3.4.1 Total population

The first year population in GMIT, as of November 1st 2016, was 1,764 students (See Appendix 1). GMIT consists of a number of campus sites located at Dublin Road and Monivea Road in Galway City, Letterfrack, and Mountbellew in County Galway, and Castlebar in Co. Mayo. Colleges within the institute include Business, Engineering, Science & Computing, and Tourism & Arts. To create an opportunity to provide a true representation of the population it was decided to issue a survey, through Survey Monkey, to all of the registered first year student population.

3.4.2 Sample Population

So and Brush (2008, p.322) argue that the researcher must ensure a thorough analysis of prior research before engaging with a sample population. A comprehensive review of the related literature was undertaken in order to inform the approach to designing a research study that addressed the primary objectives and research questions. Bryman (2012, p.187) states that in order to generalise findings to be representative of the population a probability sample technique is appropriate to minimise sampling error. The sample population reflects the total population of first year GMIT students. The researcher believes that the high response rate of 29% (504 valid responses divided by 1,754 registered first years) vindicates this decision. Rather than focus on one school, department, or location, a Stratified Random Sampling technique was employed based on the following information:

Faculty	Registered First Year Student Numbers	Sample Size 95% +/- 5% CI	Actual Response	Sample Size 99%+/- 5% CI	Sample Size 99% +/- 1%
Business	312	172	95	213	306
Engineering	396	195	70	249	387
Letterfrack	51	45	17	47	51
Mayo	145	105	75	119	144
Science	467	211	159	275	454
Tourism & Arts	393	195	88	247	384
Total	**1764**	316	**504**	483	1595

Table 2: Stratified Radom Sampling Technique

The stratified sampling approach ensured that each first year student cohort had an equal opportunity of representation. The research findings, as presented in Chapter 4, are based on a sample size of 504 complete responses. Systems (2012) calculates that this sample size guarantees the research is statistically valid at the 95% confidence level, ensuring the findings can confidently be viewed as reflective of the overall profile and perceptions of first year students in GMIT (See Appendix 3). To have credibility of +/- 5% the sample size needed 316 responses. The actual responses totalling 504, representing the first year population, far exceed 316. This established a confidence interval of +/- 3.69%.

3.4.3 Description of sample population

First year students on all GMIT programmes are, in semester one, required to take the module Learning and Innovation Skills (LIS), outlined in Chapter 1. The purpose of this module is to prepare the students to adapt to life at a higher education institute.

In September 2016 a SCORM package (explained in Chapter 2) was introduced as part of the LIS module. The SCORM package was hosted by the VLE Moodle. Gauss and Urbas (2003, p.500) define SCORM as a framework for the integration of technology-based learning objects as part of teaching and learning. This SCORM package included a number of e-learning tools, video capsules, animations, reading materials, and quizzes. An element of the package was assigned to a unit within the LIS module, called Academic Integrity. An online compulsory formative assessment worth 20% formed part of the 100% continuous assessment of the mandatory module LIS. An 80% pass rate was required for the 20% formative assessment. Students failing to meet the pass mark cannot progress. The LIS teaching and assessment concludes each year at the end of semester one.

This policy change to the first year teaching of LIS provided a complete first year population, across one institute that were exposed to BL. The described population, and their conditions of module engagement, ensured a platform upon which the researcher could test theories associated with BL and motivation. All first year students engaged at some level with the structurally designed online SCORM package, traditional face-to-face teaching, and library workshops, thus creating a BL format.

3.5 Identified research variables

Creswell (2009, pp.132-133) states that surveys are associated with studying relationships between variables through implementing quantitative research questions. Surveying multiple student sub-groups within the population ensured integrity of survey data. In recognition of possible deviations in the following associated variables researching the entire set of stratums set against criterion enabled validity in the findings:

- age, readiness to learn and self-regulation,
- gender,
- school of education,
- learning styles,
- learning objects,
- student collaboration and engagement,
- teaching media,
- quality, design and coordination of technology,
- barriers, influences, intrinsic and extrinsic motivation

3.6 Designing the survey questionnaire

The researcher identified the importance of investing sufficient time into designing the survey questionnaire that would form the linchpin for the entire project. There would be no second opportunity to return to the sample population following insurmountable flaws in survey design, possibly indicated by findings that were neither valid nor credible. The survey had to be right for the launch date, to the sample population. Application of time, multi-testing and piloting ensured survey transparency and accuracy. A ‘Tips for Questionnaire Survey’ word file was created on the 08/10/2016 at 15.06 (See Appendix 4).

3.6.1 Type of questions

Questions can be divided into two categories, the style of questioning and the content of the questioning. The latter influenced by research objectives in Chapter 1. The former, style and language, are key in question development. Kuh (2001, p.13) presents the following with particular reference to constructing a survey for undergraduate students:

1) the information requested is known to the respondents;
2) the questions are phrased clearly and unambiguously;
3) the questions refer to recent activities;
4) the respondents think the questions merit a serious and thoughtful response;
5) answering the questions does not threaten, embarrass, or violate the privacy of the respondent or encourage the respondent to respond in socially desirable ways.

De Vaus (1995, p.83-86) identifies the importance of how questions are worded (See Appendix 5: Survey question guidelines). Furthermore, Pintrich et al (1991) argue for the significance of structure and layout. The questionnaire was designed for natural flow, to enable the respondent to apply their thought process in a logical manner. Additionally, the So and Brush (2008, p.324) approach was applied to categorizing questions through general information, learning preferences, digital perception, influences, and barriers. This was essential to ensure that as many as possible who chose to do the survey, completed it. The following table, Table 3, outlines the survey questions, insofar as the variables, question style/type, and mixed research approach for data extraction.

Table 3: Questionnaire variables, survey question, question style/type & reflection of Mixed Research Approach to Data

Variables	Survey Question	Question style/type	QUAN+qual	Positivism	Interpretivism	Ontology	Epistemology	Quantitative Deductive	Qualitative Inductive	Survey	Open Question	Research Question(s)
Age	2	Select	QUAN	√		Causal	Statistic	√		√		1, 2, & 3
Gender	3	Select	QUAN	√		Causal	Statistic	√		√		1, 2, & 3
School	4	Select	QUAN	√		Causal	Statistic	√		√		1, 2, & 3
Learning styles	7	Ranking	QUAN	√		Causal	Statistic	√		√		1
Learning objects	8	Ranking	QUAN	√		Causal	Statistic	√		√		1
	12	Choice	QUAN	√		Causal	Statistic	√		√		1
Teaching Media	10	Likert Scale	QUAN	√		Causal	Statistic	√		√		3
Student Collaboration	13	Choice	QUAN	√		Causal	Statistic	√		√		3
and Engagement	6	Choice	QUAN	√		Causal	Statistic	√		√		3
Quality, design of IT	9	Likert Scale	QUAN	√		Causal	Statistic	√		√		1
Intrinsic and extrinsic	11	Likert Scale	QUAN	√		Causal	Statistic	√		√		3
Motivation	14	Likert Scale	QUAN	√		Causal	Statistic	√		√		2
	16	Likert Scale	QUAN	√		Causal	Statistic	√		√		2
Barriers and influences	15	Multi-choice	QUAN	√		Causal	Statistic	√		√		2
Other (please specify)	15	Word Text	qual		√	Own reality			√		√	2
Recommendations	17	Word Text	qual		√	Own reality			√		√	1, 2, & 3

3.6.2 Piloting the survey

Once research objectives were identified, compiling the questions necessitated patience. The process of designing and structuring a questionnaire to avoid errors in language, style, and flow can be overlooked by the researcher. Before issuing the pilot to students, it was first issued to six colleagues within GMIT. This survey formation strategy minimised flaws that otherwise would not have fulfilled the advocated approach of De Vaus (1995), Kuh (2001) and Pintrich (1991).

Piloting to fellow colleagues

The following colleagues were chosen to test the survey for clarity, transparency, readability, grammar and understanding:

- two non-native English language speakers, in this case French and Polish to offer a non-native students' interpretation of survey questions
- a lecturer in information technology (IT) to proof the technical language and terminology used in the survey
- a LIS lecturer to check for student relevance and understanding regarding the general content and structure of the survey
- a member of the 'code of conduct and ethics committee'
- the research supervisor

The survey was emailed to the above GMIT staff. Non-native English language speaking colleagues identified a number of spelling and grammatical errors, and argued that some of the words like 'robust study' may not make sense to both national and foreign students alike. It was suggested that the word 'Strong' might be more applicable than 'robust'. 'Though' was typed when it should have been 'through'. The IT lecturer clarified the appropriate terminology for question nine (See Appendix 2; Survey Questionnaire). It was suggested that explaining each term in question 9 would aid student understanding. Similar analysis was

applied to student interpretation of VARK for question seven (See Appendix 2; Survey Questionnaire). The LIS lecturer made recommendations regarding the location and flow of the questions, such as introducing the questions insofar as mirroring the layout of how the course materials were communicated on Moodle. The colleague who is a member of the GMIT ethics committee indicated that the gender option should include 'would rather not disclose', in addition to 'Male' or 'Female'. Additional guidance provided by colleagues included that the consent question should be the only compulsory question. All other questions should remain optional. Colleagues returned with supplementary commentaries (See Appendix 6). Lastly, the research supervisor, with a helicopter view of the aims and objectives of the research, provided reflection on the chosen questions with particular relevance to the literature review.

Piloting to first year students

Accepting feedback from colleagues alone would have been short-sighted. Therefore, it was essential to pilot test and receive feedback from a sample of the first year population, to whom the live survey would actually be issued. This would ensure alignment between questions and answers in language, style, content, and delivery. The second draft of the questionnaire was sent with an email cover page, and link to Survey Monkey, to ten students and the aforementioned six colleagues on the 18th January 2017 (See Appendix 7). The ten students were known to the researcher. The researcher met with the students. They had no issues or concerns with the questionnaire.

3.6.3 Distributing the survey

Initially, it was envisaged that emailing 1,764 students would be both challenging and potentially error ridden. However, a visit on the 16th of January to a colleague in the GMIT IT centre resulted in the creation of a text file inclusive of all first year student email addresses (See Appendix 8). The text file email addresses were cut and pasted into the blind carbon copy (bcc) section of the email; bcc protected ethical concerns of privacy of personal email addresses. Additionally, using 'bcc' avoids unnecessary continuous recirculation of emails. The survey went live on the 31st of January 2017 at 15.15 pm (See Appendix 9). Furthermore, with respondents to the survey at 451 on the morning of Friday February 3rd, the access to the text file of email addresses enabled a quick reminder of the survey on Monday February 6th at 13.08pm (See Appendix 10).

3.6.4 Timing of distribution

According to Epstein (2012) timing of survey distribution is equally as important as developing the appropriate questionnaire to the sample population. However, quality data can only truly be returned if the audience, and the context in which they exist, is truly appreciated by the researcher. This incorporates an appreciation for the daily requests, limitations, challenges, and commitments that face first year students. The researcher was aware of a number of impeding factors associated with the date of issue of the survey:

- Students were due back for semester two on Monday January 16th
- Semester one results were being issued online on Thursday February 2nd
- The Irish Survey of Student Engagement (ISSE) was due for launch on February 6th

It was necessary to allow students time to acclimatise to semester two. Similarly, the researcher required time to gain access to and correspondence with the students piloting the survey. The researcher was mindful that the sample population was being requested to recall

from memory their experience of a first semester module. The sooner they received the questionnaire the greater the chance of them relating to the survey questions. Patience was a requisite as a number of elements needed attention such as quality of survey design and appreciation for students time.

The link to the survey was issued through student college emails. In order to retrieve semester one exam results students were required to use a password, issued to their email address. As the research survey was circulated two days prior, students would see the survey email in their inbox. Therefore, any concerns of students failing to regularly access their college emails was alleviated. Similarly, student email access is only applicable if there are no outstanding accounts. Therefore, to gain access to results requires a clearance of unpaid instalments. This increased the chances of survey visibility in their inboxes, at a time in which student access to emails was at its peak.

The researcher was cognisant of the ISSE survey, and the power behind its marketing efforts. To avoid the research survey being lost in a clutter of student communications it was paramount it secured student attention in advance of ISSE.

3.7 Communicating survey awareness

Awareness of the survey accessibility on student emails was provided through the GMIT Student Union webpage, Facebook and Twitter accounts (See Appendix 11). Additionally, the GMIT VLE Moodle homepage hosted, for three days leading up to the ISSE survey, the notification of this research survey (See Appendix 12). Colleagues in GMIT IT centre advised that historically student demand for the four hundred available computers in the IT centre increases on the day exam results are released. On that basis a number of posters were positioned in and around the entrances to the IT centre (See Appendix 13).

Further communication opportunities were available. However, the author declined the option to ask student class representatives to inform students of the survey. It would not have been appropriate to ask them to do so, as they already had commitments to communicate the ISSE. Furthermore, the option to use the staff intranet to request colleagues to inform students of the survey was declined. This would have been an infringement of class time, and a potential bombardment of awareness of the survey.

3.8 Response rates

Survey question one established an ethical base in the administration, distribution, and collection of data. Respondents were restricted to progress beyond question one, unless they acknowledged consent to their participation with the survey. 'Yes', to consent to the survey was selected by 504 respondents, while only 4 respondents preferred not to engage with the questionnaire. The 29% response rate (504 respondents/1,764 registered students) demonstrated a high level of engagement and interest from first year students for their role in the evolution and development of blended learning (BL).

The combination of time spent developing the survey, and the strategic approach to issuing and supporting awareness of it, duly paid dividend. (See Appendix 14 which highlights the original 'work in progress' survey, created on November 26th 2017, which commenced the journey for piloting to colleagues and students alike).

3.9 Data analysis

Survey Monkey enabled export of data by Microsoft Excel creating statistical information through percentages and charts. To advance analytical output beyond the excel data, Statistical Package for the Social Sciences (SPSS) was used. The software created opportunities to use correlation, regression, and variance statistical methods to extrapolate differences between variables. Field (2012, p.44) defines the statistical approach to social

science as discovering the constants in relationships representing a population, by identifying the relationships in setting out parameters on the backdrop of multiple variables, and their variances. While the statistical analysis can identify relationships between variables, this is not sufficient to provide reasons for causation.

The qualitative analysis approach to question 15 'Other (please specify)' and Q17 (See Appendix 2) followed the six principles of Braun and Clarke (2006, p.87). Question 17 was divided into two data sets from the entire set of data collected. Representing two over-arching themes, data set one relates to themes for recommendations for students from students, while data set two relates to themes for recommendations from students to the institute. Themes relevant to the research question were extracted from each data set (Braun and Clarke 2006, p.80), as set out in Chapter 5. To provide an accurate account of the 355 commentaries from the data corpus numerical coding was applied to set one, and alphabetical coding to set two. Repeated topics from the commentaries were collated to indicate the strength of each theme. The structure of the coding was driven by the data creating an inductive approach to the analysis which ensured the researcher, although not operating in isolation to the data, refrained from putting a 'voice' on the data. Themes were labelled, graphed and presented in Chapter 4, and discussed with the relevant literature in Chapter 5.

3.10 Ethics and permission

The researcher recognised the ethical responsibilities associated with social research, the outcomes, and consequences for future researchers. By adopting the role of a researcher, the author, in a teaching capacity, was acutely aware of partiality due to the proximity to the field of study under investigation. Therefore, all questions on surveys were informed by the literature, thus making every possible attempt to remove bias. It was remotely impossible to remove oneself from the research. However, the author acknowledged the power of his

position. According to O'Leary (2010, p.42) commitment alone to ethical standards is only the beginning. All facets of the research that question participants and record data were scrutinised.

Permission was granted from the Registrar at GMIT (See Appendix 15). Valuing informed consent, human integrity, confidentiality, and honesty of intentions are prerequisite. Bryman, (2012, p.146) argues that ethical research is a question of quality in approach, intervention, and detail. The goodwill of participants was respected at all times. The fundamental purpose for this study was to quantify the perception of BL on motivation. Thus, participation in the survey was voluntary and participants were fully informed of the purpose of the study, and assured of anonymity prior, during, and post the research (See Appendix 16).

Ethical deliberation regarding the offering of an incentive arose. To encourage participation, and simultaneously offer a goodwill gesture as a token of appreciation for student survey engagement, the researcher put in place an incentive of a first prize draw of a One4All Gift Card worth €50. Additionally, 25 meal vouchers incorporating a three course meal in the training restaurants of the College of Tourism & Arts were issued to randomly selected participants. However, the type of incentive offered, and how it was communicated, alleviated potential pitfalls. According to Millikin (2015) it is important to distinguish an incentive that offers something free and one that states a prize draw, being open to all participants for available prizes. Similarly, there was no constraint to complete the survey in full. Respondents could skip each and all questions, bar question one, which was designed for consent purposes alone, and proceed to question 18 to enter the prize draw. On March 2nd, students were notified by email (See Appendix 17) of the Prize draw details, and issued instructions in how to redeem. The prize draw was conducted using the random option on Excel (See Appendix 18).

3.11 Research Limitations

Bell (2014, p.116) stipulates the importance of realism and an appreciation for limitations in designing methodologies. As a novice researcher, working alone, and adhering to a time plan the author realises that no research is 100% valid or generalizable (Cohen et al 2007). Studying human perception, through a QUAN+qual approach, will sometimes tend towards bias in terms of attitudes, thoughts, and opinions. Appropriate rate and ranking style questions were formatted on the survey to avoid bias (Perry 2002). To temper bias and limit central tendency errors on Likert scale survey questions, some topics like digital and IT configuration were addressed in questions 14 and 16 to strengthen validity in findings.

3.12 Conclusion

The research design was strategically aligned to meet the research objectives. Similarly, the design was cognisant of limited resources available to the researcher. Although the research is important to the researcher, awareness and understanding for the student environment underpinned the timing, communication, and delivery of the survey. Time spent on creating and piloting the survey resulted in a 29% response rate. The high response rate and time invested in design and layout provided findings that are appropriate to answering the research questions.

CHAPTER 4
FINDINGS

4.1 Introduction

The research design produced a survey questionnaire formulated to satisfy the aims and objectives outlined in chapter 1 insofar as answering the research question. Therefore, the findings are presented through graphs, charts, and tables. As stated in Chapter 3 the researcher engaged with Microsoft Excel and SPSS to analyse the data. The six principles of Braun and Clarke (2006) were followed to analyse part of question 15 regarding 'Other (please specify)' and qualitative recommendation findings of question 17. Additional information in support of the findings is collated and forms part of the appendices.

4.2 Question 2: Age range

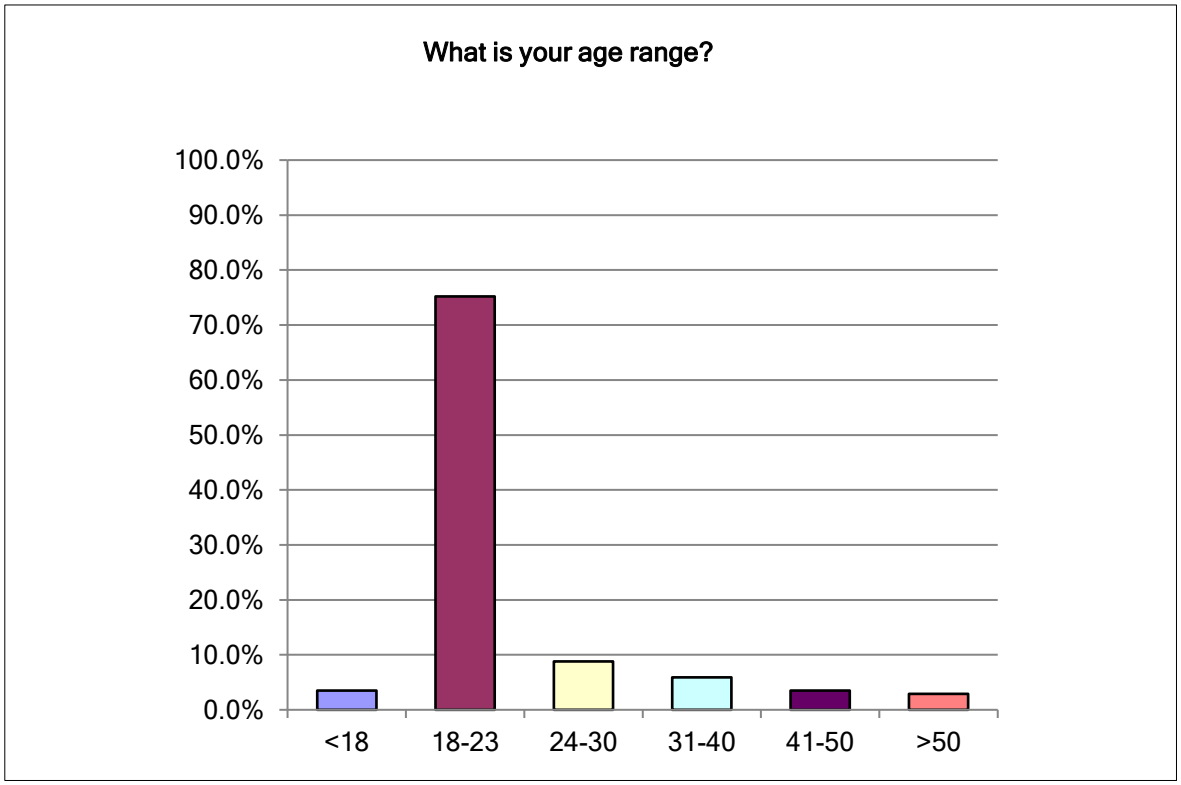


Figure 1

Responses reveal that the majority of first year students were aged between 18 and 23, representing over 75.2% of the survey respondents. However, 21.1% of the respondents make up the age categories 24 and over, representing more than one in every five students. This highlights interest for life-long learning at undergraduate level among mature persons. They may face motivational challenges, similar to the 23 year old and under, in adapting to higher education. Discussion is warranted in Chapter 5 regarding institute awareness of how they may complement the BL environment, as leaders in a community of practice. (See Appendix 19 for age outline of numerical and descriptive statistics).

4.3 Question 3: Gender

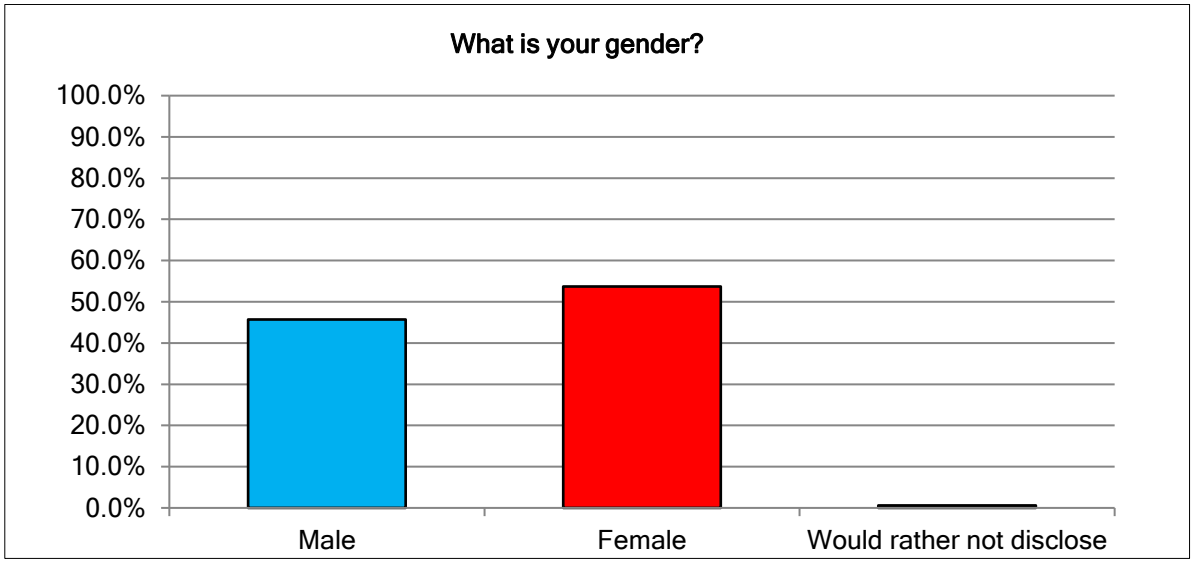


Figure 2

The respondents to the gender question were Male 233, and Female 274, with 3 choosing not to disclose. Courtesy of the Admissions Office at GMIT the gender breakdown for applications through the Central Applications Office (CAO) for the academic year 2016/2017 was 1,269 male and 716 female, totalling 1,985 students (See Appendix 20). It is important to point out, in the interest of transparency, that the difference between the 1,985 and the 1,764 of 221 students is reflective of students that accepted offers of a place on a programme, but did not register. Only registered students have access to IT facilities, inclusive of college emails, the medium of communication of the survey. However, these figures are the most accurate available to establish the male female gender balance in GMIT. Albeit that there are nearly double the amount of male students to females in GMIT, 1269 to 716 (Ratio: 1.77:1), more females than males completed the survey, 274 to 233 (See Appendix 21a for gender numerical statistics). Perhaps this questions whether females are more interested in their process and development of learning, than their male counterpart. (See Appendix 21b for further descriptive statistics on gender).

4.4 Question 4: School/Campus location

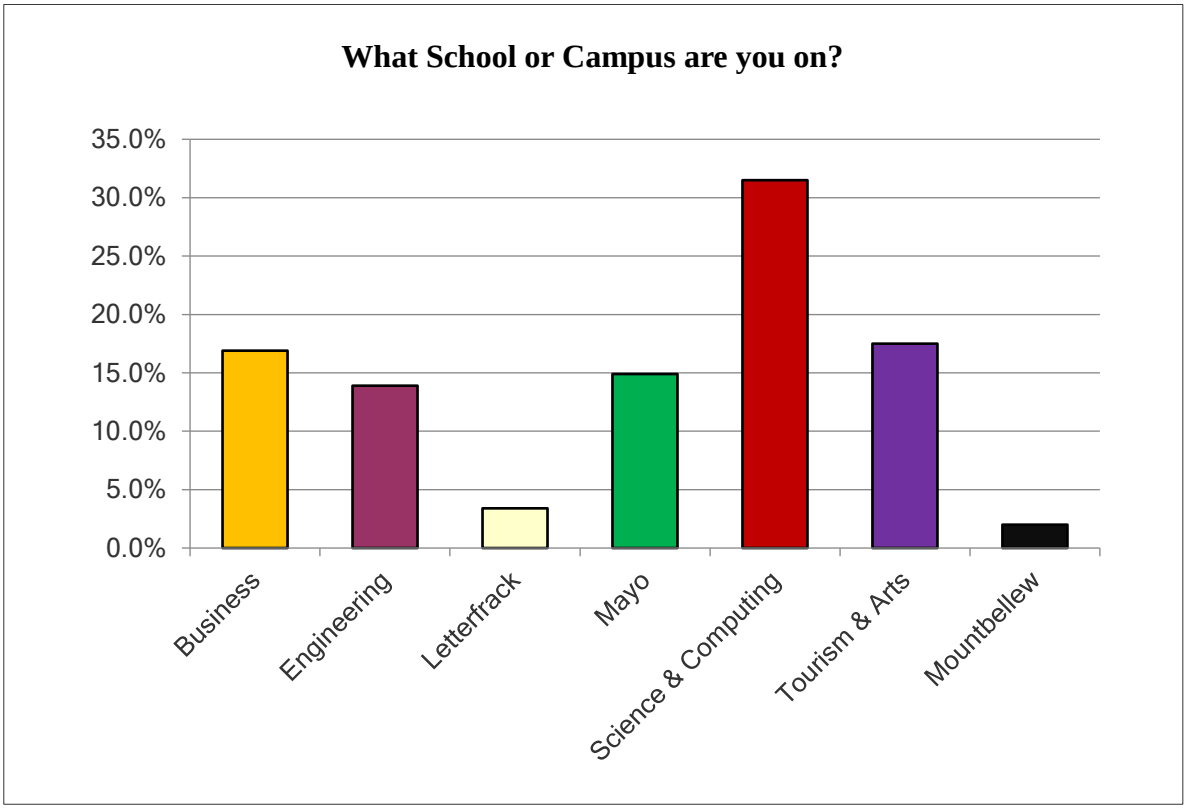


Figure 3

The style and layout of this question reflects the matrix upon which GMIT Admissions compile their student data per campus and school. Mountbellew students come under the remit of Business. Letterfrack students come under the remit of Engineering. This is relevant for discussion in Chapter 5 regarding each schools interpretation of learning styles and learning objects.

