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Exploring Aboriginal and Torres Strait Islander Students' Acquisition and Use of Academic
Information Behaviours and Academic Information Literacies

Thesis submitted by

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Statement of contribution

Nature of Assistance	Contribution	Names, Titles (if relevant) and Affiliations of Co-Contributors
PhD Supervision	Advice on research design including theoretical frameworks, Research methodology, data collection and analysis.	Dr Dianna Hardy Dr Ailie McDowall
	Review of early drafts of literature review and methodology chapters.	
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In loving memory of my father, Peter Morgan

Abstract

Education plays a key role in the self determination of Aboriginal and Torres Strait Islander people and their ability to improve individual and community socioeconomic status and quality of life. It also provides opportunities to promote Aboriginal and Torres Strait Islander voices and knowledges to the wider community. However due to historical and continuing failures in providing adequate education for Aboriginal and Torres Strait Islander students at all levels of schooling, Aboriginal and Torres Strait Islander students are often academically underprepared for university study. As part of this under preparedness, students lack higher-order information and communication literacies and behaviours required to identify the need for, find, evaluate, and use information to support their studies. These behaviours and capabilities are built through formal instruction offered by teaching staff, librarians and other support staff as well as through informal learning opportunities when students are seeking help. However, few research studies focus on Australian Aboriginal and Torres Strait Islander students' perceptions and experiences of learning and developing information literacy skills and academic information behaviours, and where they seek help when encountering problems when researching.

This interpretive research study utilised a thematic analysis approach to explore data collected from 10 semi-structured interviews to learn from students about their experiences of the literature research process, how they use information to meet their educational needs and how they navigate the challenges that may present in the process. This qualitative research study used Nakata's Cultural Interface theory and Aboriginal and Torres Strait Islander standpoint theory as frameworks to explore how Aboriginal and Torres Strait Islander students develop academic-level information literacy skills and information-seeking behaviours. The study also explored whether information literacy training experiences affects students' academic information behaviours, and the reasons why. Participants in this study included six undergraduate and four postgraduate Aboriginal and Torres Strait Islander students studying across multiple disciplines and at different year levels at James Cook University.

This thesis argues that, while Aboriginal and Torres Strait Islander students are mostly able to find information for their academic needs, they may not have academic information literacy capabilities due to academic unpreparedness. Because students have not developed academic information behaviours, they therefore use a range of strategies to plug gaps in information literacy skills and behaviours. This proposition is supported by student interviews, which suggested that the students are generally able to navigate the library system or use other ways to find the information they need. However, students found that their information capabilities and behaviours were not always adequate when topics were more difficult to research such as on Aboriginal and Torres Strait

Islander related topics which required complex search strategies and high level critical analysis capabilities to engage with the Indigenous corpus.

Although all participants had some experience of information literacy training, students continued to lack comprehensive academic information literacy capabilities due to inadequacies in provided training. While students successfully learnt about available sources such as databases and skills such as referencing, few students mentioned learning to use complex higher order thinking and critical analysis capabilities during instruction. To navigate gaps in information literacy capabilities, Aboriginal and Torres Strait Islander students sought help from a range of people, preferably from someone they already had a relationship with. By preference, students generally consult with family, Indigenous Centre staff, academic teaching staff or friends and fellow students before consulting with expert academic support staff, which results in piecemeal capability development and gaps in student learning.

This study contributes to the field of Aboriginal and Torres Strait Islander higher education research in Australia by providing insight into how and when Aboriginal and Torres Strait Islander students learn and use academic information behaviours to support their academic literacy and achieve success at academic studies, exploring the implications of these practices and recommending ways to improve Aboriginal and Torres Strait Islander student information literacy and information behaviours. It contributes to

While this study does not seek to compare Aboriginal and Torres Strait Islander students to non-Indigenous students, it can be seen from reviewing the broader literature around students' academic information behaviours that these students encounter many similar issues in using and learning these behaviours and capabilities as non-Indigenous students. Recommendations of this study include increasing information literacy training across the curriculum which are sequenced to provide scaffolded learning opportunities and providing training for Indigenous Student Support Unit and ITAS tutors so they can assist students reluctant to seek help directly from academic support staff.

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Chapter 1: Introduction

The United Nations (2007) *Declaration on the Rights of Indigenous Peoples* states, “Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development”. Education plays a key role in the self-determination of Aboriginal and Torres Strait Islander people¹ and their ability to freely determine and develop these aspirations (Australian Human Rights Commission, n.d.). Universally, education is seen as a key strategy to improve individual socioeconomic status and quality of life through improved job opportunities and financial security (Becker, 1975; Behrendt et al., 2012; Ma et al., 2019; McMahon, 2009; Morgan & David, 1963). As education levels increase, society benefits through increases in productivity and development, reduction of crime, improvements in overall health and welfare, increased technology adaption and use and improved civic engagement (Bloom et al., 2007; Ma et al., 2019; McMahon, 2009). For Aboriginal and Torres Strait Islander people, higher education also provides opportunities to promote Aboriginal and Torres Strait Islander voices and knowledges to the wider community and develop skills and services within communities (Bradley et al., 2008; Nakata, 2013; Pidgeon, 2008). Nakata (2004) also argues that familiarity with western systems of thought allows Aboriginal and Torres Strait Islander people to better navigate and work within the systems that are part of their everyday lives.

In 2009, the Closing the Gap² agenda identified education as one of the key areas for improvement, focusing on early childhood education, literacy, numeracy and completion of Year 12; this was expanded to include tertiary education outcomes in 2020 (Commonwealth of Australia, 2009, 2020). However, Indigenous students are severely underrepresented at higher education institutions in Australia, making up only 2.04% of the total number of students in 2020. This is much lower than parity with the total Aboriginal and Torres Strait Islander population which makes up 3.1% of the Australian population (Universities Australia, 2022). Aboriginal and Torres Strait Islander students are also less likely to complete their studies and attain a degree than non-Aboriginal and Torres Strait Islander students, with only 49.4% of students completing their degrees within nine years compared to 72.2% of non-Aboriginal and Torres Strait Islander students in 2014 (Universities Australia, 2022).

¹ Throughout this thesis, the term Aboriginal and Torres Strait Islander is used to refer specifically to Australian Indigenous peoples, whilst the term Indigenous is used to refer to Indigenous people in general or internationally.

² Closing the Gap is an agreement between all Australian governments and Aboriginal and Torres Strait representatives to work together to develop programs and policies that reduce socioeconomic and health inequality between Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander Australians.

There are numerous reasons for the lower rates of enrolment and higher rates of attrition of Aboriginal and Torres Strait Islander people in Australia. These reasons include, but are not exclusive to, entrenched historical disadvantage, cultural barriers, poor educational outcomes in high school, exclusion from formal education systems, family and community commitments and lack of funds, many of which are direct or indirect outcomes of colonisation (e.g. Bin-Sallik, 2003; Ellis, 2001; Nakata et al., 2008). These factors are well researched and well established. Perhaps less frequently discussed is the role that academic support plays in building success, particularly for those who were less academically prepared, which is quite a common situation for Aboriginal and Torres Strait Islander students (Nakata et al., 2008).

Academic preparedness, often seen as synonymous with college readiness, has traditionally been defined as having sufficient reading, writing and numeracy skills to be able to produce work and succeed at university level studies to complete their degrees (Conley, 2007; Paul, 2012). However, other definitions recognise that to be able to read and write at an academic level, other abilities are also required (Murray as cited by Paul, 2012; e.g. Weideman, 2018). This includes having the appropriate academic information behaviours and literacies to be able to identify information needs, navigate information environments and understand, critically analyse and use the literature that is required for academic study (Byrne, 2003; Combes, 2009; Murray as cited by Paul, 2012; Weideman, 2018).

These academic information behaviours and literacies are particularly important for Aboriginal and Torres Strait Islander students because they need to navigate the space between a traditional and western worldview, a space which Nakata (2012) identifies as the cultural interface. Nakata (2012) envisages the cultural interface as a space where Indigenous knowledge and western knowledge intersect and where Indigenous people are both influenced by western 'knowledge' about them as well as developing their own knowledges. Because of Aboriginal and Torres Strait Islander students' positionality within this cultural interface, Nakata (2012) argues that they need higher order thinking skills such as English literacy, critical thinking and analysis skills to be able to interpret information from both non-Indigenous and Indigenous perspectives, with students from more traditional and remote backgrounds needing more of these skills due to their lack of experience in engaging with different perspectives (Nakata, 2012).

Therefore, it is important to build the information literacy skills of Aboriginal and Torres Strait Islander students to support their academic information behaviours when navigating the cultural interface. However, there is very little research available about the academic information behaviours of Aboriginal and Torres Strait Islander students and how they learn the skills required to support these behaviours, either in Australia or in countries with similar cultural and colonial backgrounds.

Background to the Study

To understand the issues around Aboriginal and Torres Strait Islander participation in higher education, it is important to recognise that Aboriginal and Torres Strait Islander people had been largely restricted, formally and informally, from most forms of education since colonisation until the 1967 referendum provided them with greater recognition and rights. Following colonisation, Aboriginal and Torres Strait Islander students had minimal opportunities for education and at most were only educated to middle primary school level (Bin-Sallik, 1989). Although many wanted access to education and to learning English³, obtaining this became harder as time went on. Early education for Aboriginal and Torres Strait Islander children was framed around 'civilising' these people with religion, basic literacy and numeracy skills and training them to do menial work (Ellis, 2001; Wilson & Wilks, 2015). This curriculum was based on findings from numerous scientific and anthropological studies by western governments and universities that concluded Aboriginal and Torres Strait Islander people had low levels of intelligence and were only suited to be trained for manual labour (Bin-Sallik, 2003; Bin-Sallik, 1989; Ellis, 2001; Nakata, 2007b; Partington, 1998). When examples of academically capable Aboriginal and Torres Strait Islander people appeared, such as David Unaipon or Mary Locke⁴ these were attributed to their being educated in good habits by white people; they were identified as exceptions to the rule rather than examples of a people who could learn (Bin-Sallik, 1989; Parry, 2005).

Access to higher education for Aboriginal and Torres Strait Islander people began to improve during the 1950s and 1960s. During this period there was growing social recognition of the issues they faced, as part of the beginnings of the national and international human rights movements (Wilson & Wilks, 2015). Milestones in the 1950s include the offering of private university scholarships to Aboriginal and Torres Strait Islander students and the first two Aboriginal and Torres Strait Islander students matriculated from high school and went on to receive diplomas in tertiary education ("Aboriginal girl matriculates," 1957; Fletcher, 1989; Holt, 2020; Wilson & Wilks, 2015). Another major influence on change was the Australian government's ratification of the *UNESCO Convention against discrimination in education* in 1966 as the Convention's obligations required the government to provide equal access to education based on learning capacity and enshrined the rights of minorities to undertake their own educational activities (Ellis, 2001; United Nations Educational Scientific and Cultural Organization, 1960; Wilson & Wilks, 2015). This was also the year

3 For a Torres Strait Islander perspective see Nakata (1993); for an Aboriginal perspective see Fletcher (1989).

4 Mary Lock is thought to be the name of the 14-year-old student who beat nearly 100 European students at an exam in Sydney in 1819. She attended the Native Institution established by Governor Macquarie to train Aboriginal children (Parry, 2005)

in which the first identified Aboriginal and Torres Strait Islander student graduated with a bachelor degree (Ellis, 2001; Wilson & Wilks, 2015).

The successful 1967 referendum made it possible for the first time for the federal government to legislate on behalf of Aboriginal and Torres Strait Islander people, which had great impacts on access to education for Aboriginal and Torres Strait Islander peoples (Ellis, 2001; Wilson & Wilks, 2015). Initially, in the late 1960s and early 1970s, support for Aboriginal and Torres Strait Islander students to study at university was focused around making university accessible. This was done by providing funding to assist with study expenses, living costs and relocation expenses through the Aboriginal Study Grants Scheme (later known as ABSTUDY) which began in 1969 (Bin-Sallik, 2003; Wilson & Wilks, 2015).

In the 1970s and 1980s, funding was expanded to develop Indigenous support units at higher education institutions around the country after the successful development of the first unit to train Aboriginal and Torres Strait Islander social workers at the South Australian Institute of Technology in 1973 (Gale, 1998; Wilson & Wilks, 2015). These enclaves provided dedicated study spaces and common areas incorporating Aboriginal and Torres Strait Islander design themes to make them culturally safe teaching spaces (Bin-Sallik, 2003). However, at this stage, the Indigenous units predominantly provided pastoral care and cultural safety and did not necessarily focus on building Aboriginal and Torres Strait Islander students' academic capacity (Bin-Sallik, 2003; Kinnane et al., 2014). During this early period of Aboriginal and Torres Strait Islander higher education, funding success was mainly measured in terms of enrolments at university. Whilst this led to improved access to higher education, many of those who entered had low levels of achievement and there were high rates of attrition (Gale, 1998).

As a result of these high attrition rates, the focus of funding expanded from enrolments alone to include retention. One of the major reasons identified for student failure was that Aboriginal and Torres Strait Islander students lacked the academic skills to achieve their goals due to their poor educational backgrounds (Gale, 1998). As a result, enabling and bridging programs were designed specifically to help these students build academic literacies so that they could then enrol in undergraduate studies (Fredericks et al., 2015; Pitman et al., 2017). As a result, over 50% of Aboriginal and Torres Strait Islander students entered universities via enabling or special entry programs in 2010 (Behrendt et al., 2012).

Indigenous education units also expanded the services they provided beyond providing safe spaces and cultural support. In 2005, the Indigenous Tutorial Assistance Scheme was introduced to provide tuition services for eligible Aboriginal and Torres Strait Islander students as well as access to scholarships and funding for Indigenous education units aligned to retention (Bradley et al., 2008).

In the 2010s, the focus of Aboriginal and Torres Strait Islander higher education expanded from a focus on Indigenous units providing isolated support to Aboriginal and Torres Strait Islander students to moving Aboriginal and Torres Strait Islander support into mainstream services and incorporating Aboriginal and Torres Strait Islander learning outcomes into the curriculum across the university. These expansions were part of the recommendations made in the *Review of higher education access and outcomes for Aboriginal and Torres Strait Islander People final report* (Behrendt et al., 2012) which recognised that although Indigenous units still offered valuable services, they could isolate Aboriginal and Torres Strait Islander students from the rest of the student population and this limited the awareness of Aboriginal and Torres Strait Islander issues more broadly within the university. Whilst universities still maintain discrete Indigenous units, several are also working towards Indigenising the curriculum and implementing Aboriginal and Torres Strait Islander specific subjects within professional degrees, such as education, social work and health related fields (Kinnane et al., 2014; Page et al., 2018; Universities Australia, 2017, 2019, 2020).

Another focus of the Behrendt Report was the change of focus from the enrolment and retention of Aboriginal and Torres Strait Islander students to include students' course completions (Behrendt et al., 2012). To improve the rate of student completions, the Indigenous Student Success Program (ISSP) was introduced in 2017 to fund universities for services and resources such as scholarships, tutorial assistance, mentoring, safe cultural spaces and other personal support services. Because the ISSP has focused on completions as a measure of student success, this also has implications for how universities support their students to succeed and emphasises the need to ensure that Aboriginal and Torres Strait Islander students have the academic literacy skills and behaviours for success with academic study. For these students, these abilities and behaviours will assist them in navigating within the cultural interface to advance their personal and collective Aboriginal and Torres Strait Islander agendas.

Aboriginal and Torres Strait Islander Students' Academic Preparedness

Research which explores Aboriginal and Torres Strait Islander students as learners has focused on underpreparedness as a key issue impacting Aboriginal and Torres Strait Islander students' university learning (Martin et al., 2017). Early explanations for Aboriginal and Torres Strait Islander students' academic preparedness or lack thereof stemmed from explanations of cultural difference. Drawing on anthropological literature, cultural differences in verbal and non-verbal communication styles used by Aboriginal and Torres Strait Islander peoples (such as using silence, avoidance of direct questions or lack of eye contact) were seen to impact interactions with academic staff and other students, as were the styles used by non-Aboriginal and Torres Strait Islander people such as brusque tones or speaking rapidly (Anderson, 2000; Eltchelebi, 1996). Drawing attention to

individuals in groups (such as by asking direct questions) was interpreted by researchers as causing embarrassment or shame (Eltchelebi, 1996; Malcolm & Rochecouste, 1998). It was also suggested that Aboriginal and Torres Strait Islander students may have a learning preference for oral rather than written forms of information, which could disadvantage these students in a system where written language is the dominant style of learning, particularly when they are taught by staff who are not culturally aware (Rochecouste & Malcolm, 2003; Usher et al., 2005).

Whilst Indigenous learning styles have been debunked as cultural essentialism (Nicholls et al., 1998), many Indigenous cultures around the world have traditional methods for education based on oral traditions, learning through observation, practice and the communal sharing of information (Leenen-Young, 2020; Smylie et al., 2014; Wilss et al., 1999). Aboriginal and Torres Strait Islander students may also experience difficulties navigating differences between Indigenous and western knowledge systems, as western language and knowledge structures may not make cognitive sense to those from more traditional backgrounds (Pochatko, 2011). Aboriginal and Torres Strait Islander students who are less familiar with formal education environments may find it more difficult to acculturate to the western system practised in the university environment where academic staff control and regulate learning and interactions are more impersonal (Gibb, 2006; Malcolm & Rochecouste, 1998). A number of studies have identified that students more integrated into mainstream society were more able to adapt to university due to their familiarity with western pedagogies and systems (Fitzpatrick & Berman, 2016; Huffman, 2001), whilst the more students maintained traditional beliefs, the more they struggled to reconcile the differences between Indigenous and western ideologies and systems (Nakata, 2012).

Students identified academic language, literacy and writing styles as challenges or even reasons not to continue in higher education, particularly amongst older students (Milne et al., 2016; Rochecouste & Malcolm, 2003; Usher et al., 2005; Young et al., 2007). Differences between academic and standard English have been shown to cause issues for students from non-English speaking backgrounds or those who speak different dialects of English (such as Aboriginal English) and do not always use standard English in everyday communication (Corson as cited by Boulton-Lewis et al., 2001; Malcolm & Rochecouste, 2002; Oliver et al., 2013). Academic language in particular was identified as a barrier for students who have English as a second language as it uses more complex language and grammatical structures and involves learning discipline-specific language and knowledge conventions (Anderson, 2000; Eltchelebi, 1996; Gottlieb & Ernst-Slavit, 2013; Nakata et al., 2008). Additionally, whilst Aboriginal English is a form of English, it differs in vocabulary, structure and syntax to standard English and therefore Aboriginal and Torres Strait Islander students who are more familiar with Aboriginal English can have problems with communicating clearly at universities (Oliver et al., 2012; Oliver et al., 2013).

In addition to academic reading and writing, previous educational experiences more broadly impact Aboriginal and Torres Strait Islander students' university learning. These experiences include missing out on educational opportunities due to uneven attendance, low grades preventing enrolment in required subjects, inappropriate subject choices because of bad advice or low expectations from others and early withdrawal or disengagement from schooling by choice or mandate (Cassidy & Chinnery, 2009; Nakata et al., 2008; Ottmann, 2017). Page et al. (2007) identified that many Aboriginal and Torres Strait Islander students who have not studied in a formal education system for many years or have not completed high school require the time and opportunity to develop the academic skills required for success in tertiary study.

Statement of Problem

As part of becoming academically prepared, students need to be able to use academic information behaviours and information literacy skills to find, interpret and use information for their academic needs. Nakata (2012) identified that Aboriginal and Torres Strait Islander students need more critical and in-depth language and thinking skills to develop their understandings of how others think as well as to build their understanding of their own culture and the situations of their peoples within the broader community. However, although extensive studies exist of the academic information behaviours of university students and how they acquire and use information literacy skills (Detlor et al., 2012; Head, 2013; Trembach & Deng, 2018), few studies focus on the information literacy abilities or academic information behaviours of Aboriginal and Torres Strait Islander students in Australia or those of Indigenous students in countries with similar colonial and cultural backgrounds.

Rationale

The aim of this study is to better understand Aboriginal and Torres Strait Islander students' learning of information literacy skills and behaviours to identify factors that assist or hinder Aboriginal and Torres Strait Islander students in learning the skills needed to achieve their own educational goals. The core proposition of this thesis is that Aboriginal and Torres Strait Islander students use a range of strategies to plug gaps in their information literacy skills and behaviours. Whilst this suggests that these students actively negotiate their own learning behaviours, these students require more advanced and formalised information literacy skills to navigate both the gaps due to their underpreparedness and the complex topics they engage with at university.

This research contributes to the literature relating to Aboriginal and Torres Strait Islander students as learners by investigating the information behaviours and acquisition of information literacy skills of Aboriginal and Torres Strait Islander university students. It uses data from ten semi-structured interviews with undergraduate and postgraduate students to learn from students about their own experiences of the literature research process, how they use information to meet their

educational needs and how they navigate the challenges that may present in the process. The research question that this study sought to answer is

‘How do Aboriginal and/or Torres Strait Islander students develop and use academic information literacy skills and/or behaviours?’

Purpose of Study

This qualitative interpretive research study explores the information behaviours that Aboriginal and/or Torres Strait Islander students at a regional Australian university use for academic purposes and how they develop the skills necessary to meet their academic needs and become independent learners. Students were asked about their formal and informal information literacy learning experiences before and during university and how they thought this had impacted on their academic behaviours. They were asked about the ways they sought help when struggling to identify and meet their information needs. Students were also asked about their experiences of researching Indigenous related topics and navigating the cultural interface and the opportunities and difficulties they encountered in doing so. As part of this, they were also asked about how their information behaviours affected their ability to navigate in this space and whether information literacy training addressed these opportunities and difficulties.

Significance

Learning academic information behaviours and information literacy skills is a key part of becoming an independent learner and supports other academic literacies such as reading and writing. However, there is very little research about Australian Aboriginal and Torres Strait Islander students’ use of information behaviours or information literacy skills. This is important because it is unclear how Aboriginal and Torres Strait Islander students learn information literacy skills, how this affects their academic information behaviour and whether academic services, including academic staff, support services and libraries, are meeting the learning needs of Indigenous students to help develop these information abilities. To understand these issues more clearly, the focus of this thesis is to focus on Indigenous students themselves rather than comparing them across the wider student population.

Overview of Research Design

This interpretivist interview study was undertaken at James Cook University in Northern Australia. Ten Aboriginal and Torres Strait Islander students were recruited to participate in semi-structured interviews conducted in person or via zoom videoconferencing. Questions were asked about the students’ experiences of working out their information needs, how they went about finding and using information and how they sought help when they encountered problems. Interview data was analysed using an inductive thematic analysis approach.

Theoretical Framework

This research used Nakata's (2007b) cultural interface theory as an interpretive framework to explore Aboriginal and Torres Strait Islander students' information behaviours and how information literacy instruction has influenced these behaviours. Nakata sees the cultural interface as the space where Indigenous knowledge and western knowledge about Indigeneity intersect and where Indigenous people are influenced by western 'knowledge' about them and develop their own knowledges. Where previous research has situated Aboriginal and Torres Strait Islander students as being different due to their culture, Nakata (2007b) suggests that framing Aboriginal and Torres Strait Islander students as learners can better serve the agendas of Aboriginal and Torres Strait Islander people.

In this study the cultural interface provides a reference point to try to understand how students discuss their own views on the challenges of identifying their own needs, finding and using information for their academic needs and the agentive efforts they use to solve these issues (or not) (Nakata et al., 2018). This study follows the approach used in Nakata et al.'s (2018) investigation of how the use of university tutors by Aboriginal and Torres Strait Islander students helps achieve academic success.

My Positioning in the Research

In conducting this research, it was important to consider and reflect on my standpoint as a non-Indigenous researcher and the effect this may have on my relationship with participants. Additionally, my professional role as a librarian gives me a position of power within the research relationship as someone with authority in the subject of the research. Both these positions may affect interview interactions and responses as well as my interpretation of the data. To help address issues of personal interpretation and focus Aboriginal and Torres Strait Islander students at the centre of my research I used Nakata's cultural interface and Indigenous standpoint theories as frameworks as well as using reflexive methods throughout the analysis and interpretation of interview data to continuously reflect on how my personal and professional experiences, cultural viewpoints and understandings of dominant western systems in universities and academic libraries affect my interpretation of Aboriginal and Torres Strait Islander students' voices (Cresswell, 2007; Pillow, 2003; Qualley, 1994).

Summary

In this chapter, I have discussed issues with Aboriginal and Torres Strait Islander students' academic preparedness and how students' academic literacy is linked to their success. It is also clear that academic literacy supports students' behaviours in managing academic information. This research attempts to focus on how Aboriginal and Torres Strait Islander students learn, apply and

navigate academic information behaviours to highlight how institutional processes can support them in learning the skills needed to achieve their own educational goals.

The remainder of this thesis is structured into the following chapters.

Chapter 2 provides an overview of research into student information behaviours and academic information literacy.

In Chapter 3, I explore the literature relating to Indigenous students' academic preparedness, their information behaviours and their experiences of information literacy training.

Chapter 4 details the methods used for the study. An overview is provided of the research paradigms and methodological frameworks used in this study, which include interpretivism, the cultural interface theory, the Indigenous standpoint theory and reflexivity. The chapter also provides details of the specific methods used to recruit participants, collect data and analyse this data.

Chapter 5 provides information about the locale of the study and introduces the participants, as well as presenting the study's initial findings. These findings cover participants' use of the academic library and study spaces to access information and their information literacy learning opportunities.

Chapter 6 continues the presentation of the research findings in relation to Aboriginal and Torres Strait Islander students' adoption and use of academic information behaviours and skills and their help-seeking behaviour.

Chapter 7 provides a discussion of the findings and concludes the study. It provides an overview of the key findings and prospects for future research in this area. It also includes the limitations of the study and implications for future research and practice.

Chapter 2: Information Behaviour, Information Literacy and Students

The importance of information literacy skills for academic achievement has been recognised for decades (Fosnacht, 2020). For Aboriginal and Torres Strait Islander students, the acquisition of critical information literacy capabilities is even more critically important as they have to walk between two worlds and integrate their understanding of both in relation to their academic studies (Nakata, 2012). However, there is little available research on Indigenous students' information behaviours or their acquisition and use of information literacy capabilities and how this impacts on their academic success. This chapter explores the general literature relating to student acquisition and use of information literacy capabilities and academic information behaviours to provide context to existing research in this field and the findings of this study. It briefly introduces the concepts of information literacy, information behaviour and how they relate to each other. This chapter also explores research into university students' information behaviours and their experiences of learning information literacy capabilities and how student learning is impacted by the perceptions and attitudes of stakeholders such as faculty staff, librarians, support units and students themselves.

Information Behaviour, Information Literacy and their Relationship

Information behaviour research involves the study of how, when, what, where and why people interact with information. In the 1980s, the concept of information behaviour developed through library user studies which focused on the systems people use and through behaviour studies on how people engage with information (Case & Given, 2016; Dervin, 1992). Wilson (1981, 1997, 1999, 2016) identified that system based studies did not explore people's motivations and behaviours around information, and thus initiated some qualitative research to investigate these factors. Many researchers in this field have developed models to explain some or all of the processes people use when engaging with information, including the identification of a need for information and the processes they use to seek, retrieve, select, evaluate and use it to satisfy their information needs (e.g. Dervin, 1992; Ellis, 1989; Kuhlthau, 1989, 2003; Wilson, 1981, 1997, 1999, 2016). Information behaviour research also explores ways that people engage with information even when not seeking it to meet specific needs, such as accidental information gathering, information encountering and information avoidance (Case & Given, 2016).

The concept of information literacy first emerged in the mid 1970's, initially to describe employees' information needs and information uses in the workplace (Zurkowski, 1974). This concept was expanded to acknowledge information literacy part of functional literacy, acknowledging that literacy concerned more than mere reading and writing, it extended to knowing when information is needed and being able to find, manage and make decisions about using it (Behrens, 1994; Kuhlthau, 1987; Onyancha, 2020). Information literacy is considered to provide people with the capacity to meet their information needs throughout their lives; research and

practice predominantly focus on teaching and learning the abilities to identify information needs and find, evaluate and use information to meet these needs, particularly using technologies which have facilitated the production of and access to increasingly large amounts of information (Behrens, 1994; Bruce, 1997; Onyancha, 2020). Being information literate is a key skill needed to successfully research and study at university; it is identified at most universities as an attribute that students should graduate with (e.g. CQUniversity, 2020). Information literacy underpins many of the skills for academic study through locating, evaluating and analysing information as well as practising academic integrity (Weideman, 2018).

Both information literacy and information behaviour cover the processes involved in gathering and using information to meet information needs. They originate from the notion that people identify a need for information and then seek, retrieve, evaluate and use information to produce new knowledges. However, the relationship between the two concepts is not particularly well defined. Both concepts predominantly developed within the field of information science. Information literacy tends to focus on capabilities needed to effectively interact with information whilst information behaviour examines the social, environmental and psychological motivations, behaviours and processes used when people interact with information (Hepworth et al., 2014; Limberg & Sundin, 2006; Maybee, 2014). Some researchers include information literacy as a sub-field within information behaviour (e.g. Ibenne et al., 2017), others consider information-seeking behaviour as a sub-field of information literacy (Stokes et al., 2021), and yet others see them as separate but related concepts (e.g. Bruce & Partridge, 2011; Limberg & Sundin, 2006), with Hepworth et al. (2014) grouping them together in the wider field of information experience. In this thesis, I use the definition of information literacy developed by Johnston and Webber (2003) who identify that information literacy is the ability to apply information behaviours to satisfy information needs critically, appropriately and ethically.

Students' Information Literacy Capabilities and Academic Information Behaviours

Strong information literacy has been shown to positively affect student outcomes, improving achievement in writing tasks and overall subject grade point averages as well as improving retention (Blake et al., 2017; Catalano & Phillips, 2016; Kim et al., 2020; Shao & Purpur, 2016). However, whilst being information literate is critical for success at university, research has shown that many students either lack prior information literacy training before attending university or are unable to transfer their skills to a higher education setting (Ellis & Salisbury, 2004; Kirker & Stonebraker, 2019; Saunders et al., 2017; Varlejs & Stec, 2014; Warwick et al., 2009). Additionally, studies of university students' academic information behaviours show that students at all levels of study cannot use their information literacy sufficiently for their academic needs (Dubicki, 2015; Ellis & Salisbury, 2004; Ganley et al., 2013; Head, 2013; Yvelson-Shorsher & Bronstein, 2018).

How students develop academic information literacy and practice the related information behaviours are influenced by a wide range of factors. Personal factors include prior learning experiences, personality traits, beliefs, goals, motivations and confidence levels. External factors include differing discipline information needs and academic teaching staff attitudes, both of which affect the extent of information literacy training and its delivery. The following sections of this review explore how these personal and external factors influence the development of students' academic information literacy abilities and information behaviours.

Personal Factors Influencing Students' Academic Information Behaviours. Students' personality styles, traits, attitudes, motivations for learning and epistemological beliefs also have an effect on their information literacy and academic information behaviours. Several studies have used the five factor personality model to explore the possible effects of personality on information literacy or information behaviours, finding that being open to experience and being conscientious were more closely linked to more developed information literacy and behaviours (Aharony & Gur, 2017; Atman Uslu & Yildiz Durak, 2022; Halder et al., 2010; Heinström, 2003). Curiosity and feeling challenged are also identified as positive traits associated with developing academic information behaviours, whilst feeling threatened or anxious are more likely to negatively affect information behaviours (Aharony & Gur, 2017). Anxiety about finding and using information and about using libraries is well documented in the literature (Naveed & Anwar, 2019; Wurman, 1989). Anxiety affects students' ability to effectively identify their information needs, analyse topics, search for information, evaluate and select sources, navigate spaces and seek help, therefore hindering students' information literacy development (Dubicki, 2015; Jiao & Onwuegbuzie, 1997; Mellon, 1986; Naveed & Anwar, 2019). As can be seen, students' personality traits have a large influence on their learning and use of academic information behaviours and their information literacy achievements.

Motivation and attitudes to learning are also shown to affect students' academic information behaviours. Intrinsic motivation, in other words seeking challenges so as to learn, was identified as a positive indicator of students' information literacy self-efficacy, as, to a lesser extent, was extrinsic motivation such as task requirements, whilst poor motivation resulted in low information literacy self-efficacy (Aharony & Gazit, 2020; Ross et al., 2016). Folk (2018b) identified that students who were more performance goal oriented tended to use a checklist style approach to meet minimum needs, whilst those who were learning goal oriented were more likely to adopt higher level critical information literacies.

Students' confidence and self-efficacy also impact on the ability to learn and use information literacy skills. It has been identified that students who feel challenged and are more open to experience have more self-efficacy in their information literacy abilities, whereas those who feel

anxiety or intimidation are less likely to believe in their abilities (Aharony & Gazit, 2020). However, other studies have shown that students tend to overestimate their information literacy skills, particularly those with lower achievement levels (Gross & Latham, 2007, 2012; Kim & Shumaker, 2015; Mahmood, 2016; Oliver, 2008), which is known as the Dunning-Kruger Effect (Kruger & Dunning, 1999; Latham & Gross, 2013). For lower achieving students, whilst overestimating their own skills is the most common finding in studies comparing tests of actual information literacy skills to students' self-efficacy, other studies have shown that students with more advanced information literacy skills are more likely to underestimate their skills (Black, 2014; Boucher et al., 2009; Guy & Lownes-jackson, 2010) or make a more accurate estimate (De Meulemeester & Buysse, 2014; Tepe & Tepe, 2015). These studies showed that students with more advanced information literacy skills are more likely to be in the later years of an undergraduate degree or postgraduate study, which could reflect the point that students improve these skills as they progress through their studies.

Another factor that influences students' academic information behaviour is their attitudes towards time and effort. Research shows that students often spend little time on developing and practising academic information behaviours due to time constraints, being focused on the completion of assessment tasks and on marks (Badke, 2010; Bury, 2011; Detlor et al., 2012; Dolan & Martorella, 2004; Huddleston et al., 2019; McGuinness, 2006). When seeking information, many students use strategies that require the least amount of time, by relying on Google, looking for results that are 'good enough', finding shorter articles so as to read less, or relying on a few tried and tested key sources or strategies (Badke, 2010; Bury, 2011, 2016; Connaway et al., 2011; Cope & Sanabria, 2014; Dolan & Martorella, 2004; Ellis & Salisbury, 2004; Godbey & Dema, 2017; Hayes-Bohanan & Spievak, 2008; Head & Eisenberg, 2009; McGuinness, 2006; Rosman et al., 2016). Students also preferred to get information from other people rather than searching and evaluating sources. They generally started their research by seeking or receiving recommendations about materials from supervisors and academic staff, other students or family (George et al., 2006; Head, 2013; Latham & Gross, 2013). All these strategies show students tend to seek the easiest path to find information, do not employ complex strategies, and tend to use 'strategic satisficing' to meet their information needs (Badke, 2010; Head & Eisenberg, 2009; Warwick et al., 2009).

The Effect of Institutional Factors on Students' Academic Information Behaviours.

Research has generally shown that information literacy instruction is most effective when it is explicitly linked to the subject, embedded into subject content and taught through collaborations between academic teaching staff and librarians (e.g. Douglas & Rabinowitz, 2016; Munn & Small, 2017; Phillips et al., 2018). Furthermore, this effectiveness is enhanced when information literacy instruction is scaffolded across the entire degree program to ensure students could use foundational

skills to build from when learning more advanced capabilities as information needs increase during the degree (e.g. Buchanan et al., 2015; Dolan & Martorella, 2004; Khailova, 2021).

However, the scaffolding of information literacy instruction is often insufficient or absent in the curriculum and opportunities to practise these skills impact on students' ability to successfully complete their assessments and succeed at university. For example, Kirker and Stonebraker (2019) identified that the lack of research assignments in foundation subjects in first year prevents the transfer of information literacy skills to other subjects in later years of study. The lack of support from academic teaching staff and of opportunities for librarians to teach information literacy skills within the curriculum restricts students' ability to learn such information literacy skills and thus directly affects students' academic literacy. Furthermore, the lack of explicit assessment tasks testing information literacy skills, as well as students' patterns of strategic satisficing in their information behaviours prevent students from adopting these skills for their academic needs and reduces their academic skills acquisition.

In most cases, academic teaching staff are responsible for developing subject content. They decide if and when to include information literacy in the curriculum, who is responsible for teaching it and if or how it is assessed. When information literacy is included in the curriculum, it is taught by a combination of academic teaching staff, librarians and other learning support staff. In addition, learning support unit staff such as librarians and learning advisors offer additional generic training in information literacy skills outside class time. However, as academic teaching staff determine what is included in the curriculum, this is often contingent on their understanding of information literacy and their view of how important it is for students to learn.

Whilst librarians are generally responsible for teaching processes such as seeking, selecting, evaluating and managing information, academic teaching staff and learning support services are responsible for other processes such as critical analysis and using information (Longley, 2010; O'Byrne). Further information processes overlap in some areas, such as identifying information needs, evaluating information and ethically using it (Longley, 2010; O'Byrne). This contributes to the incomplete or disjointed teaching of concepts and limits the provision of information literacy training for all students (Association of College & Research Libraries [ACRL], 2000, 2001; Gullikson, 2006). However, the concept of information literacy is predominantly focused within the information science field. Academic teaching staff often do not share the same perceptions of the importance of integrating information literacy development into the curriculum, which results in inconsistent information literacy learning opportunities across subjects, year levels and disciplines.

Studies about academic teaching staff's inclusion of information literacy in the curriculum showed that only a few staff directly teach students how to develop information literacy capabilities and less than half seek assistance from librarians or other learning support staff (Bury, 2016; Cope &

Sanabria, 2014; DaCosta, 2010; Gullikson, 2006; Guth et al., 2018; Huddleston et al., 2019; Nilsen, 2012). Some staff prefer to deliver their own information literacy instruction within subjects whilst others do not request librarians' assistance in teaching information literacy or are unaware of such library support (Bury, 2016; Cope & Sanabria, 2014; Huddleston et al., 2019). Furthermore, numerous studies identified that many academic teaching staff do not provide any overt information literacy instruction at all (e.g. DaCosta, 2010; Nilsen, 2012).

Academic teaching staff's personal understanding of the concept of information literacy is a major influence on how they support information literacy within the curriculum (Boon et al., 2007; Saunders, 2012). Although most academic teaching staff are aware of the term 'information literacy', many have trouble defining it or only define it superficially with terms such as finding, evaluating and sometimes, using information (Baird & Soares, 2020; Bruce, 1997; Bury, 2016). Research has also found that academic teaching staff delivering information literacy instruction often combine information literacy with other academic literacies such as reading or writing (Cope & Sanabria, 2014), or use another term such as 'research skills' instead of 'information literacy' (Dubicki, 2013). Because academic teaching staff do not always understand what information literacy involves, this affects the integration of information literacy instruction into the curriculum.

Reasons academic teaching staff give for not including information literacy instruction include it being unnecessary for the subject, insufficient time, its presence elsewhere in the program, its being overtaught or a belief that it belongs in a core curriculum outside the discipline (Huddleston et al., 2019; Kim et al., 2020; Leckie & Fullerton, 1999; McGuinness, 2006; Yvelson-Shorsher & Bronstein, 2018). Many academic teaching staff believe they have already learned information literacy skills in high school and through life experiences which they could transfer to the university environment and therefore such skills would not need to be taught (Badke, 2010; Bury, 2011, 2016; Huddleston et al., 2019; Weiner, 2014; Wingate, 2006). Academic teaching staff also consider that students who need instruction could be taught at a remedial level through generic classes outside the subject (Badke, 2010; Bury, 2011, 2016; Huddleston et al., 2019; Weiner, 2014; Wingate, 2006). Other staff expect that their students would learn information literacy skills through osmosis via subject instruction, completing assessment tasks and receiving feedback, or by actively working to learn such skills on their own or from peers, in their own time (Badke, 2010; Bury, 2011; Huddleston et al., 2019; Kim et al., 2020; Leckie & Fullerton, 1999; McGuinness, 2006). As many staff use these reasons to avoid providing information literacy instruction for students, this means that students often receive piecemeal instruction which is not scaffolded within the curriculum and may not occur at the most appropriate time or locations.

Information literacy's lack of support from academic teaching staff support and its absence of scaffolding in the curriculum leads to a further issue: librarians and other invited learning support

instructors are rarely given sufficient time to provide in-depth information literacy instruction, even when academic teaching staff support it within the curriculum (McGuinness, 2006). Instruction is often given in a short 'one shot' opportunity, usually of around fifty minutes. This is often the only opportunity for librarians to teach information literacy to students during that subject and sometimes, the entire degree (e.g. Badke, 2010; Markgraf et al., 2015; Wingate, 2006). Timing of instruction within subjects could also be problematic, as studies found that students show differing views about the need for instruction early in the subject or just in time for assignments (Kim & Shumaker, 2015; Yevelson-Shorsher & Bronstein, 2018). This lack of time for information literacy instruction and the prevalence of one shot sessions impacts the instruction's content and delivery methods.

During one shot sessions, information literacy instructors often try to cover multiple aspects, even when it is not timed most appropriately for students' needs, because it is the only opportunity they have (Coulter et al., 2008; Markgraf et al., 2015). However covering multiple topics provides little opportunity for practice and only allows time for superficial learning about tools and basic techniques rather than covering more transferable higher order thinking skills such as critical evaluation (Badke, 2010; Billing, 2007; Dolan & Martorella, 2004). Learning about such tools and techniques is not necessarily effective, as studies show that researchers quickly forget skills that are not used regularly because practice and continual use are a key part of skill retention (Ericsson, 2005; Fujimoto et al., 2011; McGuinness; National Research Council, 2000). The absence of higher level skills teaching combined with uneven teaching across a course inhibits integrating such skills into everyday use (Hayes-Bohanan & Spievak, 2008; McGuinness, 2006; Nayda & Rankin, 2008).

Many of the capabilities involved in information literacy are not assessed within the curriculum. Many assignments are poorly designed and do not require, test or grade information literacy skills apart from the need to demonstrate the use of a range of quality information sources and appropriate referencing (Badke, 2010; McGuinness, 2006). As students have been shown to commit less time to tasks for which they do not obtain marks, they are less likely to spend time using their information literacy skills to complete assessment (Badke, 2010; Bury, 2011; Detlor et al., 2012; Dolan & Martorella, 2004; Huddleston et al., 2019; McGuinness, 2006).

As can be seen, students' acquisition and use of information literacy capabilities and academic information behaviours is heavily influenced by a range of personal and institutional factors. Personal influences include personality traits, confidence levels, and self-efficacy. Institutional elements such as time constraints and the ease of access to information also influence students' personal information behaviours. Institutional support is also a key part of students' acquisition and use of academic information behaviours. Student learning in this area is substantially affected by several key factors. Firstly, information literacy training may not be included in the

curriculum; secondly, there is dispersed teaching responsibility for its instruction; thirdly, varying support exists from academic teaching staff; fourthly, insufficient time is given to information literacy instruction and practice; and finally, students' information literacy capabilities and academic information behaviours tend not to be assessed.

Summary

This chapter introduced the concepts of information literacy, information behaviour and their related components. It also provided an overview of research into students' use of academic information behaviours and information literacy capabilities. A range of factors affect the learning of academic information literacy capabilities. These include intrinsic factors, such as personality traits, confidence and self-efficacy, motivation and attitudes towards learning. They also comprise extrinsic factors such as a lack of their integration in the curriculum, little support from academic teaching staff, an absence of the time and opportunities to learn and practice information literacy and limited overt inclusion of such behaviours and capabilities in assessment mark allocation (e.g. McGuinness, 2006). These factors, combined with time pressure on students, lead to students' use of strategic satisficing in their information behaviours and prevent students from adopting these skills as part of everyday academic practice (e.g. Connaway et al., 2011; Warwick et al., 2009). This chapter has focused on the academic information behaviours of all students. The following chapter explores what is known about Aboriginal and Torres Strait Islander students' academic information literacy capabilities and academic information behaviours.

Chapter 3: Literature Review: Indigenous Students' Preparedness, Information Behaviours and Information Literacy Capabilities

Research has highlighted the need for Aboriginal and Torres Strait Islander students to develop higher order critical analysis skills to be able to interpret and understand the different viewpoints they experience between their Aboriginal and/or Torres Strait culture the western society in which they live (Chirgwin & Huijser, 2015; Nakata, 2012). Having information literacy abilities and academic information behaviours helps students develop critical thinking abilities as part of the processes involved in finding, analysing, using and creating information, improving their academic preparedness to commence and proceed through their studies. This literature review explores the existing research relating to Indigenous students' perceptions and experiences of information literacy instruction and their information behaviours.

Previous Research into Indigenous Students' Information Literacies and Information Behaviours

To be academically prepared to succeed in their studies, Indigenous students need to be academically information literate and use academic information behaviours to meet their academic needs. However, in Australia, only a few studies have investigated Aboriginal and Torres Strait Islander students' information literacy acquisition or academic information behaviours. Weir (2000) explored Aboriginal and Torres Strait Islander students' information needs and where they sourced information, while Aboriginal and Torres Strait Islander students' attitudes towards using academic libraries was explored in two studies by librarians (Hare & Abbott, 2015; Novak & Robinson, 1998) supplemented by personal experiences of Aboriginal and Torres Strait Islander students using libraries (e.g. Bourke, 1992; Jeffrey, 1992). Research from the education field explores Aboriginal and Torres Strait islander students' critical thinking abilities and ability to read and use information for academic purposes (e.g. Harrison, 2004; Morgan & Kutieleh, 2004; Rose, 2003; Rose et al., 2008). Only one study specifically investigated students' experiences of information literacy training (Hare & Abbott, 2015).

As so few studies researching Aboriginal and Torres Strait Islander students' academic information behaviours and information literacy were identified, this literature review was expanded to include research from New Zealand, Canada and the United States of America. While slightly more research has been conducted in these countries, there is a similar lack of investigations into Indigenous students' experiences of learning information literacy capabilities to develop academic information behaviours. The majority of research from all countries included in the review focuses on students' perceptions and experiences of accessing and using academic library spaces, facilities, collections and services to find and use information, both physically and virtually.

Using the Physical Library to Access Information

Library buildings at universities provide access to essential information, student facilities, study spaces and specialised help with seeking information. However, research shows that Indigenous students often feel fear, alienation, shame and intimidation when considering entering and using academic libraries, with both physical and psychological barriers being identified (e.g. Lee, 2001; Novak & Robinson, 1998; Ritchie, 2013). Entering the building is often the first challenge for Indigenous students who describe the architecture of these libraries as imposing and prison-like, a perception which makes them reluctant to set foot in them (Bourke, 1992; Tuhou, 2011). Several studies reported that having support from friends made Indigenous students more comfortable in going into and using these libraries (Duncker, 2002; Tuhou, 2011; Young & Brownotter).

Academic libraries were shown to present challenges for Indigenous students in a range of ways relating to physical features, cultural issues and staffing related issues. Physical features such as revolving doors and turnstiles create barriers that can make Indigenous students feel unwelcome (Bourke, 1992; Jeffrey, 1992; Lee, 2001; Novak & Robinson, 1998; Tuhou, 2011). Spaces inside the library such as grand empty foyers and silent spaces were also reported as barriers in some studies, although in other studies students disclosed a preference for open plan, communal study areas over individual study zones (Bucy, 2022; Hare & Abbott, 2015; Novak & Robinson, 1998; Tuhou, 2011). Students can also feel unwelcome because of a lack of Indigenous representation or the presence of inappropriate cultural materials such as sacred tribal knowledge in library holdings (Bucy, 2022; Duncker, 2002; Hinder, 2011; Neurohr & Bailey, 2016; Novak & Robinson, 1998; Young & Brownotter). Culture shock can also occur for Indigenous students from more traditional backgrounds who are in unfamiliar environments and are unacquainted with the information processes and methods based on written traditions (Gilton, 2005; Lee, 2008; Trudgett & Franklin, 2011). Finally, staff could also be barriers for students using libraries, with a number of articles reporting that the presence of security officers or librarians policing rules was challenging for students (Bourke, 1992; Jeffrey, 1992; Lee, 2001; Novak & Robinson, 1998; Tuhou, 2011). Research has shown that the presence of police and security in public libraries negatively affects Indigenous peoples' feelings of safety in these spaces (Andrews, 2021; Robinson, 2019; Selman et al., 2019), which is also likely to occur in academic library settings.

Indigenous students can also struggle with how information is organised and located within academic libraries. Most of the Indigenous related content within libraries has been created by non-Indigenous people and is organised into categories and shelved or arranged according to western knowledge systems, which can present barriers to Indigenous students intending to use them (Aase, 2017; Buchanan, 2017; Bucy, 2022; Doyle, 2013; Duncker, 2002; Simpson, 2005). Another aspect of the way information is organised within the library is that it can form part of specific collections

within libraries such as archives. Libraries often have many different collections housed in separate places, such as divisions between journals, books, reference materials, curriculum content, special collections and archives, which can make it difficult to locate and access (Aase, 2017; Bucy, 2022). Students using libraries with the Library of Congress scheme also highlighted that Indigenous related literature is mostly classified and shelved within subject areas relating to history as if Indigenous people no longer existed in modern society (Doyle, 2013; Lee, 2011; Webster & Doyle, 2008).

Accessing Information Online

As access to information is increasingly in digital and online formats, digital and computer access and literacy have become more and more important for students to be able to meet their information needs. Research has shown that poor access to information and communications technologies (ICTs) and low digital and computer literacy abilities due to low socioeconomic status or geographic remoteness negatively affect Indigenous students' information literacy abilities and use of academic information (Geia et al., 2013; Kral, 2019; Prayaga et al., 2017; Thomas et al., 2023; Usher et al., 2005). Several studies have linked poor digital skills to poor information literacy abilities. Simpson (2005) found that Maori students would avoid using computers, preferring to browse physical collections to find sources. Indigenous students who use online sources encountered difficulties, with Prayaga et al. (2017) reporting that Aboriginal and Torres Strait Islander students learning at a distance have poor digital literacy skills for navigating information and applying knowledge. Hinder (2011) identified that Pacific students would only search for known titles because they are unsure of how to use keywords and Doyle (2013) observed that Canadian First Nations students find either too many mostly irrelevant results or too few, as they were unable to search systems effectively. Other studies discovered that Indigenous students lack the knowledge of discipline specific databases and search techniques (Bucy, 2022; Hare & Abbott, 2015; Luther & Lerat, 2009). Indigenous students from more traditional backgrounds have difficulties in being able to navigate and search databases due to a lack of understanding of western ways of structuring and organising knowledge (Duncker, 2002). In all of these cases, the lack of digital literacy abilities and limited understandings of information literacy affect Indigenous student's ability to apply academic information behaviours to meet their information needs.

As I experienced in my own research for this topic, a major theme in many of these studies is Indigenous students' perceptions and experiences of academic information behaviours when seeking information on Indigenous topics. These studies identified that Indigenous students often encounter difficulties finding information due to the limitations of online interfaces. Ball et al. (2019) noted that many Indigenous resources do not have sufficient descriptions to make them identifiable when using online search tools, while other studies have found taxonomies such as subject headings, classification schemes and database thesauri often contain terminology which is incorrect,

incomplete, outdated, racist and/or demeaning (e.g. Aase, 2017; Doyle, 2013; Nakata et al., 2005b). Terminology is often too broad and does not provide specific detail, such as not detailing Indigenous nation names, language or place specific terms (Buchanan, 2017; Doyle, 2013). A further problem in locating information on Indigenous topics is the lack of content created by Indigenous peoples (Aase, 2017; Doyle, 2013; Lee, 2001; Novak & Robinson, 1998; Tuhou, 2011).

In addition, the absence of literature on many topics relevant to Indigenous peoples leads students to question their ability to research as they are unsure whether the problem relates to their search strategies or lack of published literature on their topics (Doyle, 2013). This means that researching Indigenous topics often requires complex strategies involving the use of multiple sources and multiple search terms and synonyms, as well as having to use broad concepts which results in many irrelevant results (Doyle, 2013). When researching Indigenous topics, Indigenous students often have to develop two different conceptual understandings for their research, one around their Indigenous knowledge and the other around the concepts and terms present in the information sources they use for their research (Doyle, 2013; Komeiji et al., 2019; Nakata, 2002, 2007a).

Seeking Assistance

A key part of the information seeking process is asking for help when needed. Librarians are a key source of assistance in this process. Studies into Indigenous students' help-seeking behaviour have found that many Indigenous students show a preference for asking people for information but would rarely ask a librarian as their first step (Hare & Abbott, 2015; Lee, 2001; Simpson, 2005). Students are more likely to consult with academic staff, students and other people in their networks before asking librarians (Hare & Abbott, 2015; Lee, 2001). Students were also found to be more likely to seek assistance from the library if there were staff who were Indigenous or from staff in Indigenous specific libraries as they feel culturally safe in these situations (Bourke, 1992; Doyle, 2013; Lee, 2008; Lee & Smith, 2018). Reasons Indigenous students reported for their reluctance to ask for assistance from library staff include being embarrassed or feeling that they would be inconveniencing staff (Duncker, 2002; Novak & Robinson, 1998). Jeffrey (1992) noted that asking questions requires someone to put themselves in a vulnerable position by risking refusal from someone in a position of authority, which may be particularly difficult for Indigenous people. Indigenous students who did ask for help from library staff usually reported that the library provides a good service (Lee, 2001). However when asked about librarians' helpfulness for finding information on Indigenous specific topics, students stated that librarians lack the expertise and cultural viewpoints to find materials related to their topics (Doyle, 2013; Hare & Abbott, 2015; Lee, 2001). Students also revealed they learn which librarians would be more helpful and avoid those who are not (Hare & Abbott, 2015; Lee, 2001). Other research into Indigenous students' experiences of

seeking help from library staff disclosed problems with racism, cultural insensitivity, difficulty with structural barriers (such as loan periods and fines) and lack of understanding of Indigenous issues (Lee, 2008; Lee, 2001; Tuhou, 2011). As can be seen, although librarians are experienced in providing help in the information seeking process, they are rarely consulted as a main source of help and could also become barriers to students when seeking help.

Information Literacy and Indigenous Students

Indigenous students have been shown to be aware of the need to be information literate and undertake information literacy instruction (Aase, 2017; Bucy, 2022; Doyle, 2013; Duncker, 2002; Hare & Abbott, 2015; Novak & Robinson, 1998). However, little research provides much insight into Indigenous students' experiences. Indigenous participants mentioned having little or no information literacy instruction and no training on navigating the physical library to access information (Aase, 2017; Bucy, 2022; Neurohr & Bailey, 2016). Studies also found that students consider information literacy instruction does not include enough detail about how to search and access information (Aase, 2017; Bucy, 2022; Hare & Abbott, 2015). However some students perceive that training in how to find and access information is useful when linked to and delivered within subjects and repeated across multiple subjects in their degree (Bucy, 2022; Hare & Abbott, 2015) and when learning critical reading and evaluation skills is given through support courses embedded into degrees (Doughty, 2013; Pukepuke & Dawe, 2013). This shows that while Indigenous students' experiences of some elements of information literacy instruction have been explored, there have been no comprehensive studies investigating students' perceptions and experiences of learning information literacy capabilities through formal instruction.

While not providing actual student perceptions, several articles have been written by Indigenous and non-Indigenous librarians about teaching information literacy to Indigenous students, including techniques and methods, frameworks and models. Most authors highlighted building relationships as a key factor for successful information literacy instruction (Anderson, 2000; Beatty, 2007; Lee, 2008; Loyer, 2018; Roy et al., 2011). Techniques include storytelling, using Indigenous languages or incorporating Indigenous viewpoints (such as humour) to help engage students and provide both spiritual and academic support in a holistic model (Anderson, 2000; Beatty, 2007; Lee, 2008). Other research acknowledges the trauma that researching Indigenous topics could cause and explores the need for culturally sensitive information literacy instruction and providing pastoral care when teaching Indigenous students (Edwards, 2019; Lee, 2008; Loyer, 2018).

Librarians have also explored how Indigenous knowledge systems can be related to or integrated with information literacy skills. Beatty (2007) investigated how information literacy competencies in the ACRL Standards can be mapped to the educational philosophy from Diné College which serves the Navajo nation. Dudley (2020) used the *Framework for Information Literacy*

for Higher Education (ACRL, 2016) to instruct students on the western biases of information organisation and classification in academic libraries and explained how this may conflict with Indigenous knowledges.

Several studies also examined how holistic Indigenous knowledge systems can be integrated with information literacy concepts outside the framework. Loyer (2018) explored how Nêhiyaw (Cree) principles of kinship and relationality can help librarians build resilience in Indigenous researchers undertaking traumatic research by forming relationships during information literacy instruction, whilst Roy and colleagues (2002; 2016) adapted Cajete's (1994) educational model into the 'searching circle' to guide student librarians in researching, developing and creating new information literacy materials for Indigenous communities. School librarians have also translated information literacy processes to use Hawaiian Indigenous terms that reflect Hawaiian culture and values (Montague et al., 2020; Naluai, 2014). However no research was discovered investigating how information literacy concepts and skills may use, adapt or incorporate Australian Aboriginal and Torres Strait Islander knowledge and belief systems.

Conclusion

The importance of information literacy skills for academic achievement has been recognised for decades (Fosnacht, 2020). Information literacy skills are linked with many skills required for academic preparedness and university readiness. Evidence shows that information literacy instruction can affect student success and retention (e.g. Shao & Purpur, 2016). As Australian Aboriginal and Torres Strait Islander students have a higher likelihood of being less academically prepared, the development of information literacy skills can be an important step to help them achieve their academic goals.

A review of existing literature relating to Indigenous students' information literacy training, their information behaviours and their experiences of academic libraries identified several gaps in the literature, particularly for Australian Aboriginal and Torres Strait Islander students. In total, only five studies were located that specifically explored Aboriginal and Torres Strait Islander students' perceptions and experiences of academic information behaviours and learning information literacy and most were more than fifteen years old. When the literature search was expanded to include New Zealand, Canada and the United States, similar numbers of papers were found for each country, showing there is little research in this area across countries with similar cultural and colonial backgrounds. Although there were sufficient studies about students' perceptions of libraries, few studies explored how students applied academic information behaviours, apart from research relating to the difficulties in researching Indigenous related topics. In particular, very little research was found about how students learned to be academically information literate, specifically through formal instruction.

This shows a clear gap in what we know about Indigenous students' academic information behaviours and how they learn and use information literacy capabilities. This is particularly the case for more recent research, which is increasingly important due to changes driven by digital access. Furthermore, no research was found that explicitly explored the impact of information literacy and information behaviour on the academic preparedness of Indigenous students before or during their university studies. This study adds to the research in this area by exploring the research question:

'How do Aboriginal and/or Torres Strait Islander students develop and use academic information literacy skills and/or behaviours?'

Summary

This chapter provided an overview of the literature relating to Indigenous students' academic preparedness and how this affects their academic information behaviours and academic literacy capabilities throughout their studies. This indicates there is little research into Indigenous students' perceptions or use of academic information behaviours and skills or about how they learn these behaviours and skills, and the impact this has on their academic preparedness. In the following chapter, I discuss how this interview based study was designed to explore these issues using interpretive qualitative methodologies and research methods.

Chapter 4: Methodology and Methods

This chapter provides an overview of the qualitative research paradigms and methodologies that frame my stance in undertaking this study. I also introduce the research study's locale and provide information about the participants, the methods by which they were recruited, data collection and analysis. In discussing these research methods, I detail their attributes, theoretical underpinnings and the reasons for their choice.

Purpose of Study

Higher education is an important part of self-determination for Aboriginal and Torres Strait Islander peoples. However, Aboriginal and Torres Strait Islander students are often academically underprepared for study and do not have the academic literacies which are important elements of success in higher education. Academic information literacies and behaviours are critical skills to identify information needs and find, evaluate and use information to support academic literacy and improve academic preparedness. This qualitative interpretive study employed semi-structured interviews, explored how Aboriginal and Torres Strait Islander students learned, applied, and navigated academic information behaviours to meet their academic needs and investigated how this helped support their academic preparedness and academic literacy skills (see the subsection titled Information Behaviour, Information Literacy and their Relationship in Chapter 2 for definitions of these terms).

Research Questions

This study proposed to investigate the research question **“How do Aboriginal and/or Torres Strait Islander students develop and use academic information literacy skills and/or behaviours”?** To answer this question, this study explored the information behaviours and literacies these students use and how and when they learned them. Students were asked about their formal and informal information literacy learning experiences before and during university and how this had affected their academic behaviours. They were asked about the ways they sought help when struggling to identify and meet their information needs. Students were also asked about their experiences of researching Aboriginal and Torres Strait Islander related topics, navigating the cultural interface, and their opportunities and difficulties in doing so. As part of this, they were asked how their information behaviours affected their ability to navigate in this space and whether information literacy training addressed these opportunities and difficulties.

Methodological Approaches

Qualitative inquiry explores people's stories, perspectives and experiences (Leavy, 2023; Taylor et al., 2015). It is a method to investigate peoples' ways of making meaning through their motivations, behaviours, decisions, values, strategies and experiences within the social, economic, political and cultural contexts which impact them (Patton, 2014). As an academic librarian, I have

conducted many interviews concerning academic references to find clients' information needs and purposes. Whilst doing so, I have often learned more about my clients, their motivations and their experiences of doing research, such as their difficulties when researching Aboriginal and Torres Strait Islander topics, which has led to my interest in conducting this study.

In this research, qualitative inquiry provided the opportunity to explore how Aboriginal and Torres Strait Islander students made sense of and created meaning in their academic information behaviours and how they were taught the information literacy skills to navigate the information space. Quantitative research methods could have provided insight into how often students access resources and which databases or spaces they use in the library through research tools such as surveys. However, it would not provide deep insights into why and how they use these resources, databases or spaces in the way that thick descriptive data gathered through qualitative research does. My choice of methodology to frame my research was guided by O'Donoghue's (2007) structured approach, which advises starting with connecting your research topic to:

- a. an underlying research paradigm;
- b. a specific theoretical position within the paradigm;
- c. a specific methodology consistent with the paradigm and the theoretical position; and
- d. a set of methods for data gathering and analysis consistent with the specific methodology (p. xi).

This choice of methods was also affected by the limited timeframe of a Master's degree and the need for methods to be appropriate for working with Aboriginal and Torres Strait Islander students. The following sections provide an outline of the paradigms, theoretical positions, methodologies and methods used throughout the study and insight into how and why they were chosen.

The Cultural Interface. The cultural interface refers to the theoretical framework envisioned by Professor Martin Nakata, a leading Indigenous educational researcher and Torres Strait Islander scholar. The interface is a space where western and Indigenous knowledges intersect and interact and is both a theoretical space of discourses on Indigeneity and a contemporary position in which Indigenous people make sense of their experience (Nakata, 2007b). This intersection is not simply a dichotomy between two opposing worldviews but has multiple layers of complexity based on the biases, opinions and desired outcomes of the groups that created the information (such as missionaries, settlers, governments, anthropologists and scientists and Indigenous people themselves) (Nakata, 2007b; Smith, 2021). It is also a space in which Aboriginal and Torres Strait Islanders exist and experience the world because they cannot divorce themselves from the western society in which they have to live (Nakata, 2007b). It can be seen as an embodied space based on

memories, emotions and reactions involved in the different positions that people take within it (Nakata, 2007b).

One of the founding principles of the cultural interface is the corpus of literature that provides information about Indigenous people and culture and builds the discourses around Indigeneity (Nakata, 2007b). This corpus consists predominantly of work by non-Indigenous researchers using western research paradigms to observe, label, interpret and classify Indigenous people and has often been framed from a deficit viewpoint based on the researchers' agendas (Nakata, 2007b; Russell-Mundine, 2012; Smith, 2021). Due to decontextualisation, fragmentation and the bias of information within the corpus, it contains many misinterpretations and misunderstandings.

However, the disruption colonisation caused to traditional Indigenous lifestyles and cultural knowledge means that the corpus is often the only source of information available about Indigenous people (Nakata, 2007b). The types of discourses that flow from the corpus influence how society in general views Indigenous people as well as having some effect on how Indigenous people view themselves, both historically and currently (Nakata, 2007b). Nakata (2012) states this corpus of literature is what "establishes the order of things to the ways we can and cannot understand each other" (p. 2), and that the tensions this contested knowledge creates "inform[s] as well as delimit[s] what can be said in this space between us" (p. 2). As a result, the corpus consists of a mix of western and Indigenous interpretations of Indigenous knowledge, much of which has been decontextualised from the holistic Indigenous worldview due to the effects of colonisation and the way in which western based disciplines fragment information within their specific fields (Nakata, 2007a, 2007b, 2018).

Nakata's research around the capacity of Aboriginal and Torres Strait Islander students is based upon the locale of the learners, for example in higher education. Aboriginal and Torres Strait Islander students (such as those involved in this study) come to university with pre-existing knowledge and attitudes which position their attitudes towards their discipline, towards society and towards Aboriginal and Torres Strait Islander culture. This knowledge reflects how they interact with the cultural interface and the Indigenous corpus. These students' positions come from both their cultural understandings (built through language, stories, social practices and ways of thinking) and their educational, social, economic and legal experiences of the western systems on which Australian society is based and in which they live. The locale of the learner within the interface continually changes based on how they navigate the conflict between academic perspectives of Indigeneity and their lived experiences as Aboriginal and Torres Strait Islander people (Nakata, 2007a, pp. 219-220; 2007b).

As the corpus is one of the main sources of available information about Indigenous people, its use cannot be avoided; however as it is not reliable or comprehensive, utilising this information in research requires careful selection and critical interpretation (Nakata, 2007b, 2012). To critically engage with the corpus, all students, and especially Aboriginal and Torres Strait Islander students, must become familiar with cultural institutions such as libraries that house this information and they need more in-depth learning opportunities, critical thinking skills and advanced language skills to proficiently undertake the selection and analysis of materials (Doyle, 2013; Nakata, 2002, 2012; Nakata et al., 2008). Aboriginal and Torres Strait Islander students are already in a place of tension, a push-pull between their own understanding of who they are and who the university says Aboriginal and Torres Strait Islander people are; therefore they need to become familiar with critical language to negotiate within this space (Nakata, 2012). This requires the development of advanced academic information literacies and information behaviours to effectively identify their information needs and to find, critically analyse and use information from the corpus for their assignments as well as for general study purposes.

Moreover, situating students within their lived experience in the cultural interface introduces opportunities for exploring ways to support Aboriginal and Torres Strait Islander students beyond the cultural support model and developing their capacities as independent learners. Nakata identified that the current models of support focus on remediation to fill skill deficits and do not build capacity to develop students as independent learners (Nakata as cited by Barry, 2017). There is a small body of research into how students can be supported outside this model through studies of how Aboriginal and Torres Strait Islander students develop and use learning strategies (Boulton-Lewis et al., 2001; Nakata et al., 2019) and critical thinking, problem solving and reasoning skills (Harrison, 2004; Harrison, 2005). As one of the aims of teaching information literacy skills and information behaviours is to develop independent lifelong learners, this study of Aboriginal and Torres Strait Islander students' information literacy skills and information behaviours will contribute to the wider body of work on improving Aboriginal and Torres Strait Islander students' educational progression.

Indigenous Standpoint Theory. The social relationships amongst those living and working in the cultural interface develop and determine their social positions within it. Although Indigenous people may be the main actors in the interface, their ability to influence this space through their own agency is informed and limited based on the positions of others in the space (such as governments and interest groups in positions of power in society as a whole that therefore influence others within the cultural interface) (Nakata, 2007b). Nakata (2007b) developed his Indigenous standpoint theory as a method of engaging with the corpus of knowledge about Indigenous people to understand how knowledge is produced and used to influence Indigenous peoples' lives.

Standpoint theory first emerged in the field of feminism during the 1970s to explore and document the experiences of women in a world socially constructed by men as the holders of power (Nakata, 2007b). Smith (1987) described her version of feminist standpoint theory as “creating a way of seeing, from where we actually live, into the powers, processes, and relations that organize and determine the everyday context of that seeing” (p. 9). Standpoints are not static, and can vary based on the topic, situation and timeframe in which the topic is discussed and the role of the person interviewed (Nakata, 2007b; Smith, 1999).

Nakata (2007b) identified three principles that help develop an Indigenous standpoint:

- 1) the self is understood within the cultural interface space and the corpus influences that understanding in various ways;
- 2) Indigenous people have agency in positioning their standpoint but this is also constrained through the dichotomy of Indigenous and non-Indigenous perspectives; and
- 3) these dichotomies and tensions influence what can be said and what cannot within everyday experiences and therefore they need to be factored into research to gain insights into not just what is said but what is experienced.

Standpoint theory requires the researcher to acknowledge to participants the researcher’s position about and within the research to show awareness of the respect required to conduct this research with participants, in this case, Aboriginal and Torres Strait Islander students (Ardill, 2013; Nakata, 2007b). As a non-Indigenous researcher, I cannot develop an Indigenous standpoint because I do not have the lived experience of an Indigenous person. This divides me from my participants and makes it difficult to ‘know’ when I ‘understand’ their perspectives. However, as a librarian I do have a role in the cultural interface as a person involved in collecting, maintaining and providing access to information in the corpus of Indigenous information.

The Cultural Interface and Indigenous Standpoint Theories and this Study. Nakata’s (2007b) cultural interface and Indigenous standpoint theories were selected to form the theoretical position for this research as these theories frame the nature of reality through the lens of Indigenous people and their experiences. This study interacts with the cultural interface in multiple ways. It is both the space in which participants use their information behaviours to navigate the corpus, as well as a theoretical lens for analysing the data and challenging my own stance. In this study, I attempt to use the Indigenous standpoint theory to explore the viewpoints of participants so as to understand their experiences as learners, students, researchers and Aboriginal and Torres Strait Islander people and how that may affect their academic information behaviours. I also selected the cultural interface and Indigenous standpoint theories because they fit within the larger research agenda regarding Aboriginal and Torres Strait Islander students as learners and have been guided by Aboriginal and Torres Strait Islander research at James Cook University’s Indigenous Education and

Research Centre. Whilst the cultural interface provides the reference point for the analysis, I draw on qualitative traditions such as interpretivism to analyse the data.

Interpretivism. As this study is designed to understand participants' academic information behaviours and how information literacy training helps build these behaviours, interpretivism was selected as my methodological approach (Patton, 2014; Tracy, 2020). Interpretivism, also sometimes referred to as constructivism or constructionism (Cresswell, 2007; Tracy, 2020), is a qualitative research paradigm in which the researcher seeks to understand how participants' experiences shape their understanding of the world and events and phenomena within it through empathetic insight (Leavy, 2017; Neuman, 2013; Dilthey as cited in Tracy, 2020).

Ontologically, reality is seen by interpretivists as constructed by the individual or society and therefore each person's reality can be different dependent on the location, group, situation and individual (Chilisa, 2020; Ryan, 2018). Epistemologically, interpretivists view truth and knowledge as subjective and dependent on the experiences and understandings of the individual (Ryan, 2018). Interpretivists follow the axiology that the researchers' own values and views influence how they frame, design, construct, execute and analyse their research (Chilisa, 2020). An interpretivist paradigm is also reflected in the design of the study, data collection, the analysis and interpretation of results and the presentation of the findings (Tracy, 2020).

As interpretivism seeks to construct meaning based on people's experiences and perceptions, research methods focus on developing ways to elicit information from sources and how to analyse and interpret the results to find answers to the research questions (Kankam, 2019; Ryan, 2018). Here, the research design involves collecting data through broad questions that allow the participant to construct the meaning of questions and their answers and the research aims to gather deep and detailed information (Cresswell, 2007; Tracy, 2020). Interactions with research participants occur through methods such as observation or interviews that allow the researcher to collect data on their perspectives and experiences (Patton, 2014; Tracy, 2020).

Data analysis often uses an inductive process to find patterns and themes from the data gathered from interactions with participants (Ryan, 2018). During the data collection and analysis, the researcher acts as mediator and interpreter and, as such, must be aware of their own assumptions and standpoints around the topic being studied and how this may affect their interpretation of the data (Cresswell, 2007; Taylor et al., 2015). Researchers' worldviews, perspectives and biases also need to be made explicit to help outsiders understand how this may affect the study's outcomes and findings (Chilisa, 2020; Ryan, 2018).

There are several critiques of interpretivism as a methodology. One revolves around the fact that as the researcher is an 'outsider' to the topic of research and their influence over the study design, data collection and data interpretation can distort the process and the results (Shipman,

1997). A lack of consideration of the wider power structures that may affect the situation, perspective or experience under study has been considered a drawback (Tracy, 2020). Chilisa also pointed out some critiques of how interpretivism frames Indigenous cultures. Although interpretivism theoretically legitimises all realities from all cultures, ontologically it still has trouble accepting concepts and beliefs that do not fit with western concepts of knowledge (such as the existence of spirits) because these cannot be 'proven' (Chilisa, 2020). Also, researchers using western traditions often see Indigenous customs and traditions as barriers which restrict them or which they need to work around (Chilisa, 2020). To address these issues, I also use Nakata's (Nakata, 2007b) cultural interface theory and standpoint theory as an interpretive lens to help examine and position my role in the research, analyse the data and reflect on my interpretations and recommendations.

I chose interpretivism as the research methodology because within this approach, knowledge is seen as subjective and based on the viewpoint and experiences of the participant (Ryan, 2018; Tracy, 2020). Interpretivism also acknowledges that the role of the researcher can influence the design and implementation of the study through their personal views, assumptions and biases (Ryan, 2018; Tracy, 2020), which is particularly important for me as a non-Indigenous person researching with Aboriginal and Torres Strait Islander students.

Role and Standpoint of the Researcher

In situating the methodologies and methods used in my research, it is important to consider my role as the researcher and the standpoints I have. As a non-Indigenous researcher conducting research about Aboriginal and Torres Strait Islander students, it is important to identify myself and the purpose of my research to my participants and readers so as to situate myself in the research. Another purpose is to reflect on my standpoints as a non-Indigenous research student and as a librarian and on any effects these may have on my relationship with participants.

I am a middle-aged non-Indigenous woman from a white-collar middle-class background. I have worked in Australian academic libraries for more than 20 years as a qualified librarian. In this role I have worked with students from all backgrounds and cultures to provide information literacy training and assist them in learning how to do research. Working with Aboriginal and Torres Strait Islander students has raised my awareness of some of the issues that they can experience when finding and using information. My experience as a librarian has given me insider knowledge about how systems work, which may help with understanding problems and issues experienced by Aboriginal and Torres Strait Islander students.

However, based on my background, I have very different lived experiences to many of the Aboriginal and Torres Strait Islander students with whom I have worked. I am privileged in the fact that I have a long history of being a library user and an avid seeker of information. As a librarian, I

have inside knowledge of how 'the system' works and even some control of that system. This means I am also in a position of power over my research participants as an 'insider with knowledge'. Additionally, until some years ago, I had little personal experience of some of the information issues and barriers encountered by many Aboriginal and Torres Strait Islander and non-Indigenous students because I gained insider knowledge of libraries as a child by loving using libraries and having parents who worked in the library industry.

However, there are two ways in which I have come to appreciate the challenges of students seeking and manipulating information in an academic library. As a librarian, I have experience training students to find information in classes and individually, so have seen the types of challenges they face and have sympathetically helped them to navigate the information space. As a current student researcher on Aboriginal and Torres Strait Islander topics, I have had similar issues to all students with the struggle to identify my information needs and find and analyse information in the corpus. This means I have empathy with my participants in this regard.

Based on these standpoints, it is important to consider how my position may affect how I design, collect, analyse and interpret data in my study. To emphasise the voice of my participants and try to mitigate my influence, I have selected research methodologies to stress awareness of the research subject as the focus of the study and I have acknowledged the role of the researcher in the research. I have used reflexivity to recognise my position in the study and the wider society in which I live. Through reflexivity I have identified my philosophical stance for this research.

Interpretivism was selected as a core premise of my research. This is the premise that reality is subjective and constructed by the individual or group and it reflects that everyone's experiences of phenomena are unique (Chilisa, 2020; Ryan, 2018). It legitimises different viewpoints, including those from other cultures and groups. However, as Chilisa (2020) noted, it does not always legitimise those beliefs that conflict with accepted western norms about knowledge and so must still be treated cautiously when exploring Indigenous worldviews. Cultural interface theory and standpoint theory have been used as an interpretive framework to help explore the challenges Aboriginal and Torres Strait Islander students experience with using academic information literacy skills and information behaviours in the specific context of being an Aboriginal and Torres Strait Islander learner at an Australian university as well as those challenges commonly experienced by all students (Nakata & Nakata, 2023). Reflexivity has also been used to help act as a bridge between the western paradigm of interpretivism and Indigenous knowledge because it allows researchers to reflect on their position within existing systems, on how this position affects relationships with research participants and on how they develop research questions and approach research design (Chilisa, 2012, p. 179; Levac et al., 2018).

Reflexivity

All researchers frame their research within their own interpretation of the data and position it within their own frame of reference based on their social, cultural and political backgrounds (Chiseri-Strater, 1996; Cresswell, 2007). Qualley (1994) described reflexivity as “the feeling of heightened self-awareness or consciousness that occurs in response to a dialectical encounter with an ‘other’. As a result of this interaction and our attempt to interpret it, researchers may need to re-examine our previous understanding to make sense of the ‘other’” (p. 222). In reflective practice, the researcher practices reflection by thinking and making notes about their practices and how they relate to theory and other evidence to stimulate further learning and development (Ryan, 2005).

Pillow (2003) noted that the concept of reflexivity is a development and refinement of the concept of reflection. Reflexivity incorporates reflection but goes further to include more in-depth introspection and self-scrutiny of not just practice but also the researcher’s standpoints in the wider research setting and how they affect the participants (Pillow, 2003; Qualley, 1994; Ryan, 2005). Reflexivity is a method used when writing to make explicit these personal positions and document how they may influence the researcher’s interpretations so the reader has a clearer idea of the perspectives and relationships between the researcher, the participants and the research study (Cresswell, 2007; Pillow, 2003). It is used by researchers to help legitimise, validate and question their research practices by focusing on their subjectivity in the research process and how this affects data collection and analysis, whilst acknowledging that we may never do this adequately (Pillow, 2003).

As a non-Indigenous research student and a librarian, I was particularly concerned that my roles may affect interview interactions and responses as well as my interpretation of the data. I have used reflexivity throughout the project to help me continuously reflect on how my personal experiences and cultural viewpoints affect how I designed the study, collected data and interpreted Aboriginal and Torres Strait Islander students’ voices. When designing this study, I have struggled with the appropriateness of using Indigenous research methods as a non-Indigenous person. I have used reflexivity to question my assumptions and attitudes about this perspective within the research setting and to consider how this affects my interpretation of findings within the Indigenous research frameworks I have used. Reflexive processes were involved throughout the study when recruiting, designing the data collection process, collecting the data and interpreting the findings. These processes are detailed in the relevant sections below.

Methods

Ethical Considerations. Ethics approval was required to conduct this study as it involved human research with Aboriginal and/or Torres Strait Islander students. An ethics application

including an Aboriginal and Torres Strait Islander Research Ethics Application supplement was submitted and approved through the James Cook University Ethics Committee (*Ethics Approval # H8368*). Guidelines and standards from the National Health and Medical Research Council (2018; 2018a; 2018b) and Australian Institute of Aboriginal and Torres Strait Islander Studies (2020a; 2020b) were used to design the project and guide the data collection, data analysis and presentation of results. I have used the ethical principles outlined in these documents and applied reflexivity to inform my choice of methods in order to show respect to my participants, make the interview process clear and comfortable for them and privilege Aboriginal and Torres Strait Islander voices in the research.

Locale of the Study. This study was undertaken at James Cook University (JCU), a regional multi-campus university in northern Australia and Singapore. JCU's main campus is in Townsville, which has the highest number of staff and students of all campuses. This is where the researcher and most of the research participants are located. Townsville is the largest Australian tropical city with a population of 192,768 people at the 2021 Census (Australian Bureau of Statistics [ABS], 2022b). Located 1,111 km from Brisbane, the state capital, the city is classified as regional, with the nearest major cities being Cairns (347km north-north-west, population 166,943) and Mackay (386km south-east, population 121,691). The Townsville local government area has the third highest population of Aboriginal and Torres Strait Islander people in Queensland (8.4% of the population compared to 4.6% of Queenslanders overall or 3.2% nationally) (ABS 2022a). JCU has a role in conducting research and delivering educational programs to benefit the region by preparing people from this and other regions for professional work.

To understand the educational needs of students, it is important to be aware of their educational backgrounds, which can be impacted greatly by socioeconomic and geographic statuses. In 2021, JCU had a total of 20,306 enrolled students, of which domestic students made up 71%. Over 75% of JCU's domestic students come from regional or remote areas, and over 71% are the first in their family to attend university. JCU also has a much higher proportion of mature aged entry level students (46%) compared to the national average (37.5%), and a higher proportion of female students, with 62% compared to 56% nationally. According to 2021 JCU student data (JCU personal communication 22 September 2022), 816 students, which is 4% of the total student cohort, were Aboriginal and Torres Strait Islander, which is the third highest proportion of Aboriginal and Torres Strait Islander students as a percentage of total students at Australian universities (DESE2022a; 2022b). Aboriginal and Torres Strait Islander students at JCU are even more likely to be mature aged (52%) and female (72%) (JCU personal communication 22 September 2022). As research shows, students of lower socioeconomic status and students who are the first in their family to attend

university are often less prepared for university and therefore may need additional academic support (e.g. Bradley et al., 2008; King et al., 2015).

Participants. Participants included ten students at the university who identified as Aboriginal and/or Torres Strait Islanders. Of these, eight (80%) were female and two (20%) were male. Participants were aged between 20 and 60, with the majority between 25 and 40, followed by the 15-24 age group. Table 1 presents information about participants' gender, discipline, year level, mode of study, location and first in family status, grouped by age range.

Table 1

Participant demographics by age range

Age range	Male	Female	% of total	Degree level (year level & discipline) & campus	Campus	Family university attendance
15-24	1	2	30%	3 undergraduates	UG	All 2 nd in family
				1 st year Arts	Bebegu Yumba	
				2 nd year Nursing	
				4 th year Science	
25-39	1	3	40%	2 undergraduates	UG	All 1 st in family
				3 rd year Humanities	Bebegu Yumba	
				3 rd year Social Sciences	
				2 postgraduates	PG	
				final year Health (CW [‡])	External	
final year HASS* (HDR [†])	Bebegu Yumba					
40-49	-	2	20%	1 undergraduate	UG	All 1 st in family
				3 rd year HASS*	Bebegu Yumba	
				1 postgraduate	PG	
1 st year Social Sciences (HDR [†])	External					
50-59	-	1	10%	1 postgraduate	PG	1 st in family
				1 st year Social Sciences (HDR [†])	External	

Note: * Humanities, Arts & Social Sciences, † Higher degree by research, ‡ Coursework, § Bebegu Yumba is the Aboriginal name for the Townville Douglas campus.

Although not all disciplines were represented, the students who participated in this study were studying a wide range. These include arts, humanities, social sciences, sciences and nursing. Three students (30%) were undertaking postgraduate research studies, one was completing a Masters by coursework (10%) and the other six (60%) were doing Bachelor's degrees. For undergraduates, this percentage was representative of the wider Aboriginal and Torres Strait Islander student population as well as the total student population at JCU.

However, the study included a much higher number of students at the postgraduate level than in the total student cohort (30% vs 5%) and a much lower proportion of postgraduate coursework students compared to the total percentage of postgraduate coursework students (10% vs 25%). Additionally, there were no participants undertaking enabling degrees or non-award courses, which make up approximately 2.5% and 5%, respectively, of the total student cohort. Students self-selected to participate in the study. A higher number of postgraduate research students was accepted to maximise student viewpoints as they could offer insights into both undergraduate and postgraduate experiences.

Recruitment. As this study explores the experiences of Aboriginal and/or Torres Strait Islander students, this group of students made up the study population for recruitment. All students' viewpoints were considered to provide useful data, irrespective of discipline or type of degree, level of study, study mode or location due to the lack of research in this area and the fact that these skills are used by all students in one way or another. Therefore, the study was open to all students who identified as Aboriginal and/or Torres Strait Islander and were enrolled internally or externally in 2021 at any year level in an undergraduate or postgraduate degree at JCU. Purposive sampling, also known as purposeful or judgement sampling, was used as the strategy to recruit students because it is a non-random technique allowing for the selection of participants who can provide information about the research problems, phenomena, goals and purposes (Cresswell, 2007; Etikan, 2016; Tracy, 2020) and ensures participants were recruited from a cross section of students from different levels and disciplines (Emmel, 2013; 2004).

Purposive sampling's disadvantages (such as the risk of bias or lack of a range of viewpoints) were considered. However, these were mitigated by the nature and focus of the research project. The risk of bias due to participants being selected based on their relationship to the research topic (Etikan, 2016) or due to only attracting people with the strongest opinions (positive or negative) were reduced by the fact that the lack of research in this area makes every piece of information valuable, including those from outliers. Risk of bias from participants only taking part because an incentive was offered was minimal as the reward amount was relatively low and was seen by participants as a 'bonus' (personal communication with participant).

Emails with project details, the information sheet and the consent form (see Appendix A) were sent by the researcher to a list of students identified by the researcher and supervisors. Initial emails were sent to 48 students between mid-June and mid-July 2021. This email was also sent to key contacts such as Indigenous Peer Assisted Learning tutors⁵ and other academic staff to distribute to eligible students in their cohorts. The first round of emails attracted eight students who expressed

⁵ IPAL is funded and provided through the ISSP program (see p. 4)

interest in the project. As the desired number of participants was 12-15, it was then decided to 1) offer students a \$20 Woolworths voucher as a thank you for participating and 2) expand the methods of advertising. The eight students who had already agreed to participate also received the voucher.

The project was advertised to more students by emails, word of mouth, flyers posted in the library and at the Indigenous Centre and a presentation during an Indigenous Studies tutorial. In the latter stages of recruitment, a selection bias towards humanities, arts and social sciences students was identified. To overcome this deficiency, targeted emails were sent to Aboriginal and/or Torres Strait Islander health students. In total, 13 Aboriginal and Torres Strait Islander students expressed interest in participating in the study, with a total of ten students participating in interviews. The remaining three withdrew before being interviewed due to personal and academic reasons, scheduling difficulties and technical issues.

As this is a qualitative study, it is difficult to arrive at any specific justification for the numbers of participants. For many researchers, a minimum is suggested of five or six participants for interview (Tracy, 2020). Other studies do not provide numerical figures but instead use the concept of saturation. This means no further participants are interviewed when the researcher finds the same information being repeated by multiple interviewees. It is considered the way to identify when enough participants have been included (Gill, 2020; Morse, 1991; Tracy, 2020). Robinson (2014) noted that qualitative studies that seek in-depth understanding of phenomena usually use small participant numbers that allow individual voices to be heard and in-depth analysis. Robinson (2014) recommends three to 16 participants to allow for cross interview analysis without the need to manage too much data (Robinson & Smith as cited by Robinson, 2014).

As answers from the ten study participants seemed to be nearing saturation, it was evident that sufficient numbers of responses were achieved. The number of participants in this study is also comparable to other interview and focus group studies of Indigenous students' information behaviours and library use. However, as this study did not involve students from multiple universities or disciplines, the findings should not be seen as generalisable. Furthermore, as students self-selected to the study, there was a higher representation of students invested in their own learning. This study provides some insight into how Aboriginal and Torres Strait Islander students are using information literacy skills and information behaviours to meet their academic goals but it is not by any means suggested to be comprehensive.

Data Collection Methods. Qualitative interview methods were selected as the preferred data collection method as they would provide richer and deeper data than could be gained in a survey. Semi-structured interviews were selected as the appropriate method to collect this type of rich, deep data through asking minimal open-ended questions that allowed the participants to voice

their thoughts without too much structure. The premise of these interviews is that anyone can have views and feelings about anything, that these attitudes can be explored by asking people the right questions and that by interviewing, new knowledge is produced through the interaction between the researcher and the participants (Gubrium et al., 2012; Nikander, 2012). Despite this creation of new knowledge, the researcher also biases the study and outcomes based on their preconceptions and views and these influence the study design, data collection, data analysis and interpretation (Nikander, 2012).

As this research is designed to inform us about Aboriginal and Torres Strait Islander students' experiences and perceptions, I chose a method that would permit me to guide the narrative so as to seek answers to questions whilst also allowing participants to tell their experiences, without me overly influencing their responses. Semi-structured interviews were selected as the appropriate method to gather data first-hand from participants as these allowed for gathering data on aspects of the topic through open-ended questions whilst providing flexibility to probe more deeply into responses through follow-up questions and prompts (Brinkmann, 2018). As Tracy (2020) noted, semi-structured interviews provide more opportunity for natural discussion rather than directing the progress of the interview and they afford the opportunity for more insights into interviewees' feelings and contexts. This method has also allowed me to guide the direction of the interview through asking the participants for different personal positionings (such as their viewpoints as a student in general or as an Aboriginal and Torres Strait Islander person) (Koven as cited by Gubrium & Holstein, 2012).

Developing Interview Questions. Interview questions were designed around models and frameworks of information behaviour and information literacy, including Wilson's (1981, 1999, 2022) models of information behaviour, Kuhlthau's (2003) model of the stages of information-seeking behaviour and the ACRL's (2016) *Framework for Information Literacy for Higher Education*. These interpretive models and frameworks were used because they provide representations that can help symbolise, organise and understand the processes, structures and concepts of information literacies and behaviours that students learn and experience when doing research (ACRL, 2016; Jabareen, 2009; Oxford University Press, 2022; Thomas et al., 2020; Wilson, 2016).

Previous qualitative studies into students' information behaviours and literacies were also consulted to use as examples of wording when developing questions for the interviews. These studies investigated students' information behaviours (e.g. Head & Eisenberg, 2009; Maybee, 2006), library and information anxiety (e.g. Anwar et al., 2012; Bostick, 1992; Erfanmanesh et al., 2012) and information literacy skills (e.g. Foster et al., 2018). The questions prompted students to discuss the processes and sources they used to find information needed for their academic studies and the issues and opportunities they encountered whilst doing so. Questions also elicited responses about

how participants learned how to use these processes and sources to find and use information and how this has impacted on their information behaviours throughout their studies.

The final interview question concerned participants' perspectives about whether being Aboriginal and Torres Strait Islander presented any opportunities or challenges when researching. This question was asked not to differentiate them from other students but to explore how their particular experiences as Aboriginal and Torres Strait Islander people affect their information behaviours. In framing this question, I sought assistance from supervisors and Aboriginal and Torres Strait Islander ethics advisors as well as using reflexivity to assess my motivations and expectations of why I was asking this question. This was done to ensure that I did not take a perspective of difference or disadvantage.

Although questions were based on concepts and processes from frameworks and models specific to information science, consideration was given to how to minimise the use of information science specific jargon in interview questions as most of these terms would be unfamiliar to participants, just as they are to most students (e.g. Hutcherson, 2004; Kirker & Stonebraker, 2019; Schaub et al., 2017). Questions were worded in plain language wherever possible and information science specific terms were defined during the interview. After the questions were formulated, follow-up prompts were also devised to help guide participants if they were unsure of how to answer and to engender further information where necessary. These questions and prompts were added to an interview schedule which also provided the introductory blurb and prompts to confirm consent during the interview, to allow for questions from participants and to check if they agreed to be contacted if follow-up questions were needed (Gerson & Damaske, 2020; Tracy, 2020).

Piloting the interview questions. Interview questions were tested on a group of three postgraduate students in May 2021. This process was undertaken for a number of reasons: 1) it provided interview practice for the researcher and the chance to check for interviewer bias; 2) interview questions were tested for their timing, order and understandability; and 3) questions were checked for alignment with the research question, and for whether they elicit in-depth, relevant and useful responses (Cresswell, 2007; Gerson & Damaske, 2020; Merriam & Tisdell, 2016).

Postgraduate students who also worked in the library or Learning & Teaching Services were selected as the sample group as they were easy for the researcher to access, did not have formal library qualifications, had recent experience using their information behaviours for academic purposes and were not eligible for the study (Gerson & Damaske, 2020; Rubin, 2021). Participants included two non-Indigenous students studying at JCU as well as one Aboriginal and Torres Strait Islander student studying at another university who could test the final Aboriginal and Torres Strait Islander specific question. As a result, the wording of some questions was clarified and adjusted to make it clearer for participants. The full list of interview questions can be found in Appendix C.

Conducting Interviews. Participating students were interviewed between late June and late September 2021 as they were recruited. Interviews were conducted both via online videoconferencing using Zoom and face to face at the Townsville Bebegu Yumba campus due to participants' widely dispersed locations as well as uncertainties and restrictions due to COVID-19. Students chose the time and place of the interview to ensure that it was convenient and comfortable for them. Interviews lasted between 45 minutes and 1¼ hours. All face-to-face and Zoom interviews were also recorded via Zoom so the audio recording could be saved and transcribed. Videoconferencing was used for remote interviews as it was the most similar to face-to-face interviews (Irani, 2019).

Research has shown that interviewing using videoconference apps such as Zoom can make participants feel more at ease because they are in a familiar setting, more convenient as they do not have to travel to the interview site and more flexible for scheduling (Gray et al., 2020; Irani, 2019). Another benefit for the researcher is that they can view visual cues through facial expressions and upper body language, even if they cannot see the person's whole body (Irani, 2019). Although body language was not analysed as part of the data collection, it does help facilitate the interview process. Only the audio recording was downloaded and transcribed as part of the data analysis process and video recordings were not viewed or analysed after the interview.

One of my concerns when interviewing was that my role as an 'insider' working in libraries may influence my position as the researcher and negatively affect students sharing their experiences. To address issues of power differentials between the researcher and the interviewee, a particular issue when the research is about marginalised people (Cook, 2012), I started each interview with an introduction to myself as the researcher, including information about my background, motivations and personal interests in taking up this study. This was done to help students feel more comfortable in the interview. Interviews were also conducted in a relaxed conversational style as it was hoped that this would make students feel more comfortable with me and with the interview process.

Data Analysis. Interview data was thematically analysed using inductive and deductive approaches. Reflexive thematic analysis was chosen as it could be used with any research paradigm and is a method to identify, analyse and report on themes in the data (Braun & Clarke, 2006; Hayes, 2000; Saldaña, 2013; Thomas, 2006). An inductive, also known as a 'bottoms up' approach to coding was selected as codes are developed using data from participants' responses rather than using existing theories, frameworks or models to pre-identify themes. Using an inductive thematic analysis approach aligns with the principles of interpretivism (Cresswell, 2007), which prioritises the voices of the participants to allow insight into "participants' reality in their terms and within their frames of

reference” (Maakrun & Maher, 2016, p. 302). The cultural interface was used as a framework to interpret what participants said about information literacy.

Interview recordings were exported from the Zoom platform and then uploaded and transcribed in Otter.ai, an AI voice-to-text transcription service. Transcripts were then reviewed and corrected using Otter.ai. The transcripts were then downloaded and imported into NVivo for Mac (Version 12.7.0) for their summarising and coding. Each interview was summarised to provide an overview of the key findings and common ideas were noted for further exploration in the dataset. Codes were inductively created based on the exact or paraphrased words of the participants. After this initial coding, an NVivo codebook was exported and uploaded into a Miro whiteboard (<https://miro.com>) for thematic analysis. Codes for each interview were analysed and grouped into themes and sub-themes. Once themes were identified through this process, they were used to create nodes in NVivo for secondary coding, a process in which individuals’ responses were grouped by theme.

When analysing the data, I used reflexive practices to examine how I was coding. This included asking supervisors and fellow research students for feedback as well as examining how my own assumptions based on my experience as a librarian affected how I interpreted the data. My first attempt at coding was based on questions asked during the interview. However, my supervisor noted the codes I had developed were deductively based on professional knowledge of information literacy and information behaviour rather than inductively developed from participants’ data. Therefore these initial codes resembled secondary coding based around presupposed themes. These comments led me to reflect that this would limit how I could interpret the data and could result in assumptions about behaviours rather than ‘listening’ to the voices of the students.

At this point I restarted my analysis by coding each transcript individually, creating codes based on participant responses and then grouping them according to my understanding of information literacies and behaviours (Association of College & Research Libraries, 2016; Kuhlthau, 2003; Wilson, 1999). Reflexivity was also incorporated into the thematic analysis stage. This process was undertaken collaboratively with the assistance of my primary supervisor and two other research students. As my collaborators were from different disciplines, this further helped me to think reflexively about identifying and grouping themes and therefore different perspectives emerged about the data.

Trustworthiness. Several steps were taken throughout the design, data gathering and analysis stages of the research project to ensure that the process and outcomes truly reflect the voice of the participants and to minimise the risk of bias being introduced by the researcher. Throughout the research process, I consulted with supervisors and used reflexivity to be aware of my position in the research and how my viewpoints were affecting it. This way I could try to

minimise how my position affected the research where possible. There was no risk of selection bias because all students recruited to the project were volunteers and all were accepted. As mentioned above, interview questions were also tested for appropriateness and understandability through pilot interviews with students not involved in the study. Once data was collected, participants were asked to check over the transcript and a summary which the researcher had prepared. This was done to ensure the interview was transcribed correctly and the interviewer's interpretations of the content were faithful to the interview.

Summary

In this chapter, I have provided an overview of the research methodologies and methods used during this study. The chapter began with an outline of the purpose of the study: to explore Aboriginal and Torres Strait Islander students' information literacy experiences and capabilities and academic information behaviours by seeking to answer the research question 'how do Aboriginal and/or Torres Strait Islander students develop and use academic information literacy skills and/or behaviours'? The chapter also included an overview of the research's methodological approaches: Nakata's (2007a) cultural interface and Indigenous standpoint theories, interpretivism and reflexivity. Finally the chapter covered the methods employed in the study, its locale and some details about the participants. This included methods of recruitment, selection of data collection and interview methods, data analysis and the use of reflexivity to improve the trustworthiness of the data. The following chapter is the first of two with a presentation of the interview findings and an interpretation of the results. It focuses on participants' perceptions of the library, its services and how they have learned to practise academic information behaviours through information literacy training.

Chapter 5: Findings Part 1: The Locale of the Learner

This study was designed to explore the information literacy capabilities and academic information behaviours practised by Aboriginal and Torres Strait Islander students and how they acquire, develop and adapt these to support their academic learning throughout all levels of their studies. In this chapter, I discuss the finding from my analysis of the interviews conducted. This chapter comprises an exploration of how students interact with the operational aspects of the library (such as their use of physical and digital spaces and interfaces and library services). It also includes an investigation of how students learn to practise academic information behaviours through their information literacy training.

Participants

Ten Aboriginal and/or Torres Strait Islander students participated in the final study: four postgraduates and six undergraduates. All six undergraduate students attended university at the Bebegu Yumba campus at Douglas, Townsville as did Chloe⁶, one of the postgraduate students, while the remaining three postgraduate students studied externally. Nine of the ten participants had completed high school to Year 12. Three of the undergraduate students (Adam, Fern and Hayley) and one postgraduate student (Chloe) started university soon after finishing high school and began their current degrees aged under 25. Of this group, while Chloe was the first in her family to attend university, the three recent school leavers (Adam, Fern and Hayley) had parents, siblings or close second degree relatives who had started or completed degrees. The other undergraduate (Daisy, Greta and Brian) and postgraduate students (Amelia, Brooke and Eleanor) all began their current degrees as mature aged students, although three (Brooke, Eleanor and Daisy) had started and/or completed undergraduate studies directly after high school. All mature aged participants were the first in their family to attend university and all except Brian had previously attempted or completed university studies. Amelia, Brooke and Daisy had attended university in the mid 1990s and early 2000s. While both Amelia and Brooke had graduated and went on to careers before starting postgraduate degrees, Daisy withdrew from undergraduate studies and studied at TAFE to build a career before recommencing university studies in the late 2010s. Chloe and Eleanor completed undergraduate degrees in the early 2010s. Whilst Chloe continued immediately into postgraduate study, Eleanor pursued her career before returning to university. Greta completed a pathways bridging degree directly before starting her undergraduate degree.

Participants in the study have varying motivations, attitudes and beliefs about learning, education, studying and the academic literacies required to succeed at university. The next section

⁶ Participants have been given pseudonyms. Although students were given the opportunity to provide their own pseudonyms, none chose to do so.

provides information about the participants, their reasons for studying, how they perceive education and learning and how they view and use reading and digital skills.

Amelia is in her late 50s and studying by distance to complete a research degree in Indigenous Studies. She is a strong believer in education and has encouraged her children and other family members to study as well. She has a love of reading but does not have many digital skills and is not confident or comfortable using technology. She has close connections to her nation and her children's father's community.

Brooke is in her 40s and is also completing a research degree in Indigenous Studies by distance study. She is married with children and is working while studying. She enjoys reading and researching what interests her.

Eleanor is in her late 20s and has almost completed a postgraduate coursework degree in health education by distance from Victoria. One of Eleanor's reasons to study is to prove to others that she can succeed at this. She did not have a good relationship with education whilst growing up and would much prefer to be outside than inside reading, although she is aware of reading's importance for her studies. Eleanor works full time, so she does much of her study in the evenings when the family goes to bed. She is an advocate for Aboriginal and Torres Strait Islander issues in health services and mentors and works closely with other Aboriginal and Torres Strait Islander staff and trainees, although she does not always identify herself as Aboriginal outside work.

Chloe is a PhD student in the humanities in her late 20s. She does not have very close connections to her Aboriginal family group as her grandmother was part of the Stolen Generations and did not reconnect with them for many years. Although Chloe identifies as Aboriginal and Torres Strait Islander, being Indigenous does not have a major impact on her identity. Chloe has always enjoyed reading and using computers and is very digitally literate.

Hayley is a second year nursing student in her early 20s at the Bebegu Yumba campus in Townsville. She moved to Townsville from Cairns to attend university, found it hard to adjust and was quite homesick, although attending a winter school at the university through high school helped because she was familiar with the campus. Hayley has a love of nursing and has always wanted to become a nurse to work with her community in the Torres Strait. She also wants to be a role model to her younger siblings by successfully getting her degree. She tends to prefer being outdoors doing things with her hands rather than inside using technology and does not use the internet much as she had limited access to smartphones or computers until senior high school. She enjoys reading and learning about new things and mostly reads non-fiction.

Fern is in her early 20s and has just finished her first year studying design and technology at the Bebegu Yumba campus in Townsville. Whilst she is an on campus student, as she started during the Covid-19 pandemic, she spent most of her first year studying online. Hayley has other family

members attending university who have helped her navigate university systems. She has very close connections to culture and country and works with her nation's cultural organisation. She likes doing research when a topic interests her and used the public library extensively in the small town where she grew up. She often used the school library in her final years of high school for topics on religion.

Greta is studying a Bachelor of Arts focusing on humanities at the Bebegu Yumba campus in Townsville. She is in her late 20s and has a child. Even though she wanted to attend university after high school, she did not due to a lack of confidence, self-worth and money. After working many jobs to support her family, she decided to give university a try as part of a fresh start following her move to Townsville. Greta works for her nation's cultural organisation and has close connections to culture and country. She does a lot of research in this role and is very aware of issues around cultural appropriation, intellectual property, copyright issues and managing access to Aboriginal and Torres Strait Islander related collections and materials.

Daisy is in her late 40s and is studying a Bachelor of Arts focusing on humanities at the Bebegu Yumba campus in Townsville. She did not attend university after high school as it "wasn't something my mob did". Although a previous attempt at university a few years after high school was unsuccessful, she is finding university is now much more welcoming and easier to navigate as a mature aged student with more self-confidence and self-esteem. Daisy is an avid reader and loves books. She has close connections to culture and country.

Adam is a science student in his final year at the Bebegu Yumba campus in Townsville. He is in his early 20s and is planning to continue to graduate studies after completing his degree. Adam seems to have close connections to culture but this has not affected his attitudes towards science as he views his area of scientific interest as outside Indigenous worldviews. Adam expresses his methods of doing research logically and scientifically in terms of arguments and evidence and seems very practical and straightforward in his information behaviours. Although he prefers not to use technology or read much, he has proactively learned and taught himself the digital and academic skills needed for his academic studies.

Brian is in his late 30s, is married with children, is studying social work externally to fit in with his work commitments but uses the Bebegu Yumba campus to study. Brian finished high school with poor grades and the thought of going to university was "daunting". This was partly because he was told he could not succeed and partly because he much preferred hands on learning to academic study. He found it hard to settle into university when he started, although he overcame that by completing and submitting his first assignment. Brian always enjoyed using "gadgets" and computers so feels very computer literate. He does not enjoy reading but has learned reading skills and strategies as he knows how important these are for his academic studies and learning.

The Library Interface as a Locale

“A university is just a group of buildings gathered around a library. The library is the university.”

(Shelby Foote as cited by Chepesiuk, 1994).

The word ‘interface’ has many meanings. The Oxford English Dictionary defines the noun ‘interface’ as both as a physical phenomenon and as an “apparatus designed to connect two scientific instruments, devices, etc., so that they can be operated jointly” and “a surface lying between two portions of matter or space, and forming their common boundary” as well as figuratively as “a means or place of interaction between two systems, organizations, etc.; a meeting-point or common ground between two parties, systems, or disciplines; also, interaction, liaison, dialogue” (1989a). It can also be used as a verb, i.e. to interface with something (1989b). The academic library acts as an interface between students as users and the information they need for their academic studies, whether these are about Indigenous or non-Indigenous topics. It is a virtual and physical space where students can access information for their academic needs through a variety of interfaces. These interfaces include systems and facilities that students use to locate and retrieve information (such as databases and catalogues) and services via librarians.

However, for Aboriginal and Torres Strait Islander students and researchers, it is also the physical and virtual space in which they interface with the Indigenous corpus of information and is a space in which they engage with the cultural interface (Nakata, 2007a). To Indigenous people, libraries and archives can also be symbols of colonisation. They are bastions of western knowledge that hold Indigenous cultural materials and information about them that has been taken away from their traditional owners (Duncker, 2002; Thorpe & Byrne, 2016; Walsh & Russell). These materials and sources of information can contain sensitive data for which there should be restrictions on viewing (Duncker, 2002; Thorpe & Byrne, 2016).

Although many libraries have collaborated with communities to set access conditions and negotiate rights, libraries can still be difficult places to visit and use for Indigenous people who are not familiar with them. Duncker (2002) for example found that, because libraries often hold sources of tribal and sacred knowledge, Maori people could consider them a sacred space and be reluctant to enter. Although academic libraries usually do not contain sensitive government records, they often have information about Aboriginal and Torres Strait Islanders in local history collections and archives (such as business employment records, diaries and photographs). As such, libraries can be reminders of colonial history and symbols of oppression through a historical lack of access to information.

Figure 1

Photo of the north-eastern elevation of the Eddie Koiki Mabo Library



Similarly to the quote at the start of this chapter, in the original master plan for the university, the library was envisioned as the centre of the campus (Bell, 2010). In some ways, the Eddie Koiki Mabo Library at the Townsville Bebegu Yumba campus (see Figure 1) can be seen as a typical large, imposing academic library that fits the mould of a western cultural institution. This view is reinforced by local folklore that the porthole-like windows on its ground floor are meant to represent the portholes on Captain Cook's ship, the Endeavour (A. McDowall, personal communication, October 2022). However, James Birrell's inspiration for the design of these round windows was to create a sense of relaxation for students and the design of the building overall was based on the local landscape, with the tops of the concrete walls reminiscent of the lower slopes of Mount Stuart (Fielding, 2016, n.d.).

This misinterpretation in the local folklore reinforces the view of the JCU Library as a western cultural institution, located at a university named after the person who claimed Australia to be colonised by Britain and thus causing the oppression of Aboriginal and Torres Strait Islander people. However, the JCU Library at the Townsville campus also has great importance in Aboriginal and Torres Strait Islander history as it was where Eddie Mabo did his research for the Mabo native title case.⁷ Due to this relationship, the library was renamed the Eddie Koiki Mabo Library in 2008. As

⁷ When settled, Australian governing bodies claimed all lands for the crown as they did not consider that Aboriginal and Torres Strait Islander Australians had land rights. In 1982, Torres Strait Islanders Eddie Koiki Mabo, Reverend David Passi, Sam Passi, James Rice and one Meriam women, Celuia Mapo Sale took the Queensland government to court to fight for native title rights over their lands in the Torres Strait Islands. The

a result, the library can be both a place of distrust and a place of empowerment, as Brian, the undergraduate social work student who has ties with the Torres Strait, discusses:

For me to walk into the library for the first time, acknowledging who it's named after. That was hard for me to walk into... And it wasn't hard because it's a negative thing. It was hard, because I know of what happened to the individual here on the mainland. And the impacts and effects that it had on the direct family... However, at the same time, I found it very rewarding. And I was very grateful to see that the university had named the library after him. So yeah, I had a mix of emotions. Knowing that it's named after an elder, and a very respected elder, [it] was confronting to walk into and to read all that history. But at the same time, I took the moment and I ran with it, I just, it empowered me to sit there to know that an elder was at the school, he was actively involved with the school. [Brian]

Academic libraries are also organised according to western concepts of knowledge which may tend not to meet the needs of Indigenous peoples. While academic libraries do contain information about and by Indigenous peoples, the information about them is organised according to western ways of knowledge by breaking up concepts into individual disciplines and narrow subjects (Nakata et al., 2005a, 2005b). The systems which are used to find these resources are similarly designed, organised and classified according to western ways of thinking and often use outdated or inappropriate terminology. This causes Indigenous knowledge within library collections to be divided, disjointed, placed out of context, and often inappropriately described, which makes this information confusing to find, hard to recognise and confronting to readers (Aase, 2017).

Additionally, in the library, information sources, whether correct or not, are collected, maintained and preserved, which influences what we 'know'. The Indigenous corpus contains sources which can be conflicting, offensive, misleading or contain misinterpretations of Indigenous people and knowledge. These may be easily misinterpreted or taken out of context since information is organised in a way that has removed it from the context to which it applies. Therefore, libraries which are designed to preserve information can be seen as a means of perpetuating misconceptions about Indigenous people. They are also predominantly staffed by non-Indigenous people who are in positions of authority in that space, which can be intimidating for Aboriginal and Torres Strait Islander students. As Amelia, one of the postgraduate research students stated, "*We do look for that black face... it can be in university, it could be a government department, you know, it could be anywhere*". In short, a library is a place where Aboriginal and Torres Strait

case was finally decided in the High Court of Australia in favour of Mabo and the other plaintiffs on 3 June 1992 (Mabo and others v Queensland [No. 2], 1992).

Islander people can find links to their own history and culture but also a physical and structural reminder of colonisation and western systems.

In addition to being symbols of colonisation, the design of academic library buildings is often imposing and this can be intimidating for Aboriginal and Torres Strait Islander students. Research shows that Indigenous students can feel reluctant to enter libraries because the buildings do not seem welcoming (Bourke, 1992; Duncker, 2002; Novak & Robinson, 1998; Tuhou, 2011).

Furthermore, research into both Indigenous and non-Indigenous students' perceptions of academic libraries has found that students can feel anxious, scared, embarrassed and shamed about using libraries, seeking information and asking for assistance (Dubicki, 2015; Jiao & Onwuegbuzie, 1997; Mellon, 1986; Naveed & Anwar, 2019; Novak & Robinson, 1998).

This was also the experience of students within this study. Most students initially found the building intimidating, massive, scary, difficult to navigate and easy to get lost in. However, some considered it attractive. Brian stated it was beautiful whilst "confronting" and Fern described it as "pretty cool". This is not surprising as the Eddie Koiki Mabo Library is a very imposing brutalist style concrete building with few windows that can look rather intimidating but also impressive at the same time. My own personal impression when I first saw it was that it was massive, spectacular and looked rather like a jail.

The experiences of participants in this study also reflect many of these findings. Amelia, Daisy and Brooke, who had all previously studied in the 1990s and 2000s, talked about how they mostly avoided the library in their earlier studies due to anxiety and shame. They considered the library building intimidating and easy to become lost in and were too shy and shamed to ask staff for help as they always looked too busy. Amelia described not wanting to enter, "*We were too afraid to even step into a library, it was just like a foreign place you know, like, unfamiliar*".

However, all three students found their more recent experiences of the library much more positive and welcoming. This was partly due to their own increased confidence in asking for assistance and their feelings that the library was more receptive and inclusive. However, new students still express feelings of intimidation. This shows that, even if services are more accessible than in the past, it can still be difficult for students to overcome their initial fear of using academic libraries. This then affects their ability to access the services, facilities and resources that the library offers, which may negatively affect their academic information behaviours.

Using physical library collections was also a challenge for participants. Several participants mentioned only having access to or using school or public libraries in small communities when they were growing up, which usually had small and simple systems for organising information. However, as a university library, the Eddie Koiki Mabo Library is much larger than most school or public libraries and contains many collections such as journals, books, reference materials, curriculum

materials and other special materials. These are housed in separate areas and split between different levels of the library. As a result, students can find the library difficult to navigate and become easily disoriented.

Fern described the library as *“very big and mazy”* and Brooke *“got lost a few times”* during her undergraduate degree. Both Eleanor and Greta use the library as a study space but rarely use materials in the library because they have difficulties navigating the collections. Both students mentioned having little experience of libraries and felt they did not understand how they worked or how to use them, with Eleanor noting she *“never really knew what to do and I hadn't really grown up around anyone that knew what to do [in the library]”*. Even Daisy, who worked in the library, finds the journal collection confusing to navigate as she stated, *“I'm still lost in the periodicals. Yes, I still walk around there for another 10 minutes when I'm trying to put a book back. Because I'm like, this doesn't make sense”*. As can be seen from participants' descriptions, the library is often confusing and difficult to navigate due to their unfamiliarity with libraries prior to university.

Using university libraries does not just involve the physical spaces and collections. Much of the information students need to access is now available online in digital formats from the university library and from other sources on the internet. Tools to find information, such as database and search engines, have been mostly moved online and many journals, conference papers and, increasingly, books are available in digital formats. Access to support services for students and staff has also been moved online. Help can be sought through synchronous tools such as instant messaging, chat and videoconferencing apps as well as non-synchronous methods such as FAQs, online guides and online forms. Students now access information and assistance from anywhere without being tied to a specific location, as can be seen by their choice of study spaces.

Participants in this study showed preferences for accessing information from three main locations: within a library, from home and at the Indigenous Centre. The main reasons for studying in their chosen locations were related to comfort, access to help, convenience and noise reduction. Several participants described using the library as a study space at different times throughout their studies: Brian, Daisy, Eleanor, Hayley, Greta and Adam. Brian likes studying in the library because he found it empowering and visits it at least once a week. Daisy likes using the library as it feels inclusive and comfortable to her. She is studying disciplines which predominantly use books and print sources and is employed at the library, which has built up her familiarity with the space. Eleanor, who was studying externally in a capital city, prefers using the library at her workplace or at a university to study so as to escape distractions and noise from her family. Hayley also mentioned using the library a little when she first began her studies but then gravitated to the Indigenous Centre most of the time. Greta and Adam mainly used the library as a convenient study space when they had to be on campus for classes early in their studies. Later they both changed their

preferences to other spaces. This was the case for most participants. Their preferred study spaces changed over time due to personal and external factors.

One of the factors affecting participants' use of the library as well as other campus spaces was the 2020 COVID-19 pandemic, which began around 18 months prior to most of the interviews being conducted. The pandemic caused a rapid transition from on campus instruction to online learning as universities went into lockdown. Across the country, libraries and study spaces in universities and workplaces were closed or access was restricted at varying levels and times during this period, which affected students' study patterns and access to resources in different locations in different ways. Greta, Brian and Eleanor all transitioned from using the library as a study space to studying and accessing the library from home. Only Greta returned to using the library in person. Fern began her studies at the end of the first six months of the pandemic. Most of her subjects have been delivered online. She had only visited the library in person once since she started university just over a year before the interview.

Other students had transitioned to mostly using the library from home or in other spaces on campus before the pandemic. Adam used the library as a study space in his first year but now he prefers to study at home where he is comfortable and can play music. He sometimes needs to study on campus with a study group or between classes but finds the library too noisy so has found other quieter study spaces around campus. Chloe had an IT background before university so always preferred to study from home and use the online library wherever possible. She only visits the library to pick up resources after she has found everything she can online. Brian also uses the online library *"... all the time. It's almost every night or every second night"*. Brooke, Eleanor and Amelia, who are studying externally, do not have access to JCU's physical library so must rely on the online library to access materials. Brooke, who is doing a research degree externally in a remote area, undertakes all her research online and uses numerous ebooks, although she is concerned that she misses information without ready access to print books. Even though Brooke knows she can request books in print, this is often too time consuming as she wants the information immediately. Eleanor was studying in Melbourne with much harsher restrictions and lockdowns than Queensland so had spent most of her time studying from home and using online resources.

Another group of students prefers to use the Indigenous Centre as a study space to access information. Fern had only visited the library once and prefers the Indigenous Centre, even during the pandemic when she was doing her subjects online. Greta, Fern and Daisy all described the Indigenous Centre as a comfortable space to study that was inclusive and social. Fern described it as *"a lot better environment and a lot of people just kind of, like, get each other so I really enjoy that"*. Greta appreciated the fact that the centre was open to everyone *"otherwise we're separated which is I guess the biggest challenge for Indigenous people, always feeling like you're separated from*

everyone”, while Daisy liked the fact that “everybody comes out and has a talk to you and, and it’s very social, which I really like. You feel comfortable going there”. Hayley also prefers the Indigenous Centre as a study space and a place to access help. She often consulted with her tutor or a librarian who provided a drop-in help service at the centre for support in identifying her information needs and finding information, stating “I found that having that person that comes into the Indigenous Centre which is the place that I mostly, like, go around and stay there, really helped with referencing and finding resources”. Another reason the students use the Indigenous Centre is because it provides a small collection of texts and other useful information sources for them to use, which meant they could access resources without visiting the library. Greta, Hayley and Fern all use this collection.

Learning to Use the Library Interface and Find Information

Learning Prior to University. Students participating in the study had varying levels of experiences of libraries and of learning how to find information before coming to university. This affected their academic preparedness in relation to their information literacy capabilities and information behaviours. Although all participants had used school and/or public libraries, only a few remembered having any training in how to find information or use libraries effectively. Of the undergraduate students, most had used local and school libraries. Undergraduate and recent school leaver Fern used the public library growing up in her very small community and later, the school library extensively for her studies. Adam, another school leaver, had taught himself how to use Google Scholar stating, “I don’t know what made me start to use it. Somewhere between Years 11 and Year 12”.

While Adam did find librarians helpful, he had not asked them for or received any training from them. His main reasons to use the school library were to access computers and take advantage of the air conditioning. Both Fern and Adam did not remember having any formal information literacy training, although comments showed they had already been taught to reference and evaluate in training at JCU.

Of the mature aged students, Brian also mentioned using the library at high school because it was air conditioned and using public libraries for recreational purposes, but did not recall receiving any training on how to use libraries. He noted, “When I first started, I had very limited information on how to gather information”. Greta, another mature aged undergraduate student, did not have any training in finding and using information prior to university. She stated that before she started university, “Probably my biggest fear was how to find resources and how to use them effectively”. This shows that while students may be taught some information literacy capabilities at high school,

they do not remember much about it, particularly if there is a gap between finishing high school and starting university.

Whilst it would be expected that postgraduate students would have had more information literacy training opportunities and more advanced information literacy capabilities because they had previously undertaken study, this was not always the case. Prior to any university studies, Brooke only had access to school libraries growing up and does not remember any training, whilst Eleanor used the school and public library and remembers basic training on how to borrow books at both primary and secondary school, but not much else.

This lack of knowledge about how to find information carried over into their university studies. Brooke did not remember receiving any instruction on how to use the library during her first degree in the early 2000s and just learned where most of the resources she needed for her studies were on the shelves. Eleanor thought she may have had some training and described it vaguely as *“not anything formally. I think we did, we might have done like a little... in my first year... we went to the library, but I think it was real basics... it never really went into the more depth type thing that you need.”*

While Amelia did not specifically mention library experiences before university, her remarks about being too afraid to enter libraries as they were too foreign indicate she probably had little experience of using libraries before university. During her first degree, Amelia stated she *“was hardly a student who went to the library to do any research”*. However, when working in education, she became a firm supporter and user of libraries. Before enrolling in her current degree, she had attended workshops on conducting Indigenous and family research at major cultural institutions.

As can be seen from the examples above, the responses from participants show most had little if any formal training in learning how to find information and use library systems before they attended university, or even during university, as the experiences of some postgraduate participants show. Therefore, it is evident that most students did not start university with the academic information behaviours needed for university study, making it even more important to ensure these academic literacy skills are taught during their studies.

Learning at University. As shown above, few of the students participating in this study were prepared for practising information literacy abilities and academic information behaviours before starting university. This makes it even more important that students are given opportunities to learn such capabilities at university. However, students' learning of such capabilities and behaviours can be affected by who teaches them, when and what is actually covered. In this study, all participants had received some in-class training delivered by library staff in subjects in which they were enrolled, while Daisy, Adam and Brian also mentioned lecturers providing instruction and guidance, with

Brian, the social work student noting, *“Probably 80% of my lecturers so far have spoken to us about the library”*.

However, other students did not mention academic teaching staff providing any instruction, particularly in science and design subjects. Some participants also sought additional learning opportunities through voluntary workshops outside their subjects. Just over half mentioned having attended such sessions run by the library or learning advisors, mostly during the orientation period or first few weeks of study. During both subject specific and generic training, participants mentioned learning how to navigate the online library, JCU specific resources and databases and learning skills related to searching, referencing and writing. Chloe and Brian also mentioned discovering where and who to ask for help as a valuable part of library sessions. It can be assumed that Daisy found the same as, during the interview, she named the librarian for her discipline. Chloe stated that that being introduced to the librarians who supported the subject in the first year of her Bachelor’s degree *“made them a lot more accessible, because if you put a name to the face, it wasn’t just some unknown being that you’ve had to go ask”*.

Training was mostly focused around specific assignment topics or discipline and subject needs in general. An example of the former was a session taught by librarians in a core first semester subject of the Bachelor of Arts (BA) program that Fern, Greta, Daisy and Chloe all attended. Although this session was tailored towards a particular assignment task, due to the wide range of disciplines in the BA program it was not customised for any specific field of study. This meant that the sources and topics demonstrated were generic, although Chloe recognised, *“They weren’t tailored... but you can apply it quite easily to whatever, specifically, you’re doing”*. On the other hand, Chloe, Greta, Brian and Daisy also identified that library sessions in later years were adapted to highlight specific resources and databases relevant to their subjects and topics, mentioning specific classes for politics, social work, postcolonial studies and archaeology.

The extent of information literacy training students had undertaken varied greatly, mostly due to the participants’ level of study. Of the undergraduates, three students had very limited information literacy instruction. Both Hayley and Fern had few learning opportunities as they were still relatively early in their undergraduate studies, with Fern about to begin second year and Hayley in her second semester of second year. Although Adam was in his fourth year, he had participated in only one information literacy session in the very first semester at university.

All students expressed that training was not always useful. Hayley stated she probably had *“like, brief learning experiences in how to use the library but that just went over my head.”* This indicates that she found it more confusing than helpful. On the other hand, Fern and Adam felt that their information literacy instruction mostly covered material they already knew from high school. Adam stated that the only session he took in first year was *“talking about referencing, [I] taught*

myself that... I just sat there like, yeah, I'm done tick, tick, tick, tick... yeah, kind of know that stuff already".

However, he did not learn key skills about accessing information, as he reported that he often couldn't access information as it was paywalled and it was not until *"second year, second semester... one day my lecturer said... you can access it with a login to One Search from the library website... It's very annoying to find out"*. Fern, who had taken one information literacy session at university, had also previously been taught referencing and how to do annotated bibliographies at high school, but also found there was new information such as *"using One Search properly and things like obviously, there's no way I was gonna know about that"* because it was specific to JCU. These findings indicate that a single information literacy session was insufficient to teach students all the information literacy capabilities they require for university.

This finding that a single information literacy session is insufficient is reinforced by the comments from students who had received more than one information literacy session. They indicated that this helped them to build their knowledge and capabilities. Several undergraduate students, Daisy, Brian and Greta, who were all studying more research-intensive social sciences and humanities undergraduate degrees, had received training in multiple subjects over multiple years within their degrees. Greta had also completed a pathways diploma to enter university and found that *"the two diploma subjects, those two cores... I learned a lot from that. That was where, where I really got a foundation, I think, of how to use the resources that you are given"*.

Most students found that even if information was repeated, it was valuable to participate as they may pick up on aspects they had previously missed or learn about new tips or changes to resources. Chloe, who had training in each of the three years of her undergraduate degree, identified that sessions were a little repetitive but also acknowledged, *"every time I went, I picked up something that I'd missed the time beforehand... and because it was like three different years, things have changed. You're like, oh I didn't know that you could do that"*. Greta, who also experienced some repetition, found that this let her pick up on elements she had missed previously and helped reinforce her learning. She considered that because the content and delivery varied sufficiently, the repetition did not bother her.

On the other hand, Daisy found it particularly useful for librarians to teach sessions tailored for a subject or assignment because they show *"these are the databases, or this is how you navigate through things. You want to look for this, go here... just to reinforce that, again, you know, that that's where you go for stuff"*. As can be seen from these comments, additional training opportunities provided both new information to help increase capabilities as well as repetition to reinforce learning.

For postgraduate students, the length of time since they last studied and the extent of information literacy instruction they had previously received affected their learning. Of these students, Chloe had received training throughout all the years of her undergraduate degree and, as she started her postgraduate research degree immediately after her undergraduate degree, she had continued to build her skills throughout her studies. However, Amelia and Brooke, who had not studied for around 20 years and were in the first year of their research degrees, took part in an intensive research training week near the beginning of their programs, which they found very helpful. Whilst Amelia had some recent prior experience learning to find information through programs run by AIATSIS and state and national libraries before commencing her postgraduate program, Brooke had had little training in finding information during her undergraduate degree or her career, stated that *"I probably would have struggled if I wasn't able to ask questions there"*. Eleanor, finishing a two-year intensive Master's by coursework degree, also had few information literacy learning opportunities during her undergraduate degree and only one during her current degree in the last subject she studied. She stated she felt this had meant she wasted lots of time before as now, *"I'm a bit more precise on what to look for... so I don't have to read thousands of journal articles"*. This evidence shows that the extent of prior learning and length of time since studying affects students' information literacy capabilities, and that the timing of these sessions could greatly influence student learning.

The timing of information literacy training was an issue for some students and affected their ability to use academic information behaviours. Eleanor, who did not have an opportunity to learn until her final subject, stated, *"It would be good if they could do something like that a lot sooner. I think it would, would have made life a little bit easier"*. Even though the training was late in her degree, Eleanor still recognised that she would use the skills she learned in her career, *"Within my role, being able to make sure I can find that more evidence-based practice... so I find that it's really going to contribute to my career now"*. Because Fern commenced study in second rather than first semester, she noted, *"I think the way that I did it kind of wasn't right... the first [semester] one was meant to set me up for the second one. I luckily had enough skills to get me through it anyway. But I think it's really good to have it as, like, your first subject"*.

Research students, who can start their degrees at any time during the year also may not have opportunities to learn academic information literacy until later in their studies. This is true for Amelia who reported, *'I've learned, you know after maybe three months of being at [the university], that there were databases and things like that'*. She learned this through a library session during an intensive introduction to research for the degree. Even those students who had multiple learning opportunities did not always receive information at the time it would be most useful. Daisy was introduced to the MLA database by her lecturer during a class, *"I was like, I've never heard of it, you*

know, oh, my God, I'm like, a year from finishing, I did need to know about that... why did I not know this?" This shows that the timing of information literacy instruction can be critically important for students' acquisition of information literacy capabilities to support their academic studies.

Summary

This chapter has provided an introduction to the participants of the study as well as the academic library as its locale and interface to information. It also included evidence about how students learned to use this interface. As can be seen from this chapter, Aboriginal and Torres Strait Islander students access library resources from a variety of settings and spaces. It was found that students often feel uncomfortable or distressed in the physical library and most prefer to access the library online. When learning academic information behaviours, participants are affected by the extent, content and timing of information literacy instruction, with early instruction and multiple learning opportunities providing better results. In the following chapter, findings are explored relating to how students apply information literacy capabilities within their academic information behaviours and how they seek help when their information literacy capabilities are insufficient for their needs.

Chapter 6: Findings Part 2: Information Behaviours of Aboriginal and Torres Strait Islander

Students

The previous chapter introduced the participants, how and where they interacted with the interfaces used to access information for their academic needs and how they learned to navigate and use these interfaces. This chapter provides a further exploration of participants' behaviours and experiences when interacting with this interface, particularly in relation to any opportunities and/or barriers they may experience when researching as Aboriginal and Torres Strait Islander students. It also offers evidence on how their experiences of learning to use the library interfaces and their perceptions and experiences of asking for help in seeking information has affected their academic information behaviours, both for specific tasks and during the course of their degree.

The structure of this chapter is informed by the questions asked during the interview, which were based on frameworks, models and concepts from research into information behaviour and information literacy. The first section is a discussion of students' experiences and perceptions of the information seeking and information use processes used to complete academic research. The second gives insights into participants' experiences and attitudes of learning the academic information literacies and behaviours to support their academic learning. The third section explores how these experiences of learning and practising academic information literacy and behaviours influence how they conduct research and explores how being Aboriginal and Torres Strait Islander students influences and impacts these research practises.

The Information Seeking Process

The information seeking process begins with the identification of a need for information. To satisfy this need, a person searches for and identifies information to help satisfy this need. This may include a range of formal and informal sources. Once found, the person needs to critically analyse these to be able to evaluate whether the materials meet the original information need and then use them in an appropriate way to satisfy that need. This section constitutes an exploration of how participants follow this process and what may help them succeed or fail in meeting their academic needs.

Determining Information Needs and Unpacking the Assessment Task. One of the most important stages of undertaking assignments is working out what information students need. Participants in this study identified a range of strategies and tips for unpacking assignment topics and identifying key concepts and task requirements. Some concentrated more on practical aspects of planning (such as working out the type of task, word count and setting up the format and structure) whilst others spent time working out their main concepts. Daisy spoke about identifying key terms and developing a thesis statement and essay structure to help guide her information searching. Adam, in an example of an assignment involving short answer questions, structured these

questions into a Word document and dissected each to identify the task words and keywords with which to search. Chloe spoke about choosing from multiple topics possible for an assignment by doing background searches on them to see how much literature was available and to identify themes that she could explore for the assignment.

Other students admitted to rarely planning what to do other than having an expectation of what they would include. Eleanor, the postgraduate coursework student, tended to 'wing it' by having a picture in her mind of what she thinks she wants and needs to do. She stated, '*I was really bad at that subject of having to plan*'. Although Fern, the design student, worked out the main task requirements, she also described her process as '*all over the place*'. Both students mentioned searching for multiple aspects of their topic and then focusing on something completely different when writing. Hayley, Greta and Brian also struggled with interpreting and unpacking assignment questions and would consult with Indigenous Peer Assisted Learning (iPAL) tutors or subject lecturers or tutors to help understand the keywords and task requirements.

One of the factors that influenced students' information needs was the discipline they were studying. While assignments for students of the humanities, social sciences and health predominantly required several supporting sources for each assignment, for those studying IT (Fern) and science (Adam), the tasks tended to be more practical and therefore had lower information needs. Fern, at most, needed to find a few texts to explain design choices or images to illustrate ideas and Adam's assignments were mostly short answer questions that required minimal references. For both students, sources were usually easy to identify in the first search. However, when they each took an Indigenous Studies elective that required much more research, both noted it required more in-depth research skills. Adam stated, "*That's much more research than I would need to do*". As a result, while Adam generally felt very confident in his research skills, Fern felt she was slower in learning the skills for a literature research than her sister who was studying '*all the researchy based subjects*' in the humanities and social sciences.

Eleanor, a postgraduate student and Hayley, an undergraduate, both studied in the health sciences and had higher information needs than Fern and Adam. They both required evidence to support most of their research assignments. However, they also took several subjects based on clinical practice which did not require much research. Thus their information needs differed according to the subjects they undertook.

For students in the humanities, arts, social sciences or health disciplines, written assignments were usually lengthier and required more sources of evidence to support their claims. They also offered more flexibility and choice in assignment topics, with students needing to determine one topic or aspect to focus on. Most participants mentioned incorporating an Indigenous focus when they could.

Indigenising Assignment Topics. One of the themes emerging through most interviews was that the Aboriginal and Torres Strait Islander students participating in this study want to incorporate Aboriginal and Torres Strait Islander perspectives, experiences and culture into their research and assignments. All three research students started their research exploring Aboriginal and Torres Strait Islander topics, which could be expected as research students develop their own research topics based on their interests. In addition, results indicate that almost all undergraduate students and the postgraduate coursework student actively look for ways to tailor their assignments to include an Aboriginal and Torres Strait Islander angle where possible, even when the assignment topic did not seem to have any relation to Indigenous peoples.

For the three postgraduate students, personal and/or professional interest is the main motivator for choosing their research topics. Brooke identified her topic from her professional experience and her own personal interest, while Amelia developed hers from a very personal interest in her family's culture and history. Although Chloe has few personal connections to culture, she also chose to do an Indigenous related research topic after generating a personal interest in Indigenous culture during her undergraduate studies.

Undergraduate students incorporate Aboriginal and Torres Strait Islander content into their assessment in various ways. Personal experiences of being Aboriginal and Torres Strait Islander are motivators for some students. Greta and Brian, for example, use their personal experiences to help determine which topics to research and they incorporate these experiences into their assignments to demonstrate Aboriginal and Torres Strait Islander perspectives. Brooke and Daisy include Aboriginal and Torres Strait Islander stories into their work, using them as examples or inspiration. Fern also integrates visual culture into her works, using Aboriginal and Torres Strait Islander design and art in her design projects. As well as personal interest, professional interest is motivator for students. Eleanor, the postgraduate health coursework student who also works as a health educator, is passionate about Aboriginal and Torres Strait Islander health and stated she would *'...guarantee I can put it into some topic, whether they think it should be there or not'*. Hayley, studying undergraduate health, also *'loved looking through for Indigenous topics... finding new things about my culture'*.

While most students want to include Aboriginal and Torres Strait Islander content in their assignments, there are a few reasons they do not or cannot. The first is a lack of knowledge or connection to Indigenous culture. Chloe, for example, does not have close connections to culture or a clan and therefore does not tend to incorporate an Aboriginal and Torres Strait Islander perspective into her assessment as it is not part of her knowledge. Rather, studying Indigenous topics in one of her subjects developed her interest in her cultural background. The second reason is that no connection could be made between the topic or discipline and Aboriginal and Torres Strait

Islander culture. For example, Adam, studying science, expressed that it was often not possible to include Indigenous related content, noting *“it’s science, biology, it’s microscope... health would be getting more of it. Like we [Indigenous people] didn’t do any epigenetics”*. The final identified reason is that cultural aspects relating to the task could preclude including Aboriginal and/or Torres Strait Islander content. Fern, for example, feels it is inappropriate to include Aboriginal themes she knows when designing for a coastal theme as she is from an inland First Nation people. Brian also has had experiences when he could not use information for assessments for cultural reasons because it was taboo. He often had to talk generally around topics rather than sharing sacred cultural knowledge inappropriately.

Incorporating Aboriginal and Torres Strait Islander related research into their assignments could provide benefits or represent risks for participants. Eleanor found that most of her lecturers and tutors gave positive feedback, *“I’ve had like, [feedback] they’re really great ideas and a great way to move forward. And like they’re looking forward to seeing what comes from it”*. Brooke also identified that including Aboriginal and Torres Strait Islander content could improve marks by providing new insight or novel information. She remarked that for her lecturers, *‘I always got good marks from it... it was something different and they obviously liked it’*. On the other hand, Eleanor lost marks for one assignment when she could not find enough resources to support this incorporated content. What is not clear is whether her inability to find information sources was because of a lack of information on the topic (which is a known issue with Aboriginal and Torres Strait Islander related research) or because of underdeveloped information seeking behaviours or knowledge (such as inadequate knowledge of appropriate sources or search techniques). These issues are explored further through the following sections.

Finding Information. Participants in the study use a wide range of methods and interfaces when looking for information. All students in the study search for information online through databases and search engines to find information in print and electronic formats. They are able to find information for their academic needs, although perhaps not always in the most efficient manner, from a librarians’ perspective. Students also use alternative methods and sources when they found searching too difficult or ineffective. They browse discipline related sections in the library, check articles to find references or find citations to these articles. Aboriginal and Torres Strait Islander and non-Indigenous people were a third source for participants. They could provide information about relevant resources or confirm information in other materials.

Where they Search. In working out what information is needed for their research, the researcher must consider both the type of information sources they should (or must) use as well as where they can locate these information sources. It is accepted knowledge that students progressively increase their information needs to meet their increasingly complex academic needs

throughout their studies. Under this model, students start by using basic search tools such as One Search, the university’s discovery layer search solution⁸, and Google Scholar⁹. They would then expand this to more specialised and/or discipline specific sources as students’ topics become more complex.

However, what is apparent from this study, is that even when students have expanded their range of sources, the search interfaces used most often by all students, irrespective of level, were One Search and Google Scholar. Students’ reasons for this include familiarity, ease of access, simplicity to search and mostly relevant results. Brian, for example stated, *“I sort of self-educated myself how to look for material there [in One Search]”*. This indicates it was easy for Brian to teach himself to use it. Another reason students used One Search is because it was recommended by the library, as Fern noted, *“the university likes it so it’s a good sort of thing”*.

Because these sources are easy to access and use, in many cases, students’ need to search elsewhere is negated. However, results also show that students are mostly either progressively developing knowledge of the tools and resources available to them at university for their academic needs and/or actively incorporating sources from their own personal knowledge base from outside university into their research base. In addition, discipline specific factors and learning opportunities also affect students’ progressive acquisition and use of sources. Table 2 shows the range of sources used by students in the study.

Table 2

Students’ use of information sources based on degree and year level

Degree & year level	Who	What
Undergraduate (all Bachelor’s degrees)		
1 st	Fern*	One Search, Google
2 nd	Hayley*	Google Scholar, health specific databases (Medline, CINAHL, drug databases)
3 rd	Daisy ^{†^}	One Search, discipline specific databases (MLA, Informit)
	Brian [†]	One Search, workplace discovery search, professional association library

⁸ A discovery layer is a search interface that draws information from many other databases into one place so they can all be searched simultaneously. It includes details of most sources held by the library, including print and online journals, books, conference papers, