STRIVING FOR SUCCESS IN LIBRARY INSTRUCTION: AN ANALYSIS OF ACQUIRING INFORMATION LITERACY SKILLS IN HIGHER EDUCATION AS PART OF THE FIRST-YEAR EXPERIENCE.

by

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DECLARATION OF ORIGINALITY

I declare that the intellectual content of this thesis is the product of my own work and that where other people's work or my own previous work has been used, this has properly been acknowledged and referenced.

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Kathryn Briggs

ABSTRACT

Information Literacy (IL) is important for today's learners and is a vital skill in the pursuit of knowledge. It promotes problem solving, thinking skills, evaluating sources and learning strategies. The consequence of new technologies and an explosion of readily accessible information sources means IL has become more and more important in Higher Education (HE). Learners need to be able to identify what is real and relevant not just for learning but for work and life. IL skills are key to academic development in addition to lifelong and independent learning. This research investigates if first-year students (novice learners) in the Galway-Mayo Institute of Technology (GMIT) who participate in library instruction as part of the First-Year Experience (FYE) acquire IL skills. Using the triangulated, mixed methods approach to the research pre/post-test assessments, an online survey and an attitude scale survey were conducted. The findings suggest that novice learners acquire IL skills from Information Literacy Instruction (ILI) as 92% of students improved their score from pre-test to post-test assessment. This research verifies the positive effects of ILI and the significant role ILI plays as part of the FYE in GMIT with high satisfaction rates reported from student's participating in ILI. A proposed IL framework is presented to offer direction for GMIT library and academic staff to develop IL skills and learning opportunities for GMIT students with recommendations for redesigning future ILI as part of the FYE.

KEYWORDS: Information Literacy, Library Instruction, Higher Education, First-Year Experience.

DEDICATION

In memory of dad, who always believed…

“Education is our passport to the future,

For tomorrow belongs to the people who prepare for it today” (Malcom X).

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GLOSSARY

Copyright:

Copyright is a legal term that describes the rights given to creators of certain categories of work, it applies to all kinds of written and recorded materials, including but not limited to the typographical arrangement of published works, photography, film and music (Irish Patents Office 2019).

Critical Thinking:

Critical thinking is “purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological or contextual considerations upon which judgment is based” (Facione, 1990, p. 2).

Digital Literacy:

Digital literacy is defined as “the ability to use information and communication technologies to find, understand, evaluate, create, and communicate digital information, an ability that requires both cognitive and technical skills” (American Library Association Digital Literacy Taskforce 2013, p. 2).

Expert Learner:

The expert learner forms theoretically rich and prepared representations of knowledge that can be retrieved automatically, not easily forgotten and can be applied flexibly in different circumstances and across tasks (Welch-Ross & Lesgold, 2012, p. 107).

Higher Order Thinking Skills:

High order thinking occurs when a learner obtains new knowledge and stores it in their memory, this knowledge is correlated, organized, or evaluated to achieve an explicit purpose. These skills include secondary skills such as analysis and evaluation which are the highest levels in Bloom’s taxonomy of thinking skills (Abosalem 2016, p. 2).

Independent Learner:

“Independent study is a process, a method and a philosophy of education in which a student acquires knowledge by his or her own efforts and develops the ability for inquiry and critical evaluation; it includes freedom of choice in determining those objectives, within the limits of a given project or program and with the aid of a faculty advisor; it requires freedom of process to carry out the objectives; it places educational responsibility on the student for the achievement of objectives and for the value of the goals” (Foster 1972, as cited in Candy 1991, p. 13).

Information Literacy (IL):

At its simplest is defined as the ability to find, retrieve, analyse and use information (American Library Association 2000, p. 1). For the intention of this research, and according to the Society of College, National and University Libraries (SCONUL), “Information Literacy is an umbrella term which encompasses concepts such as digital, visual and media literacies, academic literacy, information handling, information skills, data curation and data management” (2011, p. 3).

Lifelong Learning:

Lifelong learning is defined as “the provision or use of both formal and informal learning opportunities throughout people's lives in order to foster the continuous development and improvement of the knowledge and skills needed for employment and personal fulfilment” (Collinsdictionary.com 2019).

Lower Order Thinking Skills:

Lower order thinking skills include remembering, understanding, and applying, as indicated by the lower three levels of Blooms Taxonomy (Bloom 1956). In order to reach the higher level of thinking skills, the lower order of thinking skills must be achieved first.

Novice Learner:

A novice learner learns content about which they hold no previous experience or knowledge (Laakso, Rajala, Kaila and Salakoski 2012). In this study a novice learner is a student new to and inexperienced in IL.

Metaliteracy:
"Metaliteracy promotes critical thinking and collaboration in a digital age, providing a comprehensive framework to effectively participate in social media and online communities" (Jacobson and Mackey 2013, p. 62).

Multimodal Literacy:

Multimodal literacy refers to the study of language that joins two or more modes of meaning. Multimodal literacy "focuses on the design of discourse by investigating the contributions of specific semiotic resources (e.g. language, gesture, images) co-deployed across various modalities (e.g. visual, aural, somatic), as well as their interaction and integration in constructing a coherent text" (Fei, O'Halloran, Tan, and Marissa 2015, p. 917).

Plagiarism:
Plagiarism refers to using or copying someone else's work or idea and passing it off as one's own (Collinsdictionary.com 2019).

Responsible Citizen:
A responsible citizen is defined as having knowledge about their role in their community, their country, and their world, and participate in activities that make the world a better place (Westheimer and Kahne 2004).

Scaffolding:
Scaffolding refers to a variety of instructional techniques used to move students gradually toward a better understanding and, in due course, greater independence in the learning process (Great School Partnership 2013).

Student Engagement:

Student engagement refers to the level of attention, interest, confidence, and appetite students show when they are being taught, which spreads to the level of enthusiasm they have to learn and develop in their education (Great Schools Partnership 2014).

Umbrella Term:
An umbrella term is used to cover a broad number of functions or items that fall under a single common category (Collinsdictionary.com 2019).

ABBREVIATIONS

ACRL	Association of College & Research Libraries
ANCIL	A New Curriculum for Information Literacy
CILIP	Chartered Institute of Libraries and Information Professionals
DL	Digital Literacy
FYE	First-Year Experience
GMIT	Galway-Mayo Institute of Technology
HE	Higher Education
IL	Information Literacy
ILI	Information Literacy Instruction
ISSE	Irish Survey of Student Engagement
LAI	The Library Association of Ireland
LIS	Learning and Innovation Skills
SCONUL	Society of College, National and University Libraries
TFIL	Taskforce on Information Literacy

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CHAPTER ONE: INTRODUCTION

1.1 CONTEXT

The ability to find, analyse and use information has always been important. However, in today's digital age discovering the correct information can be hard, some is authoritative and reliable, but some is biased or false. Students need to be provided with information literacy (IL) skills to make them efficient and successful learners, skills that are key to lifelong learning (Briggs, 2018). Brown and Malenfant (2017) report that information literacy instruction (ILI) strengthens education outcomes.

The research reported in this thesis centres on first-year students in the Galway-Mayo Institute of Technology (GMIT), a higher education (HE) in the West of Ireland, with a population of approximately 6,000 fulltime students. In 2009, a first-year experience (FYE) programme, namely Learning & Innovation Skills (LIS) was introduced in the Institute to ease the transition from second to third level education. FYE programmes help first-year students better adjust and prepare for success in college life (Yan & Sendall, 2016). To supplement this programme GMIT Library developed four standalone ILI sessions with the aim of providing first-year students with the key competencies to acquire IL skills, empowering them to become practised at finding, retrieving, evaluating and consuming information as well as knowing how to transfer these skills. It is these skills that are being examined in this research.

The perspective or position of the researcher shapes all research. As an advocate for IL in HE, I as the researcher found it difficult to take an impartial stance when commencing the research process. But determining how much I accepted, questioned, or rejected the claims that the sources of literature made helped neutralise any assumptions and speculations that were initially brought to the research. Advocating for IL skills training for all students is advocating for empowering students with skills to make them efficient and successful learners, skills that are key to lifelong learning.

Research is not completely value-free, but, if well-tested methods are used the data will back up the findings. I have positioned myself as a researcher, adhering to academic quality and standards in addition to presenting evidence of adequate understanding of existing knowledge. Past experiences of teaching IL skills to students tie me to the study. Experience shape interpretations, these experiences may have potentially shaped the direction of the research, including the methods used and the questions asked. Having to grapple with what to include in the thesis and what to omit whilst still offering a robust and unbiased argument has been challenging. In writing the thesis I needed to consider how much of myself to include in my writing, although I needed to make this research my own, I still needed to ensure not to make the study about me, but about novice learners acquiring IL skills through ILI. I did not keep a reflective diary per se, I believe the research process fosters self-reflection.

There is significant existing research on IL and evaluating library instruction. However, academic discourse on IL in Ireland is dated. This research will explore GMIT's experiences with influences from other research being reviewed, specifically research focusing on IL in HE in an Irish context.

1.1.1 LITERACY

Traditionally the most common understanding of literacy focuses on the skills of reading and writing; but more recently the interpretation of literacy comprises more than that, as explained in the following quotation:

> Literacy includes the capacity to read, understand and critically appreciate various forms of communication including spoken language, printed text, broadcast media, and digital media… when we refer to "literacy" we mean this broader understanding of the skill, including speaking and listening, as well as communication using not only traditional writing and print but also digital media (Ireland, Department of Education and Skills 2011, p. 8).

Therefore, literacy, which is a key source of information and communication, represents the ability to read and write. The focus of this research is on IL.

1.1.2 INFORMATION LITERACY

The aim of IL in HE is to enable students to become practised at finding, retrieving, evaluating and consuming information and indeed knowing how to transfer these skills. As part of the FYE LIS module the library offers four ILI sessions which aim to provide students with the key competencies to acquire IL skills (figure 1.1). In addition to these sessions GMIT library offers further 'scaffolding' sessions as students' progress through each academic year. Scaffolding helps students progress from a novice learner in IL to an expert learner in IL, starting with the basics and building on those basics as they gain understanding and knowledge. This scaffolding allows students to recollect, practice and use what they learned in previous sessions to new situations (Burkhardt 2016).

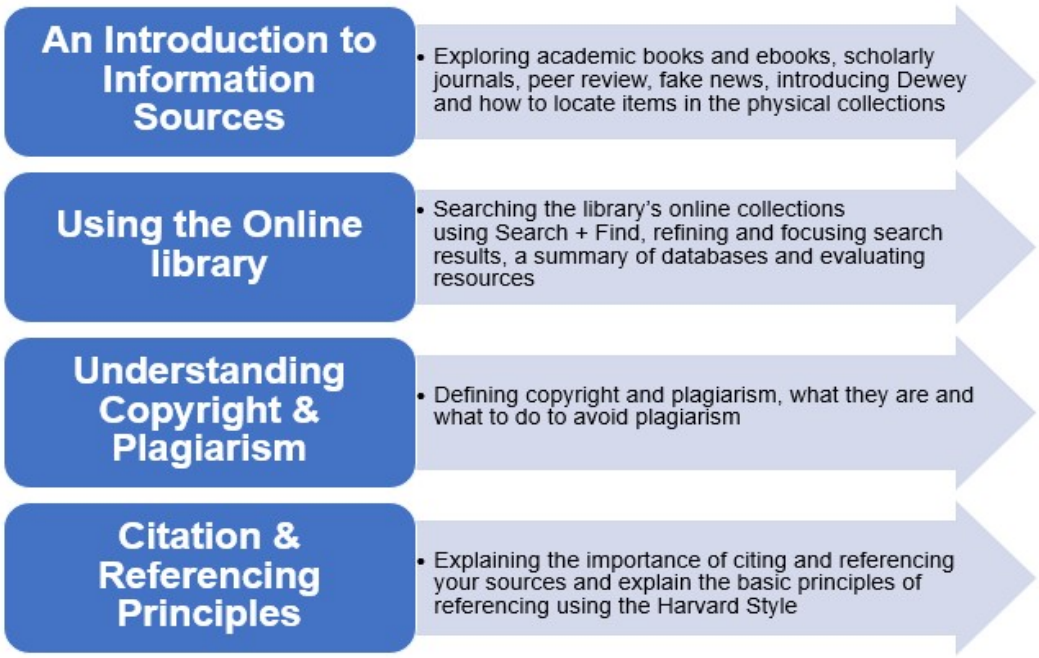


Figure 1.1: GMIT Library LIS ILI current session descriptions

IL is well established in library spheres but despite its enduring existence is not widely recognized outside of the field. Marketing IL as an everyday re-useable tool not just in the library but in academia, the workplace, and in everyday life is arguably an enduring challenge. Students are often unable to realise the purpose and usefulness of IL (Kim & Shumaker 2015), so we need to encourage attendance and engagement in ILI to help students acquire IL skills. Librarians need to improve the value of IL (Saunders 2016) and progress the significance of the library profession as educators of IL (Kim & Shumaker 2015).

This research is GMIT specific but will be valuable to the wider audience building on existing literature. The findings will contribute to research investigating the power and value of IL in the library in addition to assisting the library in modify existing ILI. Academic libraries provide supportive learning environments which actively encourage independent learning, ILI provide learners with challenging and varied tasks that allow them to think critically. Students can participate in the practical experience of ILI to make sense of learning, such experience is crucial to the learning process (Ha & Verishagen, 2015).

1.1.3 HIGHER EDUCATION

A number of Irish national strategies encompass IL or more recently, digital literacy (DL), which is defined as “the ability to use information and communication technologies to find, understand, evaluate, create, and communicate digital information, an ability that requires both cognitive and technical skills” (American Library Association Digital Literacy Taskforce 2013, p. 2). T*he National Strategy for Higher Education to 2030* states that HE Institutes should identify gaps in students’ skills during their first-year in HE, “by expanding the availability of induction and preparation courses for first-year students, covering skills such as self-directed learning, time management, information literacy and critical analysis…” (Hunt 2011, p. 55). It is argued that there is a considerable gap between second and third level education in relation to IL (Dunne & Sheridan 2012). The FYE LIS module aims to

address this gap in GMIT by helping first-year students develop skills to meet the demands of third-level education.

The mission of several HE Institutions encompasses developing and supporting lifelong independent learners and critical thinkers. GMIT's mission statement reads "At GMIT we develop the life-long learning opportunities through our teaching and research, by supporting regional development consistent with national higher education policy" (GMIT Code of Conduct 2018-2019, p. 4). Developing and presenting a framework for IL (appendix 1) with the goal of integrating IL into the curriculum should contribute to achieving the mission and develop students' academic success.

1.1.4 FIRST-YEAR EXPERIENCE (FYE)

The literature indicates that FYE programmes are becoming increasing prevalent in HE Institutions. These programmes are designed to create an engaging learning experience for students and improve academic success and retention (Kim & Shumaker 2015). The FYE programme in GMIT is part of an Institute wide commitment to connect with and support incoming first-year students. *The National Strategy for Higher Education to 2030* highlights the importance of a positive FYE in attaining the goals of HE. This research aims to determine that the role ILI can play in supporting novice learners is a significant one.

The library's involvement in the FYE programme began when GMIT introduced the LIS module for all incoming first-year students in 2009 to ease the transition from second to third level education. Librarians at GMIT's Galway campus designed four connected standalone ILI sessions to supplement the LIS module. Awareness of academic practices, including citation, plagiarism, academic dishonesty and copyright infringement are all part of IL, as is the ability to use strategies, tools and technology to find, evaluate, and use relevant, reliable information. Students need to be aware of

and realise the value of the many types of information sources available and use them ethically. FYE programmes are invaluable in introducing students to IL concepts (Kim & Shumaker 2015).

1.1.5 NOVICE LEARNERS

In this study the focus in on novice learners. A novice learner learns content about which they hold no previous experience or knowledge (Laakso, Rajala, Kaila & Salakoski 2012). Since the paper is dedicated to first-year students it is argued that most of the cohort will fall into this category as they enter HE for the first time. A novice learner herein is a student new to and inexperienced in IL.

1.2 AIMS & OBJECTIVES

The aim of this research is to investigate if novice learners who participate in library instruction as part of the first-year experience (FYE) acquire IL skills. Three objectives are derived from this aim:

1. To determine if there is evidence of acquiring IL skills from information literacy instruction (ILI) as part of the FYE using pre and post-tests as assessment tools for measuring the performance of students participating in ILI;
2. To obtain feedback from an attitude scale survey and online survey to present recommendations for redesigning future ILI as part of the FYE programme in GMIT; and
3. To present a proposed IL framework for GMIT Library developed in conjunction with the quantifiable data attained from attitude scale and online surveys.

Figure 1.2 is a summary of the research topic.

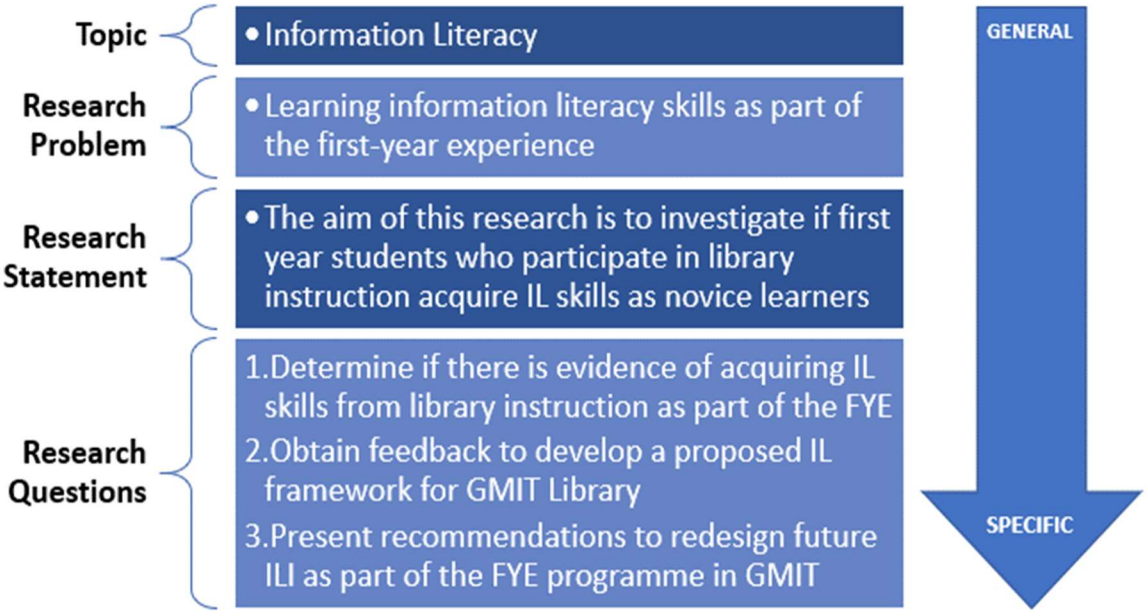


Figure 1.2: Summary of the research topic, problem, purpose and questions

1.3 RESEARCH METHODOLOGY

Creswell defines research as a process of steps used to collect and analyse information to better understand a topic. Research generally consists of three steps: 1. Present a question; 2. Collect data to answer the question; and 3. Offer an answer to the question (2012). In educational research there are three broad approaches to research (discussed in chapter 3): qualitative, quantitative and mixed methods (Creswell & Creswell 2018). Using the triangulated, mixed methods approach to the research, pre/post-tests, an attitude scale and online survey were conducted. Multiple approaches are used in research to ensure the ability to assess the validity and reliability of the findings (Creswell & Creswell 2018).

The methods for gathering the data have a distinct relationship to the research problem. The first objective is to determine if there is evidence of novice learners acquiring IL skills from library instruction as part of the FYE. The approach used for

this is quantitative: pre/post-testing. The second objective is to present recommendations to redesign future ILI as part of the FYE in GMIT. The third objective is to obtain feedback to develop a proposed IL framework for GMIT Library to support IL education in GMIT. It is anticipated that the framework will provide an integrated structure for delivering IL at all levels across all courses. These objectives will be addressed using an attitude scale survey and an online survey.

1.4 SCOPE & LIMITATIONS

Time and sample size are the main limitations of the research; triangulation is a time-consuming process (Salkind 2010). The size of the sample will depend on the number of viable pre/post-tests attainable and the number of responses to surveys. Moreover, the greater the response and completion rate the greater the validity and capability to generalize to other similar populations. A pilot study will assess the efficacy of the methods.

1.5 THESIS STRUCTURE

The chapters of the thesis are: The Introduction, a Systematic Literature Analysis, Research Methodology and Methods, Findings and Analysis and Conclusion.

Chapter 1: The Introduction.

The first chapter gives an overview of the topic, explaining the importance of the research, providing a compelling rationale and positioning the research in the literature.

Chapter 2: Systematic Literature Analysis.

This chapter reviews the related literature to highlight key developments in the field and positions the current study in the repertoire of prior research on IL.

Chapter 3: Research Methodology and Methods.

This chapter presents an overview of research methods in education in addition to providing details about the research to allow readers to evaluate its appropriateness or to replicate the study.

Chapter 4: Research Findings and Analysis.

This chapter includes the original findings of the research, explaining how the findings strengthen or differ from preceding notable research in the field.

Chapter 5: Conclusion and Recommendations.

The concluding chapter is a discussion of the summarized data presented earlier in the thesis along with recommendations for further research.

CHAPTER TWO: SYSTEMATIC LITERATURE ANALYSIS

2.1 INTRODUCTION

Chapter two will explore acquiring IL skills specifically in the context of HE. The aim is to consider if novice learners who participate in library instruction acquire IL skills. This research seeks to add to the limited literature on IL from an Irish perspective. The objective is to present recommendations to redesign future ILI as part of the FYE and to develop a proposed framework of IL for GMIT Library to better ground IL within the institute.

The literature analysis is not intended to be an exhaustive review of IL. This section will begin with characterizations of literacies before focusing on IL. Examining significant standards and frameworks before reviewing selected methods applied in delivering ILI in academic libraries. The influence of new and emerging technologies along with the proliferation of information sources means IL has become more and more important in academia and elsewhere. The researcher asserts that students need to have the skill to effectively find and use information as well as recognise what is real and appropriate, such skills are key for academic development and beyond. The review of the literature goes beyond the last published five years as selected models and frameworks were conceived some time ago; but are significant to this research.

2.2 DEFINING INFORMATION LITERACY

IL is defined differently throughout the literature. At its most direct it is defined as the ability to find, retrieve, analyse and use information (American Library Association, 2000, p. 1). To clarify for the intention of this research, and according to the Society of College, National and University Libraries (SCONUL), “Information Literacy is an umbrella term which encompasses concepts such as digital, visual and media

literacies, academic literacy, information handling, information skills, data curation and data management" (2011, p. 3). Additionally, as digital literacy (DL) is the prominent contemporary literacy, given that we are living in a digital age, DL is defined as "the ability to use information and communication technologies to find, understand, evaluate, create, and communicate digital information, an ability that requires both cognitive and technical skills" (American Library Association Digital Literacy Taskforce 2013, p. 2), or, applying IL skills in a digital context.

This research focuses on the skills firs-year novice learners need to find and access quality information, as well as knowing how to use and evaluate information. The stages of learning begin with the novice learner, as a beginner they learn objective facts and features appropriate to the skill and acquire rules for determining actions grounded on these facts (Dreyfus & Dreyfus 1980). Novice learners need to apply a great deal of cognitive effort to complete a task and require assistance in doing so (Santomauro & Carter 2011). Specifically, in relation to IL novice learners are inclined to use few search strategies and search limited resources, while experts search more broadly to determine the most suitable information (ACRL 2016a).

Novice learners learn content about which they hold no previous experience. Figure 2.1 presents SCONUL's Seven Pillars of Information Literacy Core Module for HE by Society of College, National and University Libraries alongside Bloom's Taxonomy (revised) of Educational Objectives. The figure presents the progression from lower order thinking skills at the bottom to higher order thinking skills at the top, highlighting the continuing improvement of cognitive skills adjacent to developing IL skills. Skills such as locating and accessing information or formatting citations are considered lower order skills, as they are process-based and usually do not involve students analysing or synthesizing information. Skills such as evaluating sources and content, identifying plagiarism, or applying fair use guidelines to decide when to use materials are considered higher order thinking skills (Saunders 2018).

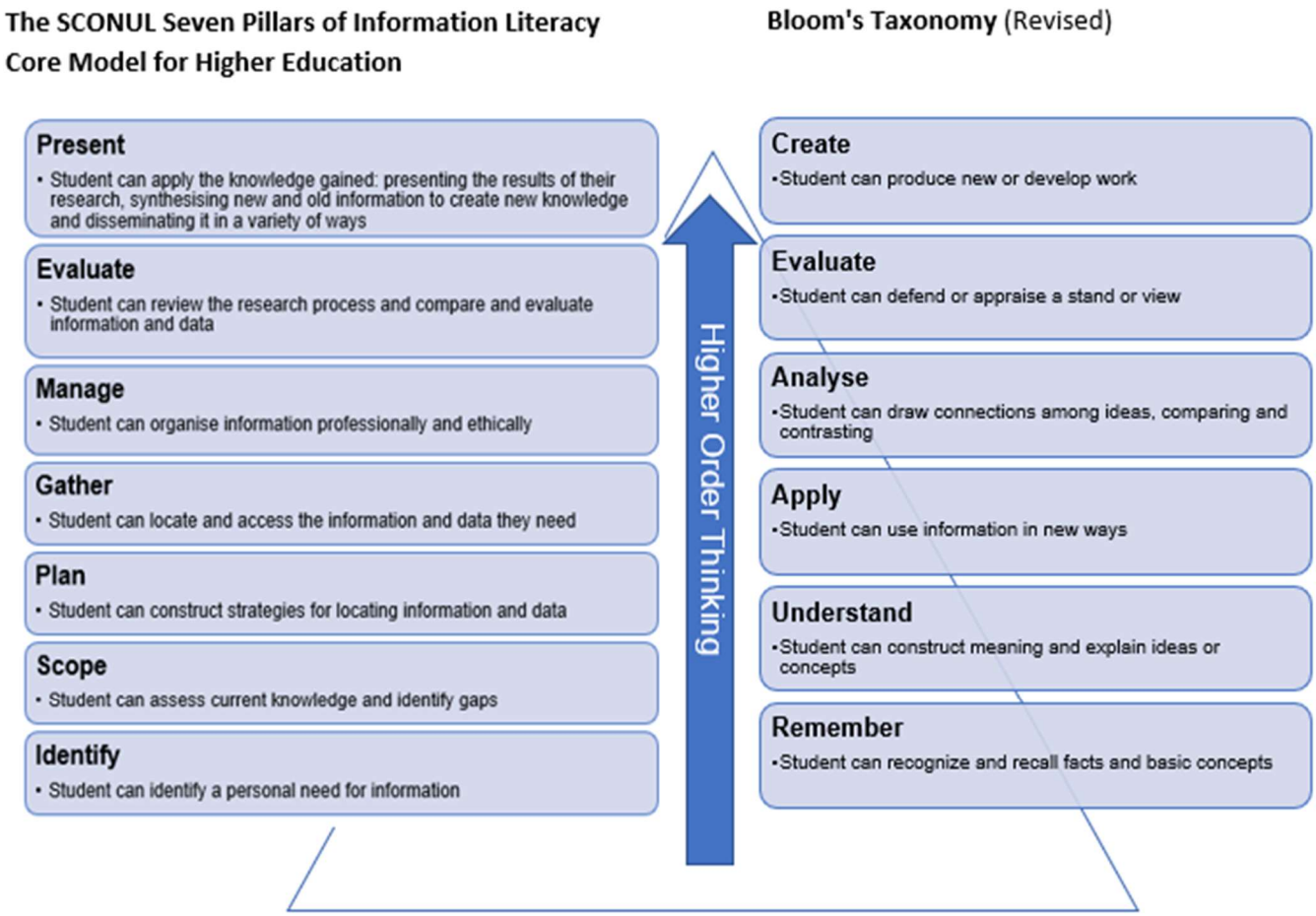


Figure 2.1: Graphical representation of SCONUL's Seven Pillars of Information Literacy Core Module for Higher Education alongside Bloom's Taxonomy of Educational Objectives

The researcher acknowledges that there are numerous approaches to ILI. The best, yet least likely means is the fully integrated IL programme, in which students acquire IL skills as part of their course through the curriculum. Other methods include online, blended or credit bearing. The most common method of ILI is the "one-shot" face-to-face session, which If used wisely can be effective. The key to any of these approaches is to involve students in active hands-on learning and use activities that result in more interaction and learning (Ragains 2013). There is a firm need for academic libraries to demonstrate their impact on student learning, largely through measurable outcomes in ILI and mandatory interventions (Gross & Latham 2013). Libraries have an important part to play in developing institutional learning outcomes for critical thinking and further higher order thinking skills. Furthermore, there is growing interest in linking the value of ILI to institutional metrics such as student retention and graduation rates (Murray, Ireland and Hackathorn 2016; Association of College & Research Libraries 2016a).

2.3 STANDARDS AND FRAMEWORKS

This research centres on the design and delivery of ILI for first-year students. This section will critically consider international IL standards and frameworks that are significant to this research investigating if novice learners who participate in ILI as part of the FYE acquire IL skills. These are: SCONUL's *Seven Pillars of Information Literacy* and the ACRL *Framework for Information Literacy for Higher Education* (2011). SCONUL's seven pillars have been instrumental in teaching IL skills to first-year students in GMIT, with the range of knowledge needed to acquire IL skills well-defined. The research recognizes that the pillars are well established within HE institutes far afield and have helped librarians form a better understanding of IL.

Through pedagogical inquiry, based around teaching and learning strategies that involve student-centred research and an examination of IL literature, it is proposed that GMIT Library will continue to use the seven pillars of IL, in addition to integrating other international frameworks and standards elements, to provide students with a learning model that supports development of HE specific IL skills. SCONUL updated its seven pillars framework in 2011 to allow for shifting IL concepts and to incorporate associated elements of DL. The review of the seven pillars identifies that IL is not just about skills and competences but highlights the importance of attitudes and behaviour. The model defines the core skills and competencies (ability) and attitudes and behaviours (understanding) that are central to the progression of IL development in HE (Society of College, National & University Libraries 2011, p. 3). Accordingly, the aim is to redesign GMIT Library's ILI to consider the recently updated core model.

The ACRL *Framework for Information Literacy for Higher Education* was approved in 2015 to supersede ACRL's previous model of IL. This framework promotes a connection between IL and discipline specific teaching practices and is a leading text for academic librarians (Wilkes, Godwin & Gurney 2015). The framework outlines IL concepts, describing how librarians can facilitate the development of IL. The move

from the original standards to a conceptual model can be seen in the distinct definitions. The Standards' definition is "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ACRL 2000, p. 2). The Framework's definition is:

> The set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning (ACRL 2016a, p. 3).

A key difference between the standards and the framework is the standards outline specific task-based learning objectives whilst the framework is a sequence of frames that are conceptual and open to critical thinking.

IL has been redefined by ACRL's framework (2016a) following advancements in information and communication technology, allowing for the presence of contemporary literacies such as digital, media, multimodal and metaliteracy (Jacobson & Mackey 2013). The emergence of such literacies challenging traditional definitions of IL lead Jacobson & Mackey (2011) to coin the term "metaliteracy" to transform the way IL is considered to support multiple literacy types. The new framework does not align with the initial standards, but instead is designed to help librarians focus their teaching of IL, each of the frames cover a distinctive attribute of information. The framework is more abstract than its forerunner, gone are the learning outcomes and in their place are adaptable interconnected concepts to put into practice (ACRL 2016a). The framework, unlike the ACRL standards, consider information as something that is created and made purposeful within context (ACRL 2016a). GMIT Library currently deliver ILI as a combination of skills-based IL, as outlined in the original standards, and the new framework which considers the influences that affect behaviours and opinions.

The intention of the research reported in this thesis is to develop a proposed framework for IL as opposed to standards for GMIT Library. Arguably this will allow

for more adaptability in the way ILI is delivered. Foasberg asserts that the ACRL "framework better recognizes the complexities of information and information behavior, and explicitly makes space for students as participants in the process of knowledge production" (2016a, p. 703). Collectively these standards and frameworks offer an overview of a skillset that can enhance learning and provide skills for life in, and beyond HE. Table 2.1 shows the current model for IL for GMIT Library based on the minimum levels of IL skills required as a novice learner. The model is presented parallel to SCONUL's original 1999 seven pillars, CONULS's 2011 seven pillars and ACRL's 2016 *Framework for Information Literacy for Higher Education.*

Table 2.1: Current model of IL for GMIT Library aligned with key IL frameworks

The original seven pillars (SCONUL, 1999).	**The 'new' seven pillars (SCONUL, 2011).**	**ACRIL Six 'frames' (2015).**	**Current model employed by GMIT Library**
1. Recognize the information need	**1. Identify: Able to identify a personal need for information**	• Information Has Value • Searching as Strategic Exploration	• Introduction to information sources session
2. Distinguish ways of addressing the gap	**2. Scope: Can assess current knowledge and identify gaps**		• Introduction to information sources session
3. Construct strategies for locating	**3. Plan: Can construct strategies for locating information**		• Using the Online Library session
4. Locate and access	**4. Gather: Can locate and access the information and data they need**		• Using the Online Library session
5. Compare and evaluate	**5. Evaluate: Can review the research and compare and evaluate information and data**	• Information creation is a process • Authority is constructed & contextual	• Using the online library session
6. Organise, apply and communicate	**6. Manage: Can organise information professionally and ethically**		• Understanding copyright and plagiarism • Citation and Referencing
7. Synthesis and create	**7. Present: Can apply knowledge: Synthesize new and old to create new knowledge and disseminate it in a variety of ways.**	• Research as Inquiry • Scholarship as Conversation	• Not currently addressed

2.4 CURRENT AND DEVELOPING TRENDS

A key development thus far in appropriately recent literature relating to IL in Ireland is the Taskforce on Information Literacy (TFIL). The TFIL originated from a combination of two reports: the unpublished *Library Association of Ireland: working group on information literacy: review of cross-sector activity 2006-2008* (2008) and *Building IL in Ireland* by Connolly, Curran, Lynch & O'Shea (2013). The key objectives of the taskforce were to review and develop IL provision in Ireland; raise awareness of the strategic value of IL; formulate a national policy and examine international best practice. The fundamental difference that has become visible since the two earlier reports is the "importance of acquiring digital literacy (DL) skills and the need to increase digital literacy for all learners has increasingly come to the fore at a national level" (Russell 2015, p. 21). Indeed, it can be argued that with the explosion of all things digital, DL is now seen as a vital graduate quality for employability. The TFIL endeavours to accomplish what the ACRL has recently completed in their *Framework for information literacy for higher education* (ACRL 2016a).

As online content for learning continues to grow in HE so too does the online accessibility of ILI. A recent study by Saunders (2018) examined the content and delivery of ILI online. Although this research concentrates on face-to-face delivery this recently published work has some valuable lessons learned. Saunders proposed to concentrate on content and learning outcomes and how they associate with higher order thinking skills offered in the ACRL framework such as judging the credibility of sources and the quality of arguments. The findings report a higher use of lower order thinking skills and reported that much of the publicly available tutorials were over simplified. It should be noted that the attention to higher order thinking skills, such as synthesizing information is becoming more apparent in the literature since the update of the SCONUL and ACRL frameworks. The findings of this research suggest that best practice for ILI should start with learning outcomes and conclude with assessment to measure learning.

The Chartered Institute of Libraries and Information Professionals (CILIP), which is the professional body for librarians in the UK, assert that the skills required to be information literate, involve an understanding of: the need for information; resources; how to find information; the need to evaluate information; how to work with or utilise results; ethics and accountability of use; how to communicate or share findings; and how to manage information (CILIP 2017). This definition is currently under review, since its initial approval in 2004, conceivably to place a greater emphasis on the online environment. CILIP's eight points of understanding are all covered in GMIT's current ILI as part of its progressional initiative. CILIP's vision goes beyond the need to be information literate merely in education, expressing that IL has significance through an individual's lifetime (CILIP 2017).

2.5 HIGHER EDUCATION

The way in which student's find and use information facilitates learning in HE. ILI is about teaching and learning; teaching strategies are informed by subject content and how students learn. When learning objectives are associated to explicit ways of learning, teaching becomes focused on student-centred activities, ensuring that students recognize both the content and concepts (Dawes 2016). The role of librarians is one of instruction and teaching (Sanborn 2015). Burke and Tumbleson (2016) claim that librarians can become educators, collaborating with academics to shape curriculum design. The researcher's role as librarian and educator is to assist in the discovery of information since their expertise is in information; finding, retrieving, analysing, and using information. While librarians are skilled to support and teach IL skills, IL is not just a library issue, as it empowers students to be lifelong learners and critical thinkers. Therefore, it is an essential value of HE.

Salisbury & Karasmanis (2011) argue that students must acquire and digest an understanding of IL, the lower order thinking skills required to find and access resources, and the higher order thinking necessary to use and evaluate information. Bloom's revised taxonomy (2001) can contextualize the extent of thinking skills

involved in ILI (figure 2.1). Higher order thinking skills are demonstrated by the top three levels in Bloom's Taxonomy. There are analysing, evaluating, and creating. Whilst lower order thinking skills are indicated by the lower three levels, which are remembering, understanding, and applying. This research focuses on first-year students as novice learners and lower-order thinking skills.

2.6 FIRST-YEAR EXPERIENCE (FYE)

First year experience programmes are intended to support the transition from second to third level education and supplement the required academic and life skills (Ginty & Boland (2016). FYE programmes were conceived to create an engaging learning experiences for students and to improve student retention and academic success. Consequently, academic Librarians deliver ILI in the context of FYE programmes using diverse methods and approaches (Kim & Shumaker 2015). As part of the FYE programme GMIT Library ILI in GMIT Library was introduced in 2006 gathering momentum in 2008 with the introduction of the mandatory FYE LIS module. The motivation in establishing ILI was to align the library's activities not only with GMIT Library's missions and strategic plans but also to the Institutes. GMIT's strategic plan is shaped by the Institute's mission, "At GMIT we develop life-long learning opportunities through our teaching and research, by supporting regional development consistent with national higher education policy" (GMIT 2013, p. 4). The library's then-current strategic plan undertook to design and implement an information skills module to provide students with the necessary skills to carry out their research (GMIT Library 2006, p. 10).

GMIT Library does not currently perform IL assessments. A feedback form is distributed to gauge a student's view on the ILI delivered as part of the FYE. Fain's (2011) literature evaluates five years of assessment data from students at Coastal Carolina University in the US. The findings suggest that there is improvement in IL skills development between pre and post-tests, demonstrating that returning to prior assessment data can identify significant changes in IL skill development. Through

using the same methodology of pre/post testing for first years it is anticipated that the study will report similar findings to Fain's. "Library instruction, as part of the overall first-year experience, contributes to the early stages of information literacy development" (Fain 2011, p. 118). The aspiration is to incorporate an IL framework into the institutes teaching and learning strategy. Ensuring first-year students have the opportunity to engage in ILI is fundamental as ILI has been positively linked with academic achievement (ACRL 2016b and Massengale, Piotrowski & Savage 2016).

A vast amount of literature seeks to understand the student's perspectives of IL. "IL should be part of a bigger academic skills agenda rather than standing alone" (Howard 2012, p. 78). The LIS module in GMIT is delivered to all first years across disciplines. Librarians contact, and are contacted by, academics who select elements of the module they consider most beneficial to their students, i.e. an Introduction to Information Sources, Using the Online Library, Citation and Referencing, and Understanding Copyright and Plagiarism (as previously described in figure 1.1). The structure of FYE programmes demonstrate that acquiring IL may not be a consideration for all academic staff. As such, students may be denied access to ILI through the LIS module. Librarians take responsibility for educational objectives that are related to the aims of FYE programmes, by teaching IL skills which are bound up with the development of academic and critical thinking skills (Kim & Shumaker 2015). Placing a framework for IL into the Institutes strategic plan would affirm the importance of IL outside the library and possibly obtain further academic and institutional wide commitment.

2.7 STUDENT ENGAGEMENT

Many factors that influence student's success occur outside the institutes scope of influence; engagement is not one of them (Walker & Pearce 2014). To succeed institutions, need students to engage in educational activities that lead to learning. HE institutions have the capacity to inspire and support such engagement (Coates &

McCormick 2014). The most widely accepted view of engagement in higher education literature highlights student behaviour and teaching practice (Kahu 2013). For the purposes of this research, and as described in The Irish Survey of Student Engagement (ISSE), student engagement exhibits two fundamentals. The first is the amount of time and effort that students put into their studies and other academically focused activities. The second is how institutions utilise resources and organise curriculum and other learning opportunities to encourage students to participate in meaningful activities that are interconnected to learning (Higher Education Authority 2018).

The ISSE is a tool designed to measure the level of student engagement in third level education and is increasingly seen as an indicator of institutional excellence. The ISSE "explores the amount of time and effort that students put into their studies and other educationally purposeful activities, and, also, how effectively institutions facilitate, encourage and promote student engagement in activities that are linked to learning" (Higher Education Authority 2018, p. 3). Questions on the ISSE involve students assessing their own level of engagement by means of behavioural indicators. The results of the survey aim to add value at institutional level) and to inform national policy (Higher Education Authority 2018).

Ginty & Boland (2016) assert that the responsibility for influencing the students first-year experience rests with the institution managers, the academics' approach to curriculum development and the students' motivation to learn and it is these factors that impact the level of student engagement attained. Furthermore, first year students' value academics that connect with them and they also need to be able to connect parts of their learning and experiences in order to drive engagement and participation. (Ginty & Boland 2016). Collaborations between librarians and academics in developing and delivering LIS ILI could endorse the importance and value of IL to students, seeing IL as part of the overall academic curricula rather than a separate entity (Conrick & Wilcox 2013; O'Brien & Cronin 2016). Furthermore, Ginty & Boland

(2016) assert that academics need to work collaboratively with colleagues in forming engaging learning materials and tasks to support first-year students successfully.

2.8 THE IRISH CONTEXT

Published international works on ILI in HE is plentiful. However, identifying what is taking place in Ireland in relation to ILI is not as abundant. The Consortium of National & University Libraries (2011) research *Integrating information literacy into the curriculum* is perhaps the closest Ireland has come to a 'best-practice' document, it was designed to heighten awareness of IL skills by presenting fifteen case studies on incorporating IL into the curriculum in Ireland. The research is based on the *Australian and New Zealand Information Literacy Framework*, which is derived from the ACRL's *Information literacy competency standards for higher education*. The document supports the idea that IL, like most skillsets, are greatest learned in a disciple specific context. Thus, reinforcing the view that courses should include IL learning outcomes at course level to make them more meaningful and relevant. The case studies offer invaluable insights into ILI methods applied in HE across Ireland.

Introduced in June 2018, *Our Public Libraries 2022, Inspiring, Connecting and Empowering Communities,* considers public libraries as a means for progressing digital skills and literacy. Although this research is centred on academic libraries, the significance of IL affects those who do not attend HE. Thus, it is imperative and understandable that IL is included in national strategies independent of educational institutions. As with other national strategies the emphasis is on DL, reflecting the changes on how information is presently stored, organised, accessed, managed, and used; in digital format. To summarize:

> The strategy will focus on the core functions of the library service, bringing greater structure and consistency to the library's role in literacy support, supporting lifelong learning opportunities and establishing the library as the key place for accessing reliable and authoritative information (Department of Rural and Community Development 2018, p. 5).

The purpose of establishing ILI into the curriculum is to compel students to acquire IL skills through ILI, so students realise that IL is an invaluable, reusable tool for life. Assessment of ILI may offer evidence of the library's value within the institute (Saunders 2018, p. 269).

Dunne & Sheridan's (2012) study *Developing first year student IL: reflections on the learning process* demonstrates that the transition from second to third level education is challenging. Adopting an interesting take on engagement in ILI; the study centres on reflective journals. There is a likeness with this study's expectations of ILI and GMIT Library's current ILI sessions learning outcomes expectations. However, the key difference in this study is that reflective journals form the basis of the study. This method, while no doubt effective in this instance, requires a large commitment of time and buy-in from academics as the journals would most likely need to be assessment based.

Though reflective journals are not exploited in this research, their use enlightens us on students' engagement with and development of ILI (McGuinness & Brien 2007; Insua, Lantz, & Armstrong 2018). This study also remarks that the development of students IL skills is a collaboration between librarians and academics efforts to produce graduates that develop ways to learn independently. This study is valuable as it concentrates on IL in HE in Ireland, reporting on the relationship between librarians and academics collaboratively teaching and developing ILI, there is considerable Irish evidence to support such necessary collaborations (Briggs 2016; Conrick & Wilcox 2013, O'Brien & Cronin 2016).

Cornick & Wilcox's research is based on the design of ILI in University College Cork (UCC). Corroborating that the most widely adopted models in use in academic institutions are the ACRL and SCONUL models (2013, p. 13). The methodology is comparable to this research as UCC set out to re-conceptualise ILI for first-year students; as is the intention in this research. The student feedback concentrates on

timing, group size and length of session rather than the content and delivery of the ILI. Interestingly the staff feedback correlates with GMIT Library's current delivery model, where ILI is hands-on, made available online and typically not delivered on Friday afternoons due to low attendance. This case study is beneficial as their re-conceptualised ILI was based on the models identified as key in this research and the study is that of ILI in HE in Ireland, promoting IL as a lifelong learning skill.

Given the lack of recently published research in Ireland, Hegarty & Carbery's (2010) research is included for comparative purposes; a case study based on first-year students in an Institute of Technology in Ireland. Those who took responsibility for designing an IL programme in Waterford Institute of Technology (WIT) based the programme on introducing first-year students to the main library resources to avoid the occurrence of information overload (Hegarty & Carbery 2010). The pilot programme implemented in WIT reported low attendance in non-compulsory classes. GMIT Library observes comparable low attendance in ILI sessions, particularly non-compulsory drop-in sessions. Hegarty and Carberry developed a structured, tiered approach to ILI by integrating its progress for all years across all levels, discussing that this method is an effective way of scaffolding the development of IL. GMIT Library does this on an ad-hoc basis; with the majority of ILI delivered as part of the FYE but offered up to postgraduate level.

2.9 CONCLUSION

To conclude, the literature provides a background and analysis of the theoretical perspective on IL. As argued, the ability to effectively find and evaluate information is vital for students, as is the need to develop skills in the ethical use of information. Developing and presenting a comprehensive IL framework for GMIT should aid in representing the importance of IL in GMIT and in HE overall, by identifying the IL skills students need to succeed in HE and beyond. Although IL has been around for decades, arguably the concept is still very current. There are considerable contributors to the field internationally. However, published works on the Irish

experience of IL is relatively limited. From the literature it is evident that several models of IL have been updated of late, not simply to take digital developments into consideration but also to allow students to engage in and be more active in the learning process.

Academic staff in GMIT report that students rely on search engines like Google to search for academic information instead of using library resources (Salehi, Du & Ashman 2018; Briggs 2016). Students are faced with more and more information choices; Google is the first place most students go to for information (Boger, Dybvik, Eng & Norheim 2015; Head 2013). Salehi, Du & Ashman (2018) reported that over 80% of HE students consider Google as the most used and relied on source of academic information. It can be argued that traditional incoming first-year students have grown up around computers their whole lives, so they may be conversant with the web, but this does not infer that they are information literate. They might have superior technical skills, but librarians and academics observe that they often lack the ability to effectively find, evaluate, and use information (Briggs 2016). Novice learners tend to wrongly imply that they have skills they do not hold (Gross & Latham 2013). IL helps students identify false or misleading information; helping distinguish suitable, creditable sources for their research. (Society of College, National & University Libraries 2011).

Investigating the more recent developments in IL models, theories and frameworks is essential to ensure innovative instruction is applied to empower students to become information literate. The most compelling reason for carrying out this research is for future generations. As society advances so will definitions of IL and ILI. To address change, including technological advancements it is important for institutes to review and revise their models of IL. The research is being carried out to investigate if novice learners in GMIT who participate in library instruction as part of the FYE acquire IL skills. The research together with existing literature aims to present recommendations to redesign ILI as part of the FYE in GMIT and obtain feedback to develop a proposed IL framework for GMIT Library. While the research is limited to one HE institution, it

may well serve as a model for other institutions. The research and data collected may perhaps provide the basis for further research at a local or national level.

Chapter 3 will present the research design and the specific procedures used in conducting the research; showing the links between the purpose of this research and the selected research methods, reviewing the methodological issues involved in the research design.

CHAPTER THREE: RESEARCH METHODOLOGY & METHODS

3.1 INTRODUCTION

Chapter three begins by providing a discussion of the philosophical frameworks in which the research sits together with the associated philosophical positions of epistemology, ontology and axiology. This is followed by participant recruitment methods and data collection methods used with explanations for adopting such methods. The chapter will finish with the ethical considerations and challenges in addition to the limitations of the research. The foundation for this research is to explore if novice learners who participate in library instruction as part of the FYE acquire IL skills. In addition, the research will contribute to the gap in the literature on the Irish perspective on IL in HE.

3.2 RATIONALE

The purpose of the research is to determine if there is evidence of novice learners acquiring IL skills from ILI as part of the FYE, which will be measured by pre/post-testing of current first-year students enrolled in GMIT. The practical implications of the research relate to presenting recommendations to design future IL skills instruction as part of the FYE in GMIT and obtain feedback to develop a proposed IL framework for GMIT Library. These objectives will be assessed using an online survey and an attitude scale survey. The chapter describes the research approach taken in relation to the extent to which novice learners who participate in ILI as part of the FYE acquire IL skills.

3.3 RESEARCH METHODOLOGY

Research is directed by a set of beliefs known as paradigms which are a “basic belief system based on ontological, epistemological and methodological assumptions” (Guba & Lincoln 1994, p. 107). Theoretical perspectives are shared ideas in research that shape views and make them logical and these theoretical perspectives establish the purpose and expectations of the research (Creswell 2018). Theoretical perspectives are grounded in the findings presented in the literature analysis, providing the context for the research design.

3.3.1 ONTOLOGICAL, EPISTEMOLOGICAL AND AXIOLOGICAL PERSPECTIVES

Ontology, epistemology and axiological are different ways of viewing a research philosophy. To understand these philosophies, we need to consider the different assumptions they make, Saunders states that

> Assumptions about human knowledge (epistemological assumptions), about the realities you encounter in your research (ontological assumptions) and the extent and ways your own values influence your research process (axiological assumptions) (2016, p. 124).

Ontology and epistemology form a general understanding of how knowledge is considered and how we see ourselves in relation to this knowledge. Ontology is concerned with the question “How do we know what we know?”. Realism is the belief that truth is objective and measurable, whilst relativism is the belief that a reality cannot exist without context (Guba 1990). Epistemology focuses on “What counts as knowledge?” (Creswell 2013, p. 21). Axiology is concerned with the question “What is the role of values?”. This is significant because our values affect how we do research and what we value in our research findings as we can never be entirely value free, values affect what we choose to study, what we see, and how we infer what we see. The research methodology is concerned with the way we go about documenting knowledge and the methods are how we collect it. Despite ontological, epistemological

and methodological differences, researchers share collective goals of gaining understanding and developing evidence (Cohen, Manion & Morrison 2018). They each have ethical constraints and follow ethical principles. All studies regardless of their paradigm have limitations (discussed later).

3.3.2 THEORETICAL PERSPECTIVES

In the field of educational research, paradigm largely refers to two contrasting approaches of how we pursue and use knowledge, these are positivism and interpretivism (Thomas 2017). Positivism is an epistemological approach that advances the application of the methods of the natural sciences to the study of social reality (Bryman 2012). Positivism is grounded on the ontological assumption that the world is controlled by rules and laws, which can be experienced and understood objectively, through experiments and reject subjective understandings (Davies & Hughes 2014). Positivist researchers stay detached from research participants, staying emotionally neutral making clear distinctions between reason and feeling (Guba & Lincoln 1994).

A contrasting epistemology to positivism is interpretivism or constructivism. “Interpretivism is based on the ontological assumption that there is no objective reality – no singular way of understanding the world” (Davies & Hughes 2014, p. 26). With interpretivism approaches, reality is perceived as subjective where individuals have different experiences which we need to recognize and explain to understand the social world (Davies & Hughes 2014). Characteristics of interpretivism/constructivism are that individuals act intentionally and make meaning through their activities, constructing their own social word. Circumstances are not fixed but evolve over time and individuals are unique and essentially non-generalizable (Cohen, Manion & Morrison 2018). This approach uses methods such as unstructured interviews.

In educational enquiry, the two paradigms of positivism and interpretivism can exist together and complement each other (Thomas 2017). The research question in this thesis is influenced by both positivism and interpretivism. It is to determine if novice learners who participate in library instruction as part of the FYE acquire IL. Mixed methods assist in triangulating the measurement approach to provide a more substantial overall measure. Thus,

> triangular techniques in the social science attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint and, in so doing, by making use of both quantitative and qualitative data (Cohen, Manion & Morrison 2018, p. 265).

To summarize, realism and relativism are the principal ontologies. They are essentially theories about reality and truth. Realism represents the traditional sciences whereby knowledge is static, and truth is determined through experimentation. In contrast relativists search for subjective meaning instead of the truth; believing reality does not exist outside of the individual. Positivism and interpretivism are the main epistemologies, with positivism aligned with realism and interpretivism/constructivism aligned with relativism. This mixed methods research recognizes that both objective and subjective views of reality are useful in this research, offering a more comprehensive representation of social experience.

3.3.3 METHODOLOGICAL APPROACHES

Research is underpinned by philosophical perspectives and within research these perspectives can be separated into different approaches to data collection and analysis. The two broadest approaches in educational research are quantitative and qualitative. The difference between the approaches originates from different ontological beliefs. These beliefs determine the most appropriate epistemology and therefore methodology for research (as discussed earlier). These two approaches will be considered separately and then collectively as mixed methods research, as the research question is best addressed with multiple phases (Creswell & Clark 2011).

Quantitative research methods use the traditions of natural science while qualitative research uses a more explanatory approach (Davies & Hughes 2014). Although quantitative and qualitative approaches have different purposes and philosophical approaches, they can be used together to answer research questions (Creswell & Creswell 2018). Quantitative (generally deductive) research, from a positivist paradigm, is directed by different methodologies, techniques and tools to qualitative (generally inductive) research (Cohen, Manion & Morrison 2018). Quantitative approaches do not consider people's unique capability to interpret their experiences, construct their own meanings and act on them.

Qualitative and quantitative approaches have their own body of theoretical knowledge encompassing their own common and respective methods (Kumar 2014). The mixed methods approach does not have its own such theoretical knowledge, instead it largely uses that of the qualitative or quantitative approaches (Creswell & Creswell 2018). In this mixed method concurrent triangulation design, qualitative and quantitative data are collected concurrently in one phase and the data are analysed separately to confirm and cross-validate the findings (Creswell 2011). Mixed methods design is useful in expanding quantitative data through the collection of open-ended qualitative data. This design is applied due to its suitability to the objectives of determining if there is evidence of acquiring IL skills from ILI using the quantitative method of pre/post-testing. Along with obtaining feedback to develop a proposed IL framework for GMIT Library and to present recommendations to redesign future ILI as part of the FYE, using an attitude scale survey as a quantitative measurement of attitudes and qualitative components from an online survey.

3.3.4 METHOLODOGICAL STRATEGIES

From a review of both quantitative and qualitative research approaches prevalent strategies identified include action, survey, ethnographic, grounded theory, narrative and the chosen method of a mixed method case study research (Bell & Waters 2018). The rationale for selecting mixed methods is deliberated in this section. Qualitative

research is characterised by strategies that take the subject's perspective as fundamental, whilst quantitative research exploits objectivity by using numbers, statistics and control. Cohen, Manion & Morrison (2018, pp. 187-188) provide a table which provides the purpose, foci, key terms and characteristics of dominant strategies of styles (appendix 2). In summary surveys, experiments, testing and assessment exploit objectivity and are thus seen as quantitative approaches. While ethnography, action research and grounded theory research are more subjective and accordingly qualitative approaches.

In deciding on the mixed method approach other approaches were deliberated but not adopted for this study. Each approach has its strengths and limitations, and each is suitable for a specific situation (Bell & Waters 2018). A summary of some well-established approaches follows, beginning with qualitative. Narrative research centres on individual stories expressed by participants, ethnography concentrations on an entire culture-sharing group, grounded theory aims to generate a theory (Creswell 2013). A popular method used by educators to research their own institutions is action research (Cohen, Manion & Morrison 2018). This method might be suitable for this research as the purpose is to develop practice, which is an objective of this research. However, the difference is the research is principally carried out by participants, developing through a self-reflective spiral. Action research provides a strong means of enhancing practice (Thomas 2017) but was not employed as part of this research as it tends to be small-scale and time-consuming.

Survey research offers a quantitative description of trends, or views of a population by investigating a sample of that population (Creswell & Creswell 2018). Case study design view effects in real contexts, acknowledging that context is an influential factor of both cause and effect (Cohen, Manion & Morrison 2018). Although they seem similar there is a fundamental difference between surveys and case studies. A case study describes reasonably long research which studies individuals, groups or a situation. A survey refers to research where data is collected from a large sample or entire population in order to comprehend views on a matter. Since this research

centres on first-year students in GMIT a case study is employed to understand the case in detail, in its natural setting, understanding its intricacy and its setting (Punch & Oancea 2014). The choice of approach using the case study method was determined by the research question that this study is aiming to address, with the relevant case study data deriving from several sources of evidence.

3.4 RESEARCH METHODS

Mixed methods research has become more and more prevalent in recent years. Nevertheless, methodological challenges of mixing qualitative and quantitative research persist. For this research the position regarded about the nature of quantitative and qualitative research is the technical version, as opposed to the epistemological version. The technical version perceives quantitative and qualitative research approaches as compatible, viable and necessary, as against the epistemological version which asserts that mixed methods research is unattainable (Bryman 2012).

There are several methods available. The more common methods are surveys, questionnaires, interviews, observation, diaries and focus groups. Several methods (i.e. interviews and focus groups) use primarily words so are considered qualitative, tests largely use numbers so are considered quantitative, whilst observation and questionnaires can use both words and numbers. Using the triangulated, mixed methods approach to the research an online survey, pre/post testing and an attitude scale survey will be conducted. It can be argued that using multiple methods to gather data while conducting primary research strengthens research (Creswell & Clark 2011). Additional sources of information frequently give further understanding to the subject; thus, the data will have increased reliability and validity. Nevertheless, mixed methods research, as with all research, must be suitable to the research question and be proficiently planned and conducted to generate valid and reliable findings (Bryman 2012). The justification for using different methods is to address the different aspects of the overall research question so the study is richer in its presentation of the data.

The methods for gathering the data have a clear connection to the research question. The first objective is to determine if there is evidence of novice learners acquiring IL skills from library instruction as part of the FYE. The method employed for this is quantitative, using Google Forms to administer pre/post-tests to current first-year students attending ILI sessions as part of LIS. The other objectives are to obtain feedback to develop a proposed IL framework for GMIT Library and to present recommendations to design future ILI as part of the FYE. These objectives will be addressed using an attitude scale and online survey, combining qualitative and quantitative to enhance the findings (Bryman 2012). The first method to be deliberated is pre/post testing, followed by an online survey, finishing with the attitude scale survey.

3.4.1 PILOT STUDY

A pilot study is small-scale research conducted prior to the final full-scale study to examine the practicability, reliability and validity of the intended approach. Prior to the launch of the pre/post tests and the online survey a pilot of each was performed. A pilot was not conducted for the attitude scale survey as the student feedback forms used to collect and analyse this data were administered outside the timeframe. In total 14 students completed the pre/post-test and 7 completed the online survey. The data from the pre/post-tests indicate that student's performance increased following ILI as shown by the improvement in scores on the tests. The data from the pilot study are not included in the main results, as both the pre/post-tests and the online survey were amended prior to the final data collection.

All questions considered for the pre/post-tests (n=20) and the online survey (n=19) were evaluated for appropriateness with the library team delivering ILI prior to the commencement of the pilot. The researcher considered the concerns of colleagues and several questions required revising, with some questions from the original being replaced on the pre/post-tests as they were deemed too advanced for first-year students. The purpose of the pilot was to assess the reliability and validity of the tests

on the delivery of content and to determine the average length of time to complete the tests. In addition to identifying any technical problems such as login and usability problems and whether the questions were clear and comprehensible to students. Results of the pilot test show the pre/post-test and the online survey to be useable, reliable and valid and confirm the usefulness of the results.

Administration of the online survey took less than four minutes. The pre/post-test combined pilot study took 5 minutes on average and did not negatively impact the exposure of content during the ILI sessions as students were exposed to the same content as they would have been if they were not participating in the pilot. The librarian did not place added emphasis on the content contained in the post-test. No questions were raised around the wording or clarity of the tests or online survey during the pilot study. However, the researcher did not ask for input from students on this due to the limited timeframe. Nonetheless, it was reassuring that no questions or confirmation of clarity was put forward by participants.

The pilot study sample for the pre/post tests and the online survey were a non-probability convenience sample of students enrolled on courses in GMIT whose lecturers pre-booked ILI sessions for their classes. The rationale for conducting the pilot with the selected student groups was one of convenience and practicality. Improvements in performance between the pre- and post-test indicated an increase in performance following the ILI pilot session (table 3.1), as the percentage of correct answers increased for the five test questions, with a minimum 20% increase for each question.

Table 3.1: Pilot study questions with percentage of correct responses

Questions (multiple-choice answers in appendix)	Correct Answer in Pre-test %	Correct Answer in Post-test %	Difference %
1. Which of the following best describes "information literacy"?	43%	64%	+ 21%
2. The name of the online library's default search is:	29%	79%	+ 50%
3. What is meant by "full text" in library database search results?	36%	57%	+ 21%
4. When searching a database, the use of Boolean operators "And", "Or" and "Not" can be useful in narrowing or widening your search results. Which word would you use to increase the number of the items you retrieve?	7%	43%	+ 36%
5. In critically evaluating information sources you should consider:	36%	57%	+ 21%

All students who participated in the online survey pilot where aged between 18-22, studying science at the Galway campus. Six out of seven students rated their IL skills as 'good' with one asserting 'limited' IL skills. Figure 3.1 shows four out of seven rated the library LIS training as excellent.

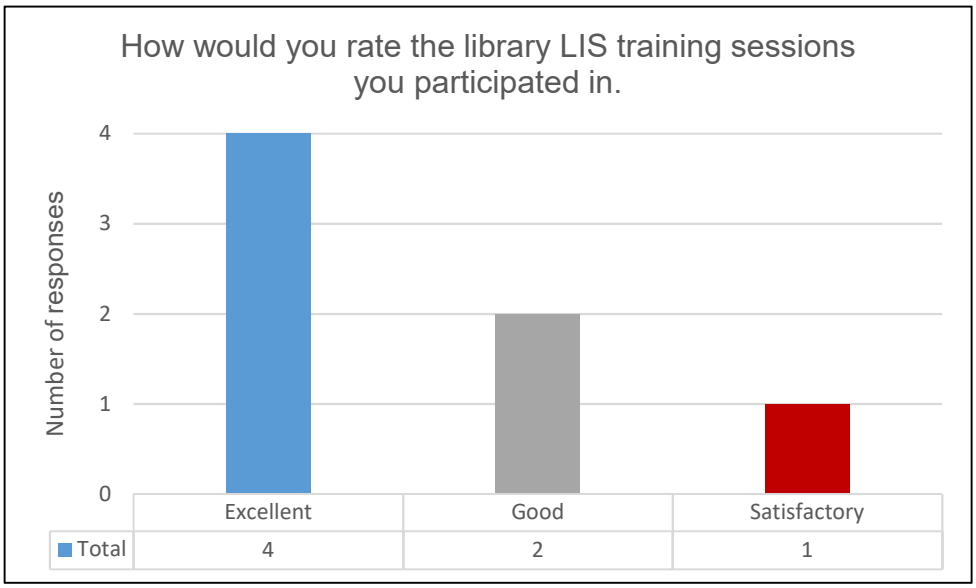


Figure 3.1: Ranking of LIS training participated in from Online Survey pilot study

Figure 3.2 shows that students had a mixed response regarding the preferred teaching method for the ILI session.

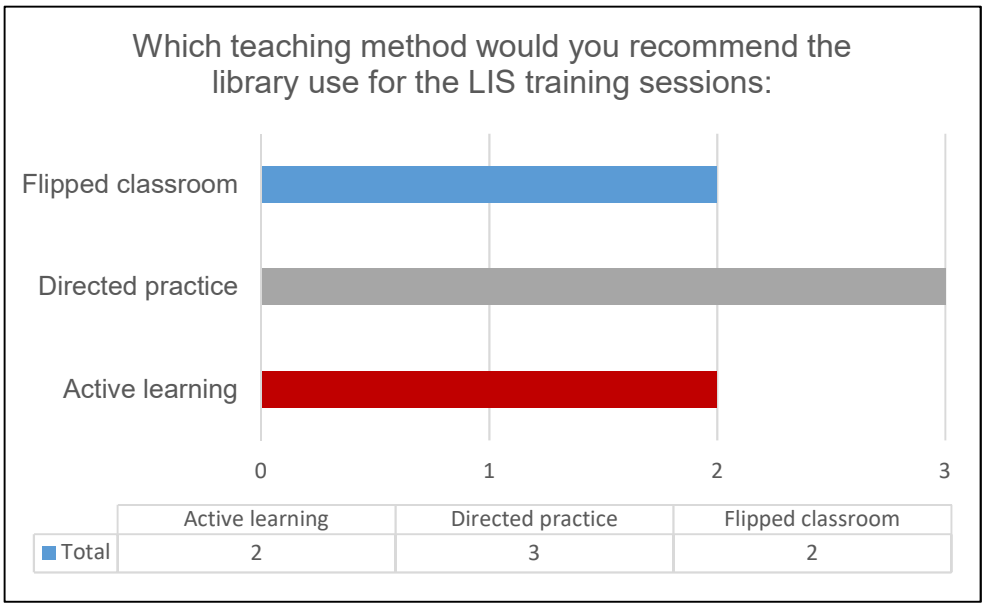


Figure 3.2: Peferred teaching method from Online Survey pilot study

The researcher was satisfied with the practicalities of carrying out the pilot study; collecting the data, preparing for and carrying out the analysis. The scores from the pilot study for the pre/post tests were not as high as the researcher expected. Nevertheless, there was an improvement in scores for all question showing students' performance improved after directed ILI.

3.4.2 PRE/POST TEST

The first research method applied is experimental design using pre/post-testing (repeated-measures design). Pre/post testing is a measure of reliability attained by administering the same test twice to a group of individuals (Bell & Waters 2018). The rationale for administering the pre/post-tests is to determine if there is evidence of acquiring IL skills from ILI; has the manipulation (ILI) caused a change in the participants. Pre/post-testing is a comparative analysis assessment tool which in addition to measuring if, or how much, students have improved after ILI, is a valuable instrument for progressing effective instruction. Recently published literature on ILI

that employ pre/post-tests include Dawson, Hsieh & Carlin (2017); McClurg, Powelson, Lang, Aghajafari & Edworthy (2015) and Ingalls (2018).

A purpose of pre/post-tests is to gain knowledge of the status of a group to provide guidance for future activities as well as the basis of comparison to determine whether expected fundamentals have been attained (Cohen, Mannion & Morrison 2018). Students were assessed at the beginning of the ILI session and at the end of the session (circa. one hour) and were not pre-warned that the same questions would be asked again at the end of the session.

3.4.3 ONLINE SURVEY

Two key objectives of the research are to obtain feedback to aid in the development of a proposed IL framework for GMIT Library, and to help in presenting recommendations to redesign future ILI as part of the FYE. An online survey will be used to get students' perspectives. GMIT students are asked to visit a website where the survey can be completed (Bryman 2012). The purpose is to gather large scale data from closed-ended questions to generalize, as well as collecting individual perspectives from open-ended questions. While the online survey is principally quantitative, using selected open-ended questions ensures the qualitative nature of this research will not be overlooked. However, closed-ended questions are typically more likely to yield complete answers, facilitating analysis (Picardi & Masick 2013).

The advantages of using an online survey include ease of access. Surveys can be made visually attractive but more significantly, the online survey can be designed and programmed to suit the requirements of the research (Bryman 2012). Also, data can be easily exported for analysis. The survey will be confidential and anonymous. Students will be invited, on a voluntarily basis, to complete a short online survey focusing on IL and ILI. A consideration of the sample population here is that all students have access to the Internet (Pickard 2017). Participants, after consenting,

will be requested to state which of the ILI sessions they attended as part of their FYE before responding to more specific questions relating to IL.

Few studies have examined issues that might influence IL skills, most recently Flierl, Bonem, Maybee & Fundator (2018) and Godbey (2018). Hence, it is intended, that the demography of the student cohort is incorporated, to see if the demographic of the students might impact on engagement with, and attainment of IL. The diverse cohort of GMIT's first-year student population goes beyond the traditional school leaver. The demographic analysis of the students aims to encompass factors such as age and disciple of study (i.e. engineering, business).

3.4.4 ATTITUDE SCALE SURVEY

Surveys in education frequently use attitude scales to gather large scale data in a short period of time to measure generalised features (Cohen, Manion & Morrison 2018). In this study the attitude scale survey was not distributed within the timeframe of the research, the data were collected as part of the LIS ILI sessions that took place in the previous academic year. The justification for this was to collate and analyse a full academic year of student's feedback forms giving a larger sample size to better determine the average student's attitude from participation in ILI as part of the FYE.

A current method of gathering feedback from students in GMIT is to have them anonymously complete a course evaluation survey or feedback form. In GMIT the main purpose of distributing a course evaluation survey is to improve course content and instructional practice in ways that enhance student learning. Staff are encouraged to administer feedback forms at the end of each ILI session. Although surveys are most often used to collect student feedback, they are not the only method employed. Student feedback can be achieved through focus groups or one-to-one student interviews (Varga-Atkins, McIsaac & Willis 2017). The researcher considered using focus groups as part of this study to look at the quality of experiences however, attitude

scale survey analysis was selected to yield more generalizable data from a larger sample.

The significance of implementing an attitude scale rests in the ability to help find out how people feel about a subject. “Attitude scales provide a quantitative measurement of attitudes, opinions or values by summarising numerical scores given by researchers to people's responses to sets of statements exploring dimensions of an underlying theme” (Payne & Payne 2004, p. 17). The student evaluation feedback form developed by librarians is routinely distributed as part of LIS ILI. It is these feedback forms that will be analysed as part of this research. Although focus groups were not used, they are key in exploring the insights, understanding and opinions of a group who have shared experiences (Kumar 2014). The main disadvantage in using focus groups is they tend not to produce generalizable data and disagreements and inappropriate discussion can divert from the focus (Cohen, Mannion & Morrison 2018). Thus, the use of focus groups as part of this research was dismissed.

A Likert scale (attitude scale) is used to determine strengths of attitude towards a sequence of statements; the inference is that the higher the category chosen the better the strength of the agreement (Bell & Waters 2018). In this study the statements focus on participation in, and satisfaction with ILI as part of the FYE. An example statement is: “Quality of course content”, students mark one of the following options, “Excellent”, “Good”, “Satisfactory”, “Poor”. There are limitations to using a Likert scale, namely, the belief of inferring extra meaning into the ranked scales as the intervals between the scales may not be the same. Nevertheless, the Likert scale can be valuable if the wording is clear and there are no unwarranted claims made about the results (Bell & Waters 2018). Identifying strengths from the feedback offers opportunity to commend and build on successes, and identifying weaknesses offers an opportunity to adapt ILI and/or feedback practice to better meet the need of the students.

3.4.5 SAMPLING

In any study the researcher should endeavour to get as representative a sample as possible (Bell & Waters 2018). Thus, in this study the purpose of sampling strategies is to get a sufficient sample that is representative of the relevant population. It is often not viable to collect data from the whole population of interest (e.g. all first years), therefore, a subsection of the population is used to estimate the population responses (Cohen, Manion & Morrison 2018). To draw conclusions accurately about the population, the sample must include individuals with characteristics comparable to the population.

Two general methods of sampling are used in educational research and these are probability and non-probability (Cohen & Holiday 1979, 1982, 1996 as cited in Cohen, Manion & Morrison 2018). With probability sampling, all elements (e.g. first-year students) in the population have some opportunity of being included in the sample, and the probability that any one of them will be selected can be determined. In contrast, with nonprobability sampling population elements are selected based on their availability (e.g., students attending LIS ILI). The consequence is that an unknown portion of the population is excluded (e.g. students who do not attend LIS ILI). One of the most common types of nonprobability sample, and used for this study, is a convenience sample – not because such samples are easy to enlist, but because the researcher uses whatever individuals are available instead of selecting from the entire population (Kumar 2014).

This study is dependent on the willingness of the students to voluntary participate in the pre/post tests and the online survey and attitude survey scale. In addition, for participation in the pre/post tests and the attitude scale, students need to be part of a LIS class attending a pre-booked session at the discretion of their tutor. The data from the student feedback forms were collected independently of this study. However, the students' co-operation was essential as the feedback was provided on a voluntary basis at the end of earlier LIS ILI sessions.

3.5 RESEARCH ETHICS

The researcher observes high standards of professional behaviour in undertaking this study. Both in the practice and dissemination of the research in accordance with GMIT's research ethics policy, and the requirements of the MA in Teaching and Learning Research Ethics Committee. Informed consent forms are included at the beginning of the pre/post-tests and the online survey along with a link to a participation information leaflet with detailed particulars of the research and contact details (appendix 3). There are no perceived risks and participates may withdraw at any time without penalisation. Students under 18 years of age cannot participate.

Several essential principles reinforce research integrity and good practice in carrying out research. These are duty of care, fairness, honesty, impartiality, objectivity, open communication and reliability (Irish Universities Association 2014). No information or data will be falsified and legitimate methods of collecting data will be employed. Any research or ideas will be acknowledged; to avoid plagiarism. Conducting oneself ethically is essential to any research. The ethical aspects of confidentiality, privacy, and data protection are key considerations in this research. To respect participant's privacy participation in all primary research methods will be voluntary. To safeguard anonymity the questionnaire will not ask for personal details that can identify individuals. The EU General Data Protection Regulation (GDPR) requirements mainly reflect current good practice in research, so should not impact on this research.

3.5.1 VALIDITY AND RELAIBITY

The validity and reliability of the data and the response rate will depend on how the test and surveys are designed and the structure of the questions. There are four measures of validity (Bourke & Doran 2016). These are:

1. Content: consider if the area has been covered sufficiently
2. Face: appearance and design

3. Criterion: usefulness of the questionnaire
4. Construct: the degree to which a test determines what it claims.

All questions were reviewed by colleagues, to troubleshoot the design and phraseology and to ensure that the tests and surveys were valid and reliable. It is essential that all students understand the questions being asked and are introduced to the purpose of the pre/post-tests and surveys along with providing consent to participate. Also, the anonymity and confidentiality of the participants should be valued, and informed consent sought (Cohen, Manion & Morrison 2018). A chief source of unreliability of test data stems from the degree in which participants have been prepared for the test.

Reliability refers to the quality of measurement and its consistency (Bell & Waters 2018). For research results to be considered valid, the method used for measurement must be reliable. Reliability not only refers to the techniques used in the research but also its design and execution (Mligo 2016, p. 81). Assessing the reliability of research findings requires researchers to make judgements relating to the usefulness of the information, the accuracy of the research in relation to the application and appropriateness of the methods performed and the integrity of the findings. The data analysis along with the literature review, will give increased reliability and validity to this study investigating if novice learners who participate in library instruction as part of the FYE acquire IL skills. The tasks include collecting, analysing, presenting and reporting the data. The triangulated approach using mixed research methods will increase the validity of the research, by using different methods to come to a firmer understanding of the topic and corroboration of the findings from different data sources (Bell & Waters 2018).

3.5.2 CHALLENGES AND LIMITATIONS

The main limitation of this research is time, as triangulation is time-consuming, so the researcher must strive to do the best they can in the time available (Bell & Waters 2018). The size of the sample will depend on the number of viable pre/post-tests attainable as well as the number of responses to the survey: the greater the response and completion rate the greater the validity and capability to generalize to other populations. The pre/post-test will be anonymous; thus, the researcher will distribute a unique code to each participant to ensure that each student's pre-test match their post-test. This step is crucial in conducting repeated-measures analyses on the data, a lack of reliable data may require the researcher to limit the scope of the analysis. The online survey will be distributed to students using their GMIT email address. Using this method alone may have a negative effect on the response rate as not all students use their college email as they generally have personal email addresses. Thus, students will also be invited to participate via GMIT Library's Facebook page.

3.6 DATA COLLECTION AND ANALYSIS

Data collection is the process of gathering data from participants while data analysis is the process of gaining insight from the collected data (Creswell & Creswell 2018). Each of the methods will be discussed separately, beginning with the pre/post-test, then the online survey and finally the attitude scale survey. Before reviewing the individual methods employed the researcher will deliberate on the benefits for the participants and what informed the choice of questions for the research.

3.6.1 WHY PARTICIPATE IN THE RESEARCH?

Participants may not directly benefit from being in the study, yet they may choose to volunteer if they are interested in IL or want to help. As the pre/post tests and the attitude scale are completed in a pre-booked ILI session, participants may feel that they must participate even though it is made explicitly clear that participation is

voluntary. Subsequently, as participation is voluntary and consent to participate can be withdrawn at any time, ease of mind is established, thus students may feel content participating and perceive value in contributing. It would be interesting to investigate why students did not volunteer to participate in the research.

3.6.2 QUESTION SELECTION

The choice of research questions is informed by the research topic. The research will contribute to ILI practice and advance understandings of acquiring IL skills as a novice learner as part of the FYE in GMIT. The research questions aim to obtain feedback to develop a proposed IL framework for GMIT Library and to present recommendations to redesign future ILI as part of the FYE programme. A review of the literature was central to the choice of questions. The researcher performed a thorough investigation of research pertaining to IL in HE, focusing on the FYE and examples of recommended methods and best practice in conducting educational research. It is essential that the questions contained in the pre/post-tests pertained to the focus of current ILI delivered as part of GMIT's LIS module. Thus, the multiple-choice questions aligned with the content of the individual ILI sessions. Multiple choice pre/post-tests promotes retention learning of the elements present in it (Ramrajee & Sable cited in Jayachandran & Balaji 2016).

The student feedback forms developed by GMIT librarians are based on the Institute's feedback forms. Questions were amended by the library to ensure significance to ILI. Evaluation and feedback forms can provide valuable information on the quality of content and delivery, students' perceptions of these, suggestions and other comments. The online survey uses principally closed-ended questions, the survey was created based on a review of recent surveys on ILI available for open access review and past research conducted by the researcher. Using close-ended questions limits the response, thus, open-ended questions are included in the survey to allow participants freely answer what they feel is relevant along with anything else they want the researcher to know.

3.6.3 PRE/POST TEST

A pre/post-test is a valuable method for measuring the "value-added" and is designed to measure improvements in students' performance from pre- to post-instruction tests. To do this, questions pertaining to all topics incorporated in the ILI sessions are included in the tests. Sample questions include: 'When checking the currency of information, you are checking?', 'Failure to give credit to your sources of information in your assignments is called?' (see appendices for full list). The sample is a non-probability convenience sample as participants are not assigned randomly since they are part of a pre-booked class. This method is more practical when dealing with groups of students already in class, and part of a real-life environment (Cohen, Manion & Morrison 2018), as is the case with the ILI sessions.

One of the most important considerations to allow for with pre/post-tests is the coordination of collecting the data. The researcher can confirm that it is possible to measure the same individuals' twice. The tests will take place in the library as part of face-to-face ILI. Academic agreement will be prearranged and consent from individual participants will be sought prior to issuing the test (see research ethics). The data will be collected online using Microsoft Forms, available as part of GMIT's Office 365 Education subscription. To conduct repeated-measures analyses on the data each student will be assigned a unique, de-personalized identifier to pair each anonymous response on the pre-test to the response on the post-test.

3.6.4 ONLINE SURVEY

Online surveys are becoming the principal means of conducting surveys (Cohen, Manion & Morrison 2018). Non-probability, volunteer sampling will be applied, with Microsoft Forms used to collect and analysis the data. Microsoft Forms has built-in analytics to evaluate responses and is GDPR compliant. Features include the option to export to Excel for more in-depth analysis (Support.office.com 2019). As the survey

contains open and closed questions exporting responses to Excel will be useful in grouping replies that are part of the same theme into categories.

3.6.5 ATTITUDE SCALE SURVEY

The student feedback evaluation form used was created using a Likert scale which is a rating scale devised by the psychologist Rensis Likert to measure attitudes (Cohen, Manion & Morrison 2018). Rating scales are commonly used in research as they combine the possibility of flexible responses with the opportunity to determine correlations and further quantitative analysis (Cohen, Manion & Morrison 2018). It is important to choose questions relevant to the context, namely that students are giving feedback on their experience of the attended ILI sessions. The main consideration when constructing a Likert scale is to use statements rather than questions, ensure statements are relevant and related (Bryman 2012). The data from the feedback forms will be analysed using Microsoft Excel as a range of techniques are available to easily manage data and perform analyses.

3.7 CONCLUSION

This chapter provided an explanation of the background, methods and data sampling employed, in addition to outlining the ethical considerations and limitations. The researcher has confidence in the methods used to collect the data; trusting that they meet the needs of the research question and ensuring reliability and validity. The findings and analysis of the data will be deliberated in the next chapter.

CHAPTER FOUR: RESEARCH FINDINGS AND ANALYSIS

4.1 INTRODUCTION

The findings of the research are presented in this chapter. The aim of this research was to investigate if novice learners who participate in library instruction as part of the FYE acquire IL skills. The objectives are to determine if there is evidence of acquiring IL skills from library instruction in GMIT using pre/post-tests as assessment tools for measuring the performance of students participating in LIS ILI. Along with obtaining feedback to develop a proposed IL framework for GMIT Library and presenting recommendations to redesign future ILI as part of the FYE. For clarity the findings will be presented according to research method, beginning with the findings from the pre/post-test assessments, followed by the online survey and the attitude scale survey findings.

4.2 RESEARCH FINDINGS

The data are mainly quantitative with some qualitative elements. The results reveal that novice learners who participate in ILI as part of the FYE acquire IL skills as the difference between the pre- and post-test score was statistically significant based on the data collected. Cohen's D was used to indicate the standardised difference between two means as it is one of the most universal ways to measure effect size. An effect size is how large an effect of something is and is typically measured in standard deviation units (Cohen, Manion & Morrison 2018). The feedback suggests that students who participate in ILI as part of the FYE find the sessions relevant and would recommend them to other students.

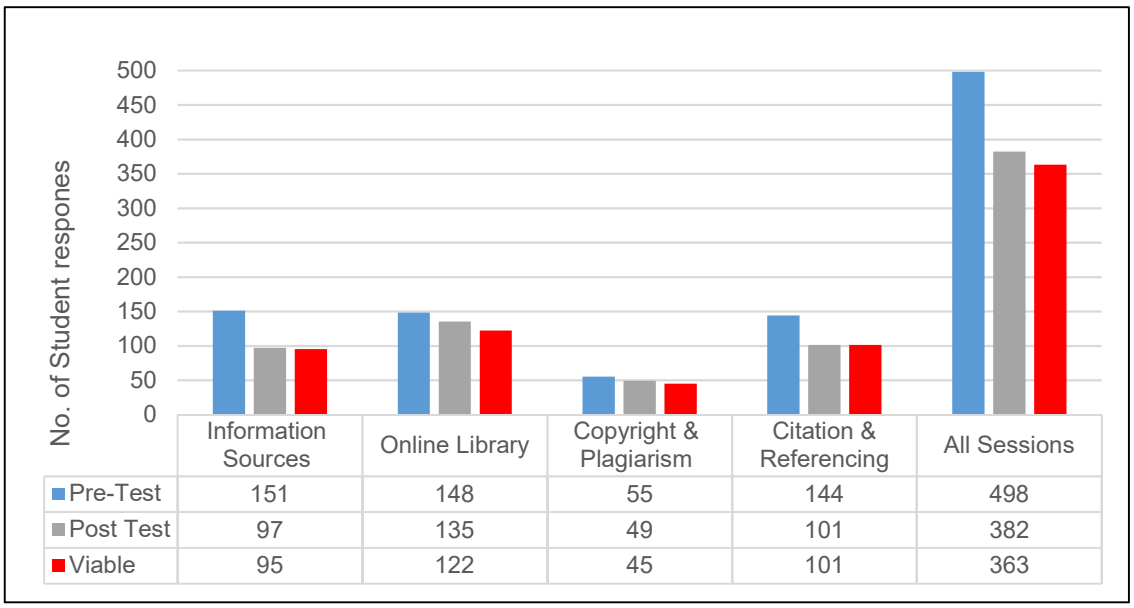
4.3 PRE/POST TEST

A pre-test/post-test analysis was performed to measure students' performances in each of the four ILI sessions. This section will present and summarize the results of the tests. Quantitative data were collected from first-year students who participated in ILI from December 2018 to March 2019 as part of LIS to determine if there is evidence of acquiring IL skills from ILI using pre/post-test assessments. Each student's pre-test and post-test were coded, and the results were compared. Only participants with comparable data are included in the analysis, while the remaining participants who completed either a pre-test or a post-test are excluded (Figure 4.1). To illustrate the difference in pre/post responses figure 4.1 shows excluded responses (not matched). Descriptive statistical analysis was used to identify frequencies and percentages to answer all questions. Not all students answered all questions, thus, the percentages reported correspond to the total number of students answering individual questions.

This section will begin by presenting the data from all matched pre/post-tests (n=363), followed by examining each LIS ILI session to establish performance in each individual session:

- Information Sources (n=95)
- The Online Library (n=122)
- Copyright & Plagiarism (n=45)
- Citation and Referencing (n=101)

The tests measured the performance, by correct answers, of a sample of students before and after completing a LIS ILI session and the results were analysed for differences using a paired sample *t*-test. A paired sample *t*-test is a statistical procedure used to determine whether the mean difference between two sets of observations is zero. In a paired sample *t*-test, each subject or entity is measured twice, resulting in pairs of observations. The level of alpha is typically 0.05 and the chance of a finding being by chance alone is 5% (Cohen, Mannion & Morrison 2018). The researcher seeks to reject the null hypothesis (H0) and conclude that there is a statistically significant difference between the two paired data.



	Information Sources	Online Library	Copyright & Plagiarism	Citation & Referencing	All Sessions
Pre-Test	151	148	55	144	498
Post Test	97	135	49	101	382
Viable	95	122	45	101	363

Figure: 4.1 Responses (n) from pre/post test data collected from all LIS ILI sessions

95% of all students who completed the pre/post tests were aged 18-22. This percentage is to be expected given that participants are first-year students. Table 4.1 presents an analysis of student's age range according to LIS ILI session participation. The results show that there was no participation from students over 41 years of age.

Table 4.1: Age range of participants in pre/post-tests

Age	18-22	n=	23-30	n=	31-40	n=	41-50	n=	50+	n=	Total
Information Sources	**94%**	89	**5%**	5	**1%**	1	**0%**	0	**0%**	0	95
Online Library	**97%**	118	**3%**	4	**0%**	0	**0%**	0	**0%**	0	122
Copyright & Plagiarism	**93%**	42	**7%**	3	**0%**	0	**0%**	0	**0%**	0	45
Citation & Referencing	**97%**	98	**2%**	2	**1%**	1	**0%**	0	**0%**	0	101
Mean	**95%**		**4%**		**1%**		**0%**		**0%**		

Four schools/areas of study are included in the summary in table 4.2. There were no bookings for the Humanities or Art and Design during the timeframe of the tests. The highest response rate for all sessions, and 74% overall, derived from the School of Business (table 4.2). This high rate was expected as all LIS bookings for business took place in the second semester, when most of the assessments took place, whilst the other schools partook earlier in the academic year. Due to the time frame of the

research the pre/post-tests could not be completed earlier in the academic year. The researcher is aware that this limitation of "sample bias" may affect the conclusions that can be drawn from the research and acknowledges that this can be addressed in future studies.

Table 4.2: School/area of study of participants in pre/post-tests

School	Business	n=	Engineering	n=	Hotel & Catering	n=	Science	n=	Total
Information Sources	**71%**	67	**29%**	28	**0%**	0	**0%**	0	95
Online Library	**64%**	78	**1%**	1	**8%**	10	**27%**	33	122
Copyright & Plagiarism	**82%**	37	**18%**	8	**0%**	0	**0%**	0	45
Citation & Referencing	**79%**	80	**0%**	0	**0%**	0	**21%**	21	101
Mean	**74%**		**12%**		**2%**		**12%**		

Table 4.3 summarizes the questions asked in the pre/post-test together with the students' scores (%), of correct answers, as a group in the pre/post-test assessments and the difference in performance (see appendices for multiple choice answers).

Table 4.3: Pre/post-test questions and students' performance as a group (% correct answers)

	Q1	Q2	Q3	Q4	Q5	Mean
Information Sources *(n=95)*						
Pre-Test	73%	44%	55%	7%	7%	
Post-Test	96%	73%	68%	12%	19%	
Difference	**+23%**	**+28%**	**+14%**	**+4%**	**+12%**	**+16%**
Online Library *(n=122)*						
Pre-Test	50%	25%	48%	9%	50%	
Post-Test	71%	84%	70%	42%	60%	
Difference	**+21%**	**+59%**	**+21%**	**+33%**	**+10%**	**+29%**
Citation & Referencing *(n=101)*						
Pre-Test	46%	19%	44%	29%	34%	
Post-Test	50%	42%	56%	56%	49%	
Difference	**+4%**	**+23%**	**+13%**	**+28%**	**+15%**	**+16%**
Copyright & Plagiarism *(n=45)*						
Pre-Test	58%	58%	4%	31%	40%	
Post-Test	87%	91%	53%	47%	60%	
Difference	**+29%**	**+33%**	**+49%**	**+16%**	**+20%**	**+29%**

Figure 4.2 shows that students' scores (correct answers) as a group increased from pre- to post-test. The average score for all students in all sessions combined in the pre-test was 56% and the average score in the post-test was 78%. Thus, the students, as a group, increased their average score by 22%. Significant improvement was made in a number of questions from pre- to post-test, with the greatest improvement arising from question 2 in the Online Library session "The name of the online library's default search is?", 25% of students answered the question correctly in the pre-test and 84% answered it correctly in the post-test, an improvement of 59%. The question with the least improvement, from the citing and referencing session, was question 1: "You should include citations in your assignment because", 46% of students answered the question correctly in the pre-test and 50% answered it correctly in the post-test; a slight improvement of 4%. For this question (and others) students were required to choose all the correct choices to be marked as correct and if they did not choose all correct choices, the score was 0.

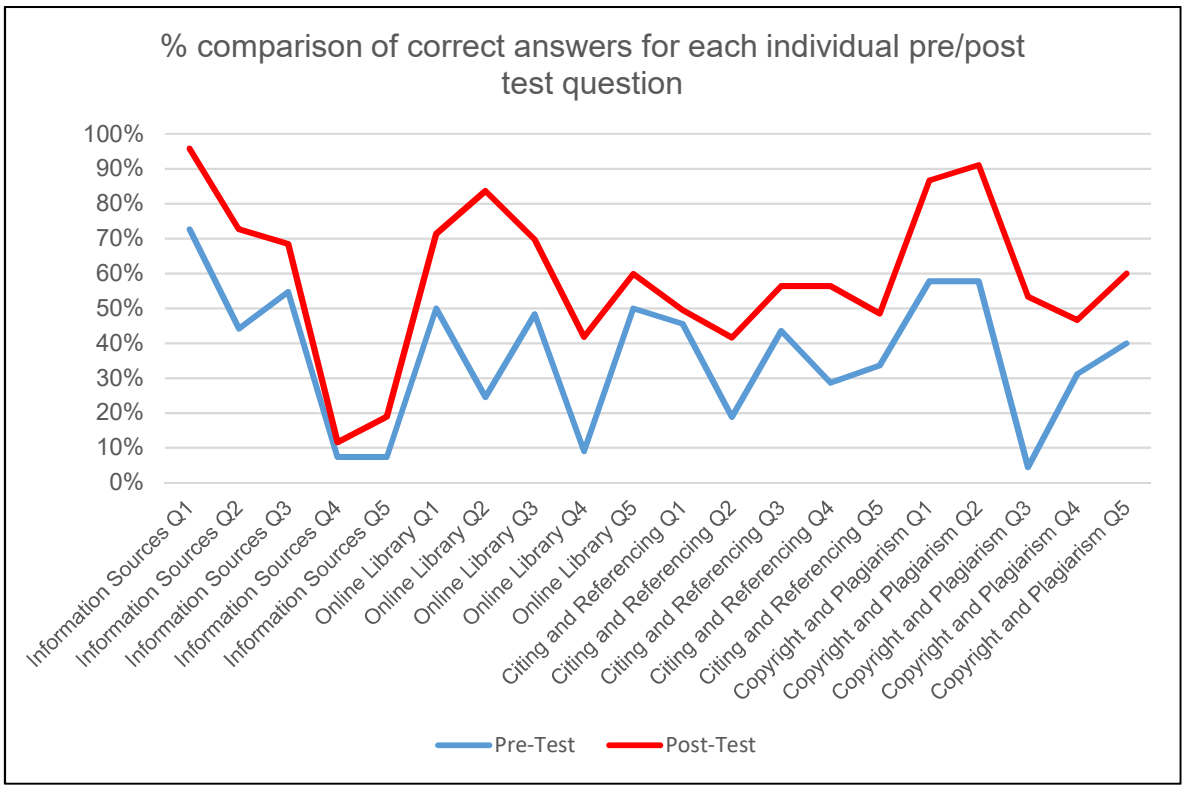


Figure 4.2: Line chart showing pre/post results for questions in the LIS ILI sessions

The highest number of students' correct answers in the pre-tests (73%) came from question 1 in the Information Sources session "Library books are all you need to research your assignment" with 96% correctly answering this question in the post-test. Interestingly, students had a low score in both the pre- and post-tests for two questions in this session with only 7% of students answering questions 4 and 5 correctly in the pre-test with an insignificant improvement in the post-test of 4% and 12% respectively.

4.3.1 INFORMATION SOURCES

The pre/post-test assessment presented in this section relates to the Information Sources session. This session covers questions on recognising and finding different sources of information and evaluating information. The student average for the pre-test in the Information Sources sessions was 37.1% ± 3.9% (mean ± 95% confidence interval). The difference between the pre-test score and the criterion of success (100%) was statistically significant: t (94) = -31.36, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -3.22). The student average on the post-test was 54.3% ± 3.9% (mean ± 95% confidence interval). The difference between the post-test score and the criterion of success (100%) was statistically significant: t (94) = -22.84, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -2.34).

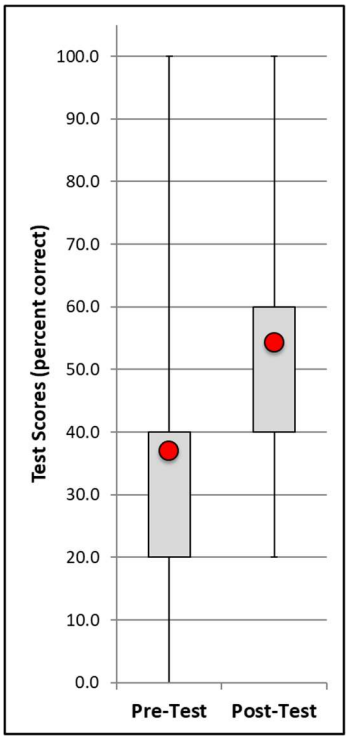


Figure 4.3: Distribution of scores for Information Sources pre/post-test

The difference between the pre-test and post-test scores (17.3%) was statistically significant using a two-tailed paired t-test: t (94), p < 0.001. The scale of this difference has a large effect size (Cohen's d = 0.89). This means the students did substantially better on the post-test than they did on the pre-test. The distribution of scores are

plotted in figure 4.3. The grey boxes make up the middle half of all scores (the second and third quartiles) with the median score dividing the two middle quartiles. The whiskers (the two lines outside the box that extend to the highest and lowest observations) represent the range of the upper and lower 25% of all scores. The average scores are indicated with red circles.

4.3.2 THE ONLINE LIBRARY

The pre/post-test assessment presented in this section relates to the Online Library session. This session covers questions on GMIT Library's online collections including refining and focusing search results. The student average from correct answers for the pre-test in the Online Library sessions was 36.9% ± 4% (mean ± 95% confidence interval). The difference between the pre-test score and the criterion of success (100%) was statistically significant: t (121) = -31.3, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -2.83). The average on the post-test was 65.9% ± 3.9% (mean ± 95% confidence interval). The difference between the post-test score and the criterion of success was statistically significant: t (121) = -17.18, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -1.56).

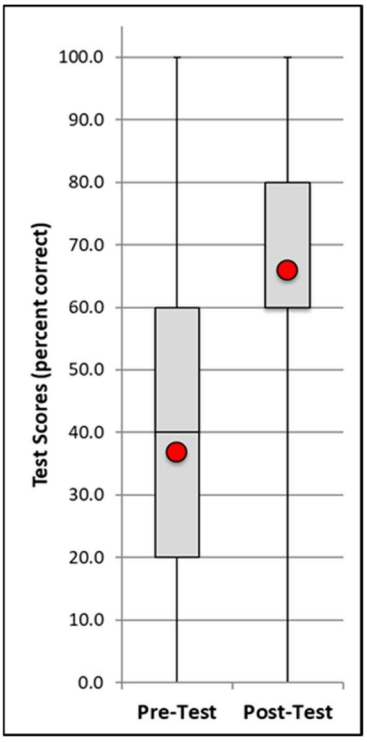


Figure 4.4: Distribution of scores for the Online Library pre/post-test

The difference between the pre-test and post-test scores (29%) was statistically significant using a two-tailed paired t-test: t (121), p < 0.001. The scale of this difference has a very large effect size (Cohen's d = 1.32). The students did much better on the post-test than they did on the pre-test (figure 4.4).

4.3.3 COPYRIGHT & PLAGIARISM

The pre/post-test assessment presented in this section relates to the Copyright & Plagiarism session. This session covers questions concentrating on copyright and how to avoid plagiarism. The student average from correct answers in the pre-test was 38.2% ± 5.7% (mean ± 95% confidence interval). The difference between the pre-test score and the criterion of success (100%) was statistically significant: t (44) = -21.3, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -3.18). The student average on the post-test was 67.6% ± 7.6% (mean ± 95% confidence interval). The difference between the post-test score and the criterion of success was statistically significant: t (44) = -8.36, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -1.25).

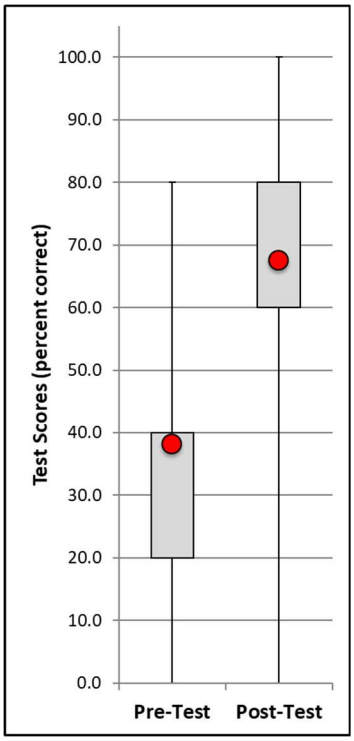


Figure 4.5: Distribution of scores for the Copyright & Plagiarism pre/post-test

The difference between the pre-test and post-test scores (29.3%) was statistically significant using a two-tailed paired t-test: t (44), p < 0.001. The scale of this difference has a very large effect size (Cohen's d = 1.29). The students did much better on the post-test than they did on the pre-test (figure 4.5).

4.3.4 CITATION & REFERENCING

The pre/post-test assessment presented in this section relates to the Citation & Referencing session. This session covers questions on in-text citations and referencing using the Harvard style. The student average from correct answers in the pre-test was 34.5% ± 4.6% (mean ± 95% confidence interval). The difference between the pre-test score and the criterion of success (100%) was statistically significant: t (100) = -28.22, p < 0.001. The difference between these scores had a very large effect

size (Cohen's d = -2.81). The student average on the post-test was 50.7% ± 5.2% (mean ± 95% confidence interval). The difference between the post-test score and the criterion of success was statistically significant: t (100) = -18.51, p < 0.001. The difference between these scores had a very large effect size (Cohen's d = -1.84).

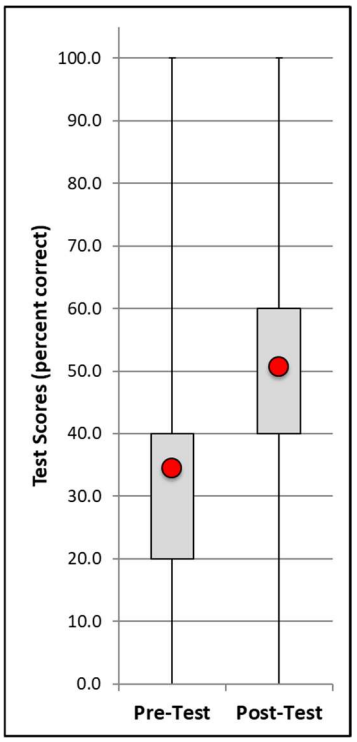


Figure 4.6: Distribution of scores for the Citation & Referencing pre/post-test

The change in performance observed a difference between the pre-test and post-test scores (16.2%) was statistically significant using a two-tailed paired t-test: t (100), p < 0.001. The scale of this difference has a medium effect size (Cohen's d = 0.65). The students did somewhat better on the post-test than they did on the pre-test. The scores suggest that there has been a meaningful gain in performance after the ILI session (figure 4.6).

This section has detailed the findings of the pre/post-test assessments. The next section reports the findings from the online survey.

4.4 ONLINE SURVEY

Since several sources of evidence are required for case study research, in addition to measuring students' performance in the pre/post-tests, research data were derived from an online survey. The results from the online survey will assist with the objective of obtaining feedback to present recommendations for redesigning future ILI as part of the FYE and gaining information to aid in developing a proposed IL framework for GMIT Library (appendix 1). This section includes an analysis of responses from an online survey. The online survey was open to all GMIT students to obtain prospective and retrospective data. However, the decision was made to concentrate only on the

results provided by current first-year students, due to the scope of the study, time limitations and the aims of the research. The objective of the survey data is to strengthen the pre/post test data and allows the researcher to further examine whether ILI aids the acquisition of IL skills by asking pertinent questions relating to the knowledge and use of IL skills by GMIT students.

4.4.1 PROFILE OF PARTICIPANTS

A total of 83 first-year students completed the online survey (see appendix 17 for full survey results). The following section presents details of the findings. Table 4.4 shows that 63% (52) of the participants were aged between 18-22 with 48% (40) male and 52% (43) female participants.

Table 4.4: Online survey participants' demographics

Age	n	%	Gender	n	%
18-22	52	63%	Male	40	48%
23-30	9	11%	Female	43	52%
31-40	17	20%			
41-50	4	5%			
50+	1	1%			

Table 4.5 shows that 67% (56) of participants are currently studying at the Galway campus with over half (59%) of all participants' (49) studying business or science.

Table 4.5: Online survey participants' campus and area of study

Campus	n	%	Studying	n	%
Galway	56	67%	Business	18	22%
			Engineering	12	14%
			Science	22	27%
			Tourism, Hospitality, Heritage, Culinary Arts	4	5%
CCAM	6	7%	Art & Design	11	13%
			Film and Documentary	1	1%
Mayo	10	12%	Nursing	3	4%
			Outdoor Education	1	1%
			Social Care	3	4%
Letterfrack	11	13%	Furniture Design	1	1%
			Teacher Education	7	8%

4.4.2 IL CONFIDENCE AND COMPETENCIES

Students were asked in what library LIS training they had participated, 31% (26) of participants participated in all four of the sessions, with 14% (13) not participating in any of the sessions (appendix 17).

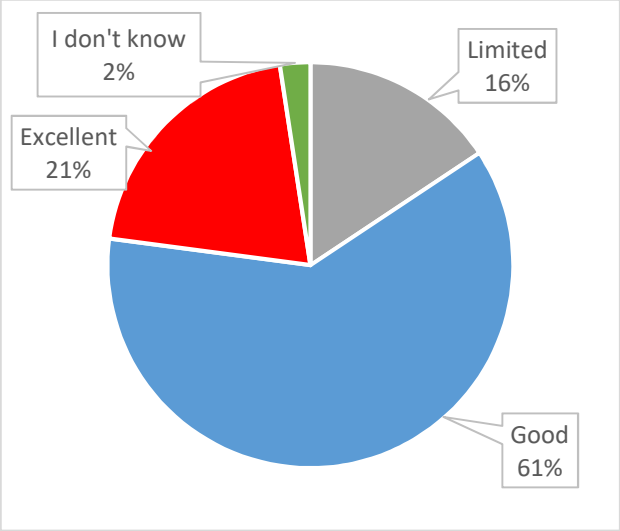


Figure 4.7: Online Survey results showing participants self-rating of IL skills

Figure 4.7 illustrates that 82% of participants rate their IL skills as 'good' or 'excellent'.

The findings suggest that students overrate their IL skills as figure 4.8 shows that although participants reported feeling confident and competent identifying a variety of potential sources of information (70%), almost a quarter of the participants (24%) did not feel confident and competent in finding, using and communicating information although figure 4.7 shows a perceived high rate of good or excellent IL skills. Of the seven statements specified, only one had a confidence and competency rate of over 50%.

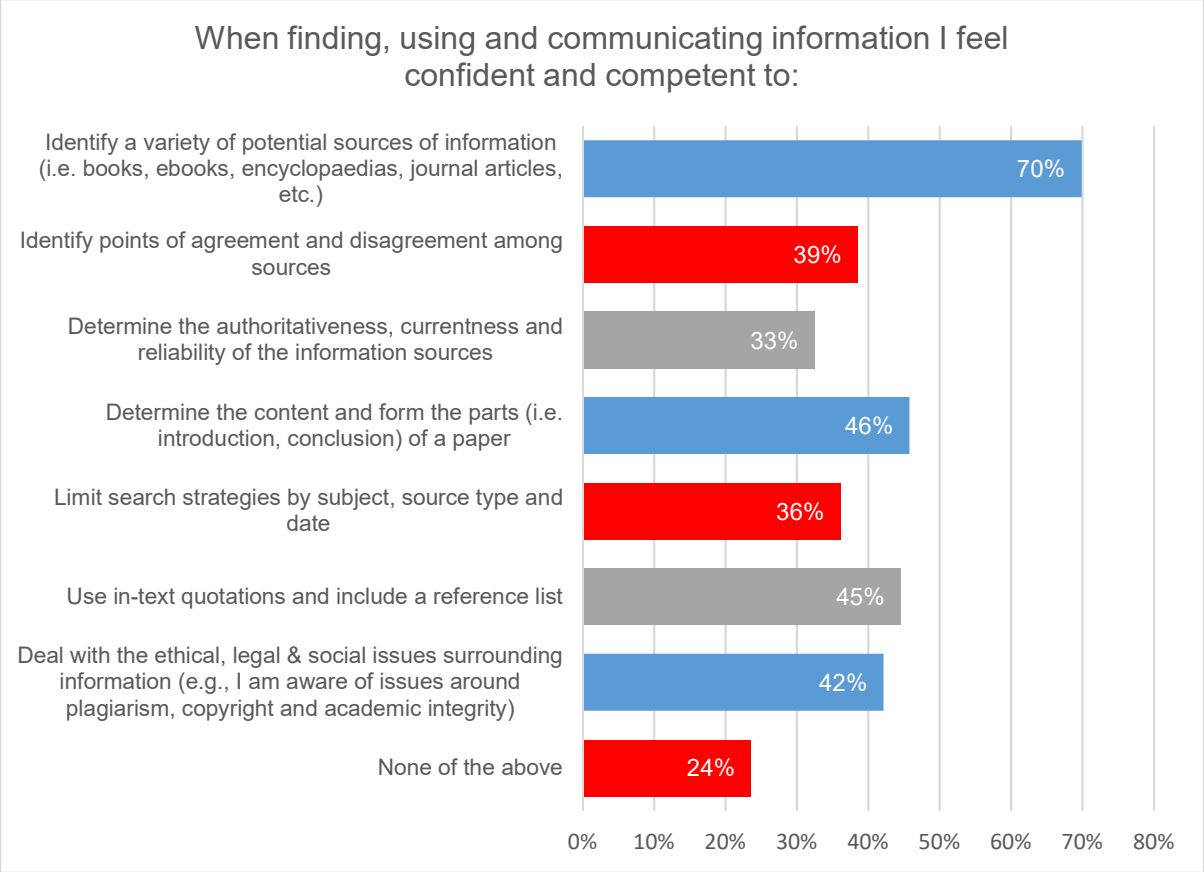


Figure 4.8: Online Survey results showing participants' competencies in IL skills

The researcher was sensitive to the wording and terminology surrounding information; thus, a second question was presented in the survey which considered students' confidence with IL. Figure 4.9 is comparable to figure 4.8 in that participants' confidence levels in finding, evaluating and using information are notably lower than participants' perceived rate of IL skills.

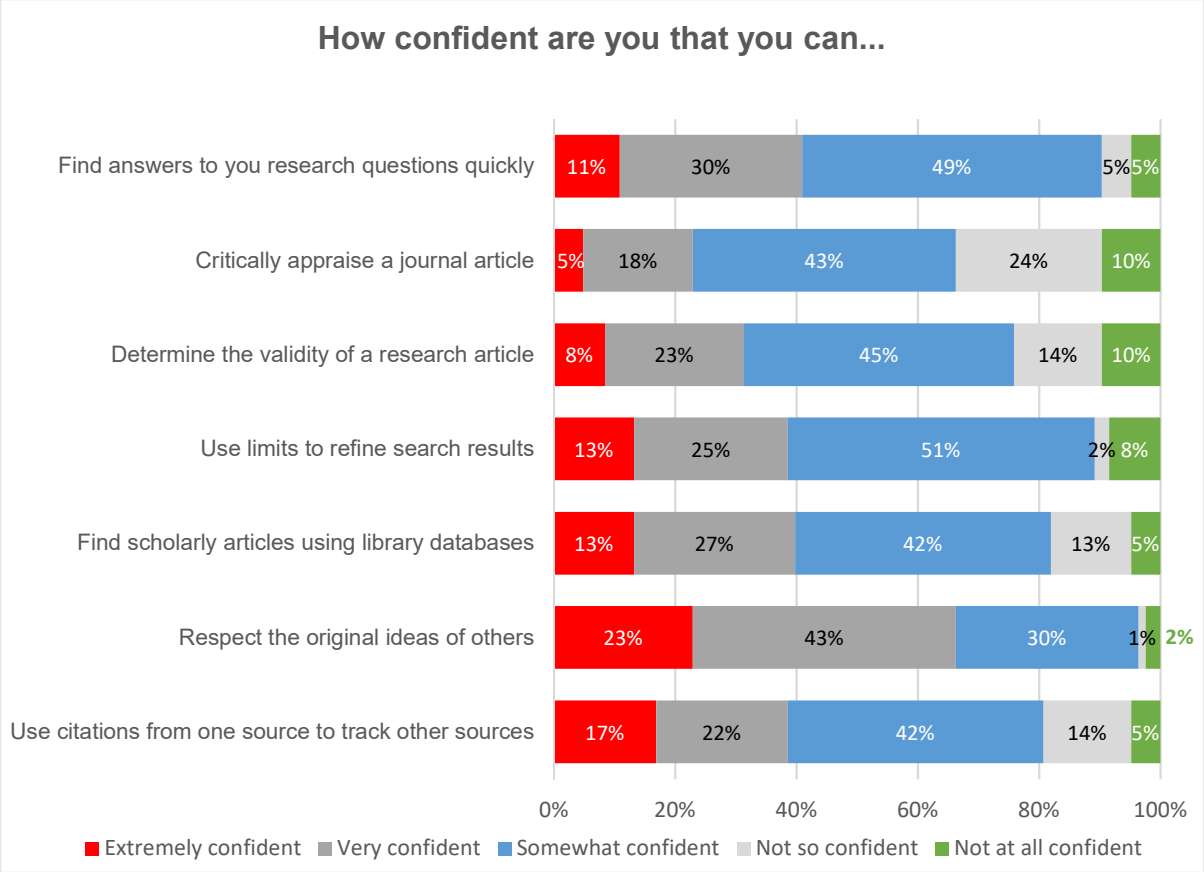


Figure 4.9: Online Survey results showing participants' confidence in IL skills

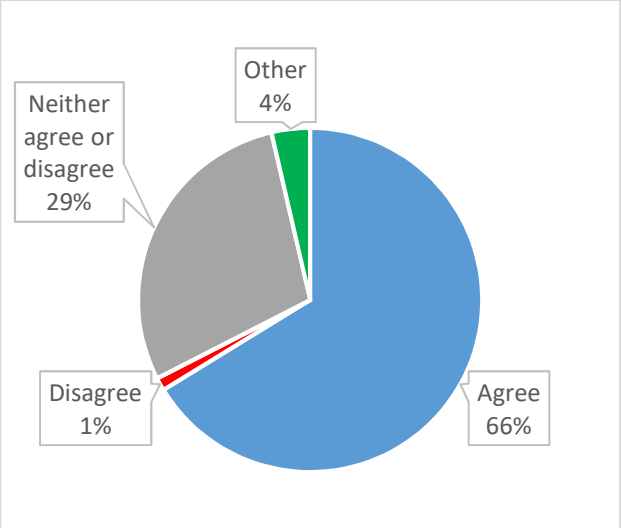


Figure 4.10: Online Survey results showing responses to question on the value of library staff from ILI

In terms of the value of library staff, 66% of students agreed that library staff seem more helpful, valuable and knowledgeable as a result of the library training received from the library, with only 1% disagreeing (figure 4.10).

4.4.3 QUALITATIVE DATA

An option labelled ‘other’ was added to selected questions to allow for the collection of qualitative data (appendix 17). The survey finished by asking students to add any comments, suggestions or complaints they had on anything relating to the ILI they attended. It was anticipated that adding open-ended elements would provide further information on students experience and expectations of LIS ILI. The findings suggest that those who commented were generally satisfied with their experience. Table 4.6 shows an illustration of all responses (see appendix 17 for all responses). There were no negative comments, only suggestions on how to improve ILI which is useful for redesigning future ILI as part of the FYE.

Table 4.6: Selected qualitative feedback from the online survey

LIS should be in the first semester rather than the second as the library training is not as useful because students use the library in the first semester for exams and have become a custom to how the library works. Female, 18-22, Galway (Business).
Brief handouts on writings and explore unique functions of library facilities. Female, 18-22, Galway (Science).
The training available is very helpful and staff are excellent at delivering material. Would suggest discipline specific sessions for database searching. Also, advertising the resources available in the library more as there are so many helpful resources that students don't know/help about or often a year into study before taking a course. Female, 31-40, Galway (Science).
It would be nice to be given “mini library assignments” so one can receive feedback on referencing and sourcing information correctly rather than being nervous and worrying your hard work will be penalized for accidental plagiarism... this leads students to procrastinate and cram at the last minute. Male, 18-22, Galway (Science).
I am a student in the evening courses in GMIT, I had no training in the library or knew where anything was. I only recently used the library and found it difficult to navigate. Everyone in there seems so settled, it was a bit over whelming and I felt more nervous. wouldn't even know where to begin to find a book or reference. I think we forget that we are just as entitled to use all these resources as the full time students. I do not have any ides as to how to rectify this though, maybe it’s just my feelings and because it’s so late in the year to be starting to use the resources. Female, 23-30, Galway (Science).

The data from the qualitative feedback will be discussed in the next chapter. However, a detailed thematic analysis was not part of this research.

4.4.4 CONSIDERATIONS FOR REDESIGNING FUTURE ILI

Figure 4.11 shows that 45% of students recommend the teaching method currently applied for LIS ILI sessions as part of the FYE programme.

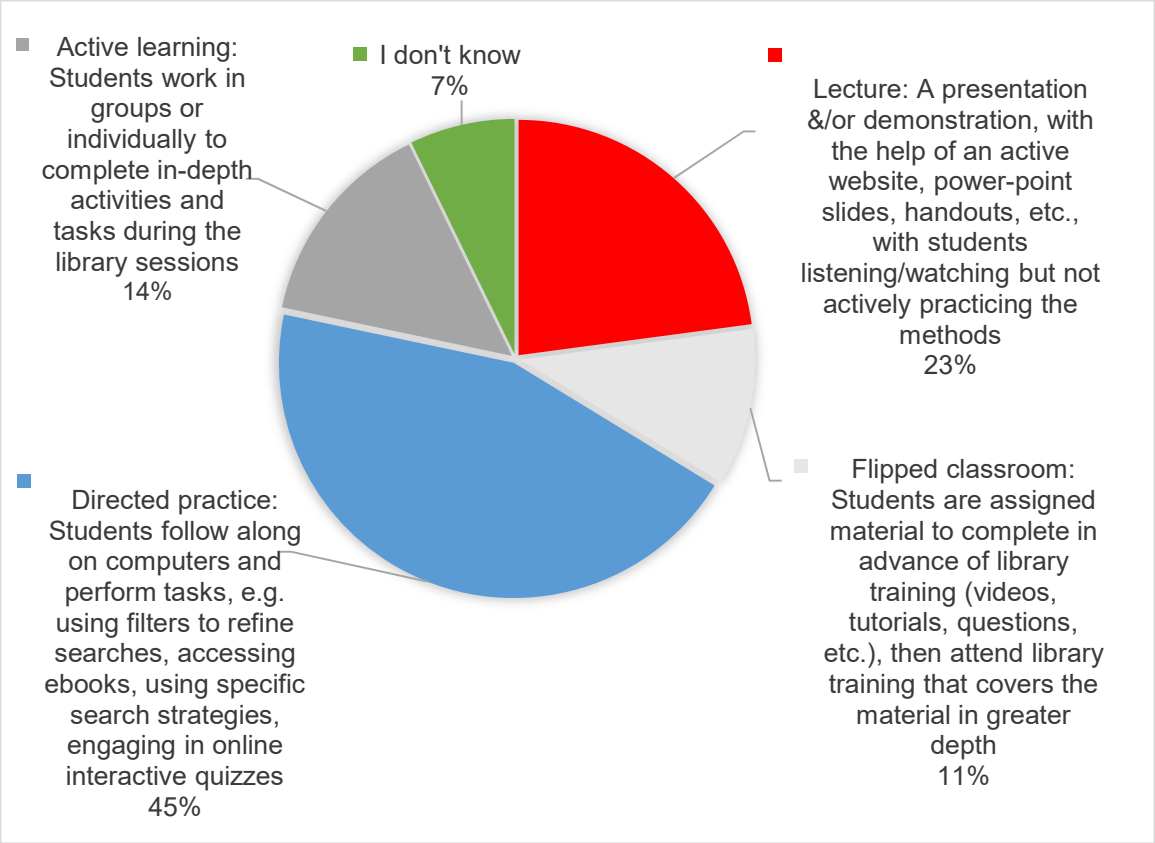


Figure 4.11: Online Survey responses to recommended teaching method for LIS library sessions

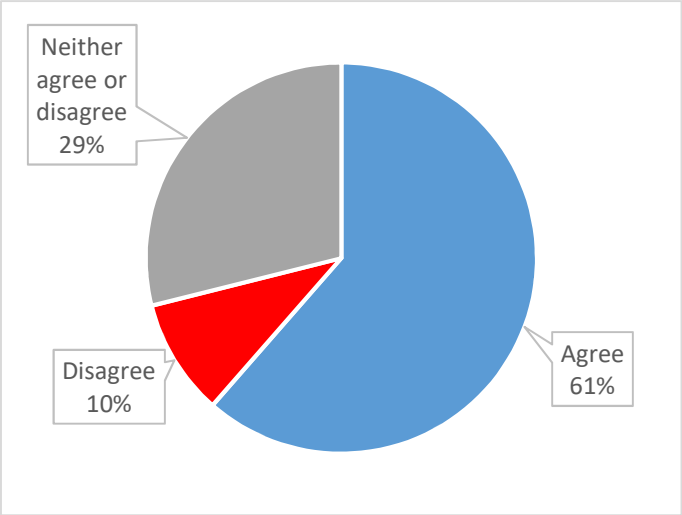


Figure 4.12: Online Survey responses to 'as a result of the library training I received the information needed for my course work takes less effort…'

Figure 4.12 shows that 61% of students agreed that the information needed for their course work took less effort and was easier and faster to find and use academic type information because of the library training received, 10% disagreed with this assertion.

43% of students who completed the survey stated that they 'never' or 'not very often' looked beyond Google for course work they have completed in the last year, with only 10% of students 'always' looking past Google (figure 4.13).

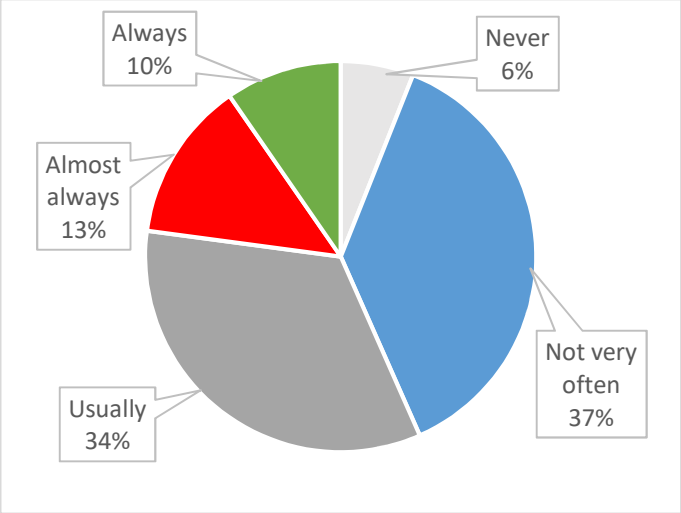


Figure 4.13: Online Survey responses to how often student's looked beyond Google

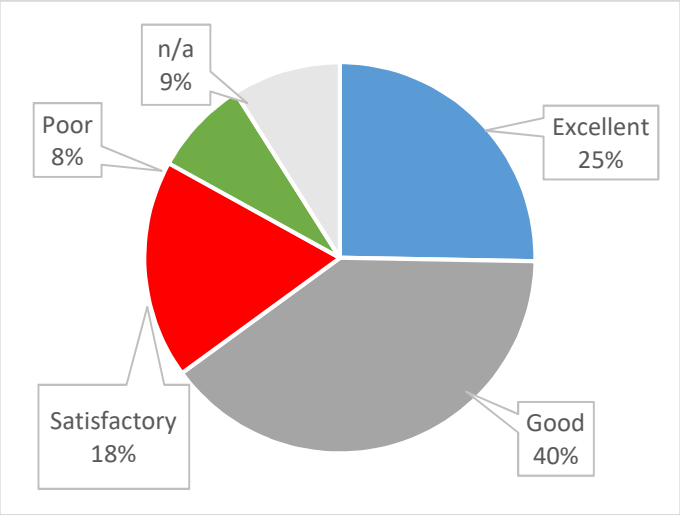


Figure 4.14: Online Survey responses to 'overall how would you rate the library LIS sessions you participated in'

Students' overall assessment of the ILI session in which they participated was 'good' (40%); with a quarter of student's (25%) stating that the session was 'excellent' (figure 4.14).

This section has presented finding from the online survey pertinent to the research aims and objectives. The following section reports the information collected from the attitude scale survey.

4.5 ATTITUDE SCALE SURVEY

The following section analyses the data collected from student feedback forms using a Likert scale. The forms were completed voluntarily in the preceding academic year (2017/2018), with students' permission to use the data for reporting, analysis and evaluation purposes. The data were analysed to measure students' attitudes to ILI directly after participating in LIS ILI. The researcher elected to use the data collected from the previous academic year's feedback forms to analyse a full academic year of LIS attitudinal data which was not possible for the current academic year given the timeframe of this research. The objective of the research was to obtain feedback to present recommendations for redesigning future ILI as part of the FYE programme in GMIT. Student feedback plays an important part in effective learning in addition to the improvement and development of ILI (Bailie 2014).

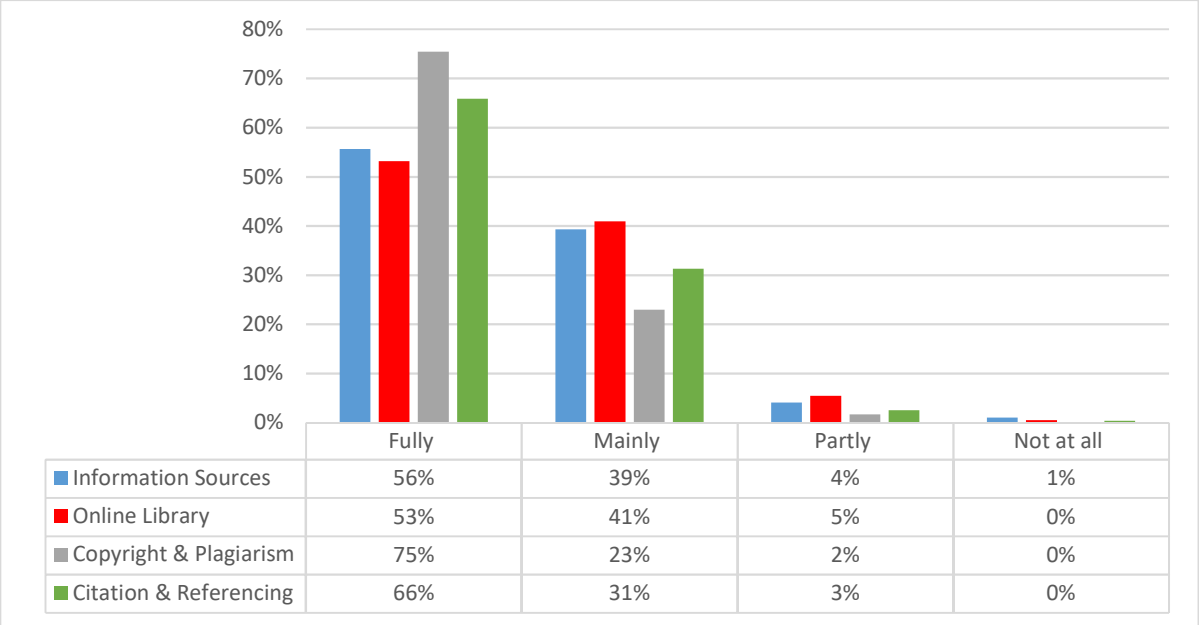
This section presents and examines the data from all feedback forms collected (n=967) to measure attitudes relating to individual LIS ILI sessions. These are:

- Information Sources (n=196)
- The Online Library (n=426)
- Copyright & Plagiarism (n=62)
- Citation and Referencing (n=283)

The benefit of using in-session feedback forms has the value of a high response rate (as high as the attendance rate). It should be noted that to date collecting demographic information is not a component of GMIT Library's student feedback forms.

4.5.1 QUANTITATIVE DATA

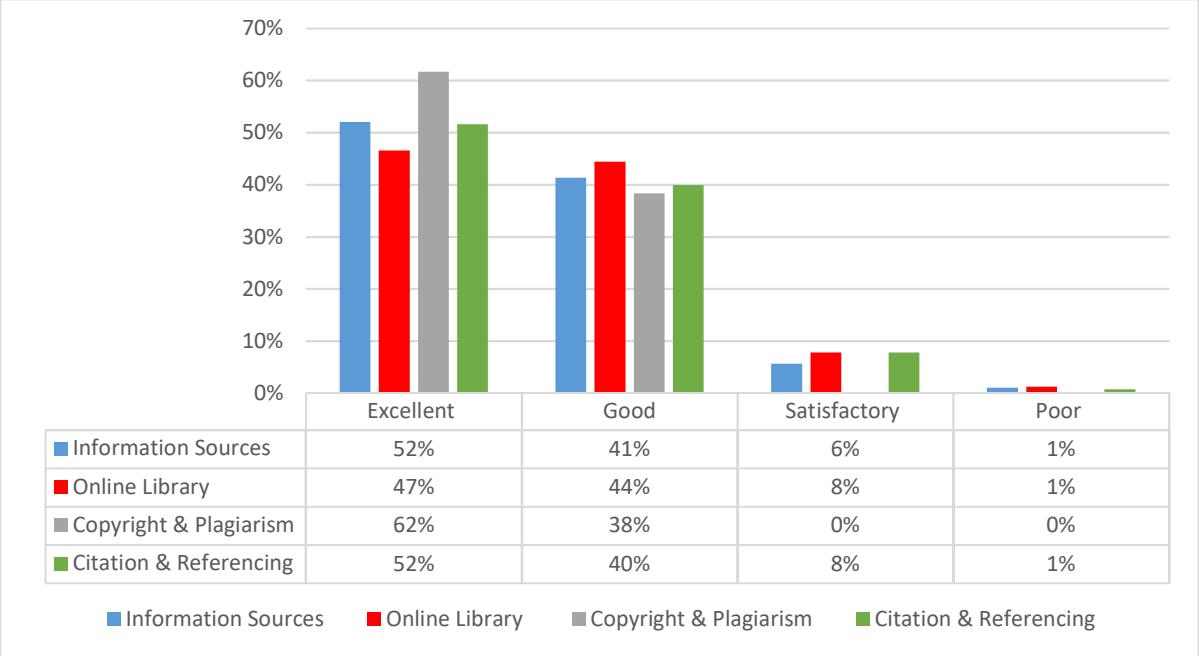
When surveying large numbers of students, using closed-ended statements are standard as they are faster and less time-consuming for students to complete and staff to evaluate (Cohen, Manion & Morrison 2018). Thus, all the statements in the attitude scale survey are closed-ended except for 'other comments' area (appendix 19). The first statement asked if the ILI session the students participated in meet their expectations. Figure 4.15 shows that the degree of satisfaction was high for all sessions, with over 95% of students indicated that the session 'fully' or 'mainly' met their expectations.



	Fully	Mainly	Partly	Not at all
Information Sources	56%	39%	4%	1%
Online Library	53%	41%	5%	0%
Copyright & Plagiarism	75%	23%	2%	0%
Citation & Referencing	66%	31%	3%	0%

Figure 4.15: Attitude scale responses to statement on course expectations

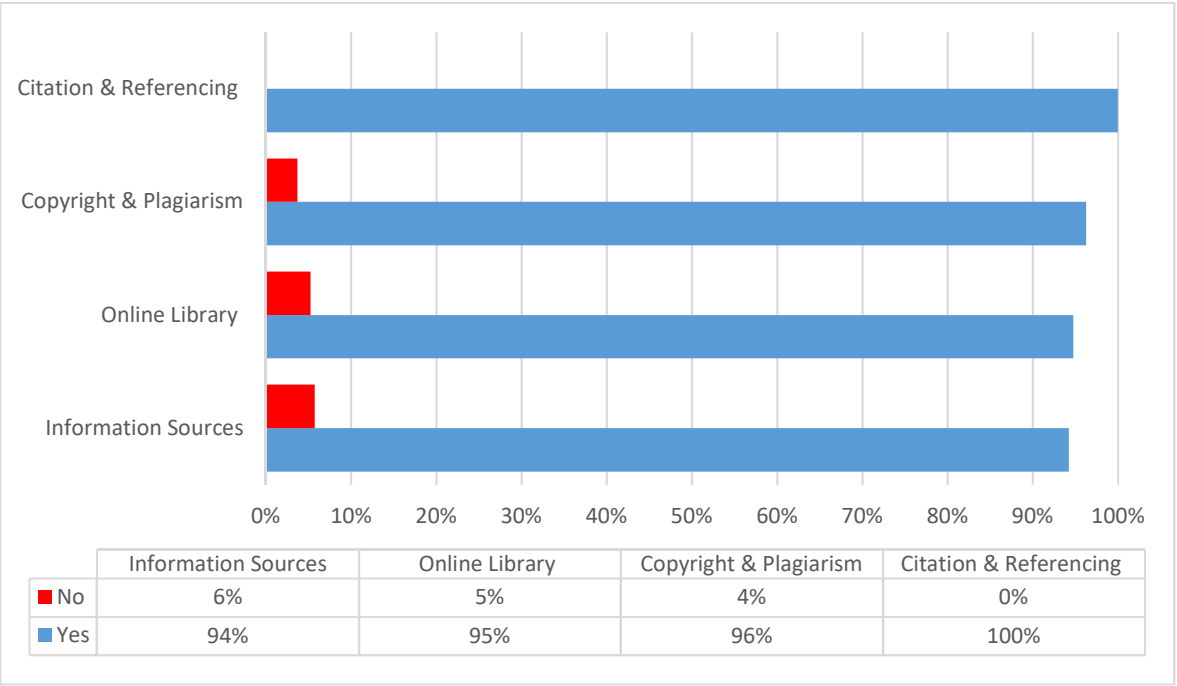
Participants were asked "To what degree where your expectations were met?" in order to identify whether their educational needs were satisfied; most students (>90%) stated that their overall assessment of the ILI was either 'excellent' or 'good' for all sessions (figure 4.16). Notably, students who participated in the Copyright & Plagiarism sessions had the highest rate of satisfaction amongst all, with 75% indicating the session fully met their expectations (figure 4.15) and their overall assessment of the ILI, with 62% expressing their overall assessment of the course was 'excellent' (figure 4.16).



	Excellent	Good	Satisfactory	Poor
Information Sources	52%	41%	6%	1%
Online Library	47%	44%	8%	1%
Copyright & Plagiarism	62%	38%	0%	0%
Citation & Referencing	52%	40%	8%	1%

Figure 4.16: Attitude scale responses to student's overall assessment of ILI session

When asked, students overwhelmingly stated that they would recommend the ILI session they participated into others, with the lowest recommendation (94%) deriving from the Information Sources session and the Citation & Referencing session achieving a 100% recommendation (figure 4.17).



	Information Sources	Online Library	Copyright & Plagiarism	Citation & Referencing
No	6%	5%	4%	0%
Yes	94%	95%	96%	100%

Figure 4.17: Attitude scale responses to whether students would recommend the session to others

To identify new issues not encapsulated in the closed, quantitative, statements a 'other comments' area was included at the end of the feedback forms to optimise the quality of the data and to allow students to address issues that may not have been addressed in the closed statements. The next section presents a section of qualitative data collected from the student feedback forms (attitude scale).

4.5.2 QUALITATIVE DATA

Findings from the qualitative data are presented in this section. A selection of comments from all LIS sessions from the academic year 2017/2018 are presented (see appendix 20 for all comments). The findings suggest that those that commented on their experience of LIS ILI were generally satisfied with the experience, however some expressed dissatisfaction. The number of students leaving comments is small. All comments are anonymous with no demographics recorded. The data is presented next.

4.5.2.1 INFORMATION SOURCES

This section includes selected comments (table 4.7) offered by students who participated in the Information Sources ILI session (see appendix 20 for all comments).

Table 4.7: Selected qualitative feedback from the attitude scale survey

It's very helpful to know all the information we were taught
It was a great introduction to the very kind and patient staff. Thank you.
Nice Librarian, friendly. Information easy to understand, explained well.
Everything was very informative.
Interesting and helpful
It seems pointless
waste of time
It was very enjoyable

Most comments were positive, however, two students from ten (5%) that commented expressed dissatisfaction with this session, commenting that it ‘seems pointless’ and a ‘waste of time’.

4.5.2.2 THE ONLINE LIBRARY

This section includes selected comments (table 4.8) offered by students who participated in the Online Library session (see appendix 20 for all comments).

Table 4.8: Selected qualitative feedback from the attitude scale survey responses from the Online Library sessions

Learned how to investigate properly
Basic information, people our age mostly know how to work these databases, we do it every day, good course for someone who wouldn't have a clue, shouldn't be compulsory
It's great for people new to the college scene
Very informative. Lots of material. Lots of questions I had were covered. It's good to now know how to use the library
Great to know. Had no idea the online library was so in-depth and useful
Perfect timing and very professional
Too much info too little time
Very useful. Never knew these resources were available
Didn't know everything was on the library website
Great amount of content available on site. Will use this service in the future
This course is not useful to anyone who has used a library before or has done research on the computer in the past

Most comments were positive (11% of participants added a comment for this session). Fourteen of the forty-eight student commented that the session was good, very good, great or excellent. Eight students commented that it was informative, beneficial or helpful.

4.5.2.3 COPYRIGHT & PLAGIARISM

Most of the comments for this session were positive. However, some negative remarks included the timelines and length of the session (table 4.9).

Table 4.9: Selected qualitative feedback from the attitude scale survey responses from the Copyright & Plagiarism sessions

Too long - maybe give printed notes and shorten lesson
The Kahoot made the session a lot more fun
If this course was done earlier in the year it would be more useful as we had essays to do,
very insightful, learned so much myself
Access to powerpoint afterwards would be helpful for revision
It should have been at the start of the year
Very, very good course. Gives the knowledge how to reference ebooks/journals very well.
Quick and straight to the point. Answered questions with ease
Worthwhile all students attending
It was an eye-opener
One of the best sessions so far
learned a lot for my next presentation

This session had the highest quantity of comments added with 52% of participants commenting on the session.

4.5.2.4 CITATION & REFERENCING

The comments for this session were largely positive (table 4.10). Several comments related to Kahoot! the game-based learning platform which uses multiple-choice quizzes to seek to make learning fun.

Table 4.10: Selected qualitative feedback from the attitude scale survey responses from the Citation & Referencing sessions

Very helpful, really good. Love the game
The interactive games are a good idea to break up the time!
Very good, learnt a lot. So helpful and approachable
Very helpful
Slower, with more discussion between stages with pupils
Great help all together! Thumbs up! :)
Another session in the future would be good
Very helpful and informative
Well worth doing this course
Kahoot was fun :)
Very interactive
very interesting because I didn't know about this before
Kahoot yes
much more useful in 2nd yr than 1st yr as in 1st yr there isn't much referencing
why was there no kahoot?

There were twenty-two comments (8%) in total from the feedback forms collected from this session.

This chapter presented the key findings that emerged from the pre/post-tests, the online survey and attitude scale survey. The next chapter will discuss the research findings in relation to the literature.

4.6 RESEARCH ANALYSIS & DISCUSSION

This section discusses the research findings aligned to the aims and objectives. The purpose of this discussion is to interpret and describe the significance of the findings in the context of the literature, explaining insights that emerged as a result of the research. The aim of this research was to investigate if novice learners who participate

in ILI as part of the FYE in GMIT acquire IL skills. The objectives were to determine if there was evidence of acquiring IL skills from library instruction using pre and post-test assessments for measuring the performance of students participating in ILI. In addition to obtaining quantifiable data from attitude scale and online surveys to present recommendations for redesigning future ILI as part of the FYE programme in GMIT and to develop a proposed IL framework for GMIT Library.

4.6.1 PRE/POST TESTS

The data suggest that, as a group, the students showed an increase from pre-test to post-test, statistically significant at the $p<0.001$ level. In terms of pre-post comparisons, the results are positive as students showed improved performance. Moreover, the mean of the performance scale increased from 36% to 58%, a statistically significant difference that demonstrates the merit of ILI on first-year students (novice learners) acquiring IL skills. These results, added to the evidence of the data from the online survey and attitude scale, present a strong case for the effectiveness of delivering ILI as part of the FYE. Nevertheless, although students showed an increase from pre- to post-test the overall scores in post-tests suggest that more influential instruction strategies are needed to significantly improve the attainment of first-year students IL skills from ILI as part of the FYE.

It is vital to consider that one introduction to ILI is insufficient to gain expertise (Gross & Latham 2013). Although each student's pre/post-test responses were coded for comparison, the code was unique to individual sessions, there is no way of knowing which students participated in multiple LIS ILI sessions or if those that participated in more than one session had higher pre/post-test scores and thus gained a better proficiency in IL as part of the FYE programme. Future research could encompass GMIT Library demonstrating their impact on student learning through measurable outcomes in ILI (Gross & Latham 2013) which maybe more achievable if IL becomes a universal concern of GMIT and the proposed framework formed as part of this research is put into action.

4.6.2 ONLINE SURVEY

Results from the online survey show that 82% of participants rate their IL skills as ‘good’ or ‘excellent’. However, 24% of student responses stated that they did not feel confident and competent in finding, using and communicating information. Latham & Gross (2013) state that students with below-proficient skills are inclined to overrate their abilities and think that they do not need ILI. Furthermore, if required to participate in compulsory instruction, these students largely have little motivation to learn skills they think they already have (Latham & Gross 2013). In addition, a separate question where students rated their confidence levels in finding, evaluating and using information showed that less than 50% of students were ‘confident’ or ‘extremely confident’ in carrying out all but one task (figure 4.9). The highest rate of student’s confidence (66%) was in relation to respecting the original ideas of others, whilst the lowest rate of confidence was 23% for critically appraising a journal article.

IL and ILI are at the centre of GMIT’s library strategy (GMIT Library 2014). Librarians endeavour to embrace best practices for ILI when reaching out to a diverse student cohort. Students can help maintain high quality practice by providing feedback on the sessions (Bailie 2014). In terms of the value of library staff, 66% of students agreed that library staff seem more helpful, valuable and knowledgeable as a result of the library training received from the library (figure 4.10), which is significant for championing the library’s value within GMIT. The range of skills required by librarians to deliver effective ILI continues to develop in response to the changing needs and expectations of library users and advances in technology (Julien, Gross & Latham 2018). Thus, the traditional skills associated with presentation and teaching needs to be enhanced with emerging instructional design and educational technology to support active learning.

Only 10% of students stated that they ‘always’ looked past Google for information (figure 4.13). An improvement of students’ information seeking behaviour needs to be considered to encourage students to look beyond Google (Boger, Dybvik, Eng &

Norheim 2015, Head 2013). GMIT Library is committed to the development of collaborations between librarians and academics to support the effective development of students' IL skills. Librarians could collaborate with academic staff to ensure that the skills taught in LIS ILI are related to the students' assignments, so students can put the skills communicated in the session into practice. Such collaboration could endorse the importance and value of IL to students, seeing IL as part of the overall academic curricula rather than a separate entity (Conrick & Wilcox 2013; O'Brien & Cronin 2016). Furthermore, Ginty & Boland (2016) state that in supporting first-year students successfully academics need to work collaboratively with colleagues in forming engaging learning materials and tasks.

Students' overall assessment of the ILI session in which they participated in was mainly encouraging with over 60% stating that the session was 'good' or 'excellent' (figure 4.14). This would suggest that students support the inclusion of ILI sessions as part of the FYE. 45% of students recommend the teaching method currently applied for LIS ILI sessions as part of the FYE programme (figure 4.11). This indicates that students are satisfied with the present teaching method. The key to any ILI is to include students in active hands-on learning, using activities that result in more interaction and learning (Ragains 2013). Nonetheless, several of the comments concentrated on the timing of the ILI, commenting that sessions should take place earlier in the academic year. It also became apparent that some students were unable to avail of the ILI or other library supports due to their timetabling (i.e. those studying in the evening). Collaboration with academics could help inform on the availability of ILI to all students, including evenings and weekends, and a suite of interactive online ILI tutorials could address this issue.

Qualitative feedback from the online survey was limited but valuable. A business student stated that "LIS should be in the first semester rather than the second as the library training is not as useful because students use the library in the first semester for exams and have become a custom to how the library works". GMIT Library recommends that LIS ILI sessions take place in the first semester, but due to

department timetabling this is not always possible. A science student commented that "It would be nice to be given 'mini library assignments' so one can receive feedback on referencing and sourcing information correctly". The best practice for ILI should conclude with assessment to measure learning (Saunders 2018). Such assessment could influence the student's motivation to learn and thus the level of student engagement attained (Ginty & Boland 2016). Moreover, linking the value of ILI to institutional metrics such as student retention and graduation rates as suggested by the ACRL and Murray, Ireland & Hackathorn (2016) may be achieved if the proposed framework for IL is accepted and implemented by GMIT (appendix 1).

4.6.3 ATTITUDE SCALE SURVEY

Findings from the attitude scale survey suggest that students were largely satisfied with their experience of participating in LIS ILI, with a high level of satisfaction reported. Positively 96% of students across all four LIS ILI sessions stated that they would recommend the session to others (figure 4.17), which is certainly encouraging. This is important as Fain (2011) reported that library instruction, as part of the FYE contributes to the early stages of IL development. It should be noted that GMIT Library do not currently collect demographic information as part of student feedback and this should be a consideration for future research.

A key outcome from the student feedback involves making ILI more interactive, principally for two of the four LIS ILI sessions. The Copyright & Plagiarism and Citation & Referencing sessions currently include Kahoot which is a free online game-based learning platform. Several students commented that Kahoot was interactive and fun and the recommendation is to include Kahoot or similar technology in all LIS ILI sessions, with the aim of supporting students to be more active in the learning process. Ragains (2013) states that the key to any ILI is to involve students in active hands-on learning, using activities that result in more interaction and learning. Although GMIT library endeavours to this it is not always feasible due to timing or the availability of technology. Also, the students view of interaction is not always comparable to the

librarians' classroom-based methods. Going forward active student engagement in ILI design could be considered. The data illustrates that student feedback plays an important part in effective learning in addition to the improvement and development of ILI.

4.7 CONCLUSION

The researcher began the study with the assumption that different methodological approaches can produce data on different aspects of ILI, and this was written into the research design and data collection strategy. For the data collection, methods were used which the researcher considered would most likely give all the components of the analysis. Each part of the study intended to produce data needed to develop a comprehensive view of novice learners acquiring IL skills as part of the FYE in GMIT. With the results providing interesting insights into the study's research question.

The outcome of the research reveals the following:

- Results from the pre/post-tests (n=363) show 92% of students increased the number of correct answers from pre- to post-test after directed ILI. The students, as a group, increased their average score (number of correct answers) by 22% from pre- to post-test.
- Feedback from the online survey (n=83) revealed that 82% of participants rate their IL skills as 'good' or 'excellent', with 70% of first-year students feeling confident and competent in identifying a variety of potential sources of information.
- 45% of participating students recommend the current teaching method applied for LIS ILI sessions as part of the FYE programme; with a number suggesting the inclusion of more interactive activities in sessions.

- Views from the attitude scale survey (n=967) revealed that 95% of students indicated that the library LIS sessions they participated in ‘fully’ or ‘mainly’ met their expectations.
- 96% of students would recommend attending library LIS sessions to other students.
- LIS ILI sessions have been effective in creating awareness about IL, including the variety of information sources available, search strategies as well as library services and facilities, as evident from the students’ responses and comments.
- The proposed IL framework is designed to offer direction for GMIT library and academic staff to develop IL skills and learning opportunities for GMIT students.
- Scope for further development investigating if novice learners who participate in library instruction as part of the FYE acquire IL skills exists.

The findings of the research were presented and discussed in this chapter. The concluding chapter summarizes the key research findings with recommendations for further research.

CHAPTER FIVE: CONCLUSIONS & RECOMMENDATIONS

The aim of this research was to investigate if novice learners who participate in library instruction as part of the FYE acquire IL skills. The objectives were to determine if there is evidence of acquiring IL skills from ILI in GMIT using pre/post-tests for measuring the performance of students participating in LIS ILI. Along with obtaining feedback to develop a proposed IL framework for GMIT Library (appendix 1) and presenting recommendations to redesign future ILI as part of the FYE. This research verifies the positive effects of ILI and the significant role ILI plays as part of the FYE in GMIT in supporting novice learners.

The data obtained in the study were analysed based on the research question. The findings suggest that there is improvement between pre- and post-tests, as supported by prior research in the field which demonstrates that returning to prior assessment data can identify significant changes in IL skill development (Fain 2011). A purpose of pre/post-tests is to gain knowledge of the status of a group to provide guidance for future activities as well as the basis of comparison to determine whether expected fundamentals have been achieved (Cohen, Mannion & Morrison 2018). The findings of this research show the potential of using pre/post-tests to assist librarians in documenting the outcomes of ILI. The data offers statistically significant information about students' performance which can contribute to improving ILI.

The attainment of IL is more difficult than it first appears, while it might seem that attaining proficiency should be as easy a learning a new set of skills, actually attaining proficiency in IL requires the development of a comprehensive set of skills that are not consistently taught to, or used by, first-year students in HE (Gross & Latham 2013). It is anticipated that the proposed IL framework can establish IL as a crucial universal education requirement to ensure that students attain a competent level of IL skills as part of GMIT's FYE. Furthermore, as students' progress through each academic year GMIT should ensure that all students can participate in further 'scaffolding' sessions to support the development of IL, helping them progress from a novice to an expert in

IL. This scaffolding allows students to use what they previously learned (Burkhardt 2016) to develop their expertise and improve engagement.

GMIT Library is committed to supporting students with engaging and succeeding at third level as part of the FYE by means of ILI. IL is not just a library issue; it is a fundamental value of HE. The proposed GMIT Library IL framework is designed to offer direction for GMIT library and academic staff to develop IL skills and learning opportunities for GMIT students. The principal intention of the framework is to support students in the development of high-level, reflective, critical thinking skills to empower them to succeed in GMIT and beyond as informed citizens and lifelong, independent learners. GMIT Library is committed to the development of collaborations between librarians and academics to support the effective development of students' IL skills, this could be achieved by incorporating the proposed IL framework into the institutes teaching and learning strategy and embedding IL in the curriculum (Briggs 2016; Conrick & Wilcox 2013; O'Brien & Cronin 2016).

The researcher teaches IL through formal instruction and is especially interested in how the library can better help students achieve their educational objectives. Taking into consideration the results of the pre/post-tests, the online survey results and the attitude scale feedback, an improvement of students' information seeking behaviour needs to be considered as ILI delivered as part of GMIT's FYE is not without fault. Thus, greater instructional effort is necessary for students to improve their performance. GMIT Library should consider using more technology to supplement face-to-face IL to impart IL skills effectively, thereby extending the reach of IL sessions. Ragains (2013) states that the key to any ILI is to involve students in active hands-on learning, using activities that result in more interaction and learning. IL continually shifts as technology advances thus there is a continuous need to evaluate and develop ILI. Further research opportunities exist to gain a deeper understanding of acquiring IL skills as part of the FYE.

This research concentrates on first-year students (novice learners) in one institute of Technology. It does not consider other students in other HE institutions. More research in this area will provide greater insight on how best to deliver active ILI and under what circumstances. The main limitation of this research was time, as triangulation is time-consuming. It is recommended that further analysis of the data collected should be completed to assess IL skills and to test relationships between demographic and IL skills attainment to continue to question the need for ILI as part of the FYE and beyond, in GMIT and elsewhere. While the sample size does not allow for definitive conclusions about how novice learns acquire IL skills, the research raises interesting implications for ILI.

Based on the results, the following recommendations have been made:

- Subsuming the proposed framework for IL with GMIT's teaching and learning strategy will aim to enhance student learning and encourage a critical approach to IL. Ensuring all first-year students can engage in ILI is fundamental as ILI has been positively linked with academic achievement (ACRL 2016b; Massengale, Piotrowski & Savage 2016).
- The findings suggest that novice learners acquire IL skills from ILI, as there was significant improvement from the pre-test to post-test scores. With an increased number (92%) of participating students obtaining a higher number of correct answers in the test after directed ILI. Nevertheless, greater instructional effort is necessary for students to improve their performance as the number of students achieving 100% success criteria from ILI was low.
- Hands-on, timely, interactive training should be provided to all first-year students to ensure effective ILI, including game-based learning, with the aim of aiding students to be more active in the learning process. GMIT Library should endeavour to develop relevant online content informed by the needs of all students to complement the library's face-to-face supports.
- Frequent evaluation and suitable intervention of GMIT Library's ILI is necessary to ensure ongoing successful instruction occurs to help develop student's IL

skills as part of the FYE and beyond. ILI should be assessed to measure students' performance and to evaluate the impact of the instruction to offer evidence of GMIT Library's value within the institute (Saunders 2018).

- There is a need for a future study (e.g., a longitudinal study) to further investigate if first-year students (novice learners) who participate in ILI as part of the FYE acquire IL skills.

The research contributes to ILI practice and advances understandings of acquiring IL skills as a novice learner as part of GMIT's FYE. GMIT Library's ILI endeavours to develop student's IL skills and encourage responsibility for their own learning, seeking to contribute to their academic success. Although this research is dedicated to first-year students (novice learners) acquiring IL skills, it is essential to take into consideration that IL should be part of the overall academic curricula as it empowers students to be lifelong, independent learners and critical thinkers, and is consequently an essential value of HE. The proposed framework for IL supports the development of a structured approach to ILI which should be used in conjunction with student feedback to redesign ILI as part of GMIT's FYE programme in collaboration with academics. To succeed, HE institutions need students to engage in educational activities that lead to learning (Coates & McCormick 2014). Librarians in association with academics have the potential to inspire and support such engagement.

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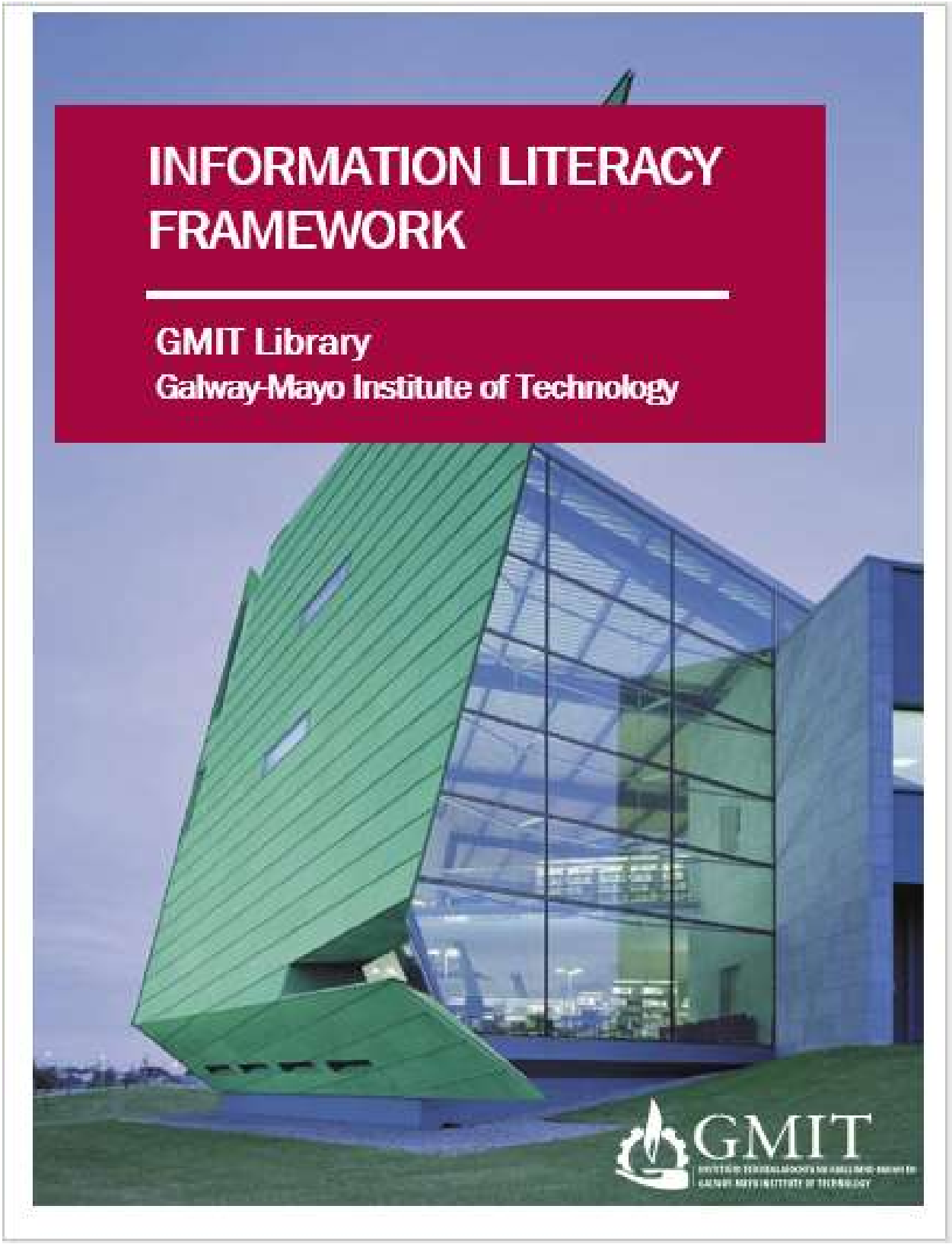
APPENDICES

APPENDIX 1 - PROPOSED IL FRAMEWORK FOR GMIT



Contents

These information literacy skills are intended to be accomplished over an undergraduate student's lifespan across all disciplines, through librarian and academic endeavors in instruction sessions, assignments and curricula.

What is Information Literacy?

Information Literacy is described as the set of skills needed to find, retrieve, evaluate and use information effectively and responsibly. Information Literacy encompasses concepts of digital, visual and media literacies, academic literacy, information handling, information skills, data curation and data management (The Society of College, National and University Libraries 2011, pg. 3). The aim of Information literacy in higher education is to enable students to become practised at these transferable skills for life. The need to acquire skills to transform information into knowledge is applicable to all disciplines and should develop year by year as students' progress in their education.

Why is Information Literacy so Important?

It is vital that students have the skills to enable them to use the wide range of information sources available both online and in print. Students need to be able to find, retrieve, evaluate and use information effectively. By helping students to develop information literacy skills, we can contribute to their academic success and help our graduates become independent and successful lifelong learners.

Background

The framework is grounded by the frameworks developed by The Society of College, National and University Libraries and The American Association of College and Research Libraries which define a context for information and the skills required to use information. The framework builds on the existing informal information literacy instruction practices that have been in place in GMIT library for several years.

4

Purpose of the Framework

While libraries and librarians are characteristically skilled to support and teach information literacy skills, information literacy is not just a library issue, it is a fundamental value of higher education. The framework is designed to offer direction for GMIT library and academic staff to develop information literacy skills and learning opportunities for GMIT students. The principal intention of the framework is to support students in the development of high-level, reflective, critical thinking skills to empower them to succeed in GMIT and beyond as informed citizens and lifelong, independent learners.

Together with the framework the library aims to:

- Situate the library as the centre of expertise in information literacy;
- Support the full process of study and research, along with teaching traditional library skills;
- Ensure that all students, including online, part-time and adult learners have the opportunity to participate in active, flexible information literacy instruction to develop information literacy skills;
- Ensure that all academic and support staff have access to supports to embrace and/or embed information literacy skills in their modules, courses or programmes;
- Continue to develop and keep current, relevant online content informed by the needs of all students, to complement the library's face-to-face supports;
- Endeavor to meet recognised International standards.

The Framework

- Is framed by GMIT's commitment to excellence in teaching and learning;
- Supports GMIT's strategic priorities;
- Can be integrated with other learning outcomes and student attributes;
- Contributes to GMIT graduate outcomes;
- Identifies skills for students to become independent, self-motivated learners which are desirable qualities for student's future employment.

5

Delivering Information Literacy

IDENTIFY / RECOGNISE	Student Understands:	Student Can:	Sample Activities:
The student can recognize a personal need for information. **Library staff can highlight the variety of information sources available and how to choose information for academic, personal or career development purposes.**	• That new information is always being created and that there is constantly more to learn • That being information literate involves developing a learning habit so new information is being actively and continually pursued • That ideas and opportunities are created by exploring/seeking information • The magnitude of the world of published and unpublished information and data	• Identify a lack of knowledge in a subject area • Identify a search topic/question and define it using simple terminology • Formulate current knowledge on a topic • Recognise a need for information and data to accomplish a specific purpose and define limits to the information need • Use background information to support the search • Take personal responsibility for an information search • Manage time efficiently to complete a search	• Students answers the following questions related to the research question: ✓ What do I already know about this topic? ✓ What do I want to know? ✓ How do I find the information I need? • Student then reflect on: ✓ Where will I find the best information to fit my needs? ✓ How will I know it when I see it? ✓ What do I do with it once I have it?
SCOPE / EXTENT	**Student Understands:**	**Student Can:**	**Sample Activities:**
The student can assess existing knowledge and identify gaps. **Library staff can foster the development of student's abilities to frame questions, evaluate arguments and find gaps in the literature.**	• What types of information are available • The characteristics of the different types of information sources available • The publication process regarding why people publish and the currency of information • Issues of accessibility • What services are available to help and how to access them	• Recognise what they don't know to identify information gaps • Identify which types of information will best meet their need • Identify the available search tools, e.g. general and subject specific resources • Identify the different formats in which information may be provided • Demonstrate the ability to use new tools as they become available	• Student details (step-by-step) how to identify a research gap in the literature • Student identifies different types of information from a reading list, classifying them according to format and currency.

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PLAN / FORMULATE	Student Understands:	Student Can:	Sample Activities:
The student can form strategies for locating information. Library staff can help to progress students' skills in finding where academic dialogues are taking place and develop students' abilities to see patterns and find gaps in the literature.	• The variety of searching techniques available for finding information • The differences between search tools, recognising advantages and limitations • Why complex search strategies can make a difference to the scope and depth of information found • The need to develop approaches to searching so that new tools are pursued for new questions (not always relying on familiar resources) • The need to revise keywords and adapt search strategies according to the resources available and/or results found • The value of controlled vocabularies in searching	• Scope their search question clearly • Define a search strategy by using appropriate keywords and concepts, defining and setting limits • Select the most appropriate search tools • Identify controlled vocabularies to assist in searching • Identify appropriate search techniques to use as needed • Identify specialist search tools appropriate to their individual information need	• Student constructs search strategy from research statement supplied, then using a discipline specific database uses advanced techniques and controlled vocabulary, tracking results systematically using applicable filters to identify a manageable set of relevant results
GATHER / COLLECT	**Student Understands:**	**Student Can:**	**Sample Activities:**
The student can locate and access the information they need. Library staff can help to identifying quality resources and evidence in addition to finding resources for other tasks, such as considering future employers.	• How information and data is organised, online and in print • How libraries provide access to resources • How digital technologies are providing collaborative tools to create and share information • The issues involved in collecting new data • The different elements of a citation and how it describes an information resource • The use of abstracts	• Use a variety of retrieval tools and resources effectively • Construct complex searches suitable to different online and print resources • Access full text information, both in print and online, read and download online material and data • Use appropriate techniques to collect new data • Keep up to date with new information • Engage with their community to share information	• Student considers the differences between academic finding aids and freely available search tools like Google • Student evaluates a subject-specific library resource and recognizes how it fits into their information landscape

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	• The need to keep up to date with new information • The difference between free and paid for resources • The importance of appraising and evaluating search results	• Identify when the information need has not been met • Use online and printed help material to find expert help	
EVALUATE /ANALYSE	**Student Understands:**	**Student Can:**	**Sample Activities:**
The student can review the research process, identify experts in the field and evaluate information. **Library staff can help students assess the quality, accuracy and reliability of information and identify subject experts.**	• The information and data landscape of their learning/research context • Issues of quality, accuracy, relevance, bias and credibility relating to information and data • How information is evaluated and published • The importance of consistency in data collection • The importance of citation in their learning/research context	• Distinguish between different information resources and the information they provide • Choose suitable information on their search topic, using appropriate criteria • Assess the quality, accuracy, relevance, bias and credibility of the information found • Assess the credibility of the data collected • Read critically, identifying key themes and arguments • Relate the information found to the original search strategy • Critically appraise and evaluate their own findings and those of others	• Student compares a subject entry in Wikipedia with an entry in an encyclopaedia and can discuss their relative value • Student chose a significant author in their discipline and appraises their impact through citations, justifying if the author qualifies as an expert in the field
MANAGE	**Student Understands:**	**Student Can:**	**Sample Activities:**
The student can organise information professionally and ethically. **Library staff can encourage students to use techniques and tools to**	• Their responsibility to be honest in all aspects of information handling and dissemination (e.g. copyright, plagiarism and intellectual property issues) • The need to adopt suitable data handling methods	• Use bibliographic software if appropriate to manage information • Cite print and online sources using appropriate referencing styles • Create suitably formatted bibliographies	• Student summarizes a short piece of text, adding an in-text citation and reference at the end to avoid plagiarising • Student generates a suitably formatted

help them be systematic in storing and managing the information found.	• The role they play in helping others in in the search for information and management • The need to keep systematic records • The importance of storing and sharing information and data ethically • The role of professionals, such as librarians, who can assist and support with all aspects of information management	• Demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism and any other intellectual property issues • Use appropriate data management software and techniques to manage data • Meet GMIT standards of conduct for academic integrity	bibliography from a set reference list using a tool of their choice • Student reviews different reference management software tools (paid and unpaid) presenting pros and cons
PRESENT	**Student Understands:**	**Student Can:**	**Sample Activities:**
The student can apply the knowledge gained: presenting the results of their research, combining new and old information and data to create new knowledge and disseminating it in a variety of ways. **Library staff can direct students on being mindful of intellectual property and acknowledging other's ideas, and where appropriate, recommending where their ideas can be communicated.**	• That different forms of writing/ presentation style that can be used to present information • That data can be presented in different ways • Their personal responsibility to store and share information and data • Their personal responsibility to disseminate information & knowledge • How their work will be evaluated • The processes of publication • The concept of acknowledgement • That individuals can take an active part in the creation of information through traditional publishing and online technologies (e.g. blogs, wikis)	• Use the information and data found to address an original research question • Summarise papers and reports • Integrate new information into the context of existing knowledge • Suitably analyse and present data • Synthesise and consider new information from different sources • Communicate effectively using suitable writing styles in a variety of formats • Select appropriate publications and dissemination outlets in which to publish if applicable • Develop a personal profile using suitable personal networks and online technologies (e.g. discussion lists, social networking sites, blogs)	• Student looks at how information on a current issue in their field is presented on the web, in newspapers and in academic journals, debating the main differences • Student write brief pieces on a current topic in their field communicating the same information to different audiences

APPENDIX 2 - ELEMENTS OF RESEARCH DESIGNS

Table showing model, purpose, foci, key terms and characteristics (Cohen, Manion and Morrison 2018, pp. 187-188).

TABLE 11.3 ELEMENTS OF RESEARCH DESIGNS

Model	*Purposes*	*Foci*	*Key terms*	*Characteristics*
Survey	Gathering large-scale data in order to make generalizations Generating statistically manipulable data Gathering context-free data	Opinions Scores Outcomes Conditions Ratings	Measuring Testing Representativeness Generalizability	Describes and explains Represents wide population Gathers numerical data Much use of questionnaires and assessment/test data
Experiment	Comparing under controlled conditions Making generalizations about efficacy Objective measurement of treatment Establishing causality	Initial states, intervention and outcomes Randomized controlled trials	Pre-test and post-test Identification, isolation and control of key variables Generalizations Comparing Causality	Control and experimental groups Treats situations like a laboratory Causes due to experimental intervention Does not judge worth Simplistic
Ethnography	Portrayal of events in subjects' terms Subjective and reporting of multiple perspectives Description, understanding and explanation of a specific situation	Perceptions and views of participants Issues as they emerge over time	Subjectivity Honesty, authenticity Non-generalizable Multiple perspectives Exploration and rich reporting of a specific context Emergent issues	Context-specific Formative and emergent Responsive to emerging features Allows room for judgements and multiple perspectives Wide database gathered over a long period of time Time consuming to process data
Action research	To plan, implement, review and evaluate an intervention designed to improve practice/solve local problem To empower participants through research involvement and ideology critique To develop reflective practice To promote equality democracy To link practice and research To promote collaborative research	Everyday practices Outcomes of interventions Participant empowerment Reflective practice Social democracy and equality Decision making	Action Improvement Reflection Monitoring Evaluation Intervention Problem solving Empowering Planning Reviewing	Context-specific Participants as researchers Reflection on practice Interventionist – leading to solution of 'real' problems and meeting 'real' needs Empowering for participants Collaborative Promoting praxis and equality Stakeholder research

continued

TABLE 11.3 CONTINUED

Case study	To portray, analyse and interpret the uniqueness of real individuals and situations through accessible accounts To catch the complexity and situatedness of behaviour To contribute to action and intervention To present and represent reality – to give a sense of 'being there'	Individuals and local situations Unique instances A single case Bounded phenomena and systems: ■ individual ■ group ■ roles ■ organizations ■ community	Individuality, uniqueness In-depth analysis and portrayal Interpretive and inferential analysis Subjective Descriptive Analytical Understanding specific situations Sincerity Complexity Particularity	In-depth, detailed data from wide data source Participant and non-participant observation Non-interventionist Empathic Holistic treatment of phenomena What can be learned from the particular case
Testing and assessment	To measure achievement and potential To diagnose strengths and weaknesses To assess performance and abilities	Academic and non-academic, cognitive, affective and psychomotor domains – low order to high order Performance, achievement, potential, abilities Personality characteristics	Reliability Validity Criterion-referencing Norm-referencing Domain-referencing Item-response Formative Summative Diagnostic Standardization Moderation	Materials designed to provide scores that can be aggregated Enables individuals and groups to be compared In-depth diagnosis Measures performance

APPENDIX 3 - INFORMATION LEAFLET FOR LIS STAFF AND STUDENTS

1. **Title or working title of the study:**

The design of library instruction: an analysis of learning information literacy skills in higher education as part of the first-year experience.

2. **Introduction to the study:**

The aim of this research is to investigate if first-year students who participate in library instruction learn information literacy skills as novice learners, effectively learning how to find, evaluate, use and create information.

3. **Research Procedures:**

The objectives of this research is to determine if there is evidence of learning information literacy skills from library instruction and to obtain feedback to develop an information literacy framework for GMIT Library, together with effectively designing future information literacy skills instruction as part of the first-year experience.

4. **Benefits of the research:** To develop an information literacy framework for GMIT Library and to determine if there is direct evidence of learning information literacy skills from the library instruction sessions.

5. **Risks of the research**: There are no perceived physical, social, economic, psychological or legal risks, or loss of confidentiality.

6. **Exclusion from participation**: Students under 18 years of age cannot participate.

7. **Confidentiality:** No identifying factors relating to participants will be in evidence in the final thesis report and/or any disseminated research (i.e. conference papers and/or presentations, publications, etc.). Those who will have access to your identity include members of the Research Advisory Panel, internal examiners and external examiner(s).

8. **Compensation:** This study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights.

9. **Voluntary Participation:** You have volunteered to participate in this study. You may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

10. **Stopping the study:** You understand that the researcher(s) may withdraw your participation in the study at any time without your consent.

11. **Permission**: This research has approval from the MA in Teaching and learning Research Ethics Committee.

12. **Further information:** You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Kathryn Briggs who can be telephoned at 091-742789 or e-mail Kathryn.briggs@gmit.ie.

APPENDIX 4 - PRE-TEST FOR INFORMATION SOURCES SESSIONS

Information Sources (pre-test)

*Post-test assessment questions were the same but commenced at number Q6 - unique identifies were used to match pre/post data.

Students under 18 years of age cannot participate.

All responses are ANONYMOUS.

The aim of this research is to investigate if first-year students who participate in library instruction learn information literacy skills as novice learners, effectively learning how to find, evaluate, use and create information.

If you participate in this study you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

This research has approval from the MA in Teaching and learning Research Ethics Committee.

You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Kathryn Briggs who can be telephoned at 091-742789 or e-mail Kathryn.briggs@gmit.ie.

* Required

1. Please add your anonymous participant code here: *

Type the code on the piece of paper under your keyboard with the number 1 at the end i.e. Indigo1

Enter your answer

2. Do you give consent to take part in the study *

- Yes - Thank you, please continue to Question 3
- No - I understand participation is voluntary and choose to withdraw at this time

3. Age *

- 18-22
- 23-30
- 31-40
- 41-50
- 50+

4. School/area of study *

- Art and Design
- Business
- Engineering
- Hotel and Catering
- Humanitites
- Science

5. Would you consider yourself to be: *

- An International Student
- A student with a registered disability
- A transfer student
- A repeat student
- None of the above

6. Library books are all you need to research your assignment...right?? *

- Yes, all the information I need is in books
- No, use books, journal articles, websites, and a variety of information sources
- If I don't have time for books I can use Google instead
- Just use lecture notes
- I don't know

7. What has Trump just said? To find out I'll use... *

- An encyclopedia
- A news site
- A journal article
- A book
- All of the above
- I don't know

8. Which of the following best defines what a journal article is? *

- Articles from popular magazines, written by journalists
- Articles with an academic focus, written by and for experts in a particular field
- Articles from newspapers or news sites
- All of the above
- I don't know

9. Which of the following is NOT a common criteria for evaluating a source for including in an assignment? *

- Currency
- Authority
- Length
- Bias
- All of the above
- I don't know

10. When checking the currency of information, you are checking... *

- The source of the information
- The reason the information exist
- The reliability of the content
- The timeliness of the information
- All of the above
- I don't know

Submit

APPENDIX 5 - PRE-TEST RESULTS FOR INFORMATION SOURCES SESSIONS

151 Responses

1. Please add your anonymous participant code here:

Latest Response

"mazda"

2. Do you give consent to take part in the study

Yes - Thank you, please continue to Question 3	149
No - I understand participation is voluntary and choose to withdraw at this time	2

3. Age

18-22	140
23-30	8
31-40	1
41-50	0
50+	0

4. School/area of study

Art and Design	0
Business	105
Engineering	44
Hotel and Catering	0
Humanities	0
Science	0

5. Would you consider yourself to be:

An International Student	11
A student with a registered disability	7
A transfer student	3
A repeat student	2
None of the above	126

6. Library books are all you need to research your assignment...right??

Yes, all the information I need is in books	8
No, use books, journal articles, websites, and a variety of information sources	108
If I don't have time for books I can use Google instead	11
Just use lecture notes	16
I don't know	6

7. What has Trump just said? To find out I'll use...

An encyclopedia	10
A news site	68
A journal article	9
A book	6
All of the above	7
I don't know	49

8. Which of the following best defines what a journal article is?

Articles from popular magazines, written by journalists	13
Articles with an academic focus, written by and for experts in a particular field	71
Articles from newspapers or news sites	25
All of the above	31
I don't know	9

9. Which of the following is NOT a common criterion for evaluating a source for including in an assignment?

Currency	21
Authority	5
Length	10
Bias	31
All of the above	12
I don't know	70

10. When checking the currency of information, you are checking...

The source of the information	34
The reason the information exist	7
The reliability of the content	15
The timeliness of the information	9
All of the above	16
I don't know	68

APPENDIX 6 - POST-TEST RESULTS FOR INFORMATION SOURCES SESSIONS

99 Responses

Please add your anonymous participant code here:
Latest Response
"vector"

2. What has Trump just said? To find out I'll use...

An encyclopedia	7
A news site	71
A journal article	3
A book	1
All of the above	14
I don't know	3

3. Library books are all you need to research your assignment...right??

Yes, all the information I need is in books	3
No, use books, journal articles, websites, and a variety of information sources	93
If I don't have time for books I can use Google instead	2
Just use lecture notes	0
I don't know	1

4. Which of the following is NOT a common criterion for evaluating a source for including in an assignment?

Currency	14
Authority	5
Length	14
Bias	24
All of the above	20
I don't know	22

5. Which of the following best defines what a journal article is?

Articles from popular magazines, written by journalists	6
Articles with an academic focus, written by and for experts in a particular field	66
Articles from newspapers or news sites	10
All of the above	14
I don't know	3

6. When checking the currency of information, you are checking...

The source of the information	12
The reason the information exist	7
The reliability of the content	16
The timeliness of the information	18
All of the above	24
I don't know	22

APPENDIX 7 - PRE-TEST FOR ONLINE LIBRARY SESSIONS

*Post-test assessment questions were the same but commenced at number Q6 - unique identifies were used to match pre/post data.

Online Library (pre-test)

Students under 18 years of age cannot participate.

All responses are ANONYMOUS.

The aim of this research is to investigate if first-year students who participate in library instruction learn information literacy skills as novice learners, effectively learning how to find, evaluate, use and create information.

If you participate in this study you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

This research has approval from the MA in Teaching and learning Research Ethics Committee.

You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Kathryn Briggs who can be telephoned at 091-742789 or e-mail Kathryn.briggs@gmit.ie.

* Required

1. Please add your anonymous participant code here: *

Type the code on the piece of paper under your keyboard with the number 1 at the end i.e. Indigo1

Enter your answer

2. Do you give consent to take part in the study *

- Yes - Thank you, please continue to Question 3
- No - I understand participation is voluntary and choose to withdraw at this time

3. Age *

- 18-22
- 23-30
- 31-40
- 41-50
- 50+

4. School/area of study *

- Art and Design
- Business
- Engineering
- Hotel and Catering
- Humanitites
- Science

5. Would you consider yourself to be: *

- An International Student
- A student with a registered disability
- A transfer student
- A repeat student
- None of the above

6. Which of the following best describes "information literacy"? *

- The ability to use a computer efficiently
- The ability to find, determine the quality of, and use information
- The ability to read and take notes effectively
- The ability to share your own personal information
- All of the above
- I don't know

7. The name of the online library's default search is: *

- QuickSearch
- SearchIt!
- Search + Find
- I don't know

8. What is meant by "full text" in library database search results? *

- ○ The article is fully indexed
- ○ The article is available online in its entirety
- ○ The article is full of information
- ○ I don't know

9. When searching a database, the use of Boolean operators "And", "Or" and "Not" can be useful in narrowing or widening your search results. Which word would you use to increase the number of the items you retrieve? *

- ○ And
- ○ Or
- ○ Not
- ○ All of the above
- ○ I don't know

10. In critically evaluating information sources you should consider: *

- ○ The accuracy of the information
- ○ The credentials of the author
- ○ The currency of the information
- ○ All of the above
- ○ None of the above
- ○ I don't know

Submit

APPENDIX 8 - PRE-TEST RESULTS FOR ONLINE LIBRARY SESSIONS

158 responses

1. Please add your anonymous participant code here:

Latest Response

"LEITRIM 1"

2. Do you give consent to take part in the study

Yes - Thank you, please continue to Question 3	155
No - I understand participation is voluntary and choose to withdraw at this time	3

3. Age

18-22	149
23-30	5
31-40	1
41-50	0
50+	0

4. School/area of study

Art and Design	1
Business	92
Engineering	15
Hotel and Catering	10
Humanities	0
Science	37

5. Would you consider yourself to be:

An International Student	13
A student with a registered disability	8
A transfer student	0
A repeat student	4
None of the above	130

6. Which of the following best describes “information literacy”?

The ability to use a computer efficiently	7
The ability to find, determine the quality of, and use information	77
The ability to read and take notes effectively	17
The ability to share your own personal information	2
All of the above	27
I don't know	25

7. The name of the online library’s default search is:

QuickSearch	35
SearchIt!	1
Search + Find	34
I don't know	85

8. What is meant by "full text" in library database search results?

The article is fully indexed	34
The article is available online in its entirety	65
The article is full of information	11
I don't know	45

9. When searching a database, the use of Boolean operators "And", "Or" and "Not" can be useful in narrowing or widening your search results. Which word would you use to increase the number of the items you retrieve?

And	46
Or	12
Not	3
All of the above	28
I don't know	66

10. In critically evaluating information sources you should consider:

The accuracy of the information	47
The credentials of the author	6
The currency of the information	2
All of the above	71
None of the above	1
I don't know	28

APPENDIX 9 - POST-TEST RESULTS FOR ONLINE LIBRARY SESSIONS

143 responses

1. Please add your anonymous participant code here:
Latest Response

"Febuary1"

2. The name of the online library's default search is:

QuickSearch	18
SearchIt!	7
Search + Find	108
I don't know	10

3. Which of the following best describes "information literacy"?

The ability to use a computer efficiently	12
The ability to find, determine the quality of, and use reliable information	95
The ability to read and take notes effectively	7
All of the above	25
I don't know	4

4. When searching a database, the use of Boolean operators "And", "Or" and "Not" can be useful in narrowing or widening your search results. Which word would you use to increase the number of the items you retrieve?

And	38
Or	56
Not	3
All of the above	39

I don't know	7

5. In critically evaluating information sources you should consider:

The accuracy of the information	35
The credentials of the author	9
The currency of the information	7
All of the above	81
None of the above	1
I don't know	10

6. What is meant by "full text" in library database search results?

The article is fully indexed	30
The article is available online in its entirety	91
The article is full of information	11
I don't know	11

APPENDIX 10 - PRE-TEST FOR CITATION & REFERENCING SESSIONS

*Post-test assessment questions were the same but commenced at number Q6 - unique identifies were used to match pre/post data.

Citing and Referencing (pre-test)

Students under 18 years of age cannot participate.

All responses are ANONYMOUS.

The aim of this research is to investigate if first-year students who participate in library instruction learn information literacy skills as novice learners, effectively learning how to find, evaluate, use and create information.

If you participate in this study you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

This research has approval from the MA in Teaching and learning Research Ethics Committee.

You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Kathryn Briggs who can be telephoned at 091-742789 or e-mail Kathryn.briggs@gmit.ie.

* Required

1. Please add your anonymous participant code here: *

Type the code on the piece of paper under your keyboard with the number 1 at the end i.e. Indigo1

Enter your answer

2. Do you give consent to take part in the study *

- Yes - Thank you, please continue to Question 3
- No - I understand participation is voluntary and choose to withdraw at this time

3. Age *

- 18-22
- 23-30
- 31-40
- 41-50
- 50+

4. School/area of study *

- Art and Design
- Business
- Engineering
- Hotel and Catering
- Humanitites
- Science

5. Would you consider yourself to be: *

- An International Student
- A student with a registered disability
- A transfer student
- A repeat student
- None of the above

6. You should include citations in your assignment because: *

- Citations give credit to authors
- Citations allow you and other readers to locate and read the sources
- Citations allow readers to determine the credibility of your sources
- All of the above
- I don't know

7. I read a book on my reading list, it contains the footnote: Manca, S. and Ranieri, M. (2016) "Yes for sharing, no for teaching!": Social Media in academic practices', The Internet and Higher Education, 29, pp. 63–74. This citation is for: *

- A book
- A journal
- A journal article
- A blog
- A website
- I don't know

8. A bibliography is? *

- An outline of an article
- A list of sources used in your assignment
- A list of authors who write on the subject of your assignment
- All of the above
- I don't know

9. When referencing using the Harvard style your reference list should be: *

- In date order, with the newest first
- In alphabetical order by the author(s)' first name
- In the order they appear in your assignment
- In alphabetical order by the author(s)' surname
- In date order, with the oldest first
- It doesn't matter as long as I list them
- I don't know

10. What should you put your in-text citation if no author's name is given for the text you are citing? *

- Use "Anonymous" instead
- Use the full title of the text you are citing instead
- Use an abbreviated title of the text you are citing instead
- Use any of the above
- I don't know

Submit

APPENDIX 11 - PRE-TEST RESULTS FOR CITATION & REFERENCING SESSIONS

144 Responses

1. Please add your anonymous participant code here:

Latest Response

"Monday "

2. Do you give consent to take part in the study

Yes - Thank you, please continue to Question 3	143
No - I understand participation is voluntary and choose to withdraw at this time	1

3. Age

18-22	138
23-30	3
31-40	2
41-50	0
50+	0

4. School/area of study

Art and Design	1
Business	115
Engineering	0
Hotel and Catering	0
Humanities	0
Science	27

5. Would you consider yourself to be:

An International Student	6

A student with a registered disability	6
A transfer student	1
A repeat student	1
None of the above	129

6. You should include citations in your assignment because:

Citations give credit to authors	14
Citations allow you and other readers to locate and read the sources	25
Citations allow readers to determine the credibility of your sources	19
All of the above	62
I don't know	23

7. I read a book on my reading list, it contains the footnote: Manca, S. and Ranieri, M. (2016) “Yes for sharing, no for teaching!”: Social Media in academic practices’, The Internet and Higher Education, 29, pp. 63–74. This citation is for:

A book	59
A journal	10
A journal article	27
A blog	2
A website	10
I don't know	35

8. A bibliography is?

An outline of an article	14

A list of sources used in your assignment	55
A list of authors who write on the subject of your assignment	23
All of the above	20
I don't know	31

9. When referencing using the Harvard style your reference list should be:

In date order, with the newest first	10
In alphabetical order by the author(s)' first name	18
In the order they appear in your assignment	26
In alphabetical order by the author(s)' surname	41
In date order, with the oldest first	2
It doesn't matter as long as I list them	5
I don't know	41

10. What should you put your in-text citation if no author's name is given for the text you are citing?

Use "Anonymous" instead	15
Use the full title of the text you are citing instead	50
Use an abbreviated title of the text you are citing instead	15
Use any of the above	15
I don't know	48

APPENDIX 12 - POST-TEST RESULTS FOR CITATION & REFERENCING SESSIONS

101 Responses

1. Please add your anonymous participant code here:

Latest Response

"September"

2. I read a book on my reading list, it contains the footnote: Manca, S. and Ranieri, M. (2016) “Yes for sharing, no for teaching!”: Social Media in academic practices’, The Internet and Higher Education, 29, pp. 63–74. This citation is for:

A book	39
A journal	20
A journal article	34
A blog	0
A website	5
I don't know	3

3. You should include citations in your assignment because:

Citations give credit to authors	12
Citations allow you and other readers to locate and read the sources	22
Citations allow readers to determine the credibility of your sources	15
All of the above	49
I don't know	3

4. When referencing using the Harvard style your reference list should be:

In date order, with the newest first	5

In alphabetical order by the author(s)' first name	16
In the order they appear in your assignment	8
In alphabetical order by the author(s)' surname	57
In date order, with the oldest first	7
It doesn't matter as long as I list them	5
I don't know	3

5. What should you put your in-text citation if no author's name is given for the text you are citing?

Use "Anonymous" instead	19
Use the full title of the text you are citing instead	46
Use an abbreviated title of the text you are citing instead	13
Use any of the above	13
I don't know	10

6. A bibliography is?

An outline of an article	12
A list of sources used in your assignment	53
A list of authors who write on the subject of your assignment	19
All of the above	13
I don't know	4

APPENDIX 13 - PRE-TEST FOR COPYRIGHT & PLAGIARISM SESSIONS

*Post-test assessment questions were the same but commenced at number Q6 - unique identifies were used to match pre/post data.

Copyright and Plagiarism (pre-test)

Students under 18 years of age cannot participate.

All responses are ANONYMOUS.

The aim of this research is to investigate if first-year students who participate in library instruction learn information literacy skills as novice learners, effectively learning how to find, evaluate, use and create information.

If you participate in this study you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

This research has approval from the MA in Teaching and learning Research Ethics Committee.

You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Kathryn Briggs who can be telephoned at 091-742789 or e-mail Kathryn.briggs@gmit.ie.

* Required

1. Please add your anonymous participant code here: *

Type the code on the piece of paper under your keyboard with the number 1 at the end i.e. Indigo1

Enter your answer

2. Do you give consent to take part in the study *

- Yes - Thank you, please continue to Question 3
- No - I understand participation is voluntary and choose to withdraw at this time

Submit

3. Age *

- 18-22
- 23-30
- 31-40
- 41-50
- 50+

4. School/area of study *

- Art and Design
- Business
- Engineering
- Hotel and Catering
- Humanitites
- Science

5. Would you consider yourself to be: *

- An International Student
- A student with a registered disability
- A transfer student
- A repeat student
- None of the above

6. Failure to give credit to your sources of information in your assignments is called: *

- Copyright
- Plagiarism
- Referencing
- I don't know

7. Plagiarism is when you: *

- Directly copy from your friends assignment and hand it in as your own
- Change a few words of a paragraph someone else wrote and make out it's your own work
- Summarize something from the internet without citing it in your paper
- Copy a paragraph from a library book but don't bother referencing it
- All of the above
- I don't know

8. You want to photocopy a book that is for library use only, for personal study, under copyright you can: *

- Photocopy as much as you want
- Photocopy 10% of the total no. of pages of the book
- Photocopy 50% of the total no. of pages of the book
- Photocopy a maximum of 2 chapters of the book
- I don't know

9. Which of the following is an ethical consideration involved in creating new information? *

- Carrying out regular backups
- Not plagiarising others' works
- Removing spelling mistakes
- All of the above
- None of them
- I don't know

10. You can use information in an essay without crediting when its: *

- Freely available on Google
- Common Knowledge or your own opinion
- Copied from your lecturers notes
- From an article you have read before and you remember the information
- All of the above
- None of the above
- I don't know

Submit

APPENDIX 14 - PRE-TEST RESULTS FOR COPYRIGHT & PLAGIARISM SESSIONS

1. Please add your anonymous participant code here:

Latest Response

"fourfour"

2. Do you give consent to take part in the study

Yes - Thank you, please continue to Question 3	55
No - I understand participation is voluntary and choose to withdraw at this time	0

3. Age

18-22	51
23-30	4
31-40	0
41-50	0
50+	0

4. School/area of study

Art and Design	0
Business	44
Engineering	9
Hotel and Catering	0
Humanities	0
Science	2

5. Would you consider yourself to be:

An International Student	6
A student with a registered disability	2

A transfer student	0
A repeat student	1
None of the above	46

6. Failure to give credit to your sources of information in your assignments is called:

Copyright	17
Plagiarism	34
Referencing	0
I don't know	4

7. Plagiarism is when you:

Directly copy from your friend's assignment and hand it in as your own	10
Change a few words of a paragraph someone else wrote and make out it's your own work	3
Summarize something from the internet without citing it in your paper	1
Copy a paragraph from a library book but don't bother referencing it	6
All of the above	34
I don't know	1

8. You want to photocopy a book that is for library use only, for personal study, under copyright you can:

Photocopy as much as you want	15
Photocopy 10% of the total no. of pages of the book	4
Photocopy 50% of the total no. of pages of the book	0
Photocopy a maximum of 2 chapters of the book	4

I don't know	32

9. Which of the following is an ethical consideration involved in creating new information?

Carrying out regular backups	4
Not plagiarising others' works	17
Removing spelling mistakes	0
All of the above	13
None of them	1
I don't know	20

10. You can use information in an essay without crediting when its:

Freely available on Google	2
Common Knowledge or your own opinion	23
Copied from your lecturers' notes	4
From an article you have read before and you remember the information	0
All of the above	9
None of the above	7
I don't know	10

APPENDIX 15 - POST-TEST RESULTS FOR COPYRIGHT & PLAGIARISM SESSIONS

49 Responses

1. Please add your anonymous participant code here:

Latest Response

"fivefive"

2. Plagiarism is when you:

Directly copy from your friend's assignment and hand it in as your own	2
Change a few words of a paragraph someone else wrote and make out it's your own work	1
Summarize something from the internet without citing it in your paper	0
Copy a paragraph from a library book but don't bother referencing it	1
All of the above	45
I don't know	0

3. Failure to give credit to your sources of information in your assignments is called:

Copyright	5
Plagiarism	42
Referencing	1
I don't know	1

4. Which of the following is an ethical consideration involved in creating new information?

Carrying out regular backups	4
Not plagiarising others' works	24

Removing spelling mistakes	1
All of the above	12
None of them	2
I don't know	6

5. You can use information in an essay without crediting when its:

Freely available on Google	2
Common Knowledge or your own opinion	29
Copied from your lecturers' notes	1
From an article you have read before and you remember it	1
All of the above	5
None of the above	9
I don't know	2

6. You want to photocopy a book that is for library use only, for personal study, under copyright you can:

Photocopy as much as you want	11
Photocopy 10% of the total no. of pages of the book	24
Photocopy 50% of the total no. of pages of the book	0
Photocopy a maximum of 2 chapters of the book	5
I don't know	9

APPENDIX 16 - ONLINE SURVEY QUESTIONS

Library Training and Information Literacy

Students must be over 18 to participate.

All responses are ANONYMOUS.

The aim of this research is to obtain feedback to redesign future library training and develop an information literacy framework for GMIT library.

If you participate in this study you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

This research has approval from the MA in Teaching and Learning Research Ethics Committee.

* Required

1. Do you give consent to take part in the study *

- Yes - Thank you, please continue to Question 2
- No - I understand participation is voluntary and choose to withdraw at this time

2. Age *

- 18-22
- 23-30
- 31-40
- 41-50
- 50+

3. Gender *

- Male
- Female
- Prefer not to say

4. Which campus are you studying on? *

- ○ Galway
- ○ CCAM
- ○ Mayo
- ○ Letterfrack

5. School/area of study *

- ○ Art and Design
- ○ Business
- ○ Engineering
- ○ Tourism, Hospitality, Heritage, Culinary Arts
- ○ Science
- ○ Teacher Education
- ○ Other

6. Year of Study *

- ○ 1st year
- ○ 2nd year
- ○ 3rd year
- ○ 4th year
- ○ 5th or higher

7. Would you consider yourself to be: *

- ☐ An International student
- ☐ A student with a registered disability
- ☐ A transfer student
- ☐ A postgraduate student
- ☐ None of the above

8. How would you rate your information literacy skills? *

i.e. how well can you recognize when information is needed and have the ability to locate, evaluate, and effectively use the needed information

- ○ Excellent
- ○ Good
- ○ Limited
- ○ None
- ○ I don't know

9. Thinking back to your 1st year - did you participate in any library training as part of LIS (Learning and Innovation Skills) *

- ○ Yes
- ○ No
- ○ I don't know

(tick all that apply)

- ☐ Information Sources
- ☐ The Online Library
- ☐ Citation & Referencing
- ☐ Copyright & Plagiarism
- ☐ I don't know
- ☐ None

11. Have you attended any library training in another academic year? *

i.e. As a 2nd, 3rd, 4th year or postgraduate (tick all that apply)

- ☐ Yes, eResources - the online library and databases
- ☐ Yes, Citation & referencing
- ☐ Yes, Referencing using Microsoft Word
- ☐ Yes, EndNote Online
- ☐ No
- ☐ Other

12. Overall how would you rate the library LIS training sessions you participated in. *

- ○ Excellent
- ○ Good
- ○ Satisfactory
- ○ Poor
- ○ Other

13. When finding, using and communicating information I feel confident and competent to: *
(tick all that apply)

- ☐ Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.)
- ☐ Identify points of agreement and disagreement among sources
- ☐ Determine the authoritativeness, currentness and reliability of the information sources
- ☐ Determine the content and form the parts (i.e. introduction, conclusion) of a paper
- ☐ Limit search strategies by subject, source type and date
- ☐ Use in-text quotations and include a reference list
- ☐ Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity)
- ☐ None of the above
- ☐ Other

14. As a result of the library training I received, the information needed for my course work takes less effort and I find it easier and faster to find and use academic type information. *

- ○ Agree
- ○ Disagree
- ○ Neither agree or disagree

15. Consider the course work you have done in the last year. How often have you looked beyond Google? *

- ○ Never
- ○ Not very often
- ○ Usually
- ○ Almost always
- ○ Always

16. As a result of the library training I received from the library, the library staff seem more helpful, valuable and knowledgeable. *

- ○ Agree
- ○ Disagree
- ○ Neither agree or disagree
- ○ Other

17. How confident are you that you can... *

	Extremely confident	Very confident	Somewhat confident	Not so confident	Not at all confident
Find answers to you research questions quickly	○	○	○	○	○
Critically appraise a journal article	○	○	○	○	○
Determine the validity of a research article	○	○	○	○	○
Use limits to refine search results	○	○	○	○	○
Find scholarly articles using library databases	○	○	○	○	○
Respect the original ideas of others	○	○	○	○	○
Use citations from one source to track other sources	○	○	○	○	○

18. Which teaching method would you recommend the library use for the LIS training sessions: *

- ○ Lecture: A presentation &/or demonstration, with the help of an active website, power-point slides, handouts, etc., with students listening/watching but not actively practicing the methods
- ○ Flipped classroom: Students are assigned material to complete in advance of library training (videos, tutorials, questions, etc.), then attend library training that covers the material in greater depth
- ○ Directed practice: Students follow along on computers and perform tasks, e.g. using filters to refine searches, accessing ebooks, using specific search strategies, engaging in online interactive quizzes
- ○ Active learning: Students work in groups or individually to complete in-depth activities and tasks during the library sessions
- ○ I don't know
- ○ Other

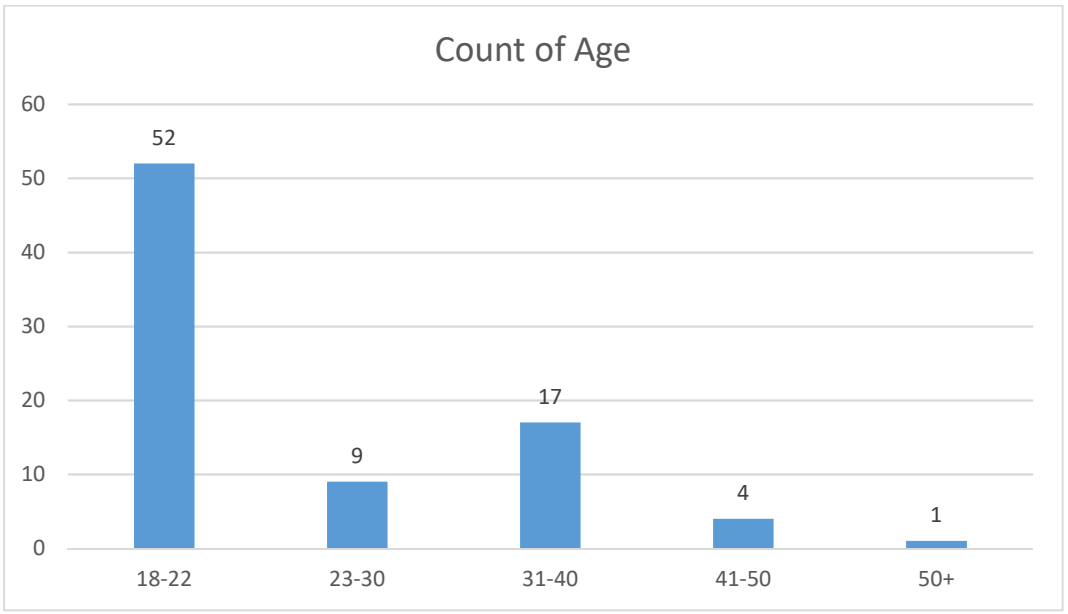
19. Please add any comments, suggestions or complaints you have on anything relating to LIS library training?

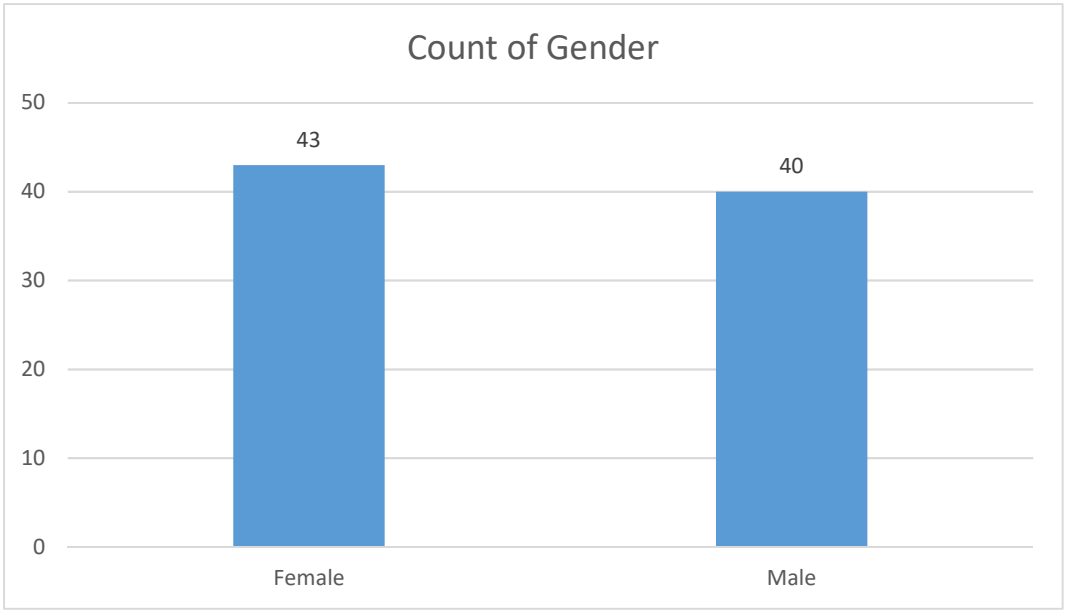
Enter your answer

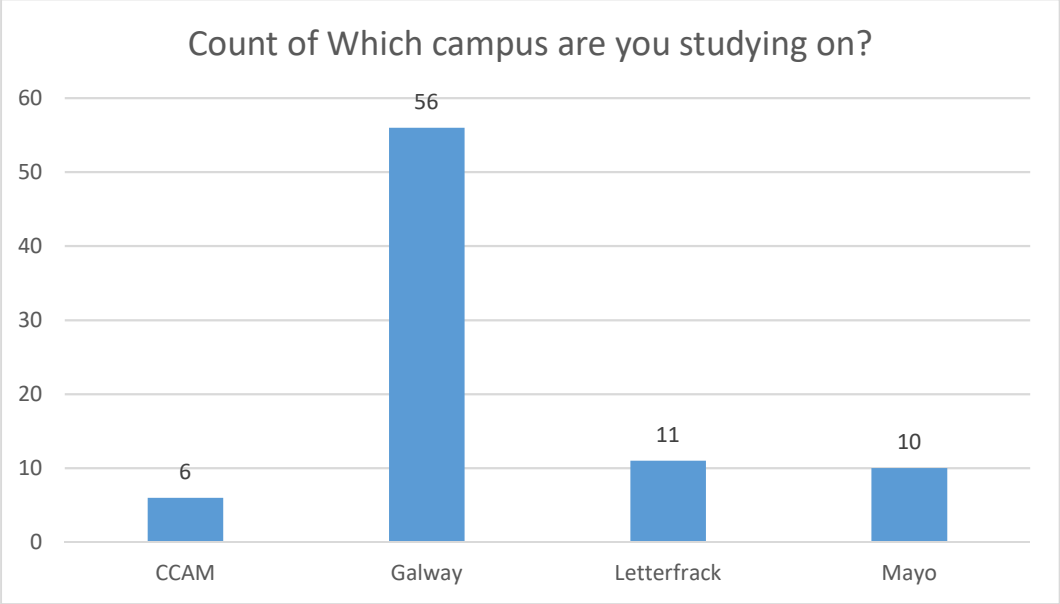
Submit

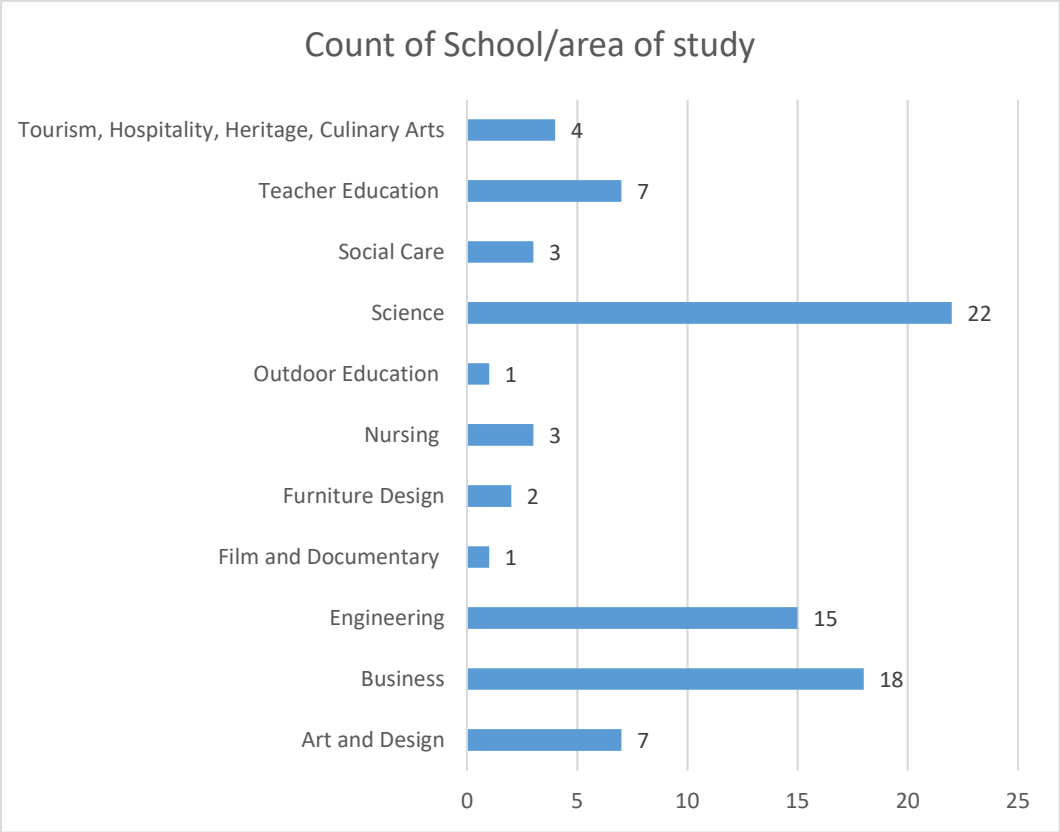
APPENDIX 17 - ONLINE SURVEY RESULTS

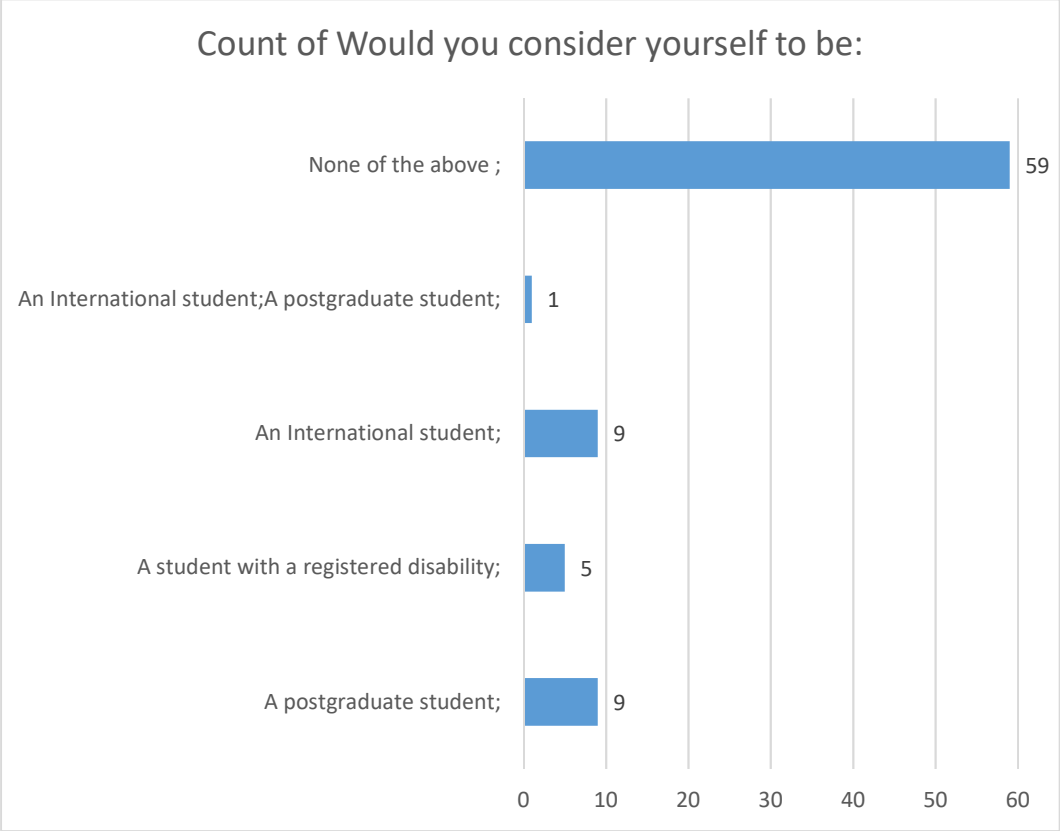
Results from online survey (n=83) – first years only.

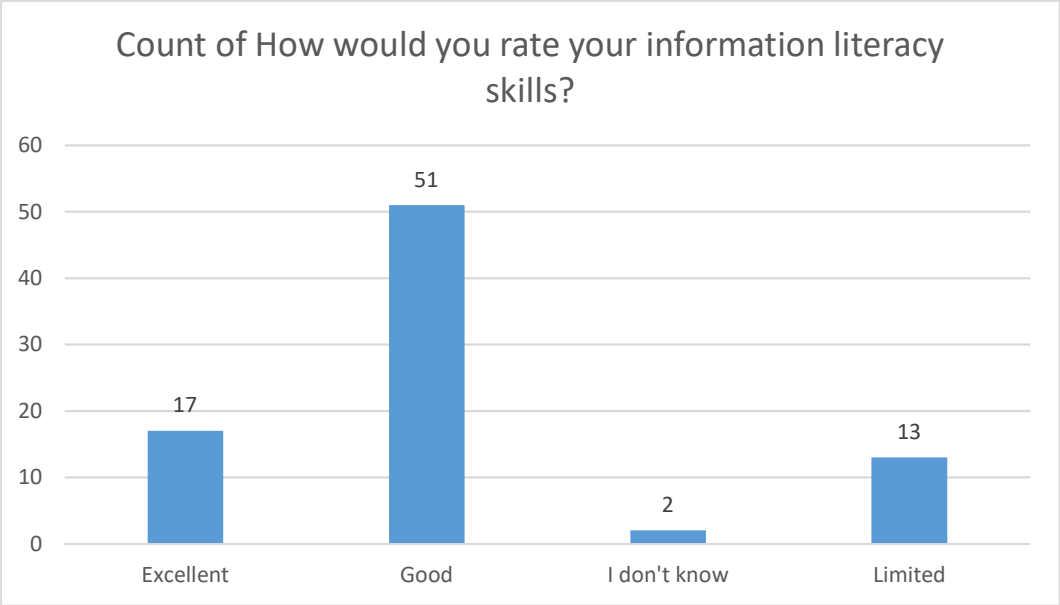




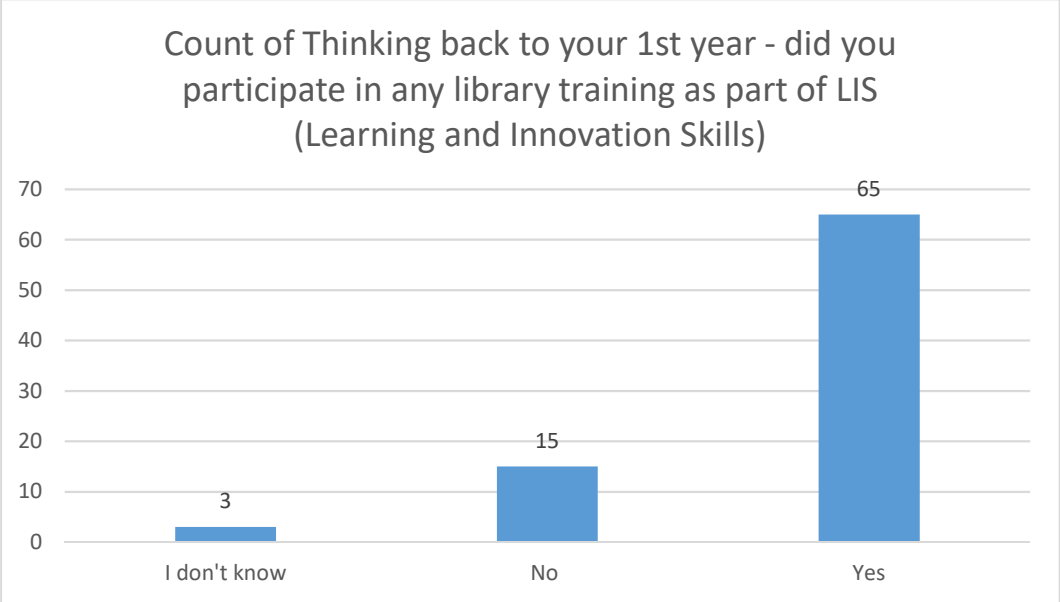

Count of Which campus are you studying on?
60
50
40
30
20
10
0
56
6
11
10
CCAM
Galway
Letterfrack
Mayo

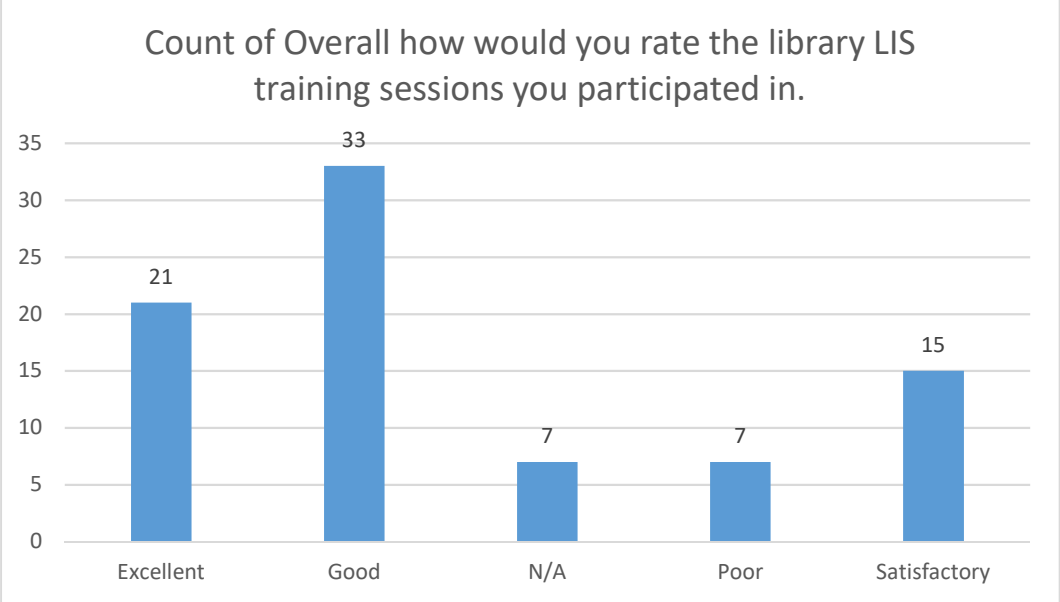

Count of School/area of study
Tourism, Hospitality, Heritage, Culinary Arts
4
Teacher Education
7
Social Care
3
Science
22
Outdoor Education
1
Nursing
3
Furniture Design
2
Film and Documentary
1
Engineering
15
Business
18
Art and Design
7
0
5
10
15
20
25


Count of Would you consider yourself to be:
None of the above ;
59
An International student;A postgraduate student;
1
An International student;
9
A student with a registered disability;
5
A postgraduate student;
9
0
10
20
30
40
50
60


Count of How would you rate your information literacy skills?
60
50
40
30
20
10
0
17
51
2
13
Excellent
Good
I don't know
Limited

Count of Which of the library LIS training sessions have you participated in?	n
4 sessions - Information Sources; The Online Library; Citation & Referencing; Copyright & Plagiarism;	26
3 sessions - Information Sources; The Online Library; Citation & Referencing;	1
3 sessions - Information Sources; Citation & Referencing; Copyright & Plagiarism;	5
3 sessions - The Online Library; Citation & Referencing; Copyright & Plagiarism;	6
2 sessions - Information Sources; The Online Library;	2
2 sessions - Information Sources; Copyright & Plagiarism;	1
2 sessions - Information Sources; Citation & Referencing	0
2 sessions - The Online Library; Citation & Referencing	3
2 sessions - The Online Library; Copyright & Plagiarism;	1
2 sessions - Citation & Referencing; Copyright & Plagiarism;	4
1 session - Information Sources	3
1 session - The Online Library	8
1 session - Citation & Referencing	3
1 session - Copyright & Plagiarism	3
None	11
I don't know	6
Total:	83


Count of Thinking back to your 1st year - did you participate in any library training as part of LIS (Learning and Innovation Skills)
70
60
50
40
30
20
10
0
3
15
65
I don't know
No
Yes


Count of Overall how would you rate the library LIS training sessions you participated in.
35
30
25
20
15
10
5
0
21
33
7
7
15
Excellent
Good
N/A
Poor
Satisfactory

Count	When finding, using and communicating information I feel confident and competent to: (7 statements)	Number of Participants (n=83)
7	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.);Identify points of agreement and disagreement among sources;Determine the authoritativeness, currentness and reliability of the information sources;Determine the content and form the parts (i.e. introduction, conclusion) of a paper;Limit search strategies by subject, source type and date;Use in-text quotations and include a reference list;Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	14
6	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.);Identify points of agreement and disagreement among sources;Determine the content and form the parts (i.e. introduction, conclusion) of a paper;Limit search strategies by subject, source type and date;Use in-text quotations and include a reference list;Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	3
6	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.);Determine the authoritativeness, currentness and reliability of the information sources;Determine the content and form the parts (i.e. introduction, conclusion) of a paper;Limit search strategies by subject, source type and date;Use in-text quotations and include a reference list;Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
6	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Determine the authoritativeness, currentness and reliability of the information sources; Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Limit search strategies by subject, source type and date; Use in-text quotations and include a reference list;	1
6	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.);Identify points of agreement and disagreement among sources;Determine the authoritativeness, currentness and reliability of the information sources;Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Use in-text quotations and include a reference list;Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
5	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Determine the authoritativeness, currentness and reliability of the information sources; Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Use in-text quotations and include a reference list;	1
5	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Determine the authoritativeness, currentness and reliability of the information sources; Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
5	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Limit search strategies by subject, source type and date; Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
4	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	2
4	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Limit search strategies by subject, source type and date; Use in-text quotations and include a reference list;	2

4	Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Limit search strategies by subject, source type and date; Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
4	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Determine the authoritativeness, currentness and reliability of the information sources; Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Use in-text quotations and include a reference list;	1
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4	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Limit search strategies by subject, source type and date; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
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4	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	1
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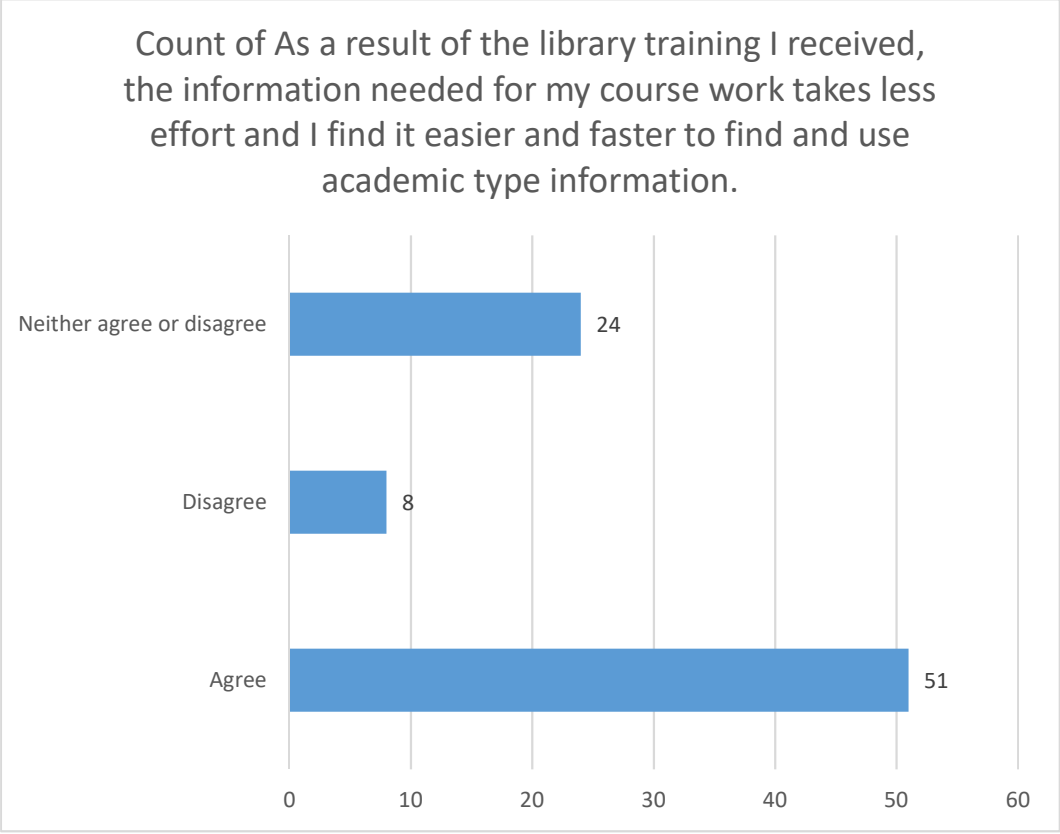
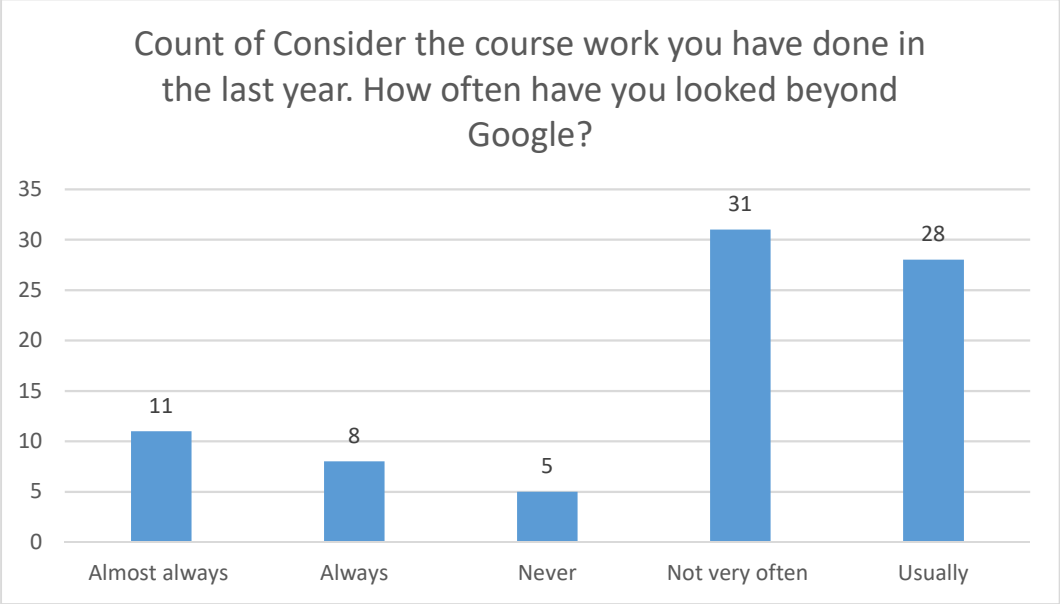
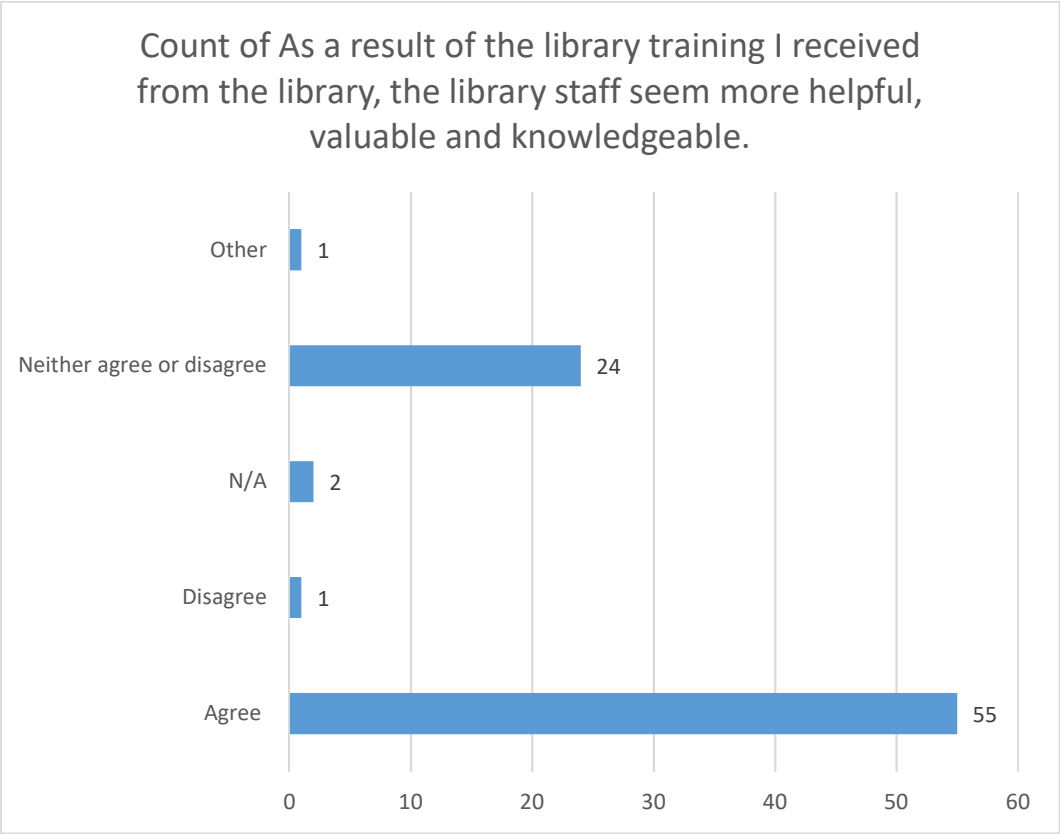
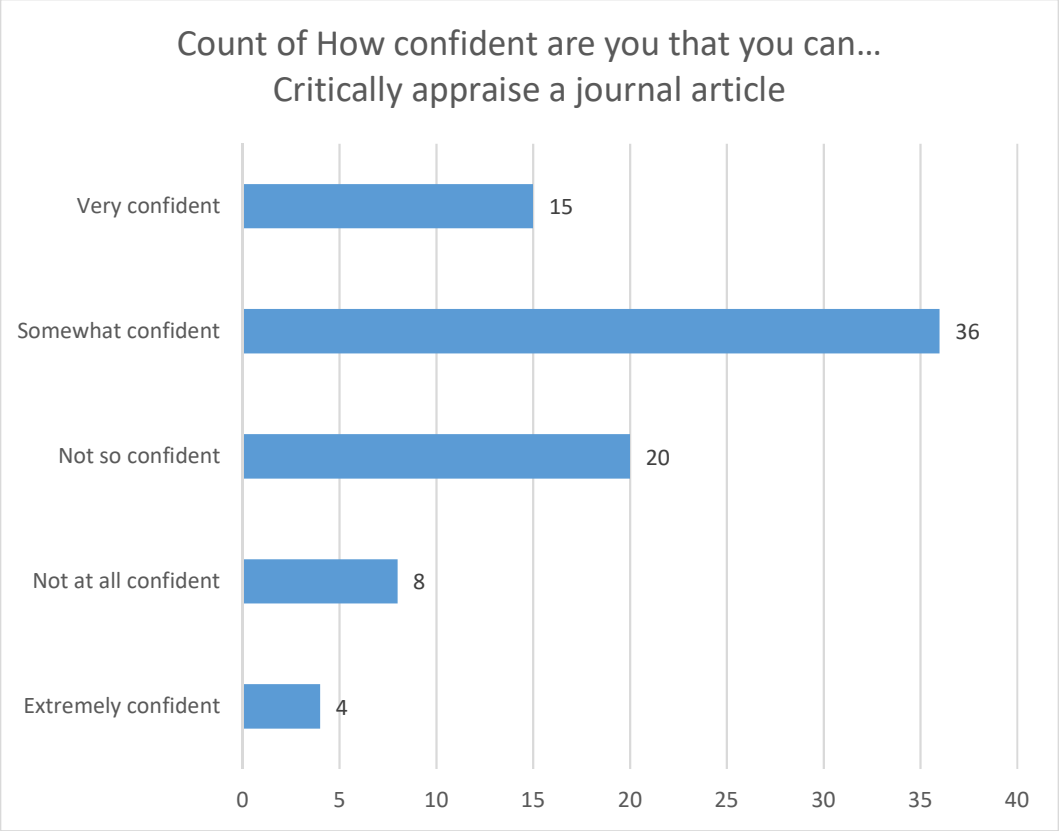
3	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Identify points of agreement and disagreement among sources; Determine the authoritativeness, currentness and reliability of the information sources;	2
3	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	2
3	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Limit search strategies by subject, source type and date;	2
3	Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Use in-text quotations and include a reference list; Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity)	1
3	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Determine the authoritativeness, currentness and reliability of the information sources; Determine the content and form the parts (i.e. introduction, conclusion) of a paper;	1
3	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Use in-text quotations and include a reference list;	1

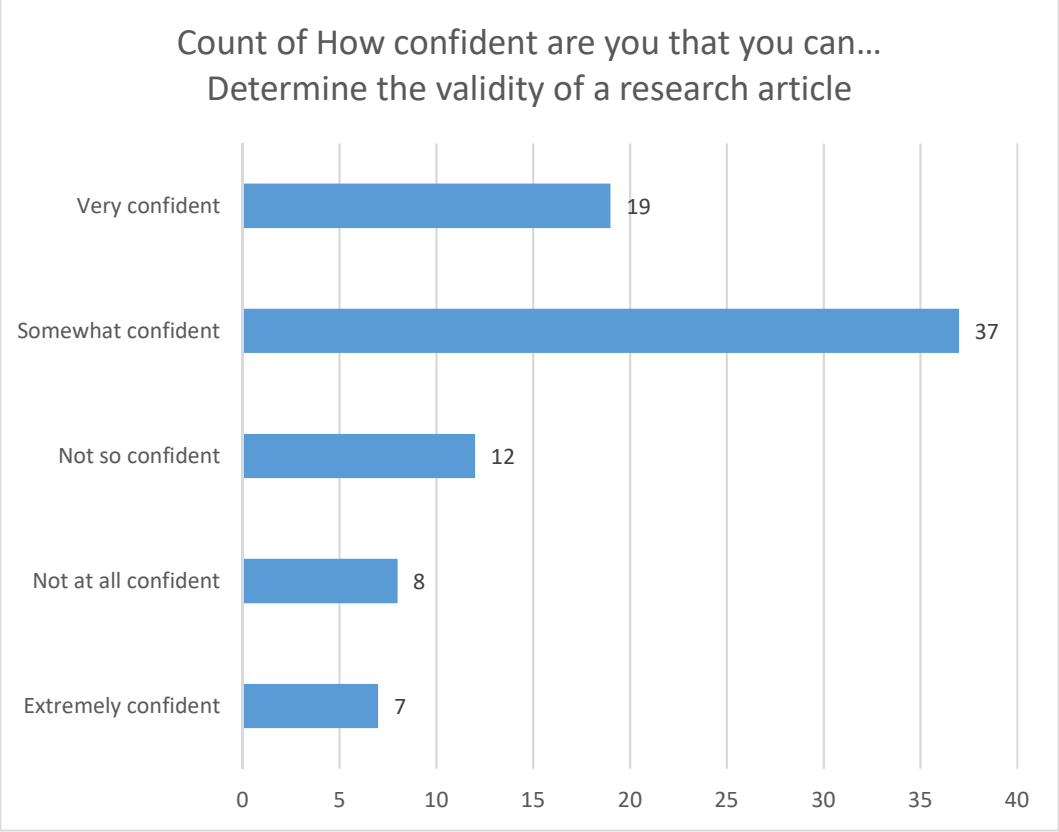
3	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Limit search strategies by subject, source type and date; Use in-text quotations and include a reference list;	1
2	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Deal with the ethical, legal & social issues surrounding information (e.g., I am aware of issues around plagiarism, copyright and academic integrity);	3
2	Determine the content and form the parts (i.e. introduction, conclusion) of a paper; Limit search strategies by subject, source type and date;	1
2	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.); Determine the content and form the parts (i.e. introduction, conclusion) of a paper;	1
1	Identify a variety of potential sources of information (i.e. books, ebooks, encyclopaedias, journal articles, etc.);	13
1	Determine the content and form the parts (i.e. introduction, conclusion) of a paper;	4
1	Determine the authoritativeness, currentness and reliability of the information sources;	1
1	Identify points of agreement and disagreement among sources;	3
1	Use in-text quotations and include a reference list;	1
0	None of the above;	10
	Total:	83

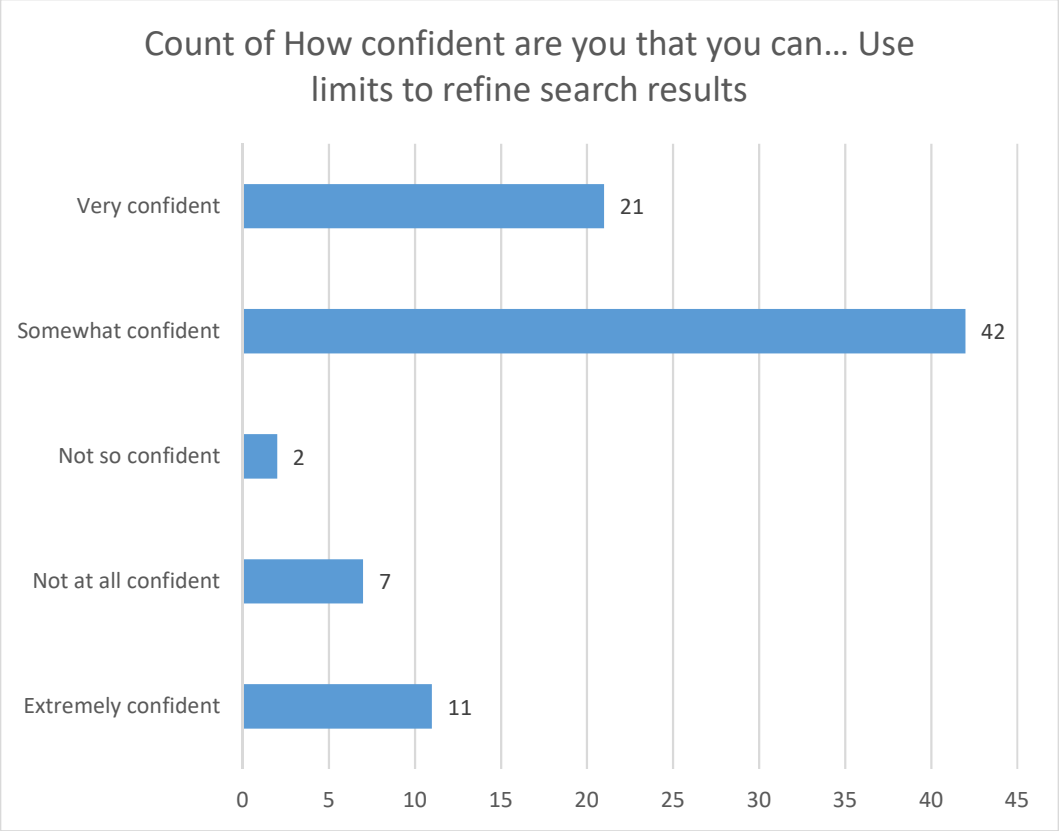


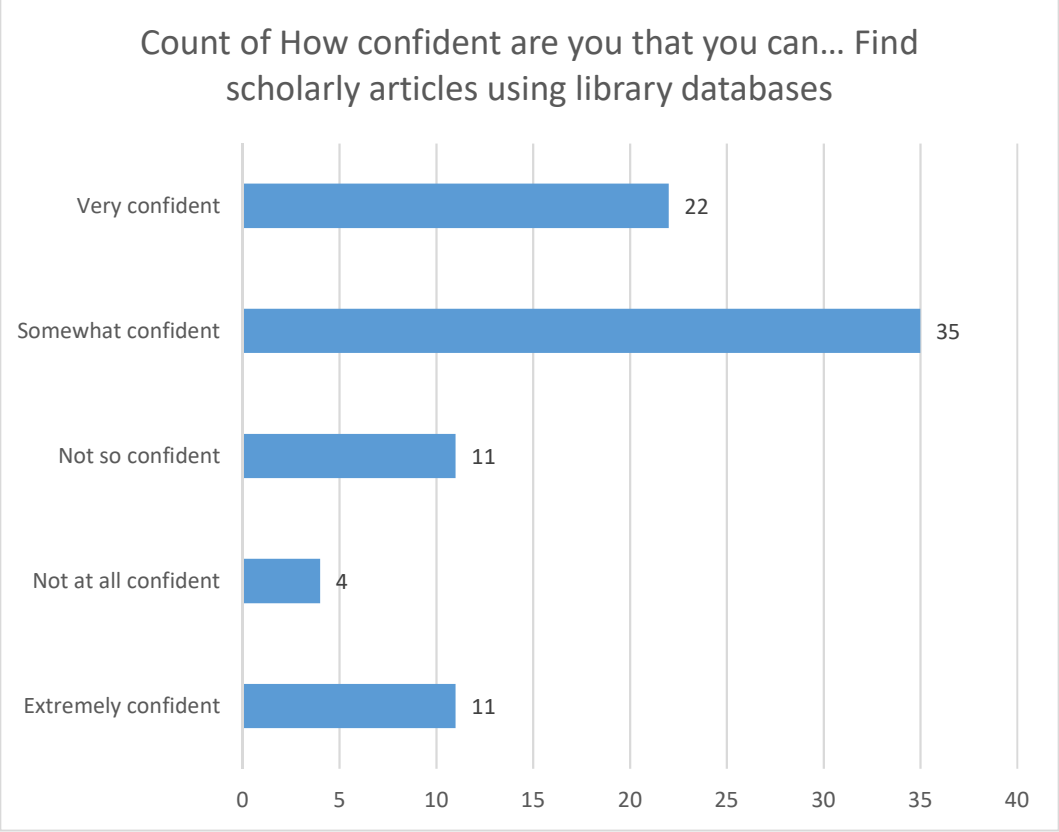

Count of Consider the course work you have done in the last year. How often have you looked beyond Google?
35
30
25
20
15
10
5
0
11
8
5
31
28
Almost always
Always
Never
Not very often
Usually

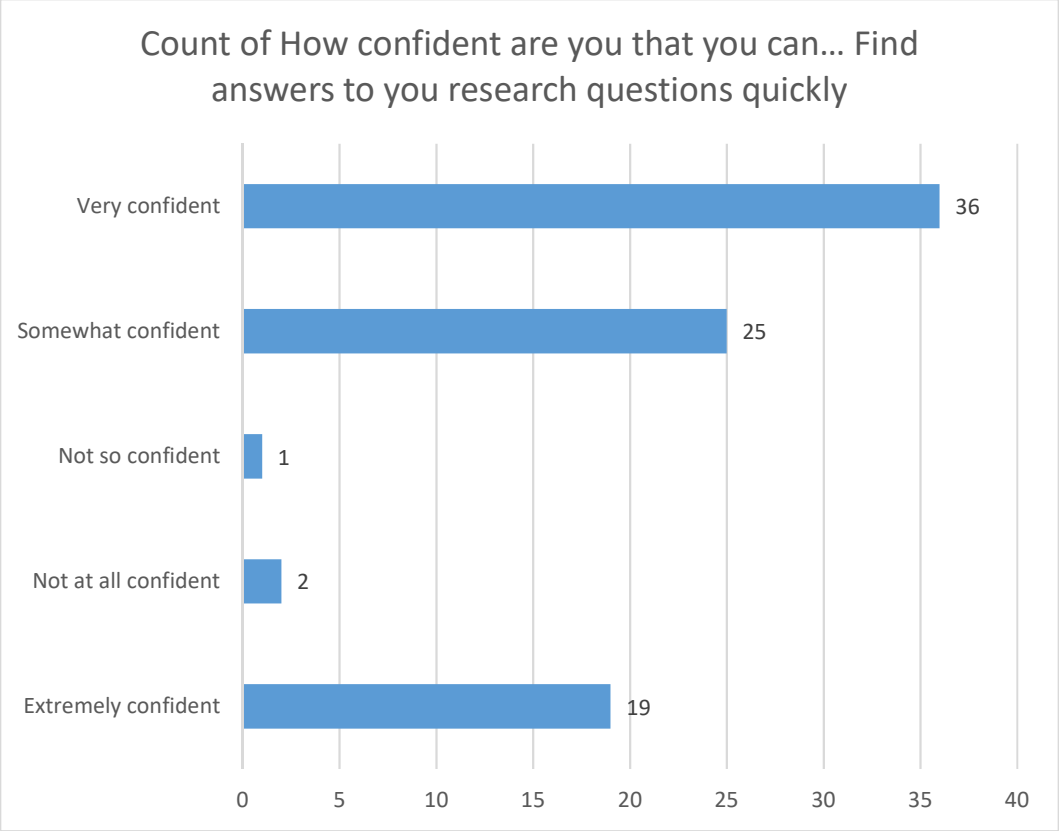

Count of As a result of the library training I received from the library, the library staff seem more helpful, valuable and knowledgeable.
Other
1
Neither agree or disagree
24
N/A
2
Disagree
1
Agree
55
0
10
20
30
40
50
60

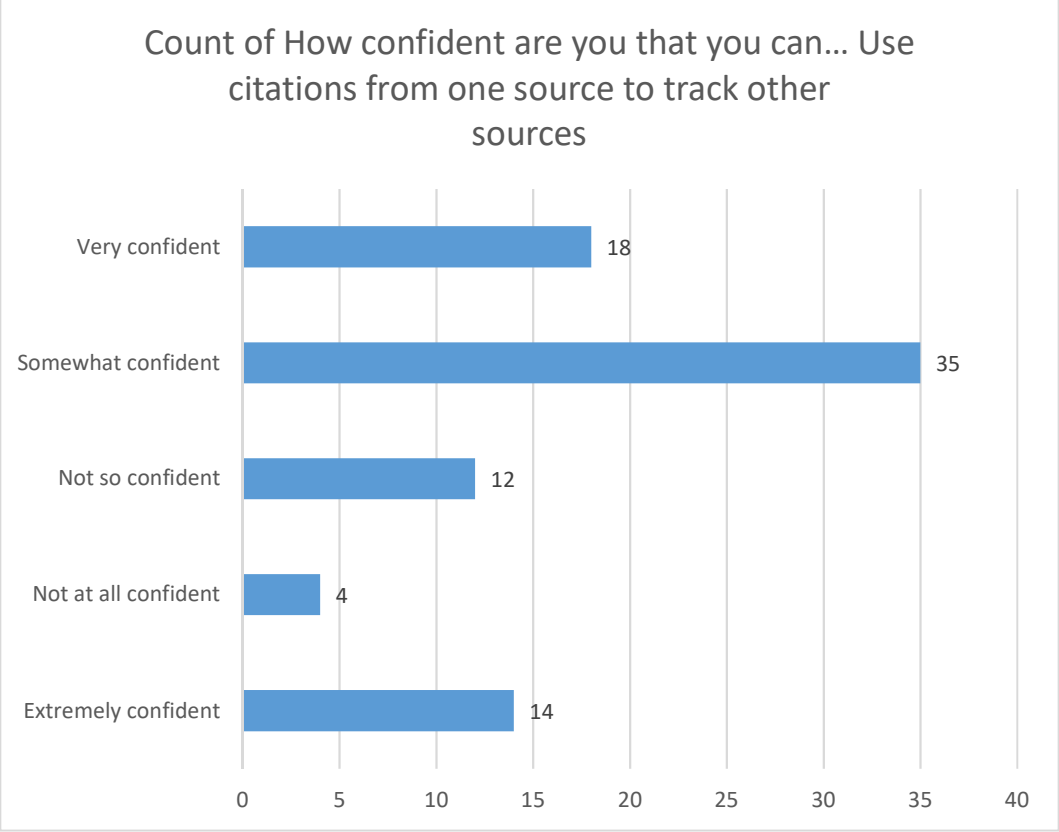

Count of How confident are you that you can…
Critically appraise a journal article
Very confident
15
Somewhat confident
36
Not so confident
20
Not at all confident
8
Extremely confident
4
0
5
10
15
20
25
30
35
40

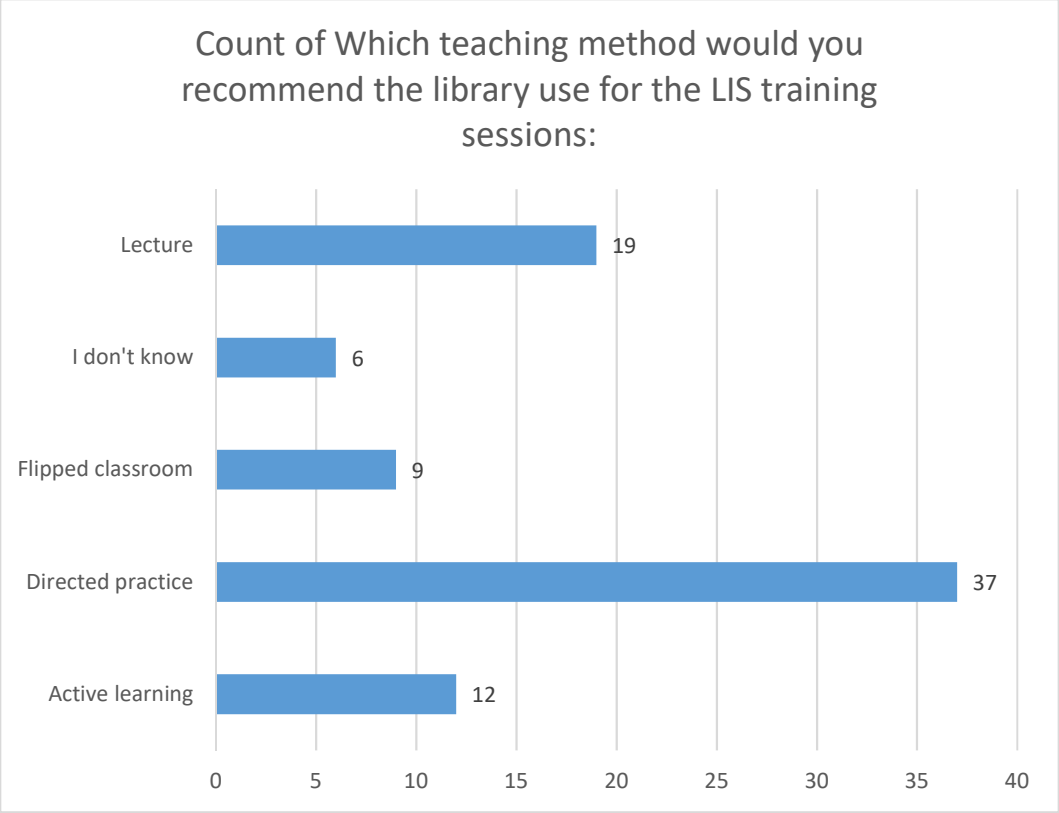

Count of How confident are you that you can…
Determine the validity of a research article
Very confident
19
Somewhat confident
37
Not so confident
12
Not at all confident
8
Extremely confident
7
0
5
10
15
20
25
30
35
40


Count of How confident are you that you can… Use limits to refine search results
Very confident
21
Somewhat confident
42
Not so confident
2
Not at all confident
7
Extremely confident
11
0
5
10
15
20
25
30
35
40
45


Count of How confident are you that you can… Find scholarly articles using library databases
Very confident
22
Somewhat confident
35
Not so confident
11
Not at all confident
4
Extremely confident
11
0
5
10
15
20
25
30
35
40


Count of How confident are you that you can… Find answers to you research questions quickly
Very confident
Somewhat confident
Not so confident
Not at all confident
Extremely confident
36
25
1
2
19
0
5
10
15
20
25
30
35
40


Count of How confident are you that you can… Use citations from one source to track other sources
Very confident
Somewhat confident
Not so confident
Not at all confident
Extremely confident
18
35
12
4
14
0
5
10
15
20
25
30
35
40



Please add any comments, suggestions or complaints you have on anything relating to LIS library training?
Found it interesting and informative
LIS should be in the first semester of first rather then the second as the library training is not as useful because students use the library in the first semester for exams and have become a custom to how the library works
Brief handouts on writings and explore unique functions of library facilities.
The training available is very helpful and staff are excellent at delivering material. Would suggest discipline specific sessions for database searching. Also, advertising the resources available in the library more as there are so many helpful resources that students don't know/help about or often a year into study before taking a course.
It would be nice to be given “mini library assignments” so one can receive feedback on referencing and sourcing information correctly rather than being nervous and worrying your hard work will be penalized for accidental plagiarism....this leads students to procrastinate and cram at the last minute
Everything seems good
I am a student in the evening courses in GMIT, I had no training in the library or knew where anything was. I only recently used the library and found it difficult to navigate. Everyone in there seems so settled, it was a bit over whelming and I felt more nervous. wouldn't even know where to begin to find a book or reference. I think we forget that we are just as entitled to use all these resources as the full time students. I do not have any ides as to how to rectify this though, maybe its just my feelings and because its so late in the year to be starting to use the resources.
Get more familiar with excel
I do not have any comments to add

APPENDIX 18 - STUDENT FEEDBACK FORM (ATTITUDE SCALE SURVEY)

Please help us to improve future training/courses by providing your opinions & comments below.

Session:	*Date:*

Please tick as appropriate below:

1. **Did this course meet your expectations?**

Fully	Mainly	Partly	Not at All
☐	☐	☐	☐

2. **Please rate the quality of:**

Course content

Excellent	Good	Satisfactory	Poor
☐	☐	☐	☐

Course materials (if applicable)

Excellent	Good	Satisfactory	Poor	N/A
☐	☐	☐	☐	☐

3. **The session length was:**

Just right	Too long	Too short
☐	☐	☐

4. **Were your individual questions discussed to your satisfaction?**

Yes	Partially	No	N/A
☐	☐	☐	☐

5. **What is your overall assessment of the course?**

Excellent	Good	Satisfactory	Poor
☐	☐	☐	☐

6. **Would you recommend this course to others?**

Yes	No
☐	☐

7. **Other comments:**

_____

_____

Thank you for completing this form.

Forms will be treated confidentially and may be used for reporting, analysis and evaluation purposes.

APPENDIX 19 - RESULTS FROM STUDENT FEEDBACK FORM (ATTITUDE SCALE SURVEY)

Meet expectations	Fully (n)	Fully %	Mainly (n)	Mainly %	Partly (n)	Partly %	Not at all (n)	Not at all %	Total (n)		
Information Sources	109	56%	77	39%	8	4%	2	1%	196		
Online Library	225	53%	173	41%	23	5%	2	0%	423		
Copyright & Plagiarism	46	75%	14	23%	1	2%	0	0%	61		
Citation & Referencing	183	66%	87	31%	7	3%	1	0%	278		
Quality of Course	**Excellent (n)**	**Excellent %**	**Good (n)**	**Good %**	**Satisfactory (n)**	**Satisfactory %**	**Poor (n)**	**Poor %**	**Total (n)**		
Information Sources	102	52%	81	41%	11	6%	2	1%	196		
Online Library	205	48%	198	46%	21	5%	2	0%	426		
Copyright & Plagiarism	45	75%	14	23%	1	2%	0	0%	60		
Citation & Referencing	165	60%	93	34%	16	6%	0	0%	274		
Course materials	**Excellent (n)**	**Excellent %**	**Good (n)**	**Good %**	**Satisfactory (n)**	**Satisfactory %**	**Poor (n)**	**Poor %**	**N/A**	**N/A %**	**Total**
Information Sources	77	42%	80	43%	18	10%	0	0%	10	5%	185
Online Library	170	40%	173	41%	35	8%	1	0%	44	10%	423
Copyright & Plagiarism	42	72%	14	24%	1	2%	0	0%	1	2%	58
Citation & Referencing	139	54%	97	38%	17	7%	1	0%	3	1%	257
Session Length	**Just right (n)**	**Just right %**	**Too long (n)**	**Too long %**	**Too Short (n)**	**Too Short %**	**Total (n)**				
Information Sources	151	78%	43	22%	0	0%	194				
Online Library	209	64%	111	34%	6	2%	326				
Copyright & Plagiarism	56	90%	6	10%	0	0%	62				
Citation & Referencing	229	81%	48	17%	6	2%	283				

Questions satisfactorily answered	Partially (n)	Partially %	No (n)	No %	Yes (n)	Yes %	N/A (n)	N/A %	Total (n)		
Information Sources	22	11%	2	1%	128	66%	42	22%	194		
Online Library	99	23%	14	3%	203	48%	107	25%	423		
Copyright & Plagiarism	7	11%	1	2%	50	81%	4	6%	62		
Citation & Referencing	33	12%	2	1%	212	75%	35	12%	282		
Overall assessment of course	**Excellent (n)**	**Excellent %**	**Good (n)**	**Good %**	**Satisfactory (n)**	**Satisfactory %**	**Poor (n)**	**Poor %**	**Total (n)**		
Information Sources	84	43%	94	48%	12	6%	6	3%	196		
Online Library	191	47%	182	44%	32	8%	5	1%	410		
Copyright & Plagiarism	37	62%	23	38%	0	0%	0	0%	60		
Citation & Referencing	146	52%	113	40%	22	8%	2	1%	283		
Recommend this course to others	**Yes**	**Yes %**	**No**	**No %**	**Total**						
Information Sources	180	94%	11	6%	191						
Online Library	397	95%	22	5%	419						
Copyright & Plagiarism	62	100%	0	0%	62						
Citation & Referencing	258	96%	10	4%	268						

APPENDIX 20 - COMMENTS FROM STUDENT FEEDBACK FORMS (ATTITUDE SCALE SURVEY)

Information Sources
It’s very helpful to know all the information we were taught
Very very good. Lovely woman.
It was a great introduction to the very kind and patient staff. Thank you.
Nice Librarian, friendly. Information easy to understand, explained well.
Excellent
Everything was very informative.
Interesting and helpful
It seems pointless
waste of time
It was very enjoyable
The Online Library
Great college, great course
Beneficial
Good
I help
Great
Very helpful, loads of info
I think everything is fine
Learned how to investigate properly
Good course
Great lesson
Basic information, people our age mostly know how to work these databases, we do it everyday, good course for someone who wouldn't have a clue, shouldn't be compulsory though
Lot more material than expected
Excellent
Very helpful
Could not hear video
Very helpful
There are some subjects which are not much beneficial for us like e-business it's just theory not practical
It's great for people new to the college scene
Very informative. Lots of material. Lots of questions I had were covered. It's good to now know how to use the library
This was really helpful, especially for new students
I found it great because I am now aware of past exam papers

Very good thank you
Well delivered and informative
Great to know. Had no idea the online library was so in-depth and useful
Good
Nice
Very helpful and insightful information
Very informative and helpful
Perfect timing and very professional
Informative
Too much info too little time
Good Info :)
v.good
You have to pay extreme attention and complete your assignment on time
Well done
Very useful. Never knew these resources were available
none
Didn't know everything was on the library website
Course was basically given twice to the class
To many questions to do
Great amount of content available on site. Will use this service in the future
Good communication and explanation
Good stuff
Great, well put together, informative
This course is not useful to anyone who has used a library before or has done research on the computer in the past
credo fell asleep
speak slower
Very helpful
Citation & Referencing
Very helpful, really good. Love the game
The interactive games are a good idea to break up the time!
Very good, learnt a lot. So helpful and approachable
Thank you for your time
Very helpful
Slower, with more discussion between stages with pupils
Great help all together! Thumbs up! :)
Another session in the future would be good
Very helpful and informative

Thank you! :)
Well worth doing this course
Kahoot was fun :)
Very interactive
Amazing
very interesting because I didn't know about this before
Thank you
Kahoot yes
well explained, thanks
much more useful in 2nd yr than 1st yr as in 1st yr there isn't much referencing
why was there no kahoot?
Thank you
No kahoot
Copyright & Plagiarism
Too long - maybe give printed notes and shorten lesson
The Kahoot made the session a lot more fun
Very good
:)
Fantastic session today
Great help
Great thank you
If this course was done earlier in the year it would be more useful as we had essays to do,
very insightful,learned so much myself
class overran slightly but overall very helpful
have it be one class instead of two
Access to powerpoint afterwards would be helpful for revision
It took well over an hour to get to 15 minutes of lecturing across to us
Not to finish overtime as a couple of us were late for meetings
Helped a lot. Was unsure how to reference. This cleared everything up. Thank you
Very helpful and informative
It should have been at the start of the year
Very,very good course. Gives the knowledge how to reference ebooks/journals very well. Thanks very much
It would be nice to see actual examples of how to do a reference list in Word
It was well presented and explained by the instructor
Thank you very much
Quick and straight to the point. Answered questions with ease
Worthwhile all students attending

Clear explanations
It was an eye-opener
Explained copyright and plagiarism, nice teacher
very informative
well presented and very clear and straight to the point
Very good, I thought it was good to talk about plagiarism and copyright and how strict it can be
One of the best sessions so far
learned a lot for my next presentation
learned how to reference properly and about plagiarism