4.4.1 Registered School students and actual respondents from each School

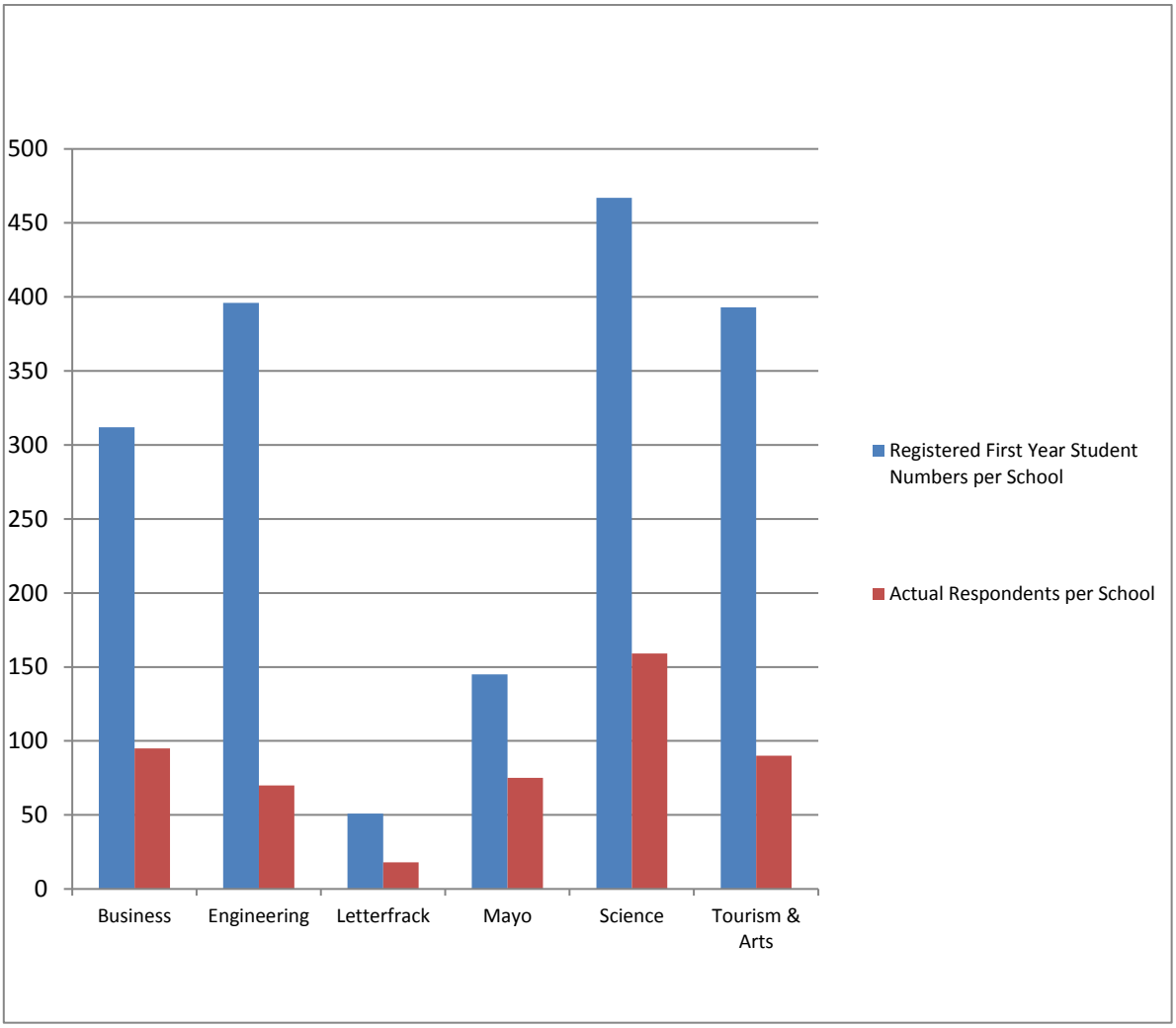


Figure 4

For the purpose of presentation Mountbellew data is incorporated into the Business School. The Mayo campus had the highest response rate of 52%, set against its first year registered students (See Appendix 22 for percentage calculations). In second place is the School of Science, inclusive of Computing, with a return rate of 34%. Considering the fact that their registered student numbers are relatively similar to Science and Computing, both the Schools of Tourism & Arts and Engineering have low response rates of 22% and 18%, respectively. Perhaps this is because the students within the School of Science and Computing have greater access and exposure to computers, thus impacting the survey rate of return.

4.5 Question 5: Programme of study

Question 5 on the survey asked students to state their programme of study. Some responses were unclear. Therefore, it was difficult to differentiate and categorise the data to distinguish between programmes. In the interest of validity and credibility this data was not used. For future research on a similar platform, it may be better to list the programmes. However, this would have been time consuming on the part of the respondents completing the survey, with over eighty programmes on offer at GMIT. Another option might have been to list the National Framework Qualifications with level 6, 7, and 8 distinguishing between the survey responses.

4.6 Question 6: Understanding the term BL

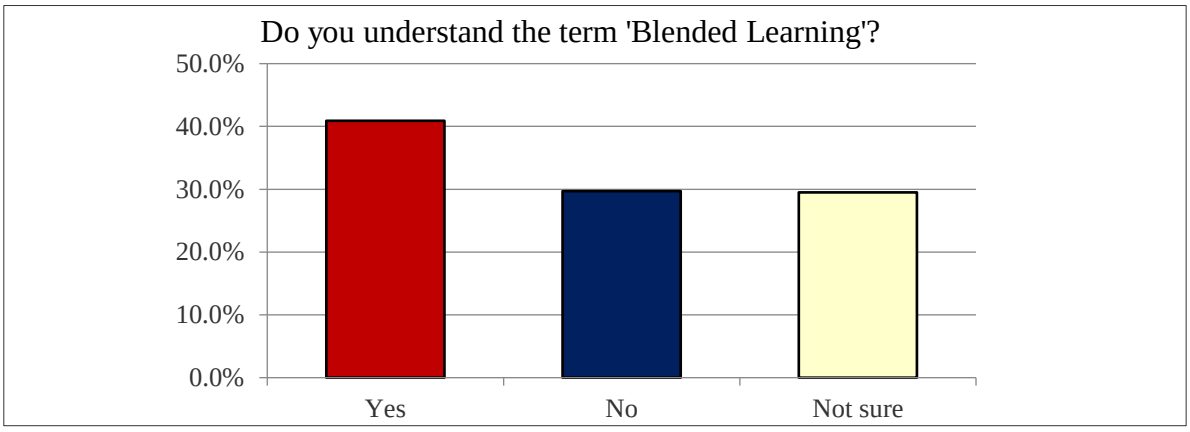


Figure 5

The purpose of question 6 establishes if first year students understand the term ‘blended learning’. In the responses 59%, (301 out of 509), chose ‘No’ or ‘Not sure’. This finding discussed in Chapter 5 is important, particularly at first year undergraduate level, around the relationship between higher education and students’ understanding of the process of blended learning. Crosstabulation was processed on SPSS between the variables age range and knowledge of BL. The purpose for the comparison was to establish if there was any significant difference in perception on the understanding of BL between age categories, in this case, the students 23 or under, and 24 and over.

4.6.1 23 or under, and 24 and over crosstabulation of age on understanding of blended learning

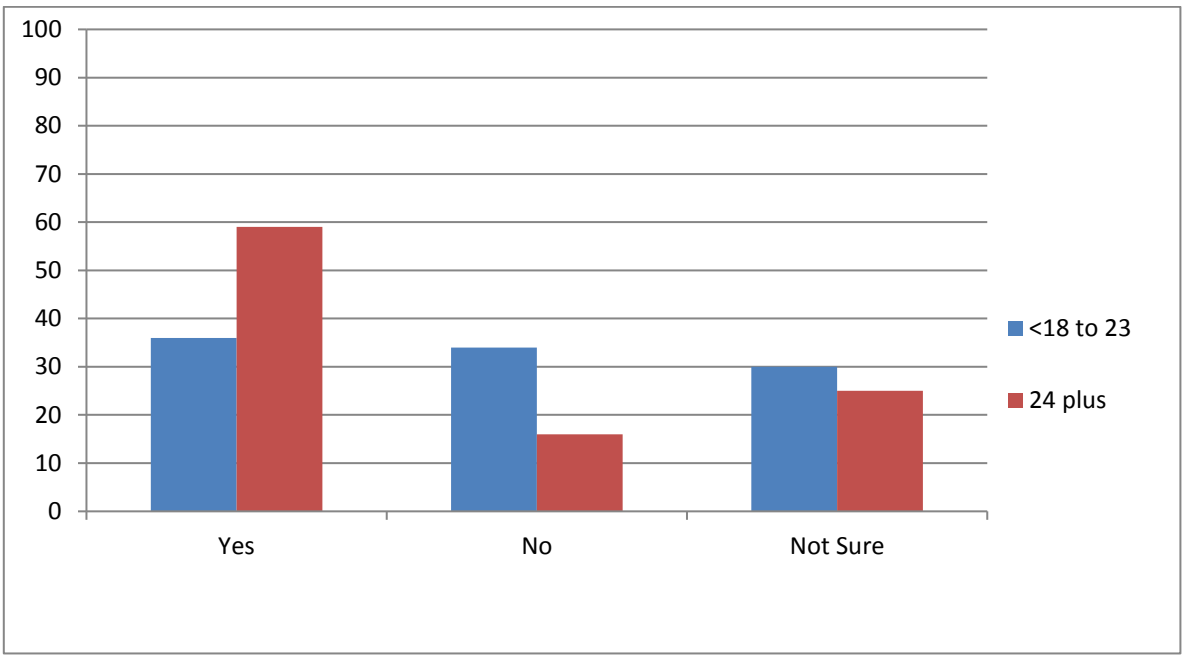


Figure 6

Figure 6 reveals that 64% (30% No + 34% Not sure) of the 401 respondents aged 23 or under (See Appendix 23 for tally of age categories: 18 + 383) chose 'No' or 'Not Sure' when asked 'Do you understand the term 'Blended Learning'. However, of the 108 respondents aged 24 and over (See Appendix 23 for tally of age category breakdown: 45+30+18+15) only 41% chose 'No' or 'Not sure'. This indicates a large difference of 23 percentage points (64%-41%) between 23 year old and under, and 24 year old and over, in understanding the term BL. Or, when reading the data from an 'understanding' perspective in choosing 'Yes', 59% of the 24 and over age category said 'Yes' to understanding BL, as opposed to only 36% of the 23 and under age category. The difference in perception between 23 or under and 24 and over requires discussion in Chapter 5, insofar as how the older student could influence, through peer assistance, the younger student in understanding BL. (See Appendix 23 for percentage calculations based on age differences of understanding BL to support Figure 6).

4.6.2 Gender crosstabulation on understanding BL

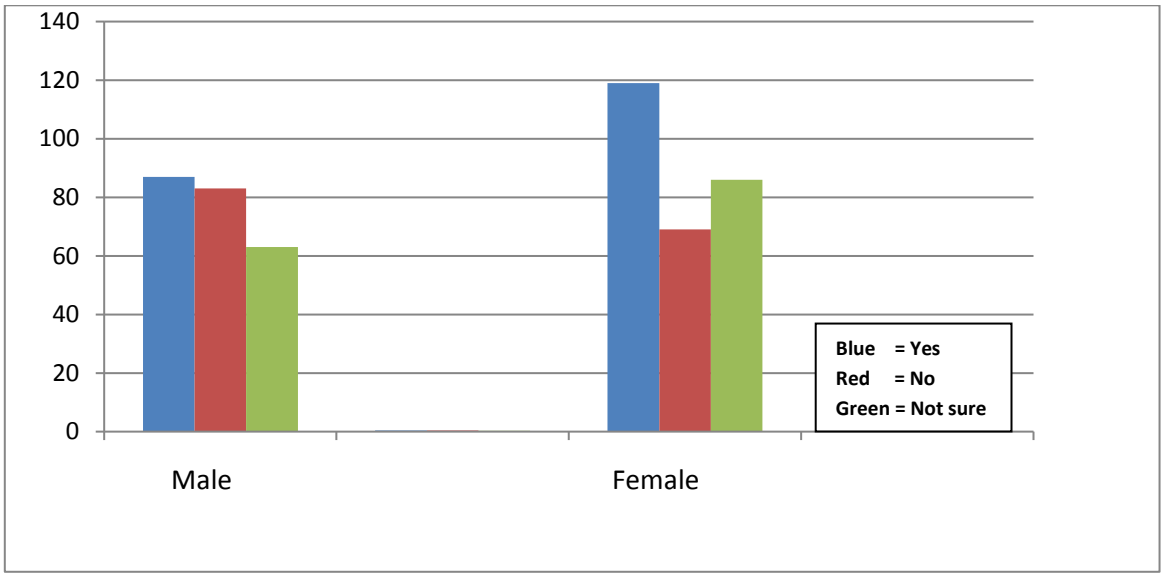


Figure 7

Regarding gender, 43% of Female respondents, as opposed to 37% of Male respondents, understand BL. Although 36% of Male respondents indicated they do not understand BL to that of 25% of Females, more Females than Males are unsure, 31% to 27%. (See Appendix 24 for percentage calculation to support Figure 7).

4.7 Question 7: VARK learning styles

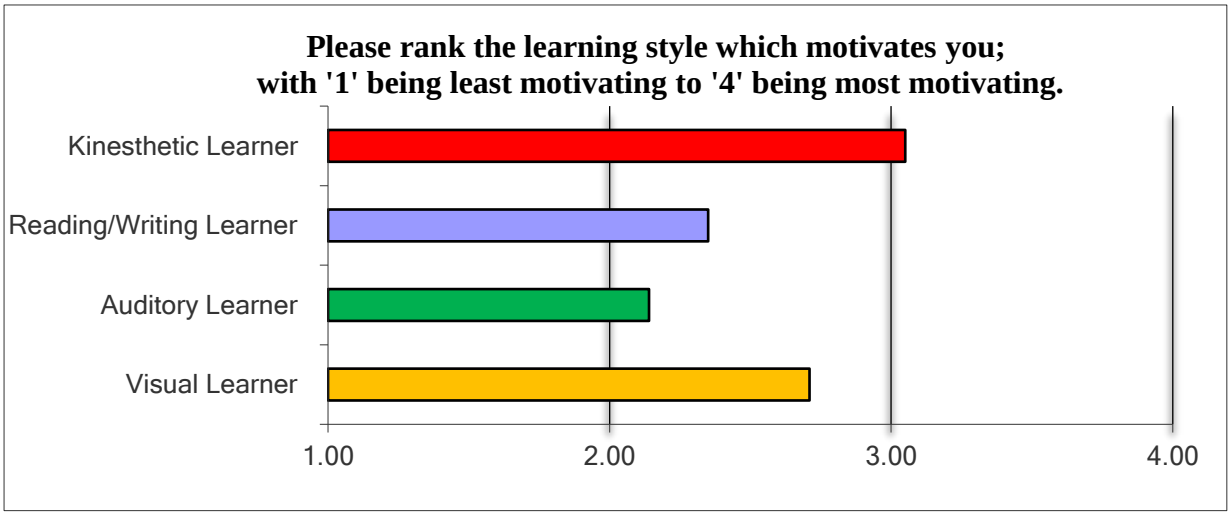


Figure 8

This ranking question required students to apply 1, 2, 3, or 4 to the VARK model of learning styles (LS), with '1' being least motivating to '4' being most motivating. The findings highlighted that learning by doing, or Kinesthetic, ranked highest at 3.05. However, Reading/Writing, Auditory, and Visual learning ranked between 2.14 and 2.71. The mode, most popular value, for Reading/Writing learners was tied to value '1', that being least motivating, by 29.7% of respondents. In comparison, the mode for Kinesthetic was tied to value '4', that being most motivating, by 51.4% of respondents. Similarly, the mean of 2.71 and 3.05 for Visual Learner and Kinesthetic Learner, respectively, affirms their selection as the most preferred LS. (See Appendix 25 for outline of LS descriptive statistics). It is important to note that although Reading/Writing was selected with a mode value of 1, Auditory has a lower mean average of 2.14 as opposed to 2.34 for Reading/Writing. This is as a result of respondents choosing a great number of value '2's for Auditory, thus bringing down its average. Data in Tables 5 and 6 below shows Reading/Writing at 126 counts at value '2' and Auditory 157 counts at value '2'. The data is important to the discussion in Chapter 5 insofar as comparing the findings to the literature review, and establishing if there are similar or different student perceptions in other studies.

Reading/Writing Learner frequency rankings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	139	26.9	29.7	29.7
	2	126	24.4	26.9	56.6
	3	108	20.9	23.1	79.7
	4	95	18.4	20.3	100.0
	Total	468	90.7	100.0	
Missing	System	48	9.3		
Total		516	100.0		

Table 4

Auditory Learner frequency statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	145	28.1	32.1	32.1
	2	157	30.4	34.7	66.8
	3	93	18.0	20.6	87.4
	4	57	11.0	12.6	100.0
	Total	452	87.6	100.0	
Missing	System	64	12.4		
Total		516	100.0		

Table 5

(See Appendices 26 and 27 for Visual and Kinesthetic learner frequency charts)

4.7.1 Male/Female Independent T-test on ranking of learning styles that were found most engaging, with '1' being least engaging to '4' being most engaging

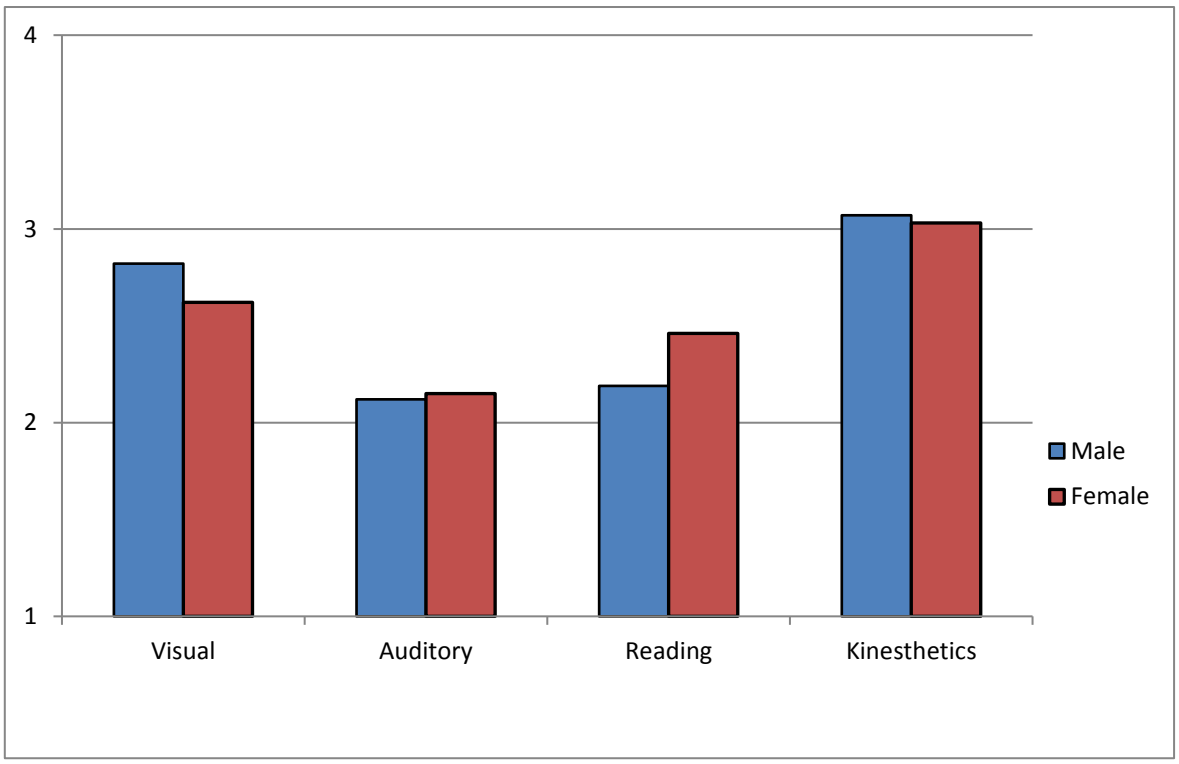


Figure 9

The gender preference for learner styles shows no significant difference between male and females for Auditory and Kinesthetics. However, Visual learners rank higher for males and lower for females, while reading is the reverse as females rank it higher than males, by a margin of 0.27. This indicates that there is a significant difference for Visual Learners and Reading/writing due to the factor of gender ($P \leq 0.05$ at the 95% confidence level) (See Appendix 28 Levene's Test for Equality of Variances). Discussion in Chapter 5 will seek comparison with other studies on gender perception of LS.

4.7.2 School Independent T-test on ranking of learning styles that were found most engaging, with '1' being least engaging to '4' being most engaging

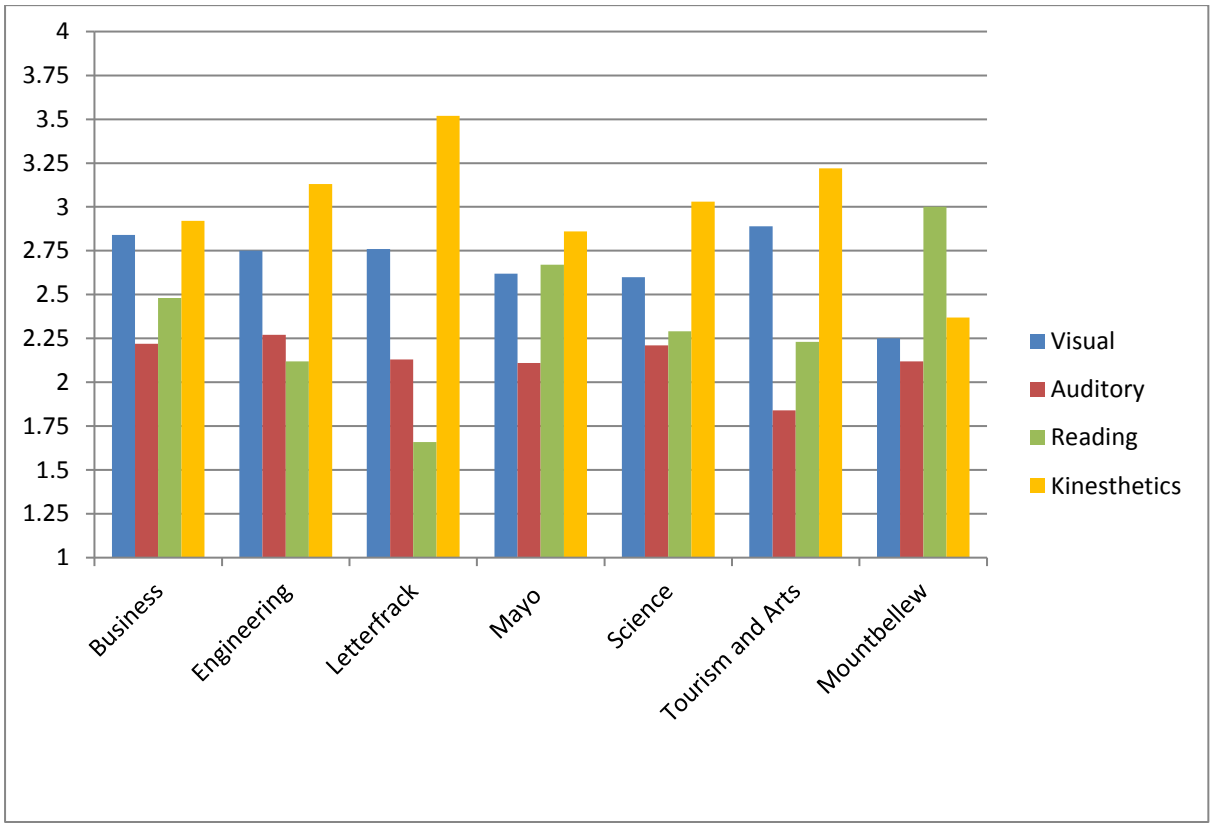


Figure 10

Further analysis using SPSS Anova (See Glossary) highlighted significant difference between schools. Practical taught programmes in Letterfrack ranked Reading/Writing and Auditory lowest in comparison to the other Schools, while Visual and Kinesthetics ranked considerably higher. Letterfrack is closely followed by the School of Engineering, School of Tourism & Arts, and School of Science & Computing. The aforementioned schools, particularly in first year, would have high practical elements embedded in their academic programme schedules leaning to Visual and Kinesthetic learning. The Business School incorporating Mountbellew, and the Mayo campus are closer in their variance of the LS, bar Mountbellew which has declared a high regard for Reading/Writing. Discussed in Chapter 5, GMIT could inform policy makers for blended learning incorporation of multiple LS opportunities, while being mindful of the significant difference in school perceptions.

4.8 Question 8: Learning objects

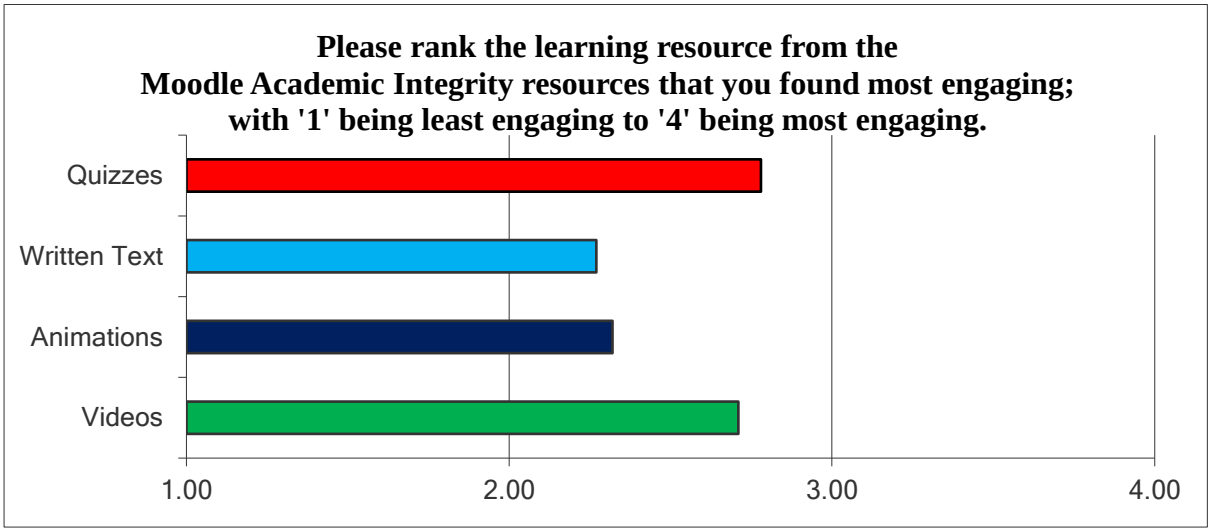


Figure 11

Similar to VARK, findings for learning objects (LO) indicated an even spread, as rankings fell between 2.27 and 2.78. However, Quizzes scored highest at 2.78. The mode, most popular choice, for Written Text was tied to value '1', that being least engaging, by 35.4% of respondents selecting it has least motivating. In comparison Quizzes had a mode value of '4' with 36.4% of respondents selecting it as most engaging. The mean averages for Videos at 2.71 and Quizzes at 2.78 reaffirm their ranking as the most engaging of the four LO (See Appendix 29 for outline of LO descriptive statistics). The LO findings are discussed in Chapter 5 with regard to the comparison of student perceptions with studies in the literature review, insofar as LO importance to motivate engagement with learning.

The independent t-test was used in SPSS to compare the mean averages for each LO against male and female independent variables. There was no significant difference in the perception of LO between male and female categories ($P \geq 0.05$) (See appendix 30 for Levene's Test for Equality of Variances).

4.9 Question 9: Perception of online set-up

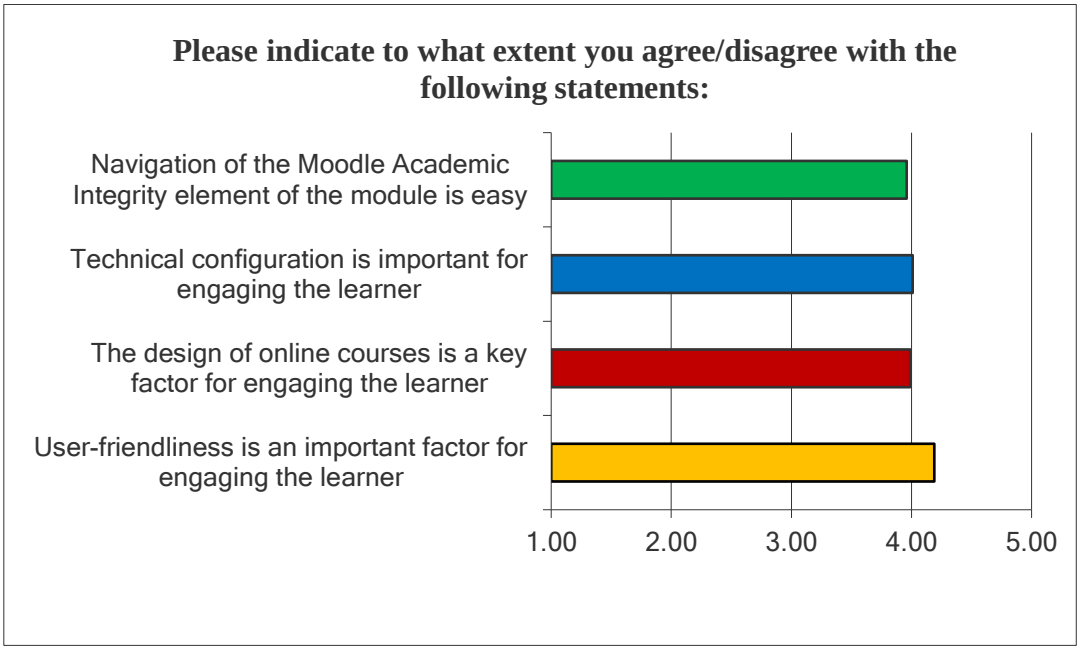


Figure 12

The mode average for each element of User-friendliness, Design, Technical Configuration and Navigation was value '4' which represents 'Agree' indicating student agreement of ensuring that effective set-up of IT is paramount in BL. User-friendliness had the highest mean at 4.19 and navigation the least mean at 3.96 (See Appendix 31 for statistical data).

The independent t- test was used in SPSS to compare the mean averages for each element of the online set-up against male and female independent variables. There was no significant difference in the perception of the online set-up elements between male and female categories ($P \geq 0.05$) (See appendix 32 for Levene's Test for Equality of Variances).

4.10 Question 10: Media effectiveness for encouraging engagement

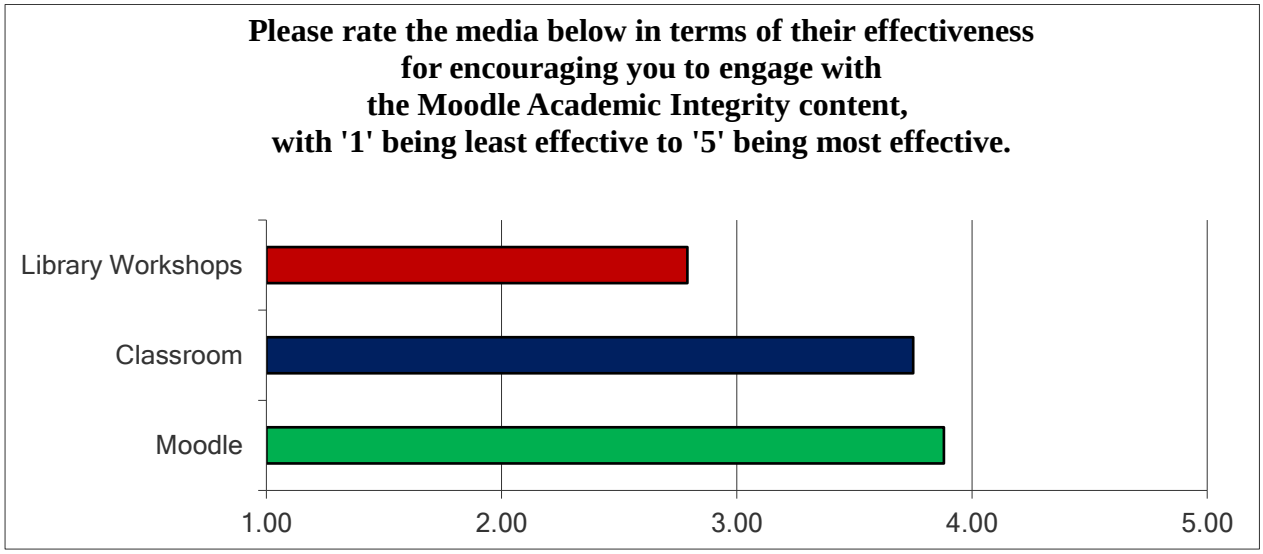


Figure 13

Figure 13 shows Moodle, hosting the eLearning content, to be most effective for engagement, scoring 3.88 out of 5. This compares with the Classroom media rating of 3.75, just 0.13 less than the preference for Moodle. The Library Workshops scored 2.79, representing a 19.2% difference in perceived effectiveness to motivate learner engagement in comparison with the Classroom. The descriptive statistics affirm the similarity in student perception ratings between the VLE Moodle and the Classroom, regarding effective engagement with learning content. The VLE and Classroom both share a mode value of '4' out of 5 while the Library Workshops has a mode value of '3' out of 5. Similarly, the median value is '4' for Moodle and Classroom, while Library Workshops has a median of 3. The mean statistic for each media is reflective of their individual rating. A finding from the research is the low mean value of 2.79 for the Library Workshops. This is reflective of the fact that 58.9% of all 502 respondents gave this media low value scores (values '2' and '3'). The student findings regarding the perception of the use of the media to engage with blended learning are discussed in Chapter 5. (See Appendices 33 to 36 for Moodle, Classroom, and Library Workshops summary statistics).

The independent t-test was used in SPSS to compare the mean averages for each learning medium against male and female independent variables. There was no significant difference in the perception of learning medium between male and female categories ($P \geq 0.05$) (See Appendix 37 for Levene's Test for Equality of Variances).

4.11 Question 11: Blended learning and motivation to engage

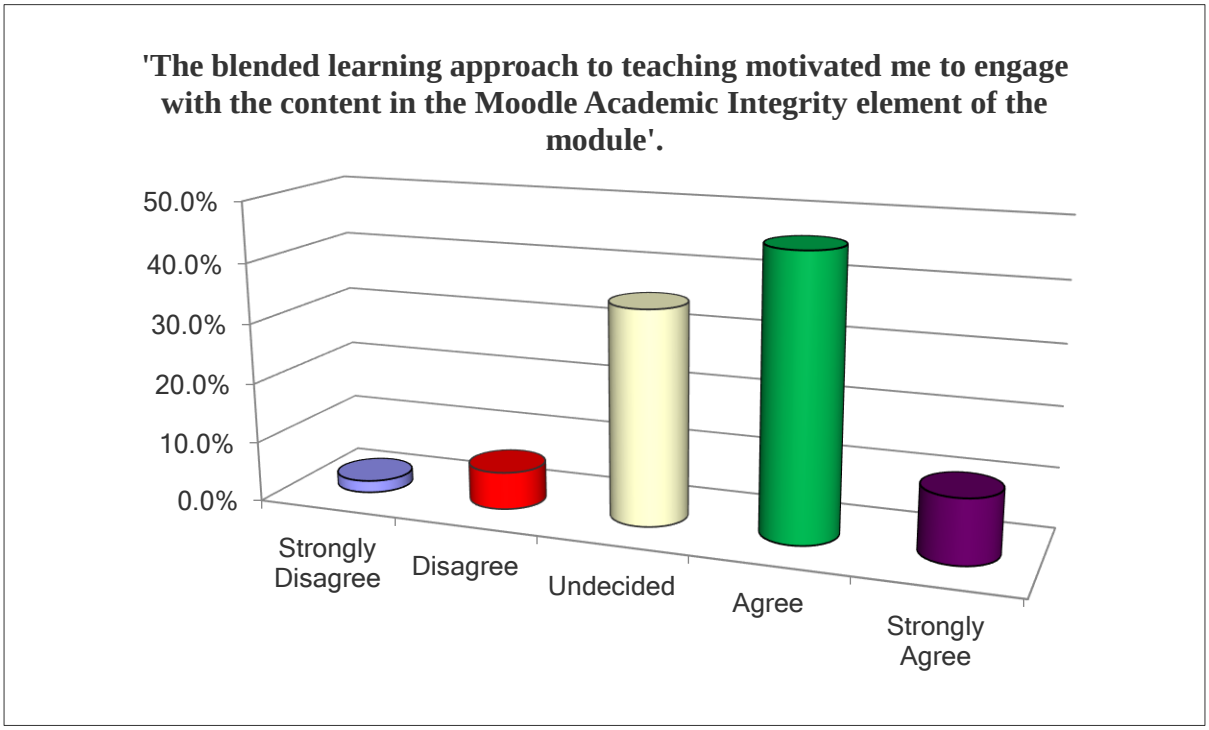


Figure 14

The purpose of this question is to establish student perception on the extent to which they agreed disagreed with the following statement: 'The blended learning approach to teaching motivated me to engage with the content in the Moodle Academic Integrity element of the module'. 56.6% of responding students revealed that they either 'Agree' or 'Strongly agree' that the BL approach to teaching motivated them to engage with the content in Moodle; 35.2% were 'Undecided' and 8.2% either 'Disagree' or 'Strongly disagree'. This data warrants discussion particularly with regard to the large group of undecided respondents. (See Appendices 38 and 39 for relevant summary statistics).

The independent t-test was used in SPSS to compare the mean averages for male and female independent variables on the BL approach to teaching motivating engagement with '1' representing Strongly Disagree, '2' Disagree, '3' Undecided, '4' Agree and '5' Strongly Agree. There was no significant difference in the perception of male and female categories, therefore ($P \geq 0.05$) (See Appendix 40 for Levene's Test for Equality of Variances).

4.12 Question 12: Availing of multiple online quiz attempts

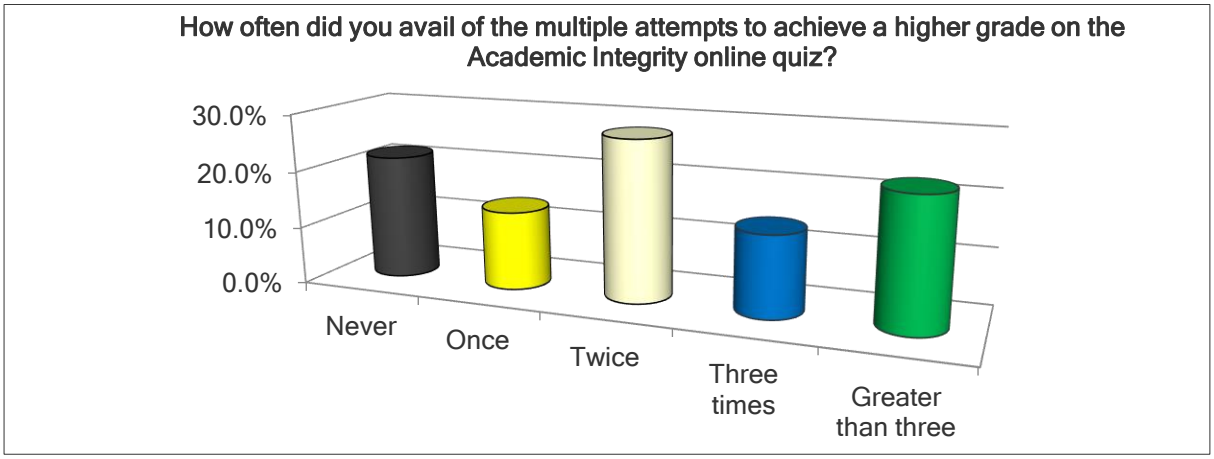


Figure 15

The online mandatory quiz allowed for multiple attempts for students to reach the minimum requirement of achieving 80%, in this instance answering 16 out of 20 multi-choice questions. Furthermore, students could continue to engage with the quiz even after reaching the 80% threshold, if so desired by motivation of engagement to achieve 100%. This supports the concept regarding motivation for learning, removing fear of failure, as students learn from mistakes and move forward with confidence. The frequency statistics indicate that nearly 4 in every 5 students attempted the quiz on more than one occasion, with 22.4% of respondents reengaging with the quiz LO on more than three occasions (See Appendix 41 for statistical data). Outlined in Chapter 2, the provision of LO for student engagement with materials at their own pace, and for same LO to be reusable, was reviewed. This necessitates discussion in Chapter 5.

The independent t-test was used in SPSS to compare the mean averages for choice of multiple quiz attempts against male and female independent variables with '1' representing Never, '2' Once, '3' Twice, '4' Three times and '5' Greater than three. There was no significant difference in the number of attempts to reengage with the online quiz based on the factor of gender ($P \geq 0.05$) (See appendix 42 for Levene's Test for Equality of Variances).

4.13 Question 13: Programme of study and use of BL

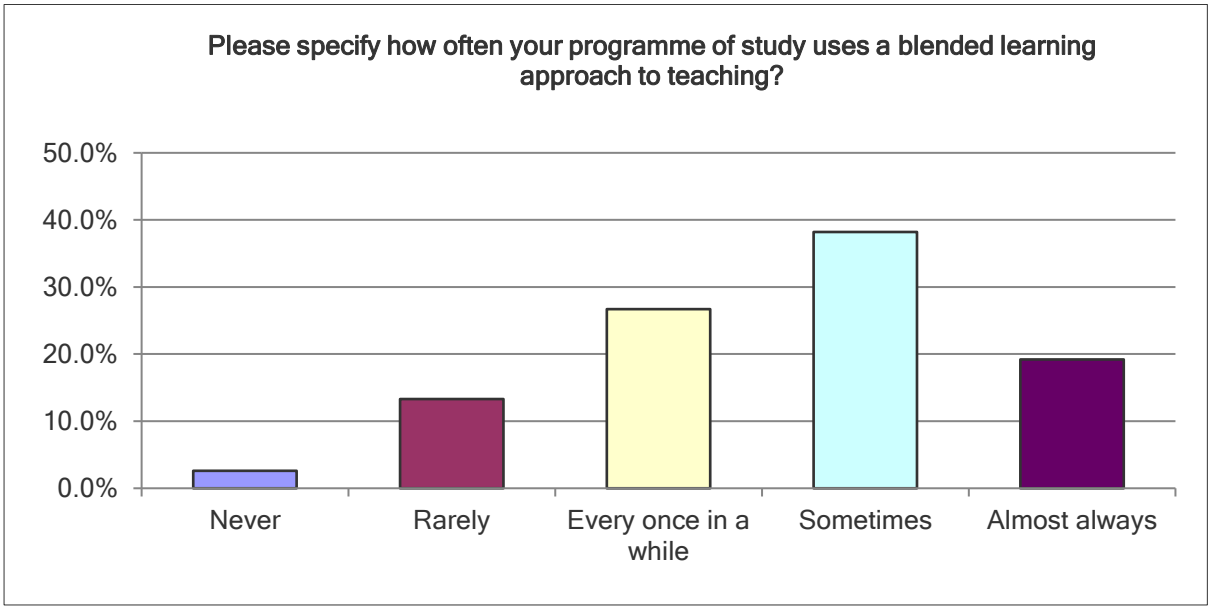


Figure 16

The purpose of question 13 was to establish if first year students were exposed to BL, beyond the module LIS, on their programme of study. Of the responses 19.2% stated that their programme of study 'Almost always' uses a BL approach to learning. However, 42.6% of the respondents stated that they were 'Never', 'Rarely', or 'Every once in a while' exposed to BL teaching strategies. The remaining 38.2% stated they were 'sometimes' exposed to BL methods (See Appendix 43 for percentage statistics).

The research hypothesis is that student exposure to blended learning positively impacts student motivation to engage with learning. Therefore, from a GMIT and student perspective, the level of student exposure to BL is important and warrants discussion in Chapter 5. The mode value of '4' represents student 'Sometimes' being exposed to BL on their programme of study (See Table 6 for outline of frequency statistical data). However, the mean of 3.58 is just as close to the value 3 representing 'Every once in a while' as it is to 4 representing 'Sometimes'.

Frequency Statistics

Please specify how often your programme of study uses a BL approach to teaching?

N	Valid	505
	Missing	11
Mean		3.5822
Median		4.0000
Mode		4.00
Std. Deviation		1.02435
Variance		1.049
Range		4.00
Minimum		1.00
Maximum		5.00

Table 6

Findings make evident that students are somewhat exposed to BL. However, frequency statistics reveal that 215 respondents representing 13 as 'Never', 67 as 'Rarely' and 135 as 'Every once in a while' portraying that BL does not appear to be the dominant teaching and learning strategy across programmes (See Table 7 for numerical and percentage respondent breakdown of how often programme of study uses BL).

	Response Percent	**Response Count**
Never	2.6%	13
Rarely	13.3%	67
Every once in a while	26.7%	135
Sometimes	38.2%	193
Almost always	19.2%	97

Table 7

4.14 Question 14: Factors effecting motivation to engage with learning

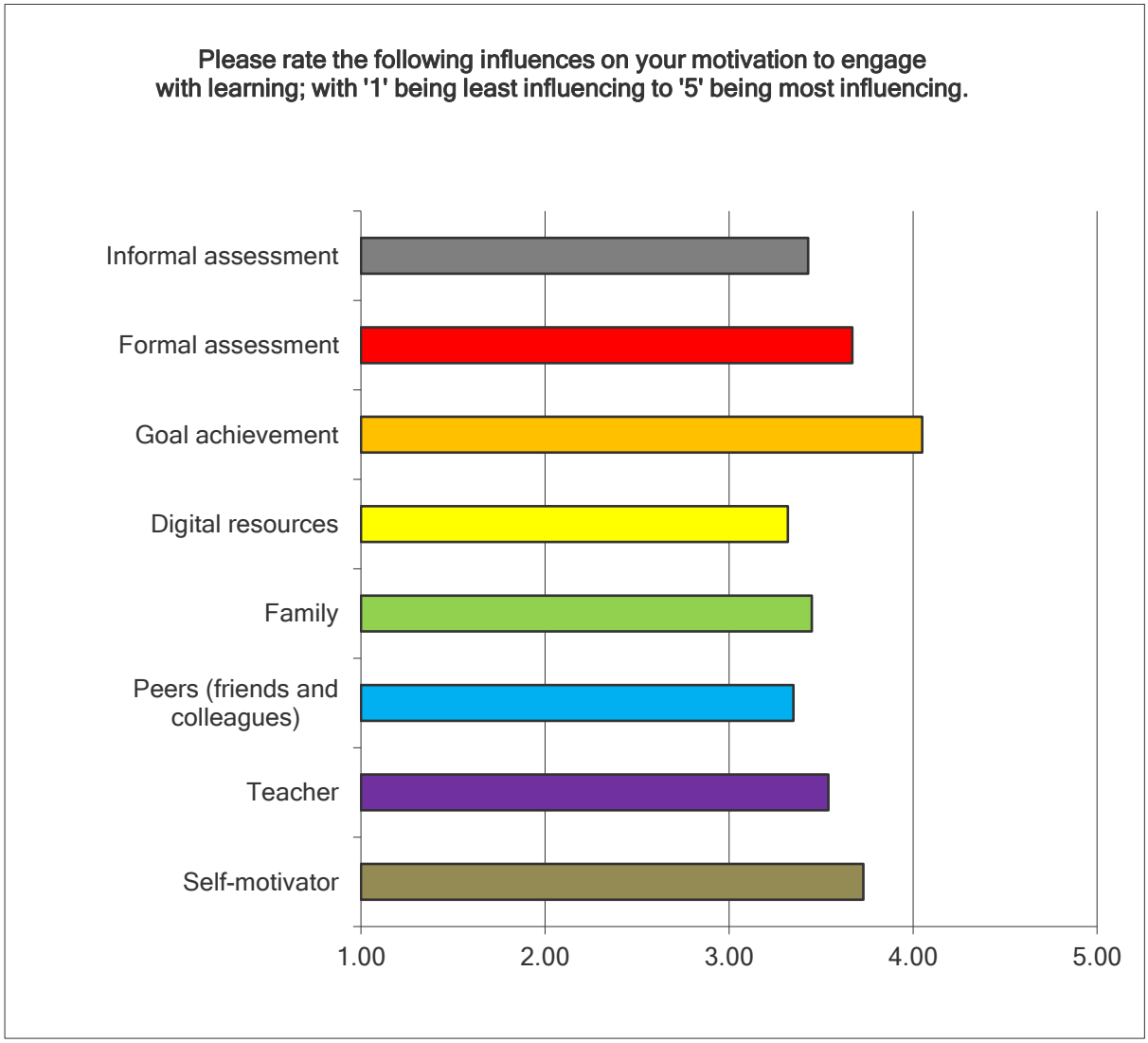


Figure 17

Question 14 surveyed influences on student motivation to engage with learning. Goal achievement, at 4.04, was rated the most influential factor for motivation to engage with learning. All other influences rated between 3.32 and 3.73. Self-motivator and formal assessment rated 2nd and 3rd respectively. Digital resources rated lowest at 3.32. It appears from the spread of the graph that students are dependent on multiple influences to motivate their learning process, intrinsically and extrinsically which will be discussed in Chapter 5.

4.14.1 Gender perception on influences on motivation to engage with learning with '1' being least influencing to '5' being most influencing

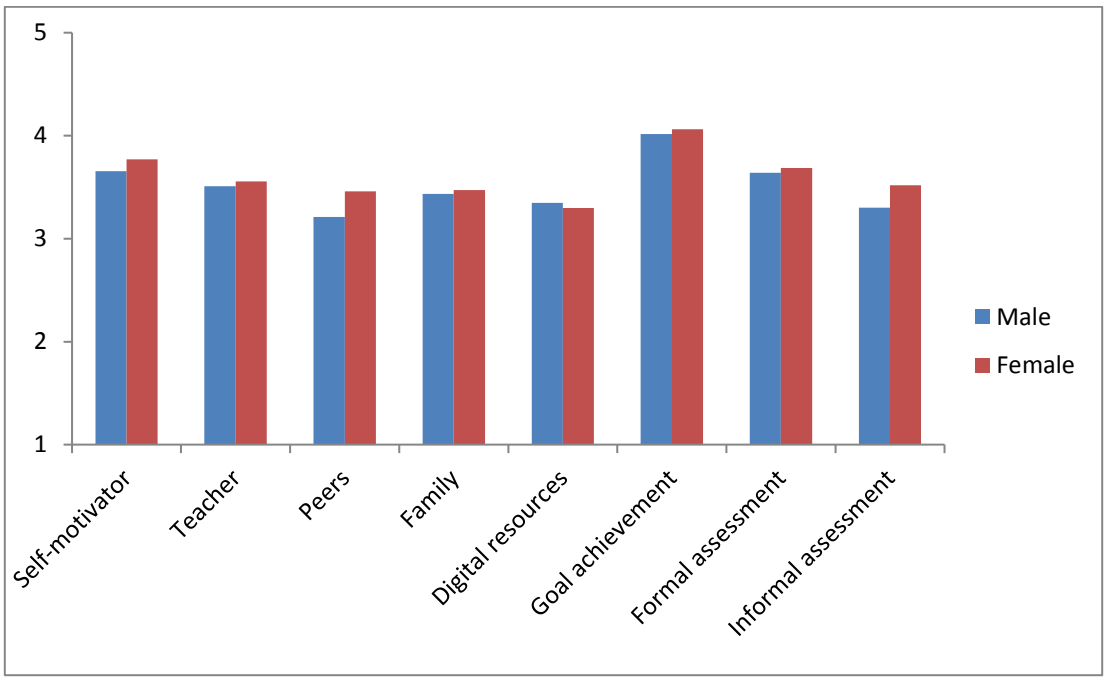


Figure 18

The independent t-test was used to compare male and female independent variables on student influences for motivation to engage with learning. Figure 18 indicates that there is no significant difference between genders and the influences, except for 'Peers' and 'Informal assessment' ($P \leq 0.05$) (See Appendix 44).

Crosstabulation with Chi-square tests was used on age profile to establish if there was a significant difference. Findings indicated that age had a significant difference on 'Peers' and 'Teacher' ($P \leq 0.05$). Of the respondents in the 24 year old and over age category 31% rated Peers at a value of 4 or greater as having a motivating influence on student engagement, opposed to 53% of the 23 year old and under. However, 49% of the respondents in the 23 or under category rated the teacher 4 or greater, as opposed to 63% of the respondents in the 24 plus category (See Appendices 45 and 46 for percentage data). Motivational influences form part of the discussion in Chapter 5.

4.15 Question 15: Barriers preventing engagement with online course material

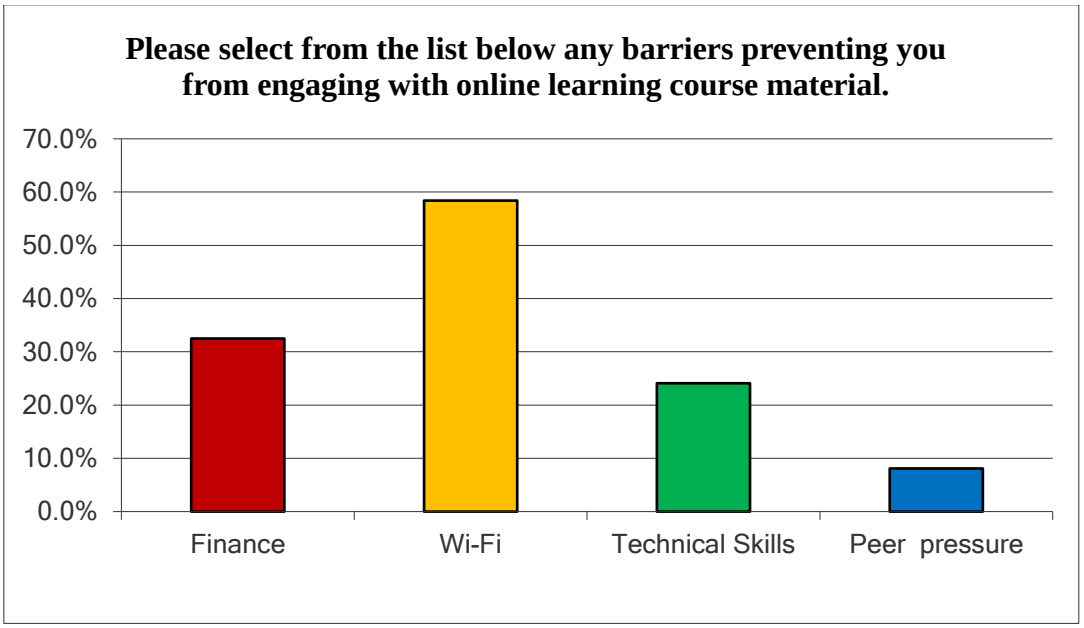


Figure 19

The purpose of this question was two-fold. Firstly, to establish to what degree existing barriers negatively influence motivation to engage with learning. Secondly, to allow students specify any other barriers preventing them from fully engaging with course material.

Wi-Fi at 58.4%, followed by finance at 32.5% is identified as the greatest threat to motivation. Only one in four identified technical skills as a barrier. Of the responses 8.1% stated that peer pressure demotivated them from engagement with learning. Identifying barriers is important to the discussion insofar as this data presents students issues impeding their efforts to engage with course material.

4.15.1 Other specified barriers to online engagement

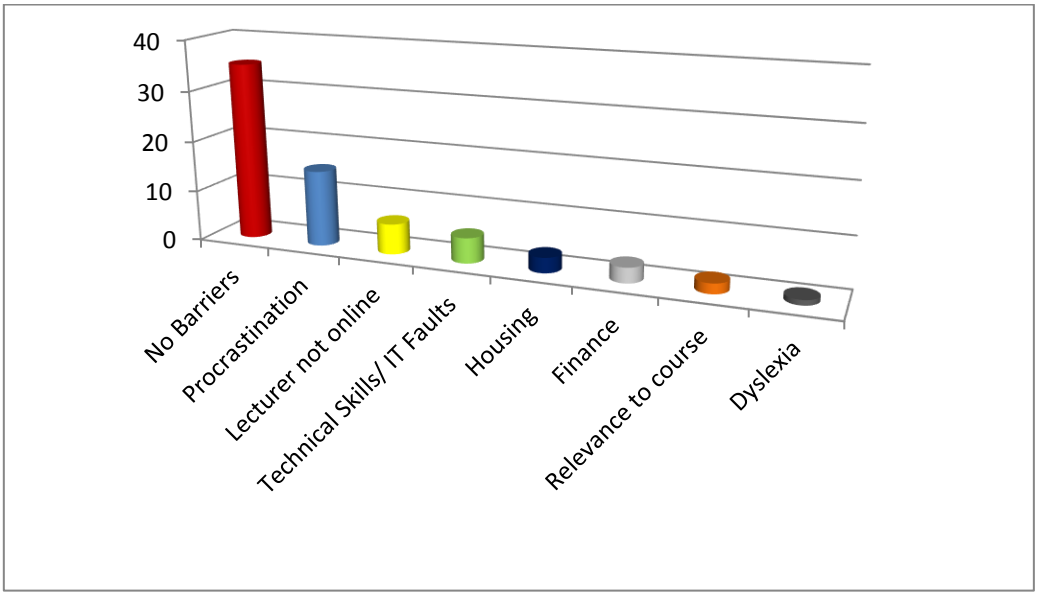


Figure 20

There were 75 comments under 'Other (please specify)' for survey question 15, listing additional barriers preventing student engagement with online learning course material (See Appendix 47 for list of comments; please note these comments are unedited, inclusive of spelling errors) (See Appendix 65 for Wordle of commentaries). Five responses were spoilt or lacked sufficient clarity to be categorised and were discounted. The remaining 70 comments are summarised in Figure 20. Of the responses 35 of the 70 comments stated 'No barriers' to be identified, making up 50%. Procrastination (an intrinsic theme), and lecture not on-line (an extrinsic theme), were barriers which occurred more frequently in the commentary, accounting for 21% and 9% respectively. Additional findings included new barriers under 'Housing' and 'Dyslexia'. Furthermore, 'Finance' and 'Technical' issues arose again in 'Other, please specify', even though they were an option in the question. The additional student identification of barriers provides for further discussion in Chapter 5.

4.16 Question 16: Multiple statements on BL and influencing engaging factors.

Survey question 16 required students to agree disagree with 12 learning statements. For the purpose of presentation the statements were split into two categories, intrinsic influences and extrinsic influence.

4.16.1 Gender perception comparison on intrinsic influences to motivate engagement. Please indicate to what extent you agree/disagree with the following intrinsic statements:

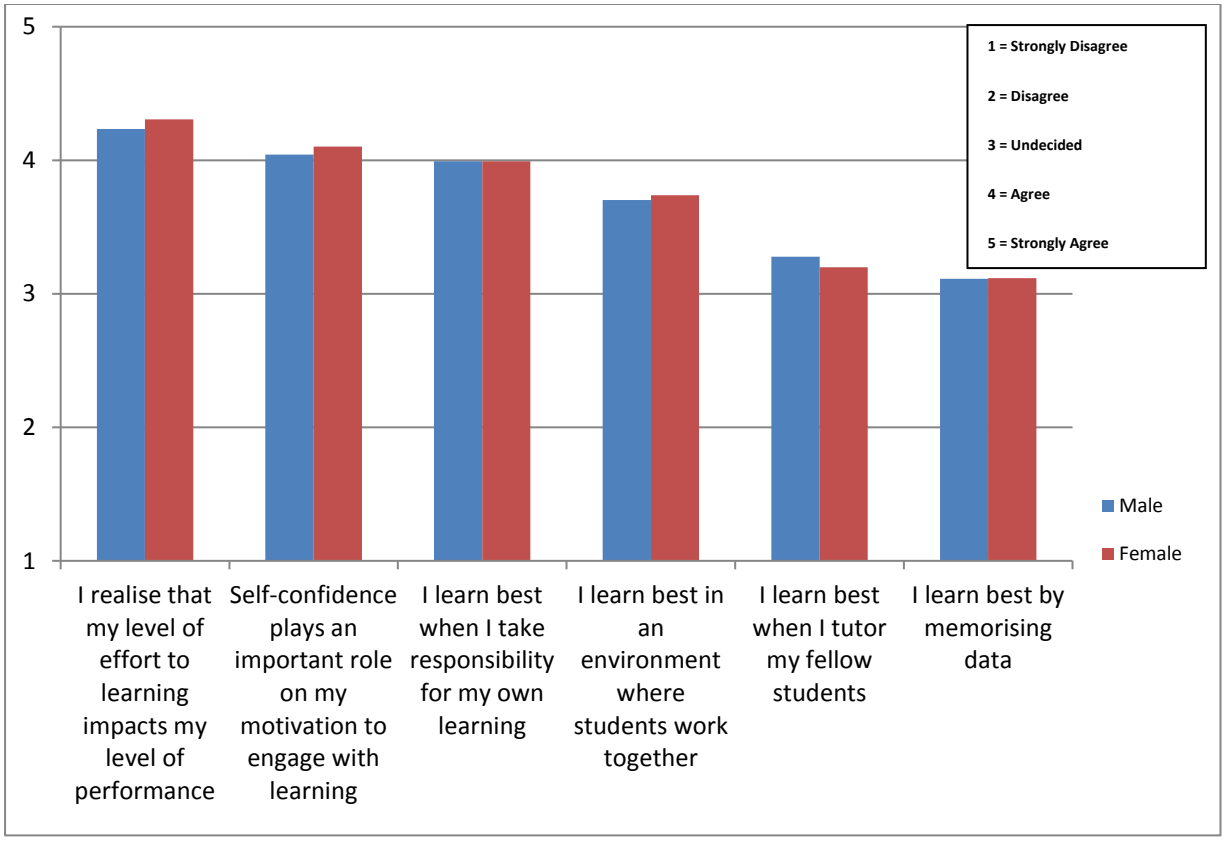


Figure 21

The statements in Figure 26 are grouped together as they require student ownership of their learning, representing intrinsic motivation. Level of personal effort impacting performance has the highest mean at 4.28 and the highest mode value of '5' for 'Strongly Agree'. Similarly, responsibility and self-confidence score means of 3.99 and 4.08 respectively.

Memorising data to influence learning has the lowest mean score of 3.11 (See Appendix 48 for outline of descriptive data).

The independent t- test was used in SPSS to compare the mean averages for perception of learning statements against male and female independent variables. Levene's Test for Equality of Variances highlights that there is no significant difference in the perception on learning statements between male and female ($P \geq 0.05$) (See Appendix 49).

4.16.2 Gender perception comparison on extrinsic influences to motivate engagement. Please indicate to what extent you agree/disagree with the following intrinsic statements:

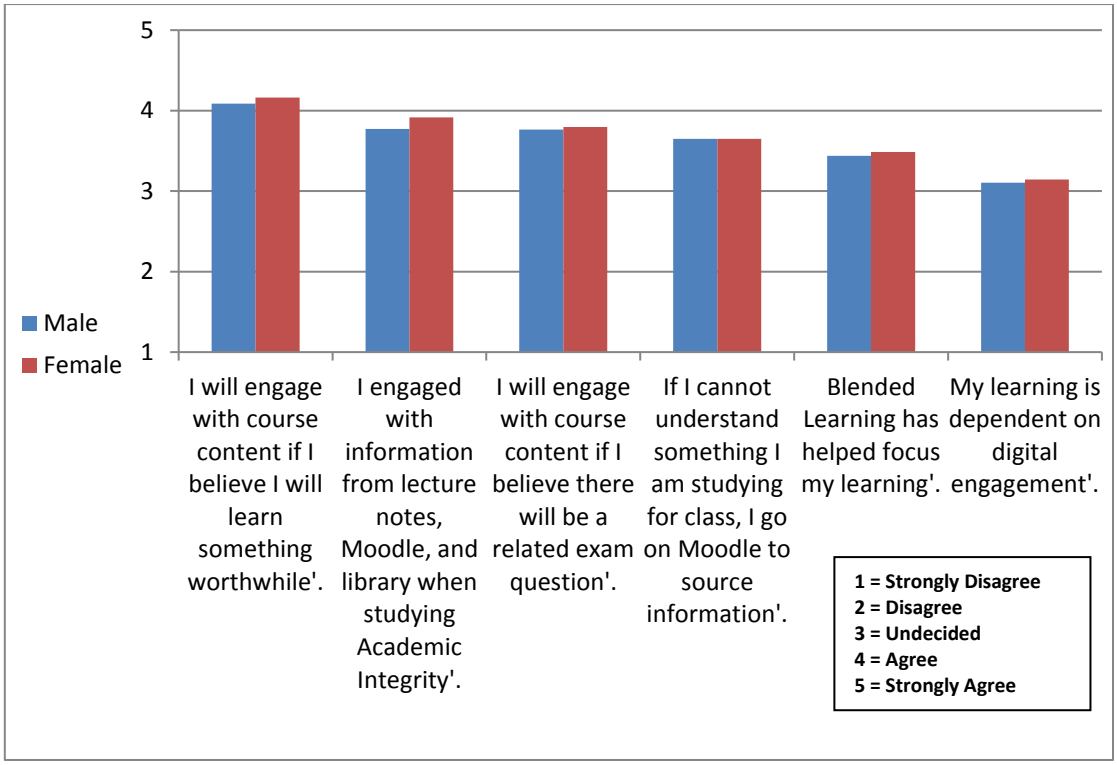


Figure 22

The above statements are grouped together as they require extrinsic factors to stimulate student motivation to engage with learning. Students engaged with course content if they believed they would 'learn something worthwhile', scoring a mean of 4.13. 'Lecture notes, Moodle and library' scored a mean of 3.86. If content can be linked to an 'exam question' to influence student motivation scored a mean of 3.78. Interestingly, the lowest mean average of

3.12 is associated with ‘My learning is dependent on digital engagement’. (See appendix 50 for outline of descriptive data).

The independent t-test was used in SPSS to compare learning statements on extrinsic influencing factors against male and female independent variables. There is no significant difference between male and female ($P \geq 0.05$) (See appendix 51 for Levene's Test for Equality of Variances).

The information in Table 8 (p.88) was tabulated to outline the spread of the mean averages among the two categories of intrinsic and extrinsic motivation. This data spread is based on student perspectives on the multiple motivational influences effecting engagement with learning content. Additionally, the table supports discussion in Chapter 5 for each category of intrinsic and extrinsic motivation being interdependent.

4.16.3 Tabulated learning statements from survey question 16, ranked in order of 1-12 based on their mean averages.

Learning statements:	Mean average:		Ranking:
I realise that my level of effort to learning impacts on my level of performance.'	4.28	Intrinsic	1
I will engage with course content if I believe I will learn something worthwhile'.	4.13	Extrinsic	2
Self-confidence plays an important role on my motivation to engage with learning'.	4.08	Intrinsic	3
I learn best when I take responsibility for my own learning'.	3.99	Intrinsic	4
I engaged with information from lecture notes, Moodle, and library when studying Academic Integrity'.	3.86	Extrinsic	5
I will engage with course content if I believe there will be a related exam question'.	3.78	Extrinsic	6
I learn best in an environment where students work together'.	3.72	Intrinsic	7
If I cannot understand something I am studying for class, I go on Moodle to source information'.	3.64	Extrinsic	8
BL has helped focus my learning'.	3.47	Extrinsic	9
I learn best when I tutor my fellow students'.	3.24	Intrinsic	10
My learning is dependent on digital engagement'.	3.12	Extrinsic	11
I learn best by memorising data'.	3.11	Intrinsic	12

Table 8

4.17 Question 17: Qualitative recommendations from students to enhance motivation to engage with course material within their programme of study.

First year students were given the opportunity to make recommendations to enhance learner motivation to engage with course material on their programme of study. The responses to this question totalled 355 commentaries. Following analysis of the recommendations by the students it was decided to divide the comments into two categories. Category one presents recommendation by students for students (See Figure 23), and category two presents recommendations by students for GMIT (See Figure 24). The qualitative recommendations are used in Chapter 5 discussion to triangulate the data.

4.17.1 Student recommendations to students to motivate engagement

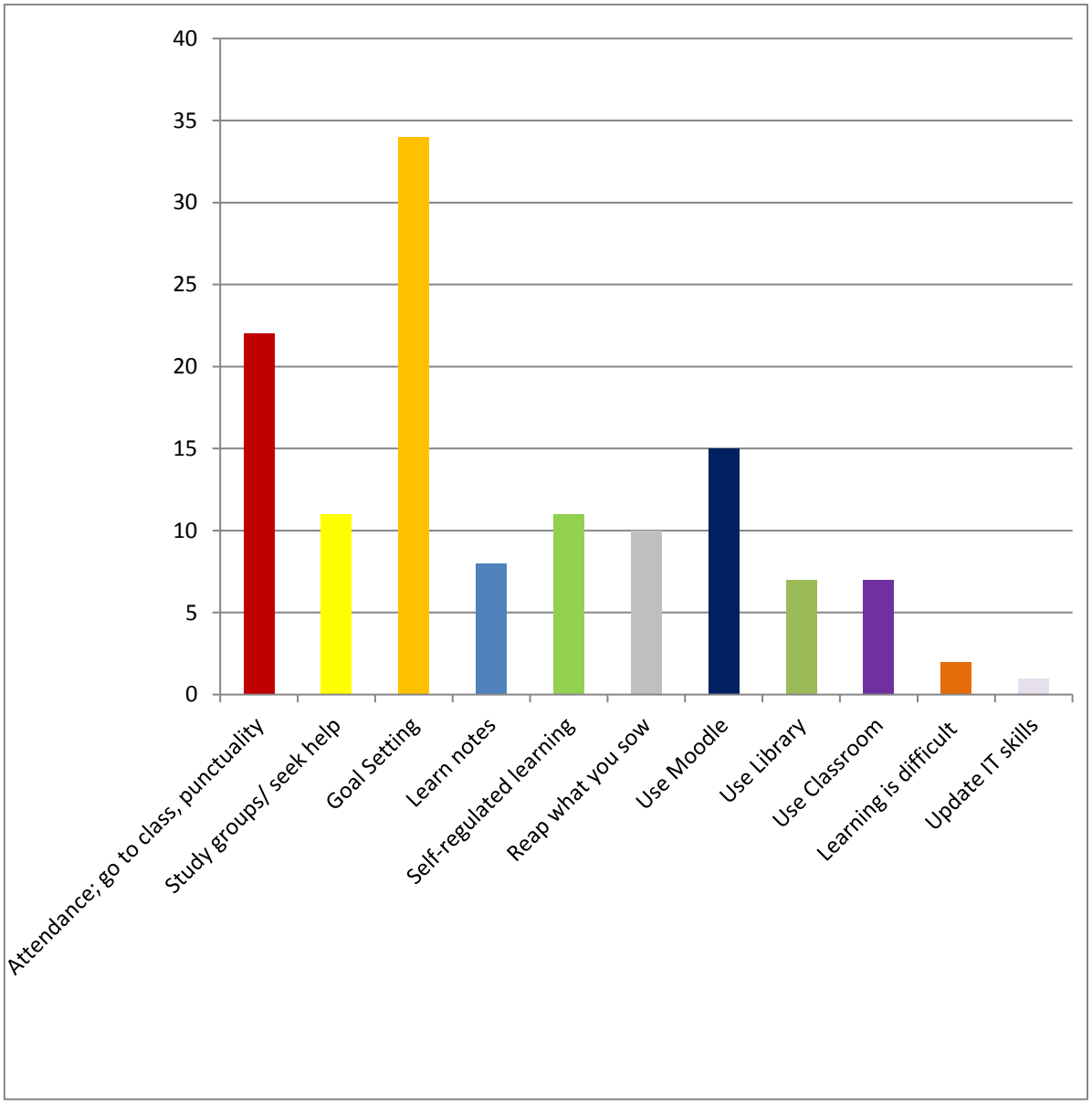


Figure 23

The students in their qualitative commentaries recommended that students set goals, attend class, and use Moodle in their top 3 of 11 categorised recommendations (See Appendix 66 for Wordle of commentaries). Additionally, seeking help, group work, taking ownership of learning through self-regulation, and making use of library and classroom are highlighted as important to engage with learning. (See Appendix 52 for list of the coded commentaries).

4.17.2 Student recommendations to GMIT to motivate engagement

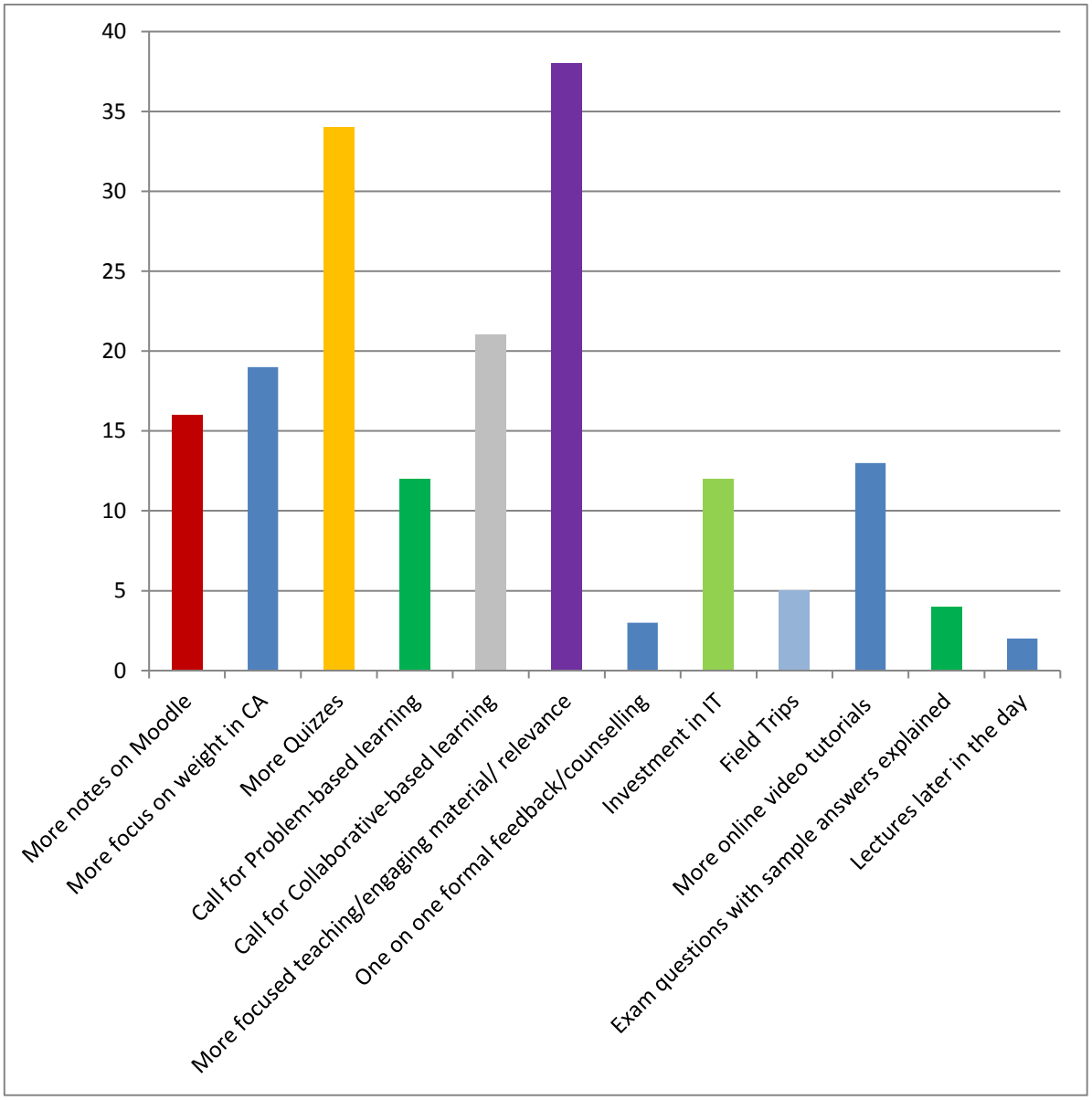


Figure 24

The students in their qualitative commentaries to GMIT recommended more focused teaching engaging material and relevance, quizzes, and collaborative-based learning in their top 3 of 12 categorised recommendations (See Appendix 66 for Wordle of commentaries). Additionally, continuous assessment weighting, more notes on Moodle, and on-line video tutorials are highlighted as important to engage with learning. Furthermore, problem-based learning and an investment in IT come highly recommended. (See Appendix 53 for list of the coded commentaries).

4.18 Conclusion

The findings provide a wealth of data from the survey questionnaire set against the independent variables of gender, age, and schools. The use of Microsoft Excel and SPSS has allowed for student perception of BL and motivation to be presented and documented through charts, graphs, tables and commentaries. Comparisons with the literature review from Chapter 2 is compared and contrasted for discussion in Chapter 5, providing a number of salient themes.

CHAPTER 5
DISCUSSION

5.1 Introduction

Chapter 4 utilised Microsoft Excel and SPSS software to organise the findings pertinent to meeting the aims and objectives of the research. Additionally, the qualitative element of question 15 and question 17 provided salient inductive themes supporting the quantitative data. The purpose of Chapter 5 compared and contrasted the findings of this research with the literature review, and discussed the significant themes in addressing the research question. The researcher collated the survey questions (SQs) thus providing data to the discussion under the headings of the three sub-research questions. Each sub-research question extrapolated themes pertinent to the research objectives. The chapter concludes with a summary of the themes.

5.2 Research question one: What are students' preferred styles of learning and how do they perceive blended learning to support these styles?

Findings from SQs 7, 8, 9, 12, and qualitative question 17 were analysed to establish student preferred styles of learning and how they perceive blended learning to support these learning styles (LS) through learning objects (LO) and IT configuration.

5.2.1 Strategically tailoring school curriculum to learning styles can initiate motivation to engage with learning

SQ 7 was utilised to quantify first year student preference for LS. Research findings indicated that student preferences for their style of learning were evenly spread across VARK: Visual, Auditory, Reading/Writing and Kinaesthetic. The responses to the ranking question on VARK scored Auditory lowest at 2.13, with Kinesthetics the highest ranking choice at 3.05.

However, while there was no significant difference between age categories, the findings did highlight a significant difference in the preference of LS between schools.

Schools with a high proposition of practical elements, embedded as part of their programmes, ranked the Visual and Kinesthetics LS considerably higher, when measured against Reading/Writing and Auditory. The School of Business, which is also the umbrella School for Mayo and Mountbellew, have programmes that are more academia based than practical based. Although the School of Business respondents have identified Visual and Kinesthetics, the rankings are closely aligned to Reading/Writing and Auditory. Stokes and Wright (2015, p.65), as was discussed in Chapter 2, presented mean averages for learner preferences using an economics class. Their findings illustrated Auditory at 3.5, Visual at 3.7, Kinesthetics at 4, and Reading/Writing at 5. The low score for Auditory concurs with the findings of this research. As economics is a business subject Stokes and Wright's (2015, p.65) findings support the higher preference for Reading/Writing among business students. The Business School, inclusive of Mountbellew and Mayo, scored Reading/Writing in closer proximity to Visual and Kinesthetics in comparison to the other schools in GMIT.

The gender findings indicated, although not significant, that males and females differ on learner style preference. The findings support Fleming (2013) regarding male preference for Kinesthetic learning, while females prefer Reading/Writing.

The findings of this research have established that students may prefer one LS over another, depending on their school and gender. (Farha 2009, p.11: Iyengar and Lepper 1999, pp.349-350: So and Brush 2008, p.320) argue that hindering the choice of learners is damaging to their motivation to engage with learning content. Limiting the choice of learning style disregards the power of the learner to make their own decisions, in turn depleting their motivation to engage with course material. Institutes of education could be advised to

establish the characteristics of their programmes being delivered, and strategically fit teaching and learning strategies with the preferred LS of their students. Additionally, it is possible that students prefer more than one LS and provision of multi-modal delivery requires consideration. However, identifying multi-modal preferences for learning is ineffective unless resources are supported adequately through IT facilities and LO, such as Videos, Animations, Written text, and Quizzes. The purpose of this research was to investigate if BL impacts students' motivation to engage with learning. Supporting learning styles is paramount to initiate motivation to engage with course material. Therefore, SQ 8 offers an insight into students' perceptions of how BL can facilitate LS through the use of LO.

5.2.2 Constructive alignment of additional learning objects with course materials can benefit self-regulated student engagement with learning outside of the classroom

In analysing the findings of SQ 8 regarding LO the mode for Written text was tied to value '1', that being least engaging. In comparison Quizzes had a mode value of '4', as most engaging. The mean averages for Video at 2.71 and Quizzes at 2.78 confirms their rankings as the most engaging of the four LO for students. Comments 139 and 160, from qualitative SQ 17, called for more LO: 'Research more videos on topics as I found they helped me understand more what I was learning!' and 'Maybe put up videos of how to do some questions when you are at home practicing and you forget how to do them and you need guidance from the lecturer' (See Appendix 56). These qualitative comments support the responses to ranking SQ 8 regarding LO where Videos were rated second in the ranking, just marginally behind Quizzes (See Figure 12).

Responses in the survey scored Written text at 2.26. Animations were 0.06 decimal points ahead at 2.32, as the least motivating influences on motivation to engage. Churchill (2014, p.144) argues that 'cartoon-like characters should be avoided unless they serve some

representational purpose'. To introduce 'fun' in learning is subjective. What the instructor imagines as fun, the learner may interpret as negatively disproportionate to the learning content, and therefore hinder their engagement with the learning process. Therefore, LO should only be used if their presence enriches the learners understanding. Furthermore, findings from question 17 regarding student recommendations to enhance student motivation to engage with course material, positioned constructive alignment and relevance of LO to their studies first among the 355 responses

5.2.3 A growing demand for curriculum informed carefully pitched Quizzes

Quizzes scored highest in the rankings at 2.78. This LO is active in learning environments insofar as Quizzes stimulate thought and engage the learning process. SQ 12 asked students how often they availed of the multiple opportunities to successfully complete the online mandatory quiz, as part of the LIS module. The provision of multiple attempts allowed 36.9% of those surveyed, representing 10.6% of the registered first year population, to engage with the quiz beyond two attempts. Therefore, if the opportunity to engage with the mandatory online quiz was limited to two attempts, 186 students who participated with 3 or more attempts would have been extrinsically demotivated to engage with learning. Student comment 147 from question 17 stated the following 'I find quizzes to be quite effective with learning course material; forces you to engage and find the answers. Include more for each module maybe?' (See Appendix 55).

An advantage of technology in BL is that it can enable initiatives of multiple engagements to learn, such as Quizzes. The mean averages for male and female attempts were 3.08 and 2.96, respectively. This is similar to McDaniel et al (2012) whose research showed mean attempts on multi-choice Quizzes of 3.22. Conversely, Andergassen et al (2014, p.23) argue that improvements in grade performance showed no significant difference when repetition of

similar Quizzes exceeded two attempts. However, Van der Merwe (2007, p.130-131) outlined in Chapter 2, argues the case for embedding Quizzes on VLE's with 57% of respondents wanting more online Quizzes, tests, and exercises. Moreover, Farha (2009) found that LO achieved results three times greater than learners only exposed to a traditional textbook. This concurs with student recommendations from question 17 placing the provision of Quizzes second in their list of requests to enhance motivation in their programme of study.

However, student comment 350 stated 'Academic integrity is good but it's easy to skip through the online course and pass easily, so it's not effective learning for the student'. This comment concurs with Gauss and Urbas (2003), outlined in Chapter 2, re the dangers of the pitch of the curriculum being unchallenging. Moreover, regarding the pitch of learning activities comment 171 states 'especially for foundation level I feel it important that the tutor pitch the work at the appropriate level' (See Appendix 56). In order to engage students beyond the classroom, with integrated Web 2.0 technologies, programme designers of educational activities must be acutely aware of enhancing motivation through matching challenges to student cognitive ability. Offering multi-modal LS, matching same with appropriate LO, in a technically effective and appealing format intertwines teaching and learning.

5.2.4 Learning styles and learning objects necessitate effective IT orientation

Research findings from SQ 9 were analysed regarding student perception on the importance of the various components that form the essential elements of successful IT orientation. The purpose of SQ 9 established the extent to which students' agreed, disagreed, with the statements on accessing and engaging with learning materials in the context of its IT set-up. All elements inclusive of Navigation, Technical configuration, Design, and User-friendliness shared a modal score of 4 representing 'agree'. Regarding gender and age, there was no

significant difference on the perception of the importance of the IT set-up. The findings in SQ 9 concur with literature that the aforementioned IT elements are influential for student engagement.

Literature highlighted the importance of quality in design and layout for eLearning resources. Gauss & Urbas (2003, p.500) argue that 'standardisation is an important issue for the sustainability of hypermedia systems in education and training'. Their studies which implemented SCORM, discussed in Chapter 2, established a structured approach to presenting technologies, identical to the LIS module of this research. Navigation in SCORM is restricted to ensure the learner follows a definitive path in order to scaffold their learning. There was no significant difference among the Schools, listed in question 4 of the SQ, on their perception of the importance of the aforementioned IT elements (See Appendix 2). This is important from an institute perspective insofar as providing and maintaining a generic platform for all schools and programmes to embed their digital LO and materials.

Teaching and learning necessitates the co-operation of stakeholders to advance student motivation with the learning process. Students in answering sub-research question one seek the development of BL modules structured to meet the needs of multiple student LS adequately supported with LO constructively aligned with module learning activities in the context of their programme discipline.

5.3 Research question two: According to students, what motivates them to engage with course material and what characterises barriers to such motivation?

Findings from SQs 14, 15, 16, and qualitative question 17 were analysed to establish what motivates students to engage with course material and what characterises barriers to such motivation.

5.3.1 Age differs on perception of influences motivating engagement to learn, but digital technology is merely a resource and not a key motivating influence

SQ 14 sought to gain student's perception of influences on their motivation to engage with learning, namely Self-motivator, Teacher, Peers (friends and colleagues), Family, Digital resources, Goal achievement, Formal assessment, and Informal assessment. Students were asked to rate their opinion of each influence on a Likert scale of 1 to 5, with 1 being least influencing to 5 being most influencing.

Students appear dependent on multiple influences to motivate their learning process, intrinsically and extrinsically. Interestingly, Digital resources rated lowest at 3.32. Therefore, although there is a call by students to further integrate Digital resources as part of BL, technology is merely a resource and not a key motivating influence. Additionally, the following learning statement from the Likert scale SQ 16, 'My learning is dependent on digital engagement', received the second lowest mean average of 3.12 of the 12 statements. This supports O'Donnell and Sharp (2011) insofar as students declaring that digital interactions, albeit important, are just another tool in the teaching and learning process.

Age highlighted significant difference between the 23 year old and under and the 24 year old and over. Findings indicated that the older learners were extrinsically dependent on the Teacher to motivate them to learn, whereas the younger learners were less inclined to rate the

Teacher as a key influence to learning. This could be a case that younger learners are more influenced by what their Peers are doing, as opposed to older learners that see the benefits of being influenced extrinsically by Teachers.

Additionally, (Holley and Oliver 2010, p. 694: Monteiro and Morrison 2014, p.586) argued that maturity and a readiness to learn in older age categories of learners are more likely to be intrinsically motivated in preparation for HE, and seek extrinsic motivating influences such as teachers to engage their learning process. Furthermore, Yoo and Huang (2013, p.156) highlight significant difference on perception of motivational factors among age categories. However, the research of Yoo and Huang (2013) differs to this research insofar as their sample population of respondents were aged 30 or over.

5.3.2 Females appear to be more consciously motivated to learn and interested in their learning process

Frith and Frith (2012, p.291) argue for the potential impact Peers and Family can have, positively or negatively, on motivation to engage with learning. Gender showed significant difference with regard to 'Peer' and 'Informal assessment'. On a Likert scale of 1 to 5, 1 being least influencing to 5 being most influencing 53% of females surveyed rated peer at 4 or greater as being most influential to motivate learner engagement, as supposed to 44% of surveyed males. Moreover, 56% of females as opposed to 46% of males rated 'Informal assessment' 4 or greater as being most influential to their learning process. Yoo and Huang (2013, p.156) concur regarding gender that females tend to be more intrinsically motivated as goal achievement and self-motivation rated higher with females than males. This research found that although there is double the amount of male to female registered first year students at GMIT, more females answered the survey. Therefore, as the survey sought first year perception of BL in HE females appear to be more consciously motivated and interested in their learning process, than their male counterparts.

5.3.3 Students at the School of Science and Computing appear to be advantaged due to level of exposure to IT facilities, reflected by a greater appreciation for Digital Resources, Informal, and Formal Assessment

The schools showed significant difference for 'Digital resources', 'Formal assessment, and 'Informal assessment' (See Appendices 57-59). In the School of Science and Computing 54% of respondents' rated Digital resources either 4 or greater, on a Likert scale of 1 to 5, with 1 being least influencing to 5 being most influencing. All the other schools were less than 50%. In the School of Business 53% of respondents rated Formal assessment 3 or less as least influencing to motivate to engage with learning, while 72% of Science and Computing respondents rated it 4 or greater. Regarding Informal assessment 60% of the Science and Computing respondents rated it 4 or greater as an influencer to engage. The nearest in comparison was Tourism and Arts at 51%.

Perhaps Science and Computing students' exposure and daily access to computers, with assessments, influences their higher rating for Digital, Formal and Informal assessment. Dylan (2011, p.12) argues that both Formal and Informal assessment have the potential to influence the variable of motivation, through the use of LO such as Quizzes with the provision of timely and detailed constructive feedback. However, Liu et al (2012, p.355) argue for focus regarding the perceived value of assessment. If the weighting from a marking perspective appears insignificant student motivation to engage may decrease, as reward for effort perceives to be insufficient.

5.3.4 Student engagement with learning reliant on the interdependence of intrinsic and extrinsic motivational influences

Of the eight influencers outlined in SQ 14, the two intrinsic influences of Self-motivation and Goal achievement were rated highest at 3.73 and 4.05, respectively. Conversely, Gauss and Urbas (2003, p.504) found that 'extrinsic motives were rated higher than intrinsic motives' in reference to the rationale to attend to classroom activities in part preparation for the formative examination. This is supported by the qualitative element of SQ 15 asking students to specify any other barriers preventing engagement where comment 62 stated a 'Lack of personal drive. I prefer face-to-face' (See Appendix 60).

To initiate learner engagement the presence of face-to-face interaction in a classroom environment can extrinsically motivate students. However, Paechter et al (2010, p.227) identified the importance of Self-regulation and Goal achievement as key intrinsic influences in the engagement and performance of learners in their programme of study. This concurs with Maslow (1966, cited in Fadiman 2010, p.3) and the importance placed on value from an academic perspective. Students who place higher values on Goal achievement tend to extend greater time and efforts into their studies, resulting in advanced performance (Paechter et al, 2010). Therefore, Digital resources alone are insufficient in motivating learners to engage with learning (Van der Merwe, 2007).

Furthermore, the qualitative element of SQ 15 to specify barriers preventing engagement with course materials resulted in students using this column to provide concerns regarding procrastinations, as 15 of the 70 comments portrayed the following: 'Too tired after being in lectures all day', 'Laziness', and 'Time management' (See Appendix 61).

Therefore, programme designers of curriculum must additionally focus on the importance of intrinsic motivation and establish clear learning objectives to enable self-motivated goal

achievers maximise their potential. However, if students lack the intrinsic motivating characteristics to engage with course content, more pressure is placed on the extrinsic factors to motivate engagement. Of the extrinsic factors inspiring motivation to engage, the research findings of SQ 14 placed the Teacher second to Formal assessment.

Likert scale SQ 16 required students to agree disagree with a number of motivational learning statements. For the purpose of presentation the statements were split into intrinsic and extrinsic categorisations. Findings indicated that there was an equal dependence on extrinsic influences, as per the ranking of the 12 learning statements (See Table 9). The top six mean averages included intrinsic and extrinsic statements. Intrinsic statements included ‘I realise that my level of effort to learning impacts on my level of performance', ‘Self-confidence plays an important role on my motivation to engage with learning' and ‘I learn best when I take responsibility for my own learning'. Extrinsic statements included ‘I will engage with course content if I believe I will learn something worthwhile', ‘I engaged with information from lecture notes, Moodle, and library when studying Academic Integrity', and ‘I will engage with course content if I believe there will be a related exam question'.

Findings of intrinsic characteristics of effort and reward, self-regulation, and self-confidence are ranked in the top four. This is closely aligned to results from question 14 where students were asked to rate influences on their motivation to engage with learning whereby Goal achievement and Self-motivator were rated in the top two of 8 influences (See Figure 22). However, the tabulation of the ranking of the mean averages of the twelve intrinsic and extrinsic motivational learning statements presented an even balance, with 3 intrinsic and 3 extrinsic statements ranked in both the top and bottom six statements. This indicates the important relationship and interdependence between both categories of motivation. This concurs with Ryan and Deci (2000) who argue that students are equally dependent on intrinsic and extrinsic factors of motivation to engage with learning.

There is no definitive line between the categories of intrinsic and extrinsic motivation. Intrinsic motivation is often regarded as internal to the individual, while extrinsic motivation is usually as a result of a stimulus (Ryan and Deci 2000, pp.56-61). If and when learners move between extrinsic and intrinsic motivational learning environments, programme designers must support internal desires to learn and facilitate external stimuli influencing engagement.

In answering the first part of sub-research question two 'According to students, what motivates them to engage with course material' the discussion points to a number of factors that impact motivation. Firstly, although Digital resources are recognised as important in BL, they are just another resource. Digital resources constructive alignment with course material is more important than the resource itself.

Management and teachers, as stakeholders, necessitate awareness of the significant difference of age categories on perception regarding the role of the teacher to motivate students to engage with learning. Older learners tend to appreciate the interdependence of intrinsic and extrinsic influences on their process of learning. This turns the focus to the younger learner who may require additional guidance in understanding the process of learning, and its importance to their professional development.

5.3.5 Policy update: investment in IT necessary, as students struggle financially

In characterising barriers to motivation SQ 15 allowed respondents to select from a list of Finance, Wi-Fi, Technical skills, and Peer pressure as possible barriers preventing them from engaging with online course material. Wi-Fi at 58.4% was identified as the greatest barrier to motivation. Additionally SQ 15 gave respondents the opportunity to specify any other barriers impeding their efforts to participate with learning. One respondent in the findings, identified as comment 19, stated 'Slow college computers impede class work', while

respondent comment 7 outlined that ‘Certain phones don’t make it easy to access the material on Moodle’ (See Appendix 62). If technologies are to play a role in the future of teaching and learning the Hennessy (2014) progress report highlighted that funding was essential to fulfil policies outlined in the Hunt (2011) report. Furthermore, respondent comment 42 ‘very poor broadband’ highlighted frustrations on the part of students who are willing to engage in learning, but are disenchanted because they cannot access course materials due to technological barriers (See Appendix 61).

Finance at 32.5% came second to Wi-Fi as a barrier to engagement. Klein (2009) argues for the awareness of students limitations to fully partake in online activities due to insufficient resources, partly due to lack of finances on the part of both the student and the institute. This concurs with Holley and Oliver (2010, p. 694) who argue that student experience of learning in their own space is often overlooked, restricted by barriers such as Finance. The intrinsic will of the learner may be present, but life challenges can sometimes be insurmountable without financial support to provide adequate, sufficient, appropriate resources. One respondent, identified as comment 72, stated the following ‘I don't own a laptop so it restricts my work to college opening times’. Similarly, respondent 57 commented ‘Lack of laptop at home and fees issues’, while respondent comment 54 stated ‘internet is not cheap’ (See Appendix 63).

Peer pressure at 8.1% of the 384 respondents was selected as a barrier to engagement. Therefore, this data suggests that management of HE institutes could be mindful of the power of peer groups to positively influence engagement with learning and create collaborative environments. Rather than allowing peer groups contend as a negative barrier to student engagement by distracting willing students from learning. Bloom (1984, p.11) argues for free choice among learners for their peer associations, with an awareness for the impact on learning such choices hold.

Question 15 found that only one in four identified technical skills as a barrier. Perhaps this maybe reflective of some Schools such as Science and Computing scheduling mandatory IT modules, as part of their programmes being delivered. However, survey qualitative comment 172 from question 17 argued for 'provision of services to assist online learning... not available at present and pressure to use online learning without being given the skills…' (See Appendix 64). This concurs with (Smith et al 2013, p.115: Margaryan et al 2011, p.436: Livingston and Haddon 2009, pp.27-29) that the myth of students, particularly millennial students, being digitally savvy has no foundation. It is necessary to establish ongoing training for students to acquire and develop the technical skills to engage. It is pertinent to note that 50% of the 70 comments from SQ 15 outlined no barriers to engagement.

In answering the second part of sub-research question two regarding 'what characterises barriers to their motivation to engage with course material' students face a multitude of challenges to initiate motivation to engage with learning. Distinguishing from the intrinsic factors of personal application of Self-regulation and ownership of Goal achievement, to the extrinsic factors causing barriers to participation is equally challenging for educational institutes. However, all stakeholders necessitate joint-up thinking from management, lecturers, and students alike to overcome barriers and adequately provide the appropriate resources such as IT at the right time, in the right place, with a focus on course relevance and training for collaboration.

The research is a 'voice' for first year students' perception of BL and motivation. The student commentaries outlined above are a call for help as barriers to engagement naturally demotivate students to learn. HE institutes could further analyse the struggles of first year students while they attempt to overcome barriers to adapt to blended learning in HE. The stakeholders require the support of policies, or at a minimum for the recommendations in the Hunt Report to be enacted.

5.4 Research question three: How do students perceive the impact of blended learning on their motivation to engage with course material?

Findings from SQs 6, 10, 11, 13, and qualitative question 17 were analysed for student perception of the impact of BL on their motivation to engage with course material. The intention of the discussion was to establish student views on the various elements that make up a BL format in a first year module in HE.

5.4.1 A need to educate, prepare, and support student transfer to higher education while still engaged at secondary level education

SQ 6 sought to establish the level of student understanding of BL by selecting 'Yes', 'No' or 'Not sure'. The rationale for the BL integration into the student learning environment for the LIS module may not have been apparent to the students. The purpose of question 6 was to avoid any assumptions that student exposure to different forms of teaching and learning, in this case BL, presumes that they, the students, know what BL encompasses. Nearly 6 out of every 10 students surveyed were either unsure or did not understand the term blended learning. This is a concern for GMIT, particularly with the students having been exposed to a formal element of BL for 13 weeks. Kelly (2005, p.78) argues for students to reflect on the process of their learning, rather than just the material being learnt. Rather than stakeholders focusing on outcomes of learning, time should be allocated for students to analyse what, and how, they are learning. Qualitative SQ 17, seeking student recommendations, revealed the following student comment 155 (See Appendix 67):

> Explain the concept of online learning to secondary school students so they are not overwhelmed with this new teaching format, as opposed to the traditional secondary school method.

Regarding comment 155 policies preparing students for adaption into third level integration require a review to adequately support their transfer to the new learning process. Holley and Oliver (2010, p.694) concur with the above student comment insofar as planning for students entry into HE, and particularly in a BL format.

Monteiro and Morrison (2014), outlined in Chapter 2, investigated challenges for motivating learning in collaborative BL. Mirroring comment 155 the participants in the Monteiro and Morrison (2014) study come from a second level environment where they are thought 'what to think, when to think and how well they have thought' (p.568). Additionally, Monteiro and Morrison (2014, p.565) argue that students will not necessarily partake in collaboration just because technology is introduced to the learning environment. Moreover, Costley and Lange (2016, p.169) argue that 'proper guidance to ensure effective interaction' regardless of a teacher-centred or student-centred approach to learning is necessary to motivate engagement. Oliver and Trigwell (2005, p.18) argue that for student-centred learning to evolve students must be part of, and understand, the learning process. Furthermore, the proficiency gap between teacher and student requires attentions, as the risk associated with assuming that students understand the learning process remains. Moore et al (2008, p.59) argue for transparency in communication between the expert teacher and the novice learner. Kelly (2005, pp.77-78) argues that lecturers in HE should stop and quiz students on their learning during class time. The goal of questioning student learning should serve as a guide to proactively change methods of teaching, and not to assume by student silence to questioning that content is understood.

Gender differences highlighted that more females than males understood the term BL, yet more females than males were unsure, therefore SPSS output showed no significant difference.

However, age showed that the 24 year old and over student category had a greater understanding of the term blended learning, as opposed to the 23 year old and under student category. This concurs with So and Brush (2008, p.325) who identified that older students display greater appreciation for understanding BL, and particularly collaboration. Further research is required into the role the mature student could play, as a peer assistant in the learning process to the younger student, in helping transform their understanding of BL and its potential to motivate learning extrinsically.

5.4.2 Learning can be a social activity creating collaboration through knowledge sharing

Learners differ in their social capacity to engage with online learning. Students, sometimes as first generation learners, may not have the social support of families and peers to guide their development in HE. How students perceive themselves in the learning process, and equally realise their ability to participate, calls for motivation-fuelled engagement to transform the adaptation period as students establish themselves in the learning environment. Additionally, (O'Donnell and Sharp 2011, p.4: So and Brush 2008, p.329) argue that engagement is just as dependent on the face-to-face interaction between peers in creating a community of practice, as it is between teacher and student. Comment 338 from question 17, seeking recommendations to enhance student motivation, is potent with regard to the power of student collaboration (See Appendix 67):

> Get students to test each other. I felt more confident going into my exam when I discussed sample question with my fellow classmates as it helped me understand the topic when I heard someone else's take on the topic

Blended learning as a teaching strategy has the potential to create collaboration among students. In so doing knowledge sharing can evolve and thus influence motivation. Student comment 293 calling for collaboration through teamwork states: 'in class everybody should be able to work together as a team' (See Appendix 67). (Klein 2009: Monteiro and Morrison 2014, p.566: Osguthorpe and Graham 2003, p.229: So and Brush 2008, p.320) concur insofar as creating opportunities for students to collaborate, therefore building communities of practice.

5.4.3 Learning is a shared responsibility, but blended learning creates opportunities and channels to motivate engagement with learning

The purpose of SQ 10 was to establish learner perception of the three media, delivering the content of Academic Integrity namely Moodle, the classroom, and the library. Findings emphasised familiarity in student perception regarding effective engagement with learning content in rating the media of which they have most exposure, that being Moodle and the Classroom. This is supported by O'Donnell and Sharp (2011, p.5), outlined in Chapter 2, whose findings indicated that 75% of students surveyed in Trinity College Dublin and 72% in Dublin Institute of Technology disagreed that there was 'no longer any need to attend lectures because course notes available online are a good substitution'. Therefore, dependency on the traditional classroom in support of motivation is still prevalent.

The findings of this research indicated that 70% of students surveyed rated Moodle as effective for engagement. Albeit 12% (82%-70%) short of O'Donnell and Sharp (2011, p.6) finding of 82% it is still a strong reflection of the importance of integration of technologies in a BL format. The advantage of Moodle is its 24/7 accessibility.

Comment 314 from qualitative SQ 17 stated the following (See Appendix 67):

> I would highly recommend to students to use Moodle as often as they can, as there could be something that they missed in class that could be up there. Tutors are incredible, and it is great to have Moodle there as a crutch or tool if you are unsure of something or feel that I need to spend more time on a specific topic without delaying other students or lecturers.

Student comment 314 portrays the purpose of BL in HE insofar as making learning opportunities available for students beyond the traditional classroom. The complementary supply of learning resources through face-to-face engagement and on Moodle can extrinsically motivate students to learn. (Van der Merwe 2007, p.127: So and Brush 2008, p.320) argue the case for the integration of Web 2.0 technologies to support the traditional classroom environment by providing numerous teaching channels for both synchronous and asynchronous student learning.

Through the creation of a BL format there is an expectation that the combination of traditional classroom and modern technologies can stimulate motivation. However, students have an onus of responsibility to engage with online and offline activities. Comment 290 from SQ 17 verifies student responsibility: 'Go to class because it makes studying for exams a lot easier as you are not just looking at the notes for the very first time'. Furthermore, research is required into whether BL influences students in general, or is it a case that the stronger student applies themselves to the BL approach to teaching and learning (Van der Merwe 2007, p.134: Holley and Oliver 2010, p. 699). This raises a limitation of this research study into the profile of the respondents, insofar as whether or not they were strong or weak students.

Perhaps the reason for the lower rating of the Library Workshops is reflected by students being allotted only two hours for four workshops, and at a pre-scheduled time. It could be

argued that students rated the effectiveness of the library lowest of the three media because they may not be knowledgeable on its value and benefits to their learning process. Kleinveldt et al (2016, p.63) argue that the potential for librarian integration into the BL environment is underestimated. Relationships between faculties and librarians have the potential to foster more effective student-centred learning environments.

However, to create this student collaborative learning environment requires a new focus on communication. Further research into student preference on how they wish to communicate online could inform programme management on future investment in IT resources. This is highlighted by comment 178 from SQ 17, seeking student recommendations for motivation, which stated: 'Advertising on popular sites such as Facebook. Also, the app for Moodle on the android platform is not the best. I have left reviews and complaints and sadly none have been acknowledged' (See Appendix 67). GMIT could review policy on student teacher engagement beyond the VLE through social media platforms, and additionally survey students regarding IT facilities to quantify technical areas requiring investment.

5.4.4 Room for improvement in blended learning implementation

SQ 11 established the level of agreement/disagreement to which students believed BL motivated them to engage with content regarding the LIS module. The importance to the research was fundamental with regard to first year student perception of a BL format. The variables of age, gender, and schools presented no significant difference. It might be encouraging from a GMIT management perspective that after thirteen week's exposure to BL 56.6% surveyed found it motivating for their engagement with learning. Conversely, O'Donnell and Sharp (2011, p.4) presented findings that surveyed students believed BL had a positive impact on their engagement with course material, 35.4 percentage points greater at 92%. Therefore, with 35.2% (See Figure 18) of respondents undecided in this research there

are concerns whether the BL approach is motivating or not. However, this could be related to SQ 6 and the 29.3% who stated them did not understand the term blended learning.

SQ 13 queried the extent to which students' programme of study utilised a BL approach to teaching and learning. Literature highlighted a demand from students towards further integration of Web 2.0 technology, as part of their learning process (Weller 2011, pp. 85-95: FutureLearn, 2016). Findings from this research have presented that 42.6% of the respondents to the question selected that they 'Never', 'Rarely', or 'Every once in a while' were exposed to BL on their programme of study. Furthermore, only 19.2% were always exposed to BL.

The advances in Web 2.0 technologies have encouraged teaching and learning practitioners to become aware of the potential of BL to deliver content to suit all LS. Chen 2007 (pp.73-76) outlines the relevance of instructional support for IT, course material, learners, and goals. Increased levels of teacher control impacted positively on student perception of learning. Additional findings from question 17 indicated student dissatisfaction with teacher engagement with the VLE Moodle (See Figure 29). This concurs with the argument of Lowther et al (2008, p.197) insofar as the slow progression of technology as part of teaching strategies. Question 17 revealed 38 student recommendations specifically outlining more focused teaching, engaging material, and relevance of material to their programme of study to enhance student motivation to engage with learning. Student comment 342 states 'make sure the lecturers make it very clear where the topics covered in class, are on Moodle. Moodle is not easy to find your way around and some students may need some extra help' (See Appendix 54). (Biggs and Tang, 2011: Stokes and Wright 2015, p.65) argue for a constructive approach to student-centred learning and learning outcomes by aligning learning activities, objects, and assessments.

Ertmer (1999, p.48) highlighted the necessity for teachers to overcome first and second order barriers regarding the integration of Web 2.0 technologies such as VLE's like Moodle, Social Media sites like Facebook, and video sharing sites like YouTube. Additionally, Paechter et al (2010, p.228) found that the power of the teacher as an extrinsic influence in motivation cannot be overstated. Student responses to the qualitative element of question 15 called for teachers to engage more online as an extrinsic influence to motivate engagement (See Appendix 61 for comments 45 and 53). In a BL scenario aligning classroom and online activities is challenging. However, the provision of BL resources can create an environment for collaborative learning between teacher and student, student and Web 2.0 technologies, and student and student (Osguthorpe and Graham 2003, p.229). Moreover, management of programme delivery could ensure the process of learning is clearly outlined to all students. Furthermore, because BL has many definitions the institute must communicate clearly to the students the institute's position on BL, and how it strategically fits with the student learning process.

In answering sub-research question three regarding how students perceive the impact of BL on their motivation to engage with course material, students have indicated that the potential of BL to motivate their learning is positive. The integration of the traditional classroom and Web 2.0 technologies benefits their learning process. However, there is a call for additional use of Web 2.0 technologies by teachers for students, and an improvement of the resources available to teachers and students in order to communicate, engage, and motivate. If learning is to be student-centred, collaborative, and self-directed students understanding of the characteristics of learning is essential to maximise potential. Findings suggest that student engagement with course content in HE, through the implementation of BL, requires a thorough explanation to learners of the purpose for the process of learning as part of their development. In order for a collaborative learning environment to progress teachers and

learners have a role to play: teachers insofar as providing the alignment of relevant resources to strategically fit the course curriculum, and students with a responsibility to engage with the resources afforded to them.

5.5 Conclusion

Chapter 5 combined prior research and knowledge from the Literature Review in Chapter 2 with the findings from Chapter 4, justified by the design in approach to research in Methodology Chapter 3 in answering the research questions. While no research is 100% valid the anonymity and integrity of the 29% response rate furnished data to provide depth to, and relevant discussion for, the topics blended learning and motivation. The hypothesis that BL impacts student motivation to engage with learning is supported by a number of themes. However, it is the quality of the structure and technical set-up of the BL process that creates differences in student perception. Additionally, how management supports teachers to implement BL, and in-turn support students to engage is equally important. Therefore, Chapter 6 Conclusion shall provide a summary of the main deductions, and deliver recommendations applicable to BL and motivation.

CHAPTER 6
CONCLUSION

6.1 Introduction

Chapter 6 summarises the main findings in contribution to adult learning and suggests recommendations for the development of blended learning and student motivation in higher education. The chapter will consider a GMIT perspective, a national perspective, review limitations of the research, and offer concluding remarks.

6.2 Summary of the research project and its contribution to adult learning and development

Learners, by their very nature, are inherently different in their preference for learning. Teacher variety in style of delivery and presentation of course materials is essential to maximise motivation for all learners to activate their learning style. Students have indicated, quantitatively and qualitatively, in both the literature review and the research findings their requests for the provision of learning objects and resources to fit their learning styles. How students prefer to learn is just as powerful a motivating factor, as how the teaching fraternity choose to deliver learning content.

Financial constraints, technical resources, and social networks associated with the experiential background of learners vary from student to student. Student barriers to engagement could be identified and categorised prior to participation in higher education. Such as first generation learners whose challenges could be analysed and resolutions initiated, where possible, to overcome impediments. Education and the humanities are intertwined. Failure of higher education institutes to recognise the education and humanities relationship impedes effective pedagogical progression. HEA polices are welcome on widening the gap for the student population to engage with third level education. However, a policy review is required for each category of student in preparation for successful integration

with BL in higher education. Therefore, while intended desires by management to invoke intrinsic motivations in students to learn exist, ignoring the extrinsic societal influences fails these students as life challenges create barriers preventing stimulation of intrinsic desires to learn.

The alignment of learning resources, activities, and assessments through BL must equally be affiliated with the needs of the students. The provision of media channels for teaching and learning is essential to allow learners options to engage with learning. However, providing students with the know-how to involve themselves off-line and online requires additional resources. Technology-enhanced-learning is evolving and thus providing additional options for BL configurations. Designers, and upgrades to VLE's, must be mindful of the channels of communication which learners engage, so as to accommodate such preferences in learning designs. Programme developers need to strategically align the design of BL environments with the needs of the learners, the communities in which they live, the capabilities of the teachers, and the resources available to the institute.

6.3 The 'what if' from a GMIT perspective and possible initiatives for change

Listening to student feedback on preference for learning can guide GMIT management on resourcing teachers to facilitate student preferences so as to increase motivation and engagement. Students are the reason for the existence of higher education institutes. GMIT is no different. Engaging students through motivation are challenges for both the student and the institute. The successful integration of students into higher education is paramount for all stakeholders. Successful student adaptation to higher education can lead to a decrease in student dropouts from programmes. The rationale for the research was to seek first year student perception of being exposed to mandatory BL. The influences and barriers to engagement were analysed. Literature and research findings have established that while BL positively impacts motivation to engage with learning, student barriers to engaging with

course material remain. Therefore, the focus to blend learning, or not to blend learning, no longer prevails. Therefore how stakeholders make up the blending process, support its implementation, and resource the student fraternity requires attention.

The exposure to BL over a thirteen week period resulted in 41% of the respondents understanding the term BL. This calls for transparency in communication about the process of learning more so than the product of learning. GMIT students are struggling financially. Although higher education advocates towards independent learning through BL students have clearly stated they do not have the skills to engage. There is an opportunity for GMIT to enhance the impact of blending learning on motivation by listening to the students:

- Each school within GMIT, and each programme within each school, could consider carrying out an audit on the extent to which their programmes make use of learning objects. For example quizzes and videos to fulfil the Kinesthectic and Visual Learners' needs, as identified by the research.
- Students raised concerns regarding IT facilities within the GMIT campus. Many students work to pay their way through college, and are dependent on 24/7 effective IT access to resources. The college timetable may not always suit their work schedule. While student access to resources is possible through computer labs some barriers remain such as on-site slow computers and poor Wi-Fi. An audit of IT facilities, reflecting the research findings, is essential to support a request for IT funding to improve learner opportunities for engagement with Web 2.0 technologies.
- The LIS module, currently worth 5 credits over one semester on all first year GMIT programmes, could be considered for a 10 credit module over two semesters. Additional support, through this module, could be allocated to student issues such as developing the

skills to participate collaboratively offline and on-line, develop technical abilities, and instil in students an appreciation that learning is a process, not a destiny.

6.4 National perspective

The Hunt Report (2011) and the Action Plan for Education (2016-2019) seek a greater awareness and appreciation for adult learners. However benevolent the intentions of the aforementioned documents to establish teaching and learning platforms for students they are failing the students at the coal-face of transition to higher education at GMIT. Student qualitative comments argued that undergraduate students, particularly first years, may not be ready for the change to third level education. Respondents to the survey sought for communication between secondary schools and third level institutes, regarding support and information about the change, before the change happens.

The National Forum for the enhancement of Teaching and Learning is leading the way to motivate student engagement through classroom management and integration of TEL. Further collaboration between the HEA, the Teaching and Learning Forum, and IOTs may provide platforms for engagement of the issues facing students and teachers. Collective endeavours may have the power to lobby government for sufficient resources, particularly improvement in IT facilities and the proviso of continued support for teacher and student training on collaboration for BL.

6.5 Limitations of the research

Despite the professional efforts of this research there are limitations. Albeit the research surveyed all first year students across GMIT schools and campuses the research focused on one module. Additionally, the survey was issued to the first year student population only. The rationale for this in answering the research questions was the assurance that the LIS module included all first year students partaking in a mandatory approach to BL. This may have

resulted in the loss of the experience of 2nd, 3rd, and 4th year students who might have been exposed to BL. According to Denscombe (2010, p.49) 'If the coverage is suitably wide … it gives credibility to generalised statements made on the basis of the research'. Therefore, the credibly response rate of 29% enabled for discussion the salient points of student BL perceptions.

6.6 Recommendations for future research

Due to the limitations of the research there is much scope for further studies. The following outline potential routes for future investigations:

- The achievement of the Leaving Certificate, with the rigid and controlled structure of its process, is quite removed from the teaching and learning practice and process in higher education environs. The variable of age and student readiness to learn requires further exploration in view of the transition from second level to third level education. Students called for more preparation for the move to third level.
- The implications of poor class attendance and its impact on the process of learning requires research. There are no consequences for non-attendance other than potentially failing to meet learning outcomes. Although regarded as mature adults at 18 years or older, during the adaptation period to higher education undergraduate students may not appreciate in time the cost to their learning due to poor attendance.
- Student cognitive ability, not accounted for as a variable in this research, is important for future research insofar as student capabilities to meet the needs and demands of level 6, 7, and 8 programmes. The assumption that high achievers have the wherewithal to adapt to changes in the learning process requires investigation.
- Future studies could engage with the 500 plus students who partook in this research, as they progress through higher education, insofar as evaluating their perception of BL and

motivation overtime. Research may indicate that it takes students time to appreciate BL. Higher Education Institutes perception on BL application may require a review.

- There were prior intentions by the researcher to compare the LIS grades from the academic calendar 2015/2016 with 2016/2017. However, at the time of writing the conclusion to this research the grades for the LIS module were only partly submitted to the offices of Academic Affairs. Lecturers have until June 2nd to submit module results. It would be worthwhile to investigate, following the implementation of the mandatory BL format, if year on year comparisons showed a percentage increase or decrease on LIS grades. This is an element that can be readily achieved post June 2017. This would reflect the variable of learning outcomes and whether or not they are being impacted positively, as a result of BL influencing motivation to engage.
- One regretful omission from the questionnaire was asking the participants how they were informed and therefore directed to the survey questionnaire on their email accounts. Such information could have provided a useful guide to the administration of future surveys. Additionally, links with student preference for receiving communication could have informed TEL. This could be considered in future surveys.

6.7 Concluding remarks

The research sought to give a voice to first year students in higher education and they responded; 504 students out of a registered 1,754. In their quantitative and qualitative responses to their BL experience they took the opportunity to inform GMIT that they have many challenges and barriers to overcome. They have a desire to learn, shown by the sum of the responses. How other key stakeholders, Institute Management and teachers, choose to facilitate the 'voice' of students calls for detailed discussion and the implementation of solutions to propel the teaching and learning process.

The goal of pedagogy can be to advance the capabilities of the students following their participation with the learning process. To achieve this goal requires the clear outline of objectives on the benefits associated with multi-media delivery of teaching to enhance individual student needs by reflecting learning styles, and providing support to overcome any barriers to their motivation to engage.

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Appendices

Appendix 1: Registration Statistics 2016/2017 as at 1st November 2016

Galway Mayo Institute of Technology

Registration Statistics 2016/2017 as at 1st November '16

New Entrants

CAO Accepts

	2015/2016	2016/2017			
School	CAO Accepts Total	CAO Accepts Total (Including All rounds)	Registered	Eligible to Register	CAO Defers and No Shows
Mayo	164	176	145	0	31
College of Tourism and Arts	392	442	393	0	49
Letterfrack	68	63	51	1	11
School of Business	290	345	312	0	33
School of Engineering	347	439	396	0	43
School of Science	433	520	467	0	53
Total	1694*	1985	1764	1	220

* After all rounds and only includes students who went on to register.

Appendix 2: Survey Questionnaire

First year blended learning experience of Academic Integrity during Learning and Innovation Skills.

Dear Student,

I am seeking your assistance in collecting information about your participation with the blended learning approach to the Academic Integrity element of the semester one module Learning and Innovation Skills (LIS).

Blended Learning is the integration of the traditional classroom (face-to-face) with e-learning (learning objects and Web 2.0 technology) in support of student learning.

Your response is of great value and importance in compiling a robust study of first year students. There are no right or wrong answers. Some statements may seem similar. Simply give your opinion on all statements. Your opinion is what is wanted.

I estimate your commitment of time to be approximately 8-10 minutes. I assure you of complete confidentiality – the research data will only be seen by me and by my NUI Galway supervisor and assessor.

Thanking you,

Brian Morrissey
Assistant Lecturer / Researcher
College of Tourism & Arts
Galway Campus
091-742300
brian.morrissey@gmit.ie

* 1. In order to complete the survey, you must click yes below. This indicates your consent to answer the questions in this survey.

- ◯ Yes
- ◯ No

First year Blended Learning experience on Academic Integrity with Learning and Innovation Skills.

2. What is your age range?

- ◯ <18
- ◯ 18-23
- ◯ 24-30
- ◯ 31-40
- ◯ 41-50
- ◯ >50

3. What is your gender?

- ◯ Male
- ◯ Female
- ◯ Would rather not disclose

4. What School or Campus are you on?

- ◯ Business
- ◯ Engineering
- ◯ Letterfrack
- ◯ Mayo
- ◯ Science & Computing
- ◯ Tourism & Arts
- ◯ Mountbellew

5. Please state your programme (course) of study:

6. Do you understand the term 'Blended Learning'?

- ◯ Yes
- ◯ No
- ◯ Not sure

7. Please rank the learning style which motivates you;
with '1' being least motivating to '4' being most motivating.

	Visual Learner (You learn by seeing, observing, being shown examples, imagining and seeing in mind's eye)
	Auditory Learner (Learning by listening, hearing, speaking, and repeating verbally, e.g. Podcast)
	Reading/Writing Learner (The read/write learner has a strong preference for learning through Reading & Writing, e.g. notes, essays, manuals)
	Kinesthetic Learner (Active learner; learning by doing, experiencing, making, moving, getting involved, having a go)

8. Please rank the learning resource from the Moodle Academic Integrity resources that you found most engaging; with '1' being least engaging to '4' being most engaging.

	Videos
	Animations
	Written Text
	Quizzes

9. Please indicate to what extent you agree/disagree with the following statements:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
'User-friendliness (i.e. easy access to the resources in the Moodle Academic Integrity element of the module) is an important factor for engaging the learner'.	○	○	○	○	○
'The design of online courses is a key factor for engaging the learner'.	○	○	○	○	○
'Technical configuration (i.e. the layout, look and feel of the resources in the Moodle Academic Integrity element of the module) is important for engaging the learner'.	○	○	○	○	○
'Navigation of the Moodle Academic Integrity element of the module is easy (i.e. move from one task to the next)'.	○	○	○	○	○
'The resources in the Moodle Academic Integrity element of the module adequately supported the traditional classroom teaching'.	○	○	○	○	○
'The library workshops enhanced student engagement with the Moodle Academic Integrity element of the module'.	○	○	○	○	○

10. Please rate the media below in terms of their effectiveness for encouraging you to engage with the Moodle Academic Integrity content, with '1' being least effective to '5' being most effective.

	1	2	3	4	5
Moodle	○	○	○	○	○
Classroom					
Library Workshops	○	○	○	○	○

11. Please indicate to what extent you agree/disagree with the statement:
'The blended learning approach to teaching motivated me to engage with the content in the Moodle Academic Integrity element of the module'.

○ Strongly Disagree ○ Disagree ○ Undecided ○ Agree ○ Strongly Agree

12. How often did you avail of the multiple attempts to achieve a higher grade on the Academic Integrity online quiz?

○ Never ○ Once ○ Twice ○ Three times ○ Greater than three

13. Please specify how often your programme of study uses a blended learning approach to teaching?

○ Never ○ Rarely ○ Every once in a while ○ Sometimes ○ Almost always

14. Please rate the following influences on your motivation to engage with learning; with
'1' being least influencing to '5' being most influencing.

	1	2	3	4	5
Self-motivator	○	○	○	○	○
Teacher					
Peers (friends and colleagues)	○	○	○	○	○
Family					
Digital resources	○	○	○	○	○
Goal achievement					
Formal assessment	○	○	○	○	○
Informal assessment					

15. Please select from the list below any barriers preventing you from engaging with online learning course material.

☐ Finance

☐ Wi-Fi

☐ Technical Skills

☐ Peer pressure

Other (please specify)

16. Please indicate to what extent you agree/disagree with the following statements:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
'I learn best when I tutor my fellow students'.	○	○	○	○	○
'I will engage with course content if I believe there will be a related exam question'.	○	○	○	○	○
'I learn best in an environment where students work together'.	○	○	○	○	○
'If I cannot understand something I am studying for class, I go on Moodle to source information'.	○	○	○	○	○
'I learn best when I take responsibility for my own learning'.	○	○	○	○	○
'I will engage with course content if I believe I will learn something worthwhile'.	○	○	○	○	○
'I learn best by memorising data'.	○	○	○	○	○
'Blended Learning has helped focus my learning'.					
'I engaged with information from lecture notes, Moodle, and library when studying Academic Integrity'.	○	○	○	○	○
'Self-confidence plays an important role on my motivation to engage with learning'.	○	○	○	○	○
'My learning is dependent on digital engagement'.	○	○	○	○	○
'I realise that my level of effort to learning impacts on my level of performance.'	○	○	○	○	○

17. What are your recommendations to enhance students' motivation to engage with course material within your programme of study?

18. Thank you for your time. Please include your contact details below if you wish to be entered into the prize draw for the One4all gift voucher and meal vouchers.

Name:

Email address:

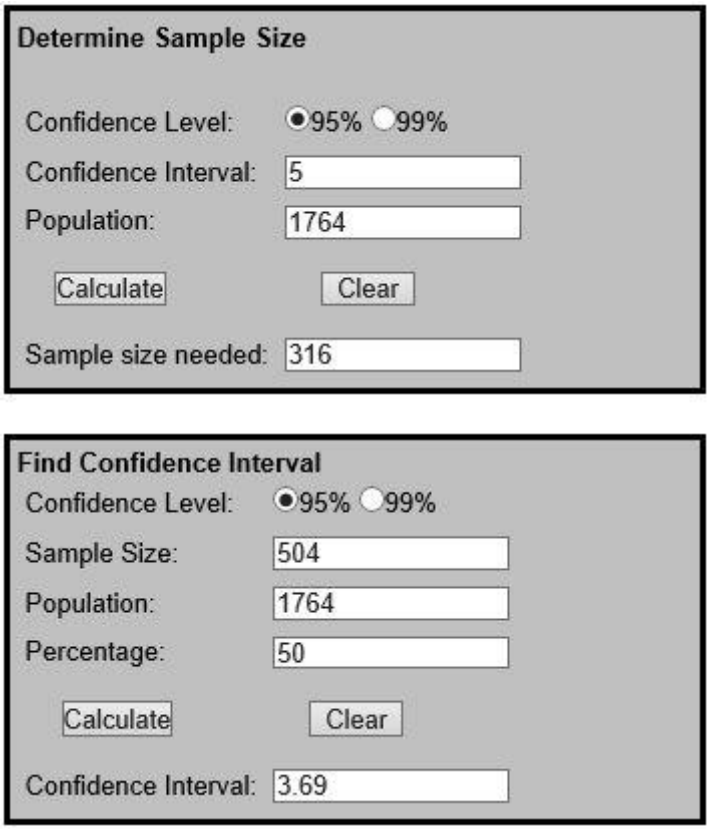
19. Add name/email if you are interested in participating in an interview or focus group on blended learning and motivation:

Name:

Email address:

Please click 'Done' to submit.

Appendix 3: Sample Size Calculator



Appendix 4: Question File Bank opened 08/10/2016 at 15.06

Question bank:

- Age
- Gender
- Nationality (diversity)
- Year of Programme
- First Language
- Learning Style
  Visual Reading Kinesics etc
- Teaching Preference
  Class Lecture Ppt Whiteboard Learning Objects
- Blended learning awareness
- Understanding Collaboration
- Use of supporting learning objects
- Preference of Media options to engage with Learning Objects (VLE/Social Media types)
- Rate importance of navigation/design over content (vice versa)
- What do you use a computer for mostly? Options; Email, Social Media Communication, Learning,
- Age Range
- Gender M/F
- College of Study Choice
  5 Choices
- Choose your preferred learning style in order of preference by applying 1, 2, 3 and 4:
  4 Choices
- Rate your satisfaction with the design of the AI assessment 0-10
- Apply 1, 2, 3 in order of your preference, for the source of material which best supported your assessment on Moodle, 1 being most preferred, 3 least preferred:
  Moodle Resources Classroom Library Workshops
- Rate the influence of the mandatory pass rate of 80% on your motivation to engage with the online AI assessment? 1-10
- What was your least favourite aspect of the blended learning experience?
- What aspect of the blended learning experience was your favourite?
- Rate your overall blended learning experience with the AI assessment as part of the module Learning and Innovation:
  1-10
- Indicate how likely you would be to partake in future module with blended learning elements:
  Not likely, likely maybe very likely definitely

Appendix 5: De Vaus (1995, p.83-86) survey question guidelines.

1) Is the language simple?
2) Can the question be shortened?
3) Is the question double barrelled?
4) Is the question leading?
5) Is the question negative
6) Is the respondent likely to have the necessary knowledge?
7) Will the words have the same meaning for everyone?
8) Is there a prestige bias?
9) Is the question ambiguous?
10) Do you need a direct or indirect question?
11) Is the frame of reference for the question sufficiently clear?
12) Does the question artificially create opinions?
13) Is personal or impersonal wording preferable?
14) Is the question wording unnecessarily detailed or objectionable?
15) Does the question have dangling alternatives?
16) Is the question likely to produce a response set?

Appendix 6: Pilot survey colleague commentary

Hi Brian,
Sorry this is so rushed, as I'm running to student vive voces... here's my tuppence worth, but email me if anything not clear....
Overall, a seriously good survey with very valuable information... my points seem quite trivial, but I know you appreciate an extra pair of eyes....
Q4: Just add the word "On"which campus are you based? Tiny grammar point, and that's even if I'm correct, might not be!
Q6: Great idea to establish understanding of Blended Learning... such an important criterion that I would not have thought of, and informs what follows...
Q7: Explanations for each style spot on, and a good idea as if you haven't recently looked at VARK, easy to forget... Just change "five" to "four", as there's not a fifth element to rank.
Q8: Ditto. Five to four. Love that the previous VARK info gathered ties in with this...
Q9 and Q10: Maybe too obvious? What I mean by that is you'll likely get everyone strongly agreeing, which isn't of great value. Better to ask people something more quantifiable, which you do later on in the survey....
Q11: You could consider taking out the phrase "technical configuration" and replace with layman's terms... interface/layout/look and feel.....
Q12: I think this question is more valuable and measurable than Q9/10...
Q14: Maybe an option for [redacted]who didn't attend library sessions? Someone who didn't mightn't know what to tick, or [redacted]
Q15: Love the term 'most motivating' to 'least motivating'... It's a great way to get people to rank items.
Q17: Really great question.... Will be very interesting to see the results.
Q18: Likewise.... will be great to see what this Q reveals.

John Carty
Wed 25/01, 19:05

Hi Brian,

sorry for delay in getting to this - only got around to it now. Some comments, but nothing major:

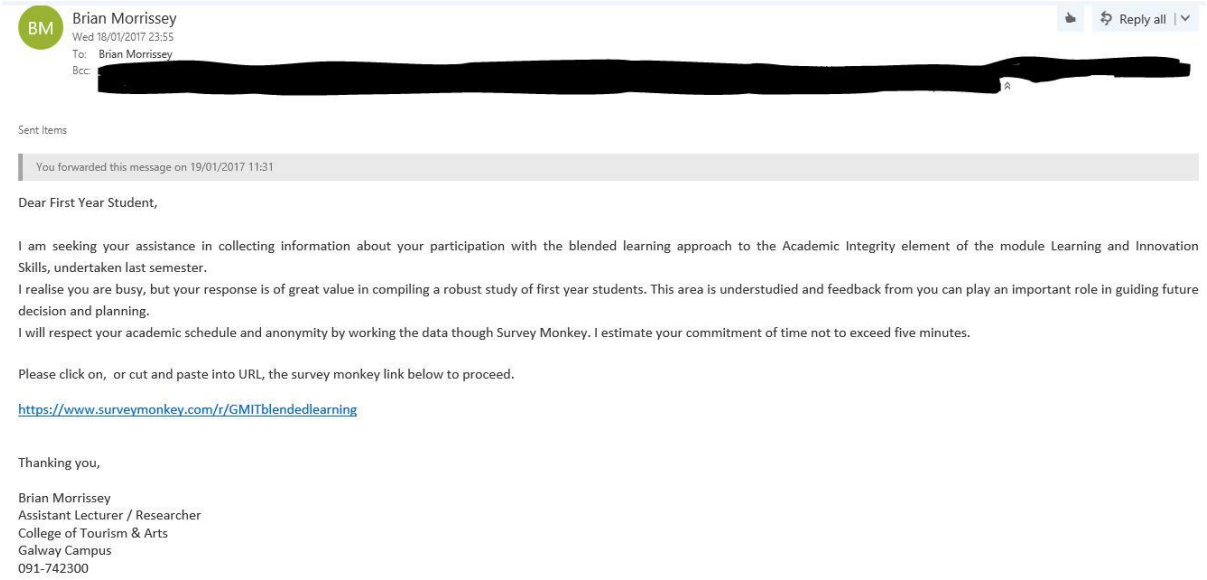
- should Q7 and Q8 be ranking questions - 1-4 (one option per row?)
- Q9 and others - should you explain what Academic Integrity resources, or perhaps students will know what these are?
- Q10 - specify design (of what - Moodle page?)
- Could Q9-14 (excl 12) be presented in a table as they all have the same options for reply? Just to tidy it up and make it quicker for respondents?

Hope this makes sense and is clear, but let me know if any queries.

Kind regards,

John

Appendix 7: Pilot survey email to students



BM

Brian Morrissey
Wed 18/01/2017 23:55
To: Brian Morrissey
Bcc: [redacted]

Reply all

Sent Items

You forwarded this message on 19/01/2017 11:31

Dear First Year Student,

I am seeking your assistance in collecting information about your participation with the blended learning approach to the Academic Integrity element of the module Learning and Innovation Skills, undertaken last semester.
I realise you are busy, but your response is of great value in compiling a robust study of first year students. This area is understudied and feedback from you can play an important role in guiding future decision and planning.
I will respect your academic schedule and anonymity by working the data though Survey Monkey. I estimate your commitment of time not to exceed five minutes.

Please click on, or cut and paste into URL, the survey monkey link below to proceed.

https://www.surveymonkey.com/r/GMITblendedlearning

Thanking you,

Brian Morrissey
Assistant Lecturer / Researcher
College of Tourism & Arts
Galway Campus
091-742300

Appendix 8: Text file of first year student email addresses

RE: Query re emails

[redacted]
Wed 18/01, 12:29
Brian Morrissey

Inbox

You replied on 18/01/2017 12:39.

BrianM.TXT
6 KB

Download

See attached the list of first year groups.

[redacted]

BM

Brian Morrissey

Reply all

Tue 31/01/2017 15:15

To: MORRISSEY, BRIAN <B.MORRISSEY5@nuigalway.ie>

Bcc: ACAPC_B07_Y1_LIST; ACONG_B07_Y1_LIST; ACONG_H08_Y1_LIST; BACCA_QGA_Y1_LIST; BACCG_H08_Y1_LIST; BAFMC_B07_Y1_LIST; BBENG_B07_Y1_LIST; BBENG_H08_Y1_LIST; BBISG_B07_Y1_LIST; BBISG_H08_Y1_LIST; BBUAC_H08_Y1_LIST; BBUAG_H08_Y1_LIST; BBUSC_B07_Y1_LIST; BBUSG_B07_Y1_LIST; BFAEC_S07_Y1_LIST; BFING_H08_Y1_LIST; BLHRC_S07_Y1_LIST; BMASC_S07_Y1_LIST; BMASG_B07_Y1_LIST; BMASG_H08_Y1_LIST; BMOPC_S07_Y1_LIST; BRUAG_B07_Y1_LIST; BRUAG_H08_Y1_LIST; BSVMC_S07_Y1_LIST; CCONC_S06_Y1_LIST; DDESG_B07_Y1_LIST; DDESG_H08_Y1_LIST; EARAG_H08_Y1_LIST; EARCG_B07_Y1_LIST; ECIAG_H08_Y1_LIST; ECIVG_B07_Y1_LIST; ECIVG_C06_Y1_LIST; ECOLG_B07_Y1_LIST; ECOMG_B07_Y1_LIST; ECOMG_C06_Y1_LIST; ECOMG_H08_Y1_LIST; EENAG_H08_Y1_LIST; EENEG_B07_Y1_LIST; EINAG_S07_Y1_LIST; EITNG_S07_Y1_LIST; EITWG_S07_Y1_LIST; EMEAG_H08_Y1_LIST; EMECG_B07_Y1_LIST; EQSCG_B07_Y1_LIST; EQSCG_C06_Y1_LIST; EQSCG_H08_Y1_LIST; ESAEG_B07_Y1_LIST; FTICG_F06_Y1_LIST; HCETC_B07_Y1_LIST; HCOED_XCB_Y1_LIST; HCOED_XGA_Y1_LIST; HFILG_H08_Y1_LIST; HHAGC_H08_Y1_LIST; HHERG_B07_Y1_LIST; HHERG_H08_Y1_LIST; HOEAC_H08_Y1_LIST; HOELC_B07_Y1_LIST; KBDIG_B07_Y1_LIST; KCDAG_H08_Y1_LIST; KCDMG_B07_Y1_LIST; KDMSC_H08_Y1_LIST; KITSC_C06_Y1_LIST; KSOAG_H08_Y1_LIST; KSOFG_B07_Y1_LIST; OCPCG_C06_Y1_LIST; OCPCG_N06_Y1_LIST; OCULG_B07_Y1_LIST; OCUPG_B07_Y1_LIST; OEVEG_B07_Y1_LIST; OHCAG_B07_Y1_LIST; OHCAG_H08_Y1_LIST; OHOPG_C06_Y1_LIST; OREMG_B07_Y1_LIST; OTOUG_B07_Y1_LIST; OTOUG_C06_Y1_LIST; SABBG_B07_Y1_LIST; SABBG_H08_Y1_LIST; SAFMG_B07_Y1_LIST; SAFMG_H08_Y1_LIST; SAGAG_H08_Y1_LIST; SAGRG_B07_Y1_LIST; SASAC_H08_Y1_LIST; SASSC_B07_Y1_LIST; SCARC_B07_Y1_LIST; SCARC_H08_Y1_LIST; SCHPG_B07_Y1_LIST; SCHPG_H08_Y1_LIST; SCMLG_H08_Y1_LIST; SCOMG_B07_Y1_LIST; SCOMG_H08_Y1_LIST; SEDUL_H08_Y1_LIST; SFDAL_H08_Y1_LIST; SFSCG_H08_Y1_LIST; SFUDL_B07_Y1_LIST; SFUWL_B07_Y1_LIST; SFWAL_H08_Y1_LIST; SGENC_H08_Y1_LIST; SMEDG_E06_Y1_LIST; SPHYG_B07_Y1_LIST; SPHYG_H08_Y1_LIST; SPQMG_S07_Y1_LIST; SPSYC_H08_Y1_LIST; SQRAG_S07_Y1_LIST; SQSMG_S07_Y1_LIST; SRMHE_BCB_Y1_LIST; SSESG_H08_Y1_LIST

Appendix 9: Actual correspondence re survey to first year student emails

From: Brian Morrissey
Sent: 31 January 2017 15:15
To: MORRISSEY, BRIAN
Subject: CALLING ALL FIRST YEAR STUDENTS

Dear First Year Student,

I am seeking your assistance in collecting information about your participation with the blended learning approach to the Academic Integrity element of the module Learning and Innovation Skills from last semester.

I realise you are busy, but your response is of great value in compiling a strong study of first year students. The feedback from you can play an important role in guiding future decisions on course development.

I will respect your academic schedule and anonymity by working the data through Survey Monkey (online survey software). The survey should take approximately 8-10 minutes to complete. I assure you of complete confidentiality – the research data will only be seen by me and by my NUI Galway supervisor and assessor.

There is a prize draw for participants of a 'One4all' Gift Voucher worth €50, and 25 meal vouchers for runners up.

Please click on the survey monkey link below to proceed:

https://www.surveymonkey.com/r/GMIT17

SurveyMonkey Powered Online Survey

www.surveymonkey.com

Web survey powered by SurveyMonkey.com. Create your own online survey now with SurveyMonkey's expert certified FREE templates.

Thanking you,
Brian Morrissey
Assistant Lecturer / Researcher
College of Tourism & Arts
Galway Campus
091-742300
brian.morrissey@gmit.ie

Appendix 10: Survey reminder to first year student emails

Survey Reminder: A BIG thank you to the First Year students who have completed the Survey thus far; it is currently open and will close this Friday the 10th February for those who still wish to complete it!

Brian Morrissey

Mon 06/02, 13:08

Dear First Year Student,

I am seeking your assistance in collecting information about your participation with the blended learning approach to the Academic Integrity element of the module Learning and Innovation Skills from last semester.

I realise you are busy, but your response is of great value in compiling a strong study of first year students. The feedback from you can play an important role in guiding future decisions on course development.
I will respect your academic schedule and anonymity by working the data through Survey Monkey (online survey software). The survey should take approximately 8-10 minutes to complete. I assure you of complete confidentiality – the research data will only be seen by me and by my NUI Galway supervisor and assessor.

There is a prize draw for participants of a 'One4all' Gift Voucher worth €50, and 25 meal vouchers for runners up.

Please click on the survey monkey link below to proceed:

https://www.surveymonkey.com/r/GMIT17

SurveyMonkey Powered Online Survey

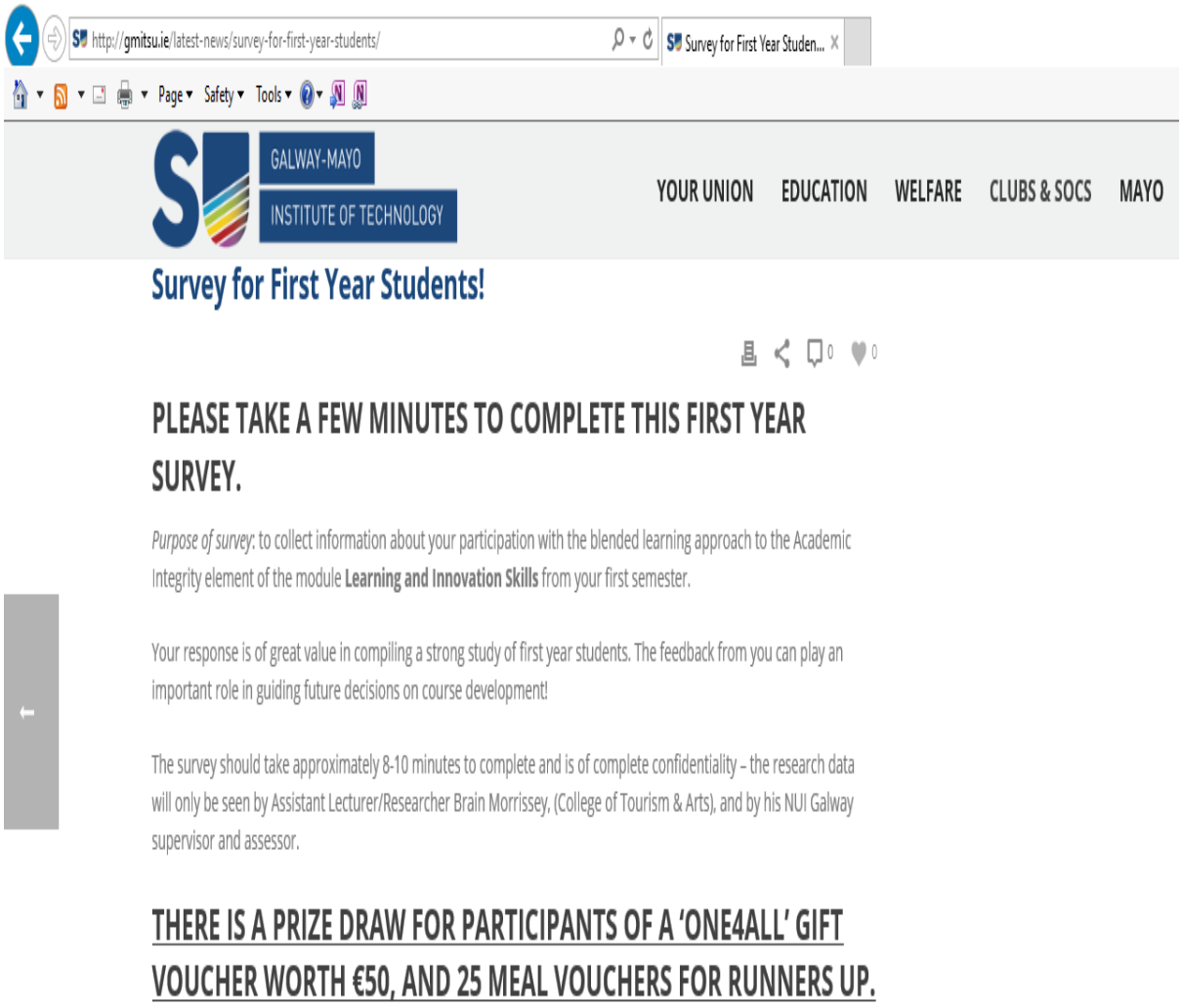
www.surveymonkey.com

Web survey powered by SurveyMonkey.com. Create your own online survey now with SurveyMonkey's expert certified FREE templates.

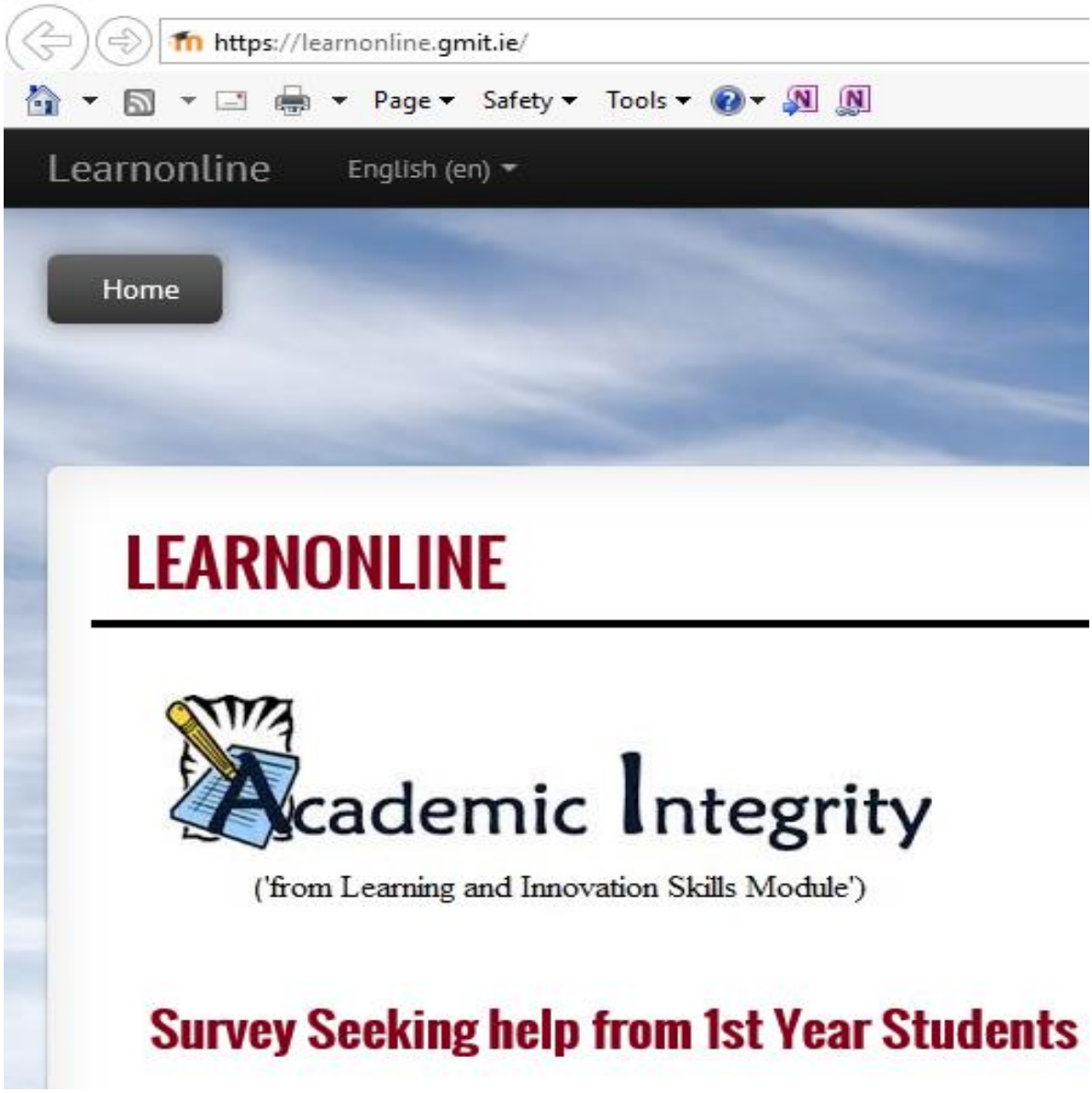
Thanking you,

Brian Morrissey
Assistant Lecturer / Researcher
College of Tourism & Arts
Galway Campus
091-742300
brian.morrissey@gmit.ie

Appendix 11: GMIT Student Union webpage



Appendix 12: GMIT VLE Moodle homepage



Appendix 13: Circulated posters in IT centre

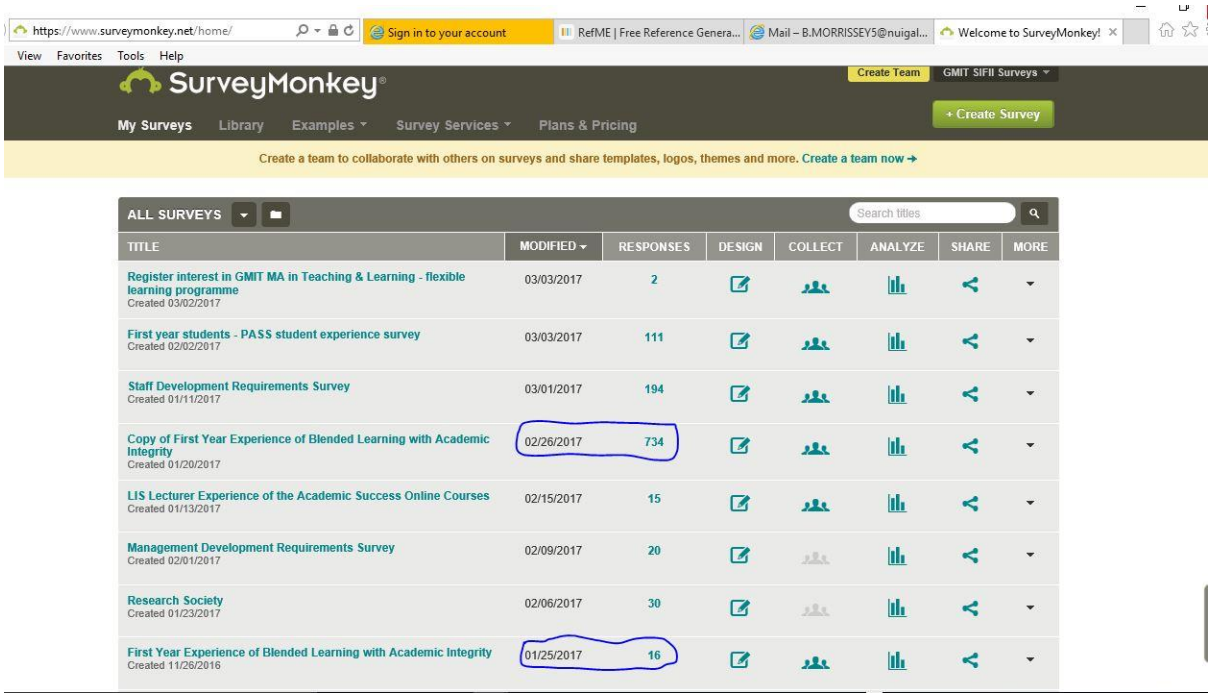
CALLING ALL FIRST YEAR STUDENTS!
REMINDER TO COMPLETE SURVEY:

from the Learning and Innovation skill module.

There is a prize draw for participants of a 'One4all' Gift Voucher worth €50, and 25 meal vouchers for runners up.

Access your college email for the link.

Appendix 14: Survey Monkey responses



Appendix 15: Consent Form from GMIT Registrar

GMIT
INSTITIÚID TEICNEOLAÍOCHTA NA GAILLIMHE-MAIGH EO
GALWAY-MAYO INSTITUTE OF TECHNOLOGY

Mr. Michael Hannon
Registrar
Galway Mayo Institute of Technology
Dublin Road
Galway.

Date: 25.11.2016

Dear Mr. Hannon,

I am currently completing an M.A. in Adult Learning and Development at NUI Galway. I will be assigned a project supervisor in due course, and will inform the Institute. The requirements of the Masters require the submission of a research project.

For my research project, my chosen research question is; 'What are students' perceptions of the potential impact of blended learning on their motivation to engage with first year undergraduate course material in a third level institute?' Study findings should demonstrate that blended learning improves the learning environment for our students, enhancing their engagement, increasing motivation, and enabling progression. From a Galway-Mayo Institute of Technology perspective, improvement in progression of students would systematically improve retention. I am seeking your consent to complete the research with student sample populations. I will respect their academic schedule by working the data collection outside of their academic timetable. I intend to issue a questionnaire in advance, via Survey Monkey. I estimate their commitment of time to take no longer than ten minutes per questionnaire. Their response is of great value and importance to me in researching this topic. Please find attached a letter of invite to be issued to the students concerned.
I assure you of complete confidentiality – the research data will only be seen by me and by my NUI Galway supervisor and assessor. To respect and protect student anonymity, all identifying information will be removed. If you have any questions or comments, you may call me at 091-742300, or email brian.morrissey@gmit.ie.

Please sign this form to show that you have read its contents and give consent to allow me conduct the research with the aforementioned students.

Signed: Research Permission: Michael Hannon — Michael Hannon, Registrar
Signed: Researcher: Brian Morrissey — Brian Morrissey

Campas na Gaillimhe
Bothar Átha Cliath
Gaillimh, Éire

Galway Campus
Dublin Road
Galway, Ireland
+353 91 753 161
info@gmit.ie

Campas Mhaigh Eo
Bothar Chathair na Mart
Caisleán an Bharraigh
Co Mhaigh Eo, Éire

Mayo Campus
Westport Road, Castlebar
Co. Mayo, Ireland
+353 94 902 5700
mayo@gmit.ie

Lárionad do na hEalaíona Cruthaitheacha & na Meán
Bothar Mhuire Mheá
Gaillimh, Éire

Centre for the Creative Arts & Media
Moorhead Road
Galway, Ireland
+353 91 770 661
info@gmit.ie

Campas Leitir Fraic
Leitir Fraic
Co na Gaillimhe, Éire

Letterfrack Campus
Letterfrack,
Co Galway, Ireland
+353 95 342 650
letterfrack@gmit.ie

Appendix 16: Informed participants

(EMAIL TITLE) CALLING ALL FIRST YEAR STUDENTS

Dear First Year Student,

I am seeking your assistance in collecting information about your participation with the blended learning approach to the Academic Integrity element of the module Learning and Innovation Skills from last semester.

I realise you are busy, but your response is of great value in compiling a strong study of first year students. The feedback from you can play an important role in guiding future decisions on course development.

I will respect your academic schedule and anonymity by working the data through Survey Monkey (online survey software). The survey should take approximately 8-10 minutes to complete. I assure you of complete confidentiality – the research data will only be seen by me and by my NUI Galway supervisor and assessor.

There is a prize draw for participants of a 'One4all' Gift Voucher worth €50, and 25 meal vouchers for runners up.

Please click on the survey monkey link to proceed.

Thanking you,

Brian Morrissey
Assistant Lecturer / Researcher
College of Tourism & Arts
Galway Campus
091-742300
brian.morrissey@gmit.ie

Appendix 17: Survey email to prize winners

Congratulations

BM Brian Morrissey
Thu 02/03, 11:35
Brian Morrissey; [redacted]

Reply all

Dear [redacted]

Thank you for taking part in the recent survey re first year experience with Blended Learning.

Delighted to inform you that out of 483 students that chose to give their details regarding the prizes on offer, you were randomly selected by excel software.

The €50 One4all Gift Card is available in room 614 (as you travel from the old reception, it is the first door on the second last corridor on your right hand side, before you cross the walkover towards the library).

Ask for Margaret, who is at the first desk counter, show your college ID and she will give you the voucher, which you sign for.

Once more thank you. In excess of 700 under students replied to the survey.
I wish you well in your studies.

Kind Regards,

Brian Morrissey

Congratulations

BM Brian Morrissey
Thu 02/03, 11:36
Brian Morrissey; [redacted]

Reply all

Dear Student,

Thank you for taking part in the recent survey re first year experience with Blended Learning.

Delighted to inform you that out of 483 students that chose to give their details regarding the prizes on offer, you were randomly selected by excel, as one of 25 student to receive a meal voucher for the training restaurants in the College of Tourism and Arts.

The Meal Voucher is available in room 614 (as you travel from the old reception, it is the first door on the second last corridor on your right hand side, before you cross the walkover towards the library).

Ask for Margaret, who is at the first desk counter, show your college ID, and she will give you the voucher for which you sign for.

Once more thank you. In excess of 700 students replied to the survey.
I wish you well in your studies.

Kind Regards,

Brian Morrissey

Appendix 18: Draw winners

First Year Survey: First year experience of blended Learning with Academic Integrity, as part of the Learning and Innovation Skills Module.
Draw winners.

		Name:	Signature:
1st Prize	€50 One 4 all	0.003333923	
2nd	Meal Voucher	0.011824691	
3rd	Meal Voucher	0.013252042	
4th	Meal Voucher	0.013693994	
5th	Meal Voucher	0.013709852	
6th	Meal Voucher	0.016644322	
7th	Meal Voucher	0.018255705	
8th	Meal Voucher	0.020033686	
9th	Meal Voucher	0.022888127	
10th	Meal Voucher	0.024188793	
11th	Meal Voucher	0.025431027	
12th	Meal Voucher	0.027417383	
13th	Meal Voucher	0.030005781	
14th	Meal Voucher	0.031266029	
15th	Meal Voucher	0.031438352	
16th	Meal Voucher	0.032059709	
17th	Meal Voucher	0.034649339	
18th	Meal Voucher	0.035087603	
19th	Meal Voucher	0.035407239	
20th	Meal Voucher	0.035473086	
21st	Meal Voucher	0.037062129	
22nd	Meal Voucher	0.040202661	
23rd	Meal Voucher	0.04172153	
24th	Meal Voucher	0.044407539	
25th	Meal Voucher	0.04555087	
26th	Meal Voucher	0.046708039	

Appendix 19 Age range numerical statistics and Age descriptive statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<18	18	3.5	3.5	3.5
	18-23	383	74.2	75.2	78.8
	24-30	45	8.7	8.8	87.6
	31-40	30	5.8	5.9	93.5
	41-50	18	3.5	3.5	97.1
	>50	15	2.9	2.9	100.0
	Total	509	98.6	100.0	
Missing	System	7	1.4		
Total		516	100.0		

N	Valid	509
	Missing	7
Mean		2.3949
Std. Error of Mean		.04422
Median		2.0000
Mode		2.00
Std. Deviation		.99766
Variance		.995
Skewness		2.155
Std. Error of Skewness		.108
Range		5.00
Minimum		1.00
Maximum		6.00

Appendix 20 Registered students for gender breakdown

Year 1 Students 2016/2017 as at 20th Feb 2017 Gender Breakdown

School	Program Description	Female	Male	Grand Total
College of Tourism and Arts	BA (Hons) Contemporary Art	23	2	25
	BA (Hons) in Design L8	21	12	33
	BA Film and Documentary L8	19	27	46
	BA Heritage Studies Level 7	2	6	8
	BA Heritage Studies Level 8	1	7	8
	BA Hotel & Cat Mgmt Level 8	8	15	23
	BA in Contemporary Art	21	7	28
	BA in Culinary Arts P/T L7	5	13	18
	BA in Design L7	13	7	20
	Bachelor of Bus in Retail Mgmt	16	24	40
	BB Culinary Arts Level 7	7	3	10
	BB Event Mngt & PR L7	41	14	55
	BB Hotel & Cat Mgmt Level 7	18	22	40
	BB Tourism Mgt (Lvl 7)	11	7	18
	Cert in Prof Cook (Total Immer	5	11	16
	HC Arts in Hotel & Hosp Oper	5	9	14
	HC in Culinary Arts Prof Chef	28	30	58
College of Tourism and Arts Total		**244**	**216**	**460**
Letterfrack	BSc (Hons) in Education	2	13	15
	BSc Furniture & Wood Tech L8	1	7	8
	BSC Furniture Design & Man L7		8	8
	BSc Furniture Design & Man L8	3	16	19
	BSc L7 Furn and Wood Tech - LF		3	3
Letterfrack Total		**6**	**47**	**53**
Mayo	BA (Hons) App Soc Care CB L8	11	4	15
	BA (Hons) Outdoor Education	5	4	9
	BA Applied Soc Studies (L7) CB	1		1
	BA in Acct & Fin Mgmt L7	7	4	11
	BA in Outdoor Edu & Leisure	5	16	21
	BA in Social Care (L7) CB	29	7	36
	Bachelor of Business (L7) CB	6	4	10
	Bachelor of Business (L8) CB	2	5	7
	FETAC Foundation Certificate	10	4	14
	General Nursing Level 8	23	4	27
	HC in Science in IT Support	2	15	17
	L6 Construction SPA CB		1	1
	Psychiatric Nursing Level 8	17	3	20
Mayo Total		**118**	**71**	**189**
School of Business	Bachelor of Bus in Finance L7	1	1	2
	Bachelor of Business (L8)	40	48	88
	Bachelor of Business (Level 7)	26	55	81
	BB (Hons) in Accounting L8	9	17	26
	BB in Finance and Economics L8	2	10	12
	BB in Marketing and Sales L7	5	3	8
	BB in Marketing and Sales L8	8	12	20
	BB with Entrepreneurship L7	4	7	11

	BB with Entrepreneurship L8	5	10	15
	BS Rural Ent & Agri-Bus L7	2	20	22
	BS Rural Ent & Agri-Bus L8	5	17	22
	BSc (Hons) Bus Info Systems L8	5	19	24
	BSc Business Info Systems L7	4	17	21
School of Business Total		**116**	**236**	**352**
School of Engineering	BEng Civil Eng (Level 8	3	40	43
	BEng Civil Engineering Level 7		10	10
	BEng Comp & Elec Eng Level 7	4	56	60
	BEng Elect Serv & Auto Eng L7		19	19
	BEng Energy Eng (Level 8)		17	17
	BEng Energy Engineering Lev 7		6	6
	BEng Mech Eng (L7)	1	32	33
	BSc (Hons) Architect Tech L8	3	15	18
	BSc Architectural Tech L7	2	15	17
	BSC Construction Mgmt Level 7		12	12
	BSC Construction Mgmt Level 8		31	31
	BSc Hons QS & Const Econ L8	1	36	37
	BSc QS & Construction Econ L7		19	19
	HC Civil Engineering L6		3	3
	HC in Construction Mgmt (L6)		5	5
	HC QS & Construction Econ L6		2	2
	Mechanical Engineering L8	5	73	78
School of Engineering Total		**19**	**391**	**410**
School of Science	BSc (Hons) Agri & Envi Mgmt L8	7	21	28
	BSc (Hons) Comp &Digital Media	6	10	16
	BSc (Hons) Sport & Exercise Sc	23	23	46
	BSc Agri & Envir Mgmt Level 7	5	27	32
	BSC App Bio & Biophar Sc L7	7	9	16
	BSC App Bio & Biophar Sc L8	44	18	62
	BSC App Freshwtr & Mar Bio L7	8	12	20
	BSC Bus Comp & Dig Media L7		2	2
	BSC Chemical & Phar Sc Level 7	2	3	5
	BSC Chemical & Phar Sc Level 8	5	5	10
	BSC Common Sc Level 7	12	12	24
	BSC Common Sc Level 8	17	10	27
	BSc Computing & Digital Media	5	28	33
	BSc Forensic Sci. &Analysis L8	12	14	26
	BSc In Applied Freshwater & Ma	16	22	38
	BSC in Comp in Software Dev L8	8	59	67
	BSC Medical Science Level 8	27	3	30
	BSC Phys & Instrument Level 8		1	1
	BSC Phys & Instrumentation L7	1		1
	BSC Software Development L7	1	22	23
	Cert in Medical Device L6	3	6	9
	Cert in Science in Qual Mgmt	2		2
	SPA Cert in Qual & Reg Affairs	1	1	2
	SPA Cert in Qual Stat & Mgmt	1		1
School of Science Total		**213**	**308**	**521**
Grand Total		**716**	**1269**	**1985**

Appendix 21a Gender numerical statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	233	45.2	45.7	45.7
	Female	274	53.1	53.7	99.4
	Would rather not disclose	3	.6	.6	100.0
	Total	510	98.8	100.0	
Missing	System	6	1.2		
Total		516	100.0		

Appendix 21b Gender descriptive statistics

N	Valid	510
	Missing	6
Mean		1.5490
Std. Error of Mean		.02257
Median		2.0000
Mode		2.00
Std. Deviation		.50978
Variance		.260
Skewness		-.063
Std. Error of Skewness		.108
Range		2.00
Minimum		1.00
Maximum		3.00

Appendix 22 School student response breakdown

School or Campus	Registered First Year Student Numbers	Actual Respondents	% Return
Business	312	95	30%
Engineering	396	70	18%
Letterfrack	51	18	33%
Mayo	145	75	52%
Science	467	159	34%
Tourism & Arts	393	90	22%
Total	**1764**	**507**	

Appendix 23 Question 6 Age breakdown of understanding of blended learning Under 23 and 24 plus understanding of Blended Learning

Age Profile	Yes	No	Not Sure	Total
<18	7	3	8	18
18-23	137	132	114	383
Total <18 to 23	144	135	122	401
Percentage of Total	36	34	30	100
	Yes	No	Not Sure	Total
24-30	26	8	11	45
31-40	19	6	5	30
41-50	10	1	7	18
>50	9	2	4	15
Total 24 plus	64	17	27	108
Percentage of Total	59	16	25	100

Appendix 24 Age percentage breakdown of question 6

		Do you understand the term 'Blended Learning'?			Total
		Yes	No	Not sure	
What is your gender?	Male	87	83	63	233
		37%	36%	27%	100%
	Female	119	69	86	274
		43%	25%	31%	100%
	Would rather not disclose	2	0	1	3
Total		208	152	150	510

Appendix 25 Learning style descriptive statistics

		Visual Learner	Auditory Learner	Reading/Writing Learner	Kinesthetic Learner
N	Valid	423	452	468	496
	Missing	93	64	48	20
Mean		2.7139	2.1372	2.3397	3.0524
Std. Error of Mean		.04456	.04737	.05120	.05124
Median		3.0000	2.0000	2.0000	4.0000
Mode		3.00	2.00	1.00	4.00
Std. Deviation		.91640	1.00718	1.10767	1.14118
Variance		.840	1.014	1.227	1.302
Skewness		-.294	.468	.200	-.766
Std. Error of Skewness		.119	.115	.113	.110
Range		3.00	3.00	3.00	3.00
Minimum		1.00	1.00	1.00	1.00
Maximum		4.00	4.00	4.00	4.00

Appendix 26 Visual learner frequency statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	48	9.3	11.3	11.3
	2	111	21.5	26.2	37.6
	3	178	34.5	42.1	79.7
	4	86	16.7	20.3	100.0
	Total	423	82.0	100.0	
Missing	System	93	18.0		
Total		516	100.0		

Appendix 27 Kinesthectic learner frequency statistics

Kinesthetic Learner frequency rankings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	81	15.7	16.3	16.3
	2	67	13.0	13.5	29.8
	3	93	18.0	18.8	48.6
	4	255	49.4	51.4	100.0
	Total	496	96.1	100.0	
Missing	System	20	3.9		
Total		516	100.0		

Appendix 28 Question 7 Levene's test for equality of variances

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Visual Learner (You learn by seeing, observing, being shown examples, imagining and seeing in mind's eye)	Equal variances assumed	1.798	.181	2.298	416	.022	.20491	.08917	.02963	.38019
	Equal variances not assumed			2.301	411.403	.022	.20491	.08906	.02983	.37998
Auditory Learner (Learning by listening, hearing, speaking, and repeating verbally, e.g. Podcast)	Equal variances assumed	2.448	.118	-.297	445	.767	-.02849	.09588	-.21692	.15995
	Equal variances not assumed			-.299	439.342	.765	-.02849	.09526	-.21570	.15873
Reading/Writing Learner (The read/write learner has a strong preference for learning through Reading & Writing, e.g. notes, essays, manuals)	Equal variances assumed	.217	.641	-2.721	462	.007	-.27918	.10261	-.48082	-.07755
	Equal variances not assumed			-2.720	451.613	.007	-.27918	.10264	-.48089	-.07747
Kinesthetic Learner (Active learner; learning by doing, experiencing, making, moving, getting involved, having a go)	Equal variances assumed	.006	.938	.333	489	.739	.03444	.10341	-.16875	.23762
	Equal variances not assumed			.333	472.964	.739	.03444	.10341	-.16876	.23763

Appendix 29 Learning object descriptive statistics

		Videos	Animations	Written Text	Quizzes
N	Valid	431	459	477	494
	Missing	85	57	39	22
Mean		2.7123	2.3246	2.2621	2.7794
Median		3.0000	2.0000	2.0000	3.0000
Mode		4.00	2.00	1.00	4.00
Std. Deviation		1.07002	.98308	1.14150	1.13308
Variance		1.145	.966	1.303	1.284
Skewness		-.230	.171	.282	-.348
Std. Error of Skewness		.118	.114	.112	.110
Range		3.00	3.00	3.00	3.00
Minimum		1.00	1.00	1.00	1.00
Maximum		4.00	4.00	4.00	4.00

Appendix 30 Question 8 Levene's test for equality of variances

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Videos	Equal variances assumed	2.983	.085	.631	424	.528	.06588	.10437	-.13928	.27103
	Equal variances not assumed			.626	392.205	.532	.06588	.10522	-.14098	.27274
Animations	Equal variances assumed	.000	.985	-.303	453	.762	-.02801	.09238	-.20955	.15353
	Equal variances not assumed			-.303	442.260	.762	-.02801	.09245	-.20970	.15368
Written Text	Equal variances assumed	1.399	.238	-.663	470	.508	-.06977	.10529	-.27667	.13714
	Equal variances not assumed			-.664	467.568	.507	-.06977	.10500	-.27610	.13657
Quizzes	Equal variances assumed	3.856	.050	.675	488	.500	.06955	.10308	-.13298	.27208
	Equal variances not assumed			.679	482.783	.498	.06955	.10247	-.13180	.27090

Appendix 31 Perception of online set-up statistics

		User-friendliness	Design of online course	Technical configuration	Navigation
N	Valid	509	509	508	504
	Missing	7	7	8	12
Mean		4.1906	3.9941	4.0118	3.9643
Median		4.0000	4.0000	4.0000	4.0000
Mode		4.00	4.00	4.00	4.00
Std. Deviation		.81631	.86601	.84724	.92390
Variance		.666	.750	.718	.854
Skewness		-1.432	-1.175	-1.038	-.992
Std. Error of Skewness		.108	.108	.108	.109
Range		4.00	4.00	4.00	4.00
Minimum		1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00

Appendix 32 Question 9 Levene's test for equality of variances

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
'User-friendliness (i.e. easy access to the resources in the Moodle Academic Integrity element of the module) is an important factor for engaging the learner'.	Equal variances assumed	.013	.911	-1.611	502	.108	-.11765	.07305	-.26116	.02586
	Equal variances not assumed			-1.599	472.835	.110	-.11765	.07357	-.26221	.02691
'The design of online courses is a key factor for engaging the learner'.	Equal variances assumed	.254	.614	-.839	502	.402	-.06516	.07770	-.21781	.08749
	Equal variances not assumed			-.837	485.264	.403	-.06516	.07786	-.21815	.08782
'Technical configuration (i.e. the layout, look and feel of the resources in the Moodle Academic Integrity element of the module) is important for engaging the learner'.	Equal variances assumed	8.800	.003	-1.286	501	.199	-.09778	.07602	-.24715	.05158
	Equal variances not assumed			-1.266	446.329	.206	-.09778	.07721	-.24953	.05396
'Navigation of the Moodle Academic Integrity element of the module is easy (i.e. move from one task to the next)'.	Equal variances assumed	8.613	.003	-1.279	497	.201	-.10652	.08327	-.27012	.05709
	Equal variances not assumed			-1.267	460.557	.206	-.10652	.08408	-.27175	.05871

Appendix 33 Blended learning media statistics

		Moodle	Classroom	Library Workshops
N	Valid	503	504	502
	Missing	13	12	14
Mean		3.8767	3.7540	2.7988
Median		4.0000	4.0000	3.0000
Mode		4.00	4.00	3.00
Std. Deviation		1.03750	1.06964	1.16561
Variance		1.076	1.144	1.359
Range		4.00	4.00	4.00
Minimum		1.00	1.00	1.00
Maximum		5.00	5.00	5.00

Appendix 34 Moodle rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	2.9	3.0	3.0
	2	40	7.8	8.0	10.9
	3	95	18.4	18.9	29.8
	4	195	37.8	38.8	68.6
	5	158	30.6	31.4	100.0
	Total	503	97.5	100.0	
Missing	System	13	2.5		
Total		516	100.0		

Appendix 35 Classroom rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	3.7	3.8	3.8
	2	44	8.5	8.7	12.5
	3	119	23.1	23.6	36.1
	4	182	35.3	36.1	72.2
	5	140	27.1	27.8	100.0
	Total	504	97.7	100.0	
Missing	System	12	2.3		
Total		516	100.0		

Appendix 36 Library workshops rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	73	14.1	14.5	14.5
	2	135	26.2	26.9	41.4
	3	161	31.2	32.1	73.5
	4	86	16.7	17.1	90.6
	5	47	9.1	9.4	100.0
	Total	502	97.3	100.0	
Missing	System	14	2.7		
Total		516	100.0		

Appendix 37 Question 10 Levene's test for equality of variances

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Moodle	Equal variances assumed	1.523	.218	.112	496	.911	.01053	.09365	-.17348	.19453
	Equal variances not assumed			.112	470.999	.911	.01053	.09414	-.17446	.19551
Classroom	Equal variances assumed	.745	.389	.794	497	.428	.07624	.09604	-.11244	.26493
	Equal variances not assumed			.797	490.150	.426	.07624	.09566	-.11172	.26420
Library Workshops	Equal variances assumed	.363	.547	.476	495	.634	.04999	.10508	-.15647	.25645
	Equal variances not assumed			.477	487.168	.633	.04999	.10474	-.15581	.25579

Appendix 38 Question 11 frequency statistics

Frequency Statistics: Please indicate to what extent you agree/disagree with the statement: 'The blended learning approach to teaching motivated me to engage with the content in the Moodle Academic Integrity element of the module'.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	1.9	2.0	2.0
	Disagree	31	6.0	6.1	8.1
	Undecided	180	34.9	35.6	43.8
	Agree	231	44.8	45.7	89.5
	Strongly Agree	53	10.3	10.5	100.0
	Total	505	97.9	100.0	
Missing	System	11	2.1		
Total		516	100.0		

Appendix 39 Question 11 descriptive statistics

Descriptive Statistics: Please indicate to what extent you agree/disagree with the statement: 'The blended learning approach to teaching motivated me to engage with the content in the Moodle Academic Integrity element of the module'.

N	Valid	505
	Missing	11
Mean		3.5663
Median		4.0000
Mode		4.00
Std. Deviation		.83574
Variance		.698
Range		4.00
Minimum		1.00
Maximum		5.00

Appendix 40 Question 11 Levene's test for equality of variances

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Please indicate to what extent you agree/disagree with the statement: 'The blended learning approach to teaching motivated me to engage with the content in the Moodle Academic Integrity element of the module'.	Equal variances assumed	2.431	.120	-.717	498	.474	-.05386	.07515	-.20151	.09379
	Equal variances not assumed			-.723	495.561	.470	-.05386	.07445	-.20013	.09242

Appendix 41 Question 12 frequency statistics

How often did you avail of the multiple attempts to achieve a higher grade on the Academic Integrity online quiz?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	109	21.1	21.6	21.6
	Once	69	13.4	13.7	35.2
	Twice	141	27.3	27.9	63.2
	Three times	73	14.1	14.5	77.6
	Greater than three	113	21.9	22.4	100.0
	Total	505	97.9	100.0	
Missing	System	11	2.1		
Total		516	100.0		

Appendix 42 Question 12 Levene's test for equality of variances

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How often did you avail of the multiple attempts to achieve a higher grade on the Academic Integrity online quiz?	Equal variances assumed	6.435	.011	.903	498	.367	.11618	.12872	-.13672	.36908
	Equal variances not assumed			.911	496.318	.363	.11618	.12753	-.13439	.36675

Appendix 43 Question 13 frequency statistics

Please specify how often your programme of study uses a blended learning approach to teaching?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	13	2.5	2.6	2.6
	Rarely	67	13.0	13.3	15.8
	Every once in a while	135	26.2	26.7	42.6
	Sometimes	193	37.4	38.2	80.8
	Almost always	97	18.8	19.2	100.0
	Total	505	97.9	100.0	
Missing	System	11	2.1		
Total		516	100.0		

Appendix 44 Question 14 Levene's independent test on equality of variances

(1 of 2 pages)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Self-motivator	Equal variances assumed	.437	.509	-1.154	499	.249	-.11470	.09942	-.31004	.08065
	Equal variances not assumed			-1.151	481.371	.250	-.11470	.09964	-.31049	.08110
Teacher	Equal variances assumed	.199	.656	-.557	497	.578	-.04842	.08700	-.21937	.12252
	Equal variances not assumed			-.557	483.731	.578	-.04842	.08695	-.21926	.12242
Peers (friends and colleagues)	Equal variances assumed	2.960	.086	-2.397	496	.017	-.24909	.10393	-.45329	-.04488
	Equal variances not assumed			-2.377	462.332	.018	-.24909	.10479	-.45502	-.04315
Family	Equal variances assumed	.041	.839	-.334	497	.738	-.03811	.11398	-.26206	.18584

	Equal variances not assumed			-.335	486.034	.738	-.03811	.11376	-.26163	.18540
Digital resources	Equal variances assumed	.014	.905	.509	486	.611	.04897	.09613	-.13990	.23785
	Equal variances not assumed			.510	473.626	.611	.04897	.09610	-.13987	.23781
Goal achievement	Equal variances assumed	.654	.419	-.489	496	.625	-.04542	.09296	-.22807	.13723
	Equal variances not assumed			-.488	481.253	.626	-.04542	.09300	-.22816	.13733
Formal assessment	Equal variances assumed	3.475	.063	-.462	498	.644	-.04443	.09611	-.23326	.14441
	Equal variances not assumed			-.466	495.838	.641	-.04443	.09529	-.23164	.14279
Informal assessment	Equal variances assumed	1.380	.241	-2.215	498	.027	-.21136	.09542	-.39884	-.02389
	Equal variances not assumed			-2.222	488.205	.027	-.21136	.09512	-.39827	-.02446

Appendix 45 Question 14 age crosstabulation on Teacher

Age Crosstab on Teacher as an Influence

Count

		Teacher					
		1	2	3	4	5	Total
What is your age range?	<18	0	1	12	2	2	17
	18-23	12	40	139	136	53	380
	24-30	0	6	16	14	9	45
	31-40	0	1	6	13	9	29
	41-50	0	1	5	6	6	18
	>50	0	1	2	4	5	12
Total		12	50	180	175	84	501

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.486[a]	20	.038
Likelihood Ratio	33.498	20	.030
Linear-by-Linear Association	16.090	1	.000
N of Valid Cases	501		

a. 16 cells (53.3%) have expected count less than 5. The minimum expected count is .29.

Appendix 46 Question 14 age crosstabulation on Peers

Crosstab

Count

		Peers (friends and colleagues)					
		1	2	3	4	5	Total
What is your age range?	<18	2	1	3	6	5	17
	18-23	18	63	98	126	75	380
	24-30	7	12	19	6	1	45
	31-40	3	7	7	10	3	30
	41-50	2	2	3	7	1	15
	>50	3	1	5	1	3	13
Total		35	86	135	156	88	500

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.185[a]	20	.001
Likelihood Ratio	46.851	20	.001
Linear-by-Linear Association	10.181	1	.001
N of Valid Cases	500		

a. 16 cells (53.3%) have expected count less than 5. The minimum expected count is .91.

Appendix 47 Question 15 qualitative commentaries

Q15: Authentic student commentaries on other barriers to online engagement (Pages 1 of 2)

Number	Response Date	Other (please specify)
1	Feb 8, 2017 11:57 a.m.	Lazinesss
2	Feb 7, 2017 7:05 p.m.	i dont think any of this is applicable for our course
3	Feb 7, 2017 2:11 p.m.	some lectures dont put their stuff on module , this is so frustrating and annoying
4	Feb 7, 2017 11:20 a.m.	Lack of affordable student housing
5	Feb 6, 2017 9:32 p.m.	Technical faults
6	Feb 6, 2017 6:52 p.m.	Dyslexia
7	Feb 6, 2017 3:06 p.m.	Certain phones dont make it easy to access the material on moodle
8	Feb 6, 2017 2:32 p.m.	none
9	Feb 5, 2017 8:06 p.m.	None
10	Feb 5, 2017 4:29 p.m.	-
11	Feb 4, 2017 9:35 p.m.	None
12	Feb 4, 2017 9:00 p.m.	The notes from some lecturers are poor
13	Feb 4, 2017 8:32 p.m.	none
14	Feb 4, 2017 8:12 p.m.	procastination
15	Feb 4, 2017 8:01 p.m.	none
16	Feb 4, 2017 5:12 p.m.	Difficult to find sometimes
17	Feb 4, 2017 3:22 p.m.	None
18	Feb 4, 2017 3:07 p.m.	No time available to do so.
19	Feb 4, 2017 2:38 p.m.	Slow college computers impede class work.
20	Feb 4, 2017 12:15 p.m.	irelevant course IT Skills, Project management etc....
21	Feb 4, 2017 9:58 a.m.	none
22	Feb 4, 2017 12:28 a.m.	laziness
23	Feb 3, 2017 9:05 p.m.	Non
24	Feb 3, 2017 4:27 p.m.	skills mostly
25	Feb 3, 2017 11:38 a.m.	Most of it not posted online
26	Feb 3, 2017 10:20 a.m.	NONE
27	Feb 3, 2017 10:06 a.m.	none
28	Feb 2, 2017 11:42 p.m.	None
29	Feb 2, 2017 8:57 p.m.	None
30	Feb 2, 2017 7:29 p.m.	n/a
31	Feb 2, 2017 4:30 p.m.	None
32	Feb 2, 2017 3:52 p.m.	accomodation
33	Feb 2, 2017 3:37 p.m.	none
34	Feb 2, 2017 3:11 p.m.	Lecturers that refuse to use moodle!
35	Feb 2, 2017 2:42 p.m.	Too tired after being in lectures all day
36	Feb 2, 2017 12:38 p.m.	No idea
37	Feb 2, 2017 1:58 a.m.	I never really go on my moodle account
38	Feb 2, 2017 12:19 a.m.	no barriers
39	Feb 1, 2017 11:29 p.m.	work and family
40	Feb 1, 2017 8:57 p.m.	Time
41	Feb 1, 2017 8:17 p.m.	work
42	Feb 1, 2017 7:33 p.m.	VERY POOR BROADBAND
43	Feb 1, 2017 6:45 p.m.	none
44	Feb 1, 2017 6:41 p.m.	None
45	Feb 1, 2017 6:37 p.m.	Lecturs not on the same hyme steet as lecturs on line very out dated
46	Feb 1, 2017 6:04 p.m.	n/a
47	Feb 1, 2017 5:56 p.m.	time

48	Feb 1, 2017 5:38 p.m.	Lack of it
49	Feb 1, 2017 5:35 p.m.	acoomodation
50	Feb 1, 2017 5:20 p.m.	None
51	Feb 1, 2017 5:03 p.m.	none
52	Feb 1, 2017 4:16 p.m.	lazyness
53	Feb 1, 2017 3:57 p.m.	Teachers having nothing on it
54	Feb 1, 2017 3:37 p.m.	internet is not cheap
55	Feb 1, 2017 3:32 p.m.	none
56	Feb 1, 2017 3:10 p.m.	No barriers
57	Feb 1, 2017 2:43 p.m.	Lack of laptop at home and fees issues.
58	Feb 1, 2017 2:37 p.m.	time
59	Feb 1, 2017 2:02 p.m.	None maybe motivation
60	Feb 1, 2017 1:59 p.m.	N/A
61	Feb 1, 2017 1:17 p.m.	None of the above
62	Feb 1, 2017 1:13 p.m.	Lack of personal drive. I prefer face-to-face.
63	Feb 1, 2017 1:03 p.m.	No Barriers
64	Feb 1, 2017 12:58 p.m.	NA
65	Feb 1, 2017 12:26 p.m.	Time - management
66	Feb 1, 2017 11:52 a.m.	N/A
67	Jan 31, 2017 10:52 p.m.	Time.
68	Jan 31, 2017 6:51 p.m.	I feel that there are no present barriers.
69	Jan 31, 2017 6:25 p.m.	None
70	Jan 31, 2017 4:15 p.m.	None
71	Jan 31, 2017 4:12 p.m.	no barriers
72	Jan 31, 2017 3:52 p.m.	I don't own a laptop so it restricts my work to college opening times
73	Jan 31, 2017 3:39 p.m.	Nothing
74	Jan 31, 2017 3:36 p.m.	Time
75	Jan 31, 2017 3:30 p.m.	None

Appendix 48 Question 16 learning statements

Statistics

		'I learn best when I tutor my fellow students'.	'I learn best in an environment where students work together'.	'I learn best when I take responsibility for my own learning'.	'I learn best by memorising data'.	'Self confidence plays an important role on my motivation to engage with learning'.	'I realise that my level of effort to learning impacts on my level of performance.'
N	Valid	507	504	508	507	508	507
	Missing	9	12	8	9	8	9
Mean		3.2367	3.7242	3.9902	3.1085	4.0787	4.2781
Median		3.0000	4.0000	4.0000	3.0000	4.0000	4.0000
Mode		4.00	4.00	4.00	4.00	4.00	5.00
Std. Deviation		1.06285	1.00956	.89150	1.15330	.83187	.78999
Variance		1.130	1.019	.795	1.330	.692	.624

Appendix 49 Question 16 Levene's test for equality of variances - intrinsic

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
'I learn best when I tutor my fellow students'.	Equal variances assumed	.129	.720	.835	500	.404	.07973	.09543	-.10776	.26723
	Equal variances not assumed			.836	487.182	.404	.07973	.09538	-.10768	.26714
'I learn best in an environment where students work together'.	Equal variances assumed	3.237	.073	-.375	497	.708	-.03398	.09066	-.21210	.14414
	Equal variances not assumed			-.372	466.109	.710	-.03398	.09136	-.21350	.14554
'I learn best when I take responsibility for my own learning'.	Equal variances assumed	.600	.439	-.017	501	.986	-.00137	.07997	-.15849	.15575
	Equal variances not assumed			-.017	494.230	.986	-.00137	.07960	-.15776	.15502
'I learn best by memorising data'.	Equal variances assumed	.094	.759	-.054	500	.957	-.00553	.10314	-.20817	.19712
	Equal variances not assumed			-.054	487.509	.957	-.00553	.10314	-.20818	.19713
'Self-confidence plays an important role on my motivation to engage with learning'.	Equal variances assumed	.212	.645	-.791	501	.429	-.05909	.07467	-.20579	.08762
	Equal variances not assumed			-.790	482.478	.430	-.05909	.07482	-.20611	.08793
'I realise that my level of effort to learning impacts on my level of performance.'	Equal variances assumed	.344	.558	-1.013	500	.311	-.07188	.07095	-.21127	.06751
	Equal variances not assumed			-1.006	469.620	.315	-.07188	.07144	-.21227	.06850

Appendix 50 Question 16 Statistics

Statistics

		'I will engage with course content if I believe there will be a related exam question'.	'If I cannot understand something I am studying for class, I go on Moodle to source information'.	'I will engage with course content if I believe I will learn something worthwhile'.	'Blended Learning has helped focus my learning'.	'I engaged with information from lecture notes, Moodle, and library when studying Academic Integrity'.	'My learning is dependent on digital engagement'.
N	Valid	506	509	508	501	507	504
	Missing	10	7	8	15	9	12
Mean		3.7846	3.6444	4.1299	3.4691	3.8560	3.1210
Median		4.0000	4.0000	4.0000	3.0000	4.0000	3.0000
Mode		4.00	4.00	4.00	3.00	4.00	3.00
Std. Deviation		1.03553	1.04866	.87641	.87266	.91160	1.06416
Variance		1.072	1.100	.768	.762	.831	1.132

Appendix 51 Question 16 Levene's test for equality of variance - extrinsic

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
'I will engage with course content if I believe there will be a related exam question'.	Equal variances assumed	.627	.429	-.342	499	.732	-.03183	.09302	-.21459	.15093
	Equal variances not assumed			-.342	484.166	.733	-.03183	.09310	-.21476	.15110
'If I cannot understand something I am studying for class, I go on Moodle to source information'.	Equal variances assumed	.064	.800	.011	502	.991	.00100	.09365	-.18299	.18499
	Equal variances not assumed			.011	488.158	.991	.00100	.09365	-.18301	.18501
'I will engage with course content if I believe I will learn something worthwhile'.	Equal variances assumed	.238	.626	-.943	501	.346	-.07422	.07868	-.22880	.08037
	Equal variances not assumed			-.938	473.701	.349	-.07422	.07915	-.22974	.08130
'Blended Learning has helped focus my learning'.	Equal variances assumed	.775	.379	-.597	494	.550	-.04708	.07881	-.20192	.10775
	Equal variances not assumed			-.601	486.483	.548	-.04708	.07835	-.20103	.10686
'I engaged with information from lecture notes, Moodle, and library when studying Academic Integrity'.	Equal variances assumed	1.966	.162	-1.734	500	.084	-.14153	.08164	-.30193	.01887
	Equal variances not assumed			-1.731	482.983	.084	-.14153	.08177	-.30220	.01915
'My learning is dependent on digital engagement'.	Equal variances assumed	.052	.819	-.403	497	.687	-.03865	.09581	-.22688	.14959
	Equal variances not assumed			-.402	477.921	.688	-.03865	.09603	-.22733	.15004

Appendix 52 Question 17 qualitative themes to students
Student recommendations to students

Code:	Student to student recommendations:	Tally:
1	Attendance; go to class, punctuality	22
2	Study groups/ seek help	11
3	Goal Setting	34
4	Learn notes	8
5	Self-regulated learning	11
6	Reap what you sow	10
7	Use Moodle	15
8	Use Library	7
9	Use Classroom	7
10	Learning is difficult	2
11	Update IT skills	1

Appendix 53 Question 17 Student recommendations to GMIT

Coding:	Students reccommendations for GMIT:	Tally:
a	More notes on Moodle	16
b	Minimise financial constraints	1
c	More focus on weight in CA	19
d	Organise Library rooms for peer learning	1
e	More Quizzes	34
f	Problem Based Learning	12
g	Collaborative Based Learning	21
h	More focused teachers/ engaging material/ relevance/ feedback/ positioning on Moodle	37
i	One on one formal feedback/counselling	3
j	Negative Groups	2
k	Investment to improve computer facilities/ IT skills/ WiFi/ upkeep Moodle/ Better chairs/ GMIT Module App	9
l	Simplify online library page	1
m	Books never used	1
n	smaller classes	2
o	Remove all non-essential modules	1
p	Investment in local public libraries for WiFi to access Moodle	3
q	Field Trips	5
r	English language support	1
s	more online video tutorials	13
t	Exam questions with sample answers explained	4
u	Explain to Secondary School Students (Moved to 'k')	0
v	Avoid having to login twice to get to learnonline (Moved to 'k')	0
w	Lectures later in the day	2
x	Social Media	1
y	Too many gaps in timetable	1
z	GMIT Module App (Moved to 'k')	0
	Please note that commenatries not repeated were not included in the Bar-chart i.e. '1' or less	
	Similar commentaries were grouped; for example IT.	
		190

Appendix 54 Question 17 qualitative comment

342 Jan 31, 2017 3:32 p.m. ‘Make sure the lecturers make it very clear where the topics covered in class, are on Moodle. Moodle is not easy to find your way around and some students may need some extra help’.

Appendix 55 Question 17 qualitative comment

147	Feb 1, 2017 10:26 p.m.	‘I find quizzes to be quite effective with learning course material; forces you to engage and find the answers. Include more for each module maybe?’

Appendix 56 Question 17 qualitative comment

139	Feb 2, 2017 1:58 a.m.	‘Maybe put up videos of how to do some questions when you are at home practicing and you forget how to do them and you need guidance from the lecturer’.
160	Feb 1, 2017 8:45 p.m.	‘Research more videos on topics as I found they helped me understand more what I was learning!’
171	Feb 1, 2017 7:33 p.m.	‘ESPECIALLY FOR FOUNDATION LEVEL I FEEL IT IMPORTANT THAT THE TUTOR PITCH THE WORK AT THE APPROPRIATE LEVEL’.

Appendix 57 Question 14 School crosstabulation with Digital resources

What School or Campus are you on? * Digital Resources

Crosstab

Count

		Digital resources					
		1	2	3	4	5	Total
What School or Campus are you on?	Business	1	12	31	34	5	83
	Engineering	7	10	21	22	6	66
	Letterfrack	2	1	8	3	4	18
	Mayo	3	12	31	16	8	70
	Science & Computing	8	24	40	54	30	156
	Tourism & Arts	6	13	25	35	8	87
	Mountbellew	0	1	5	0	2	8
Total		27	73	161	164	63	488

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.235[a]	24	.026
Likelihood Ratio	42.979	24	.010
Linear-by-Linear Association	.649	1	.420
N of Valid Cases	488		

a. 12 cells (34.3%) have expected count less than 5. The minimum expected count is .44.

Appendix 58 Question 14 School crosstabulation with Formal assessment

What School or Campus are you on? * Formal assessment

Crosstab

Count

		Formal assessment					
		1	2	3	4	5	Total
What School or Campus are you on?	Business	2	11	32	24	16	85
	Engineering	2	7	22	28	9	68
	Letterfrack	2	1	6	7	2	18
	Mayo	4	11	17	23	18	73
	Science & Computing	6	10	28	60	55	159
	Tourism & Arts	3	10	22	35	18	88
	Mountbellew	1	0	2	3	3	9
Total		20	50	129	180	121	500

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.901[a]	24	.035
Likelihood Ratio	38.005	24	.035
Linear-by-Linear Association	6.550	1	.010
N of Valid Cases	500		

a. 13 cells (37.1%) have expected count less than 5. The minimum expected count is .36.

Appendix 59 Question 14 School crosstabulation with Informal assessment

What School or Campus are you on? * Informal assessment

Crosstab

Count

		Informal assessment					
		1	2	3	4	5	Total
What School or Campus are you on?	Business	1	21	28	27	8	85
	Engineering	5	5	24	26	8	68
	Letterfrack	3	1	5	4	5	18
	Mayo	4	16	18	24	12	74
	Science & Computing	4	24	35	62	33	158
	Tourism & Arts	4	11	28	34	11	88
	Mountbellew	1	0	4	2	2	9
Total		22	78	142	179	79	500

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.541[a]	24	.019
Likelihood Ratio	40.287	24	.020
Linear-by-Linear Association	3.564	1	.059
N of Valid Cases	500		

a. 12 cells (34.3%) have expected count less than 5. The minimum expected count is .40.

Appendix 60 Question 15 qualitative comment

62 Feb 1, 2017 1:13 p.m. ‘Lack of personal drive. I prefer face-to-face’.

Appendix 61: Question 15 qualitative comments

Please note: extracted as typed for Authenticity. Spelling errors not corrected.

35	Feb 2, 2017 2:42 p.m.	Too tired after being in lectures all day
36	Feb 2, 2017 12:38 p.m.	No idea
37	Feb 2, 2017 1:58 a.m.	I never really go on my moodle account
38	Feb 2, 2017 12:19 a.m.	no barriers
39	Feb 1, 2017 11:29 p.m.	work and family
40	Feb 1, 2017 8:57 p.m.	Time
41	Feb 1, 2017 8:17 p.m.	Work
42	Feb 1, 2017 7:33 p.m.	VERY POOR BROADBAND
43	Feb 1, 2017 6:45 p.m.	None
44	Feb 1, 2017 6:41 p.m.	None
45	Feb 1, 2017 6:37 p.m.	Lecturs not on the same hyme steet as lecturs on line very out dated
46	Feb 1, 2017 6:04 p.m.	n/a
47	Feb 1, 2017 5:56 p.m.	time
48	Feb 1, 2017 5:38 p.m.	Lack of it
49	Feb 1, 2017 5:35 p.m.	Acoomodation
50	Feb 1, 2017 5:20 p.m.	None
51	Feb 1, 2017 5:03 p.m.	None
52	Feb 1, 2017 4:16 p.m.	Laziness
53	Feb 1, 2017 3:57 p.m.	Teachers having nothing on it
54	Feb 1, 2017 3:37 p.m.	internet is not cheap
55	Feb 1, 2017 3:32 p.m.	None
56	Feb 1, 2017 3:10 p.m.	No barriers
57	Feb 1, 2017 2:43 p.m.	Lack of laptop at home and fees issues.
58	Feb 1, 2017 2:37 p.m.	Time
59	Feb 1, 2017 2:02 p.m.	None maybe motivation
60	Feb 1, 2017 1:59 p.m.	N/A
61	Feb 1, 2017 1:17 p.m.	None of the above
62	Feb 1, 2017 1:13 p.m.	Lack of personal drive. I prefer face-to-face.
63	Feb 1, 2017 1:03 p.m.	No Barriers
64	Feb 1, 2017 12:58 p.m.	NA
65	Feb 1, 2017 12:26 p.m.	Time - management

Appendix 62 Question 15 qualitative comments

3	Feb 7, 2017 2:11 p.m.	some lectures dont put their stuff on module, this is so frustrating and annoying
4	Feb 7, 2017 11:20 a.m.	Lack of affordable student housing
5	Feb 6, 2017 9:32 p.m.	Technical faults
6	Feb 6, 2017 6:52 p.m.	Dyslexia
7	Feb 6, 2017 3:06 p.m.	Certain phones dont make it easy to access the material on moodle
8	Feb 6, 2017 2:32 p.m.	None
9	Feb 5, 2017 8:06 p.m.	None
10	Feb 5, 2017 4:29 p.m.	-
11	Feb 4, 2017 9:35 p.m.	None
12	Feb 4, 2017 9:00 p.m.	The notes from some lecturers are poor
13	Feb 4, 2017 8:32 p.m.	none
14	Feb 4, 2017 8:12 p.m.	Procrastination
15	Feb 4, 2017 8:01 p.m.	None
16	Feb 4, 2017 5:12 p.m.	Difficult to find sometimes
17	Feb 4, 2017 3:22 p.m.	None
18	Feb 4, 2017 3:07 p.m.	No time available to do so.
19	Feb 4, 2017 2:38 p.m.	Slow college computers impede class work.

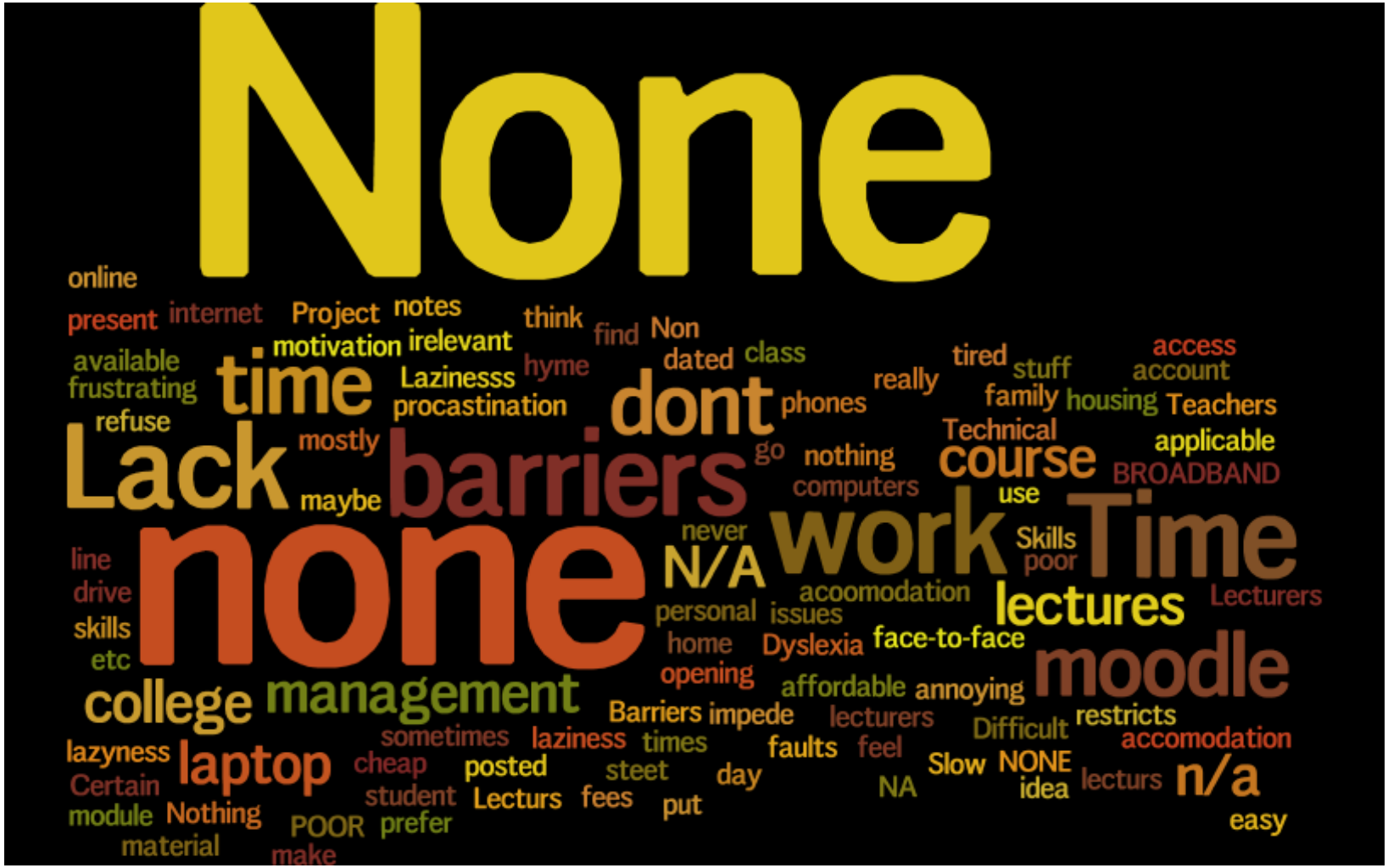
Appendix 63 Question qualitative comments continued

54	Feb 1, 2017 3:37 p.m.	internet is not cheap
55	Feb 1, 2017 3:32 p.m.	None
56	Feb 1, 2017 3:10 p.m.	No barriers
57	Feb 1, 2017 2:43 p.m.	Lack of laptop at home and fees issues.
58	Feb 1, 2017 2:37 p.m.	Time
59	Feb 1, 2017 2:02 p.m.	None maybe motivation
60	Feb 1, 2017 1:59 p.m.	N/A
61	Feb 1, 2017 1:17 p.m.	None of the above
62	Feb 1, 2017 1:13 p.m.	Lack of personal drive. I prefer face-to-face.
63	Feb 1, 2017 1:03 p.m.	No Barriers
64	Feb 1, 2017 12:58 p.m.	NA
65	Feb 1, 2017 12:26 p.m.	Time - management
66	Feb 1, 2017 11:52 a.m.	N/A
67	Jan 31, 2017 10:52 p.m.	Time.
68	Jan 31, 2017 6:51 p.m.	I feel that there are no present barriers.
69	Jan 31, 2017 6:25 p.m.	None
70	Jan 31, 2017 4:15 p.m.	None
71	Jan 31, 2017 4:12 p.m.	no barriers
72	Jan 31, 2017 3:52 p.m.	I don't own a laptop so it restricts my work to college opening times

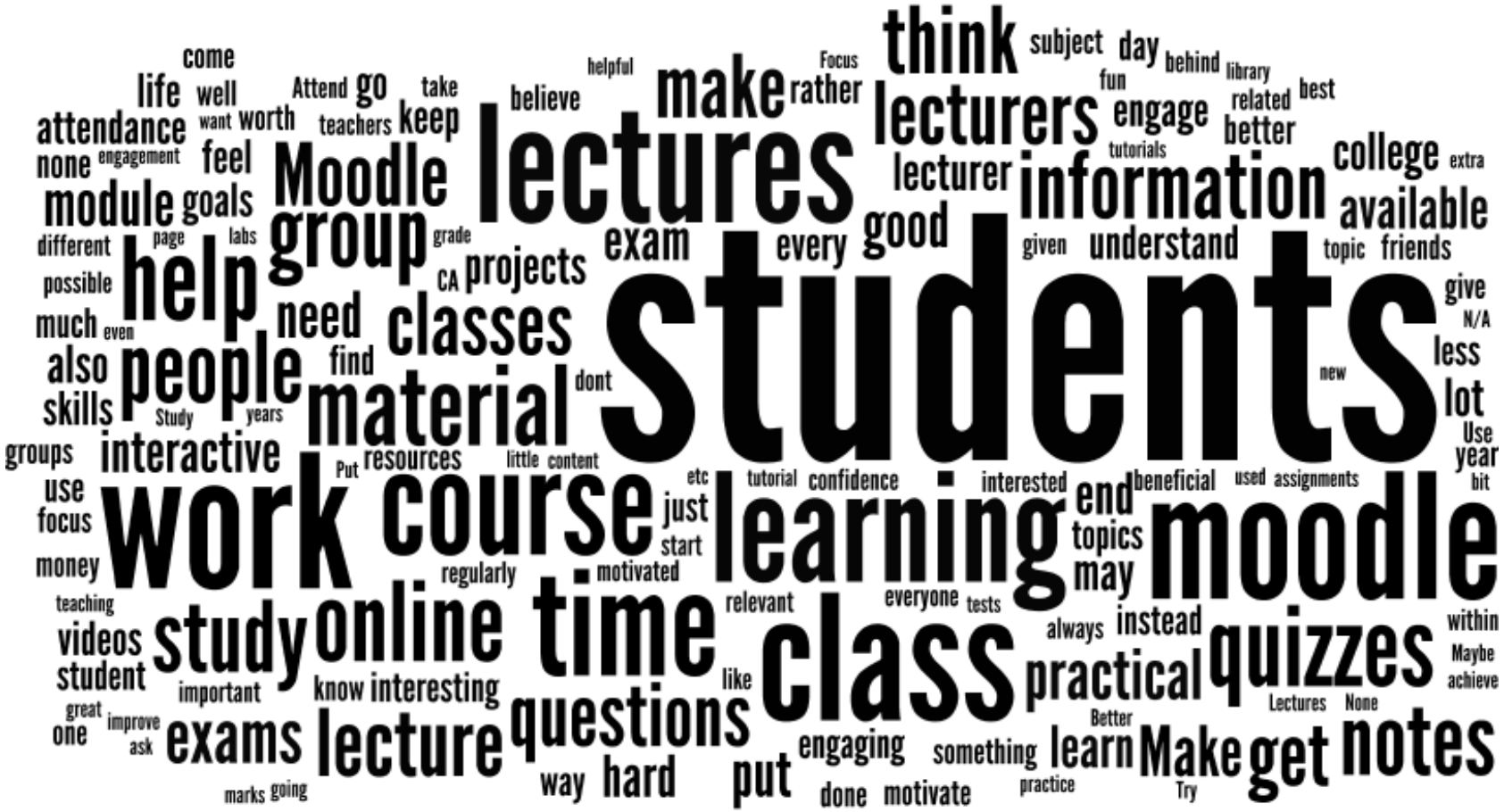
Appendix 64 Question 17 qualitative comment

172	Feb 1, 2017 7:20 p.m.	‘Provision of services to assist on line learning.... not available at present and pressure to use on line learning without being given the skills. Seems that money available for surveys but none available for students who need extra support in computer skills’.

Appendix 65 Wordle of commentaries from question 15; 'Other, please specify'.



Appendix 66 Wordle of commentaries from question 17 on student recommendations



Appendix 67 Question 17 qualitative comments

155	Feb 1, 2017 9:34 p.m.	‘Explain the concept of online learning to secondary school students so they are not overwhelmed with this new teaching format as opposed to the traditional secondary school method’
338	Jan 31, 2017 3:41 p.m.	‘Get students to test each other I felt more confident going into my exam when I discussed sample question with my fellow classmates as it helped me understand the topic when I heard someone else's take on the topic’
293	Feb 1, 2017 10:29 a.m.	‘IN CLASS EVERYBODY SHOULD BE ABLE TO WORK TOGETHER AS A TEAM’.
314	Jan 31, 2017 6:51 p.m.	‘I would highly recommend to students to use Moodle as often as they can, as there could be something that they missed in class that could be up there. Tutors are incredible, and it is great to have Moodle there as a crutch or tool if you are unsure of something or feel that I need to spend more time on a specific topic without delaying other students or lecturers’
290	Feb 1, 2017 11:36 a.m.	‘Go to class because it makes studying for exams a lot easier as you are not just looking at the notes for the very first time’.
178	Feb 1, 2017 6:25 p.m.	‘Advertising on popular sites such as Facebook. Also, the app for moodle on the android platform is not the best. I have left reviews and complaints and sadly none have been acknowledged’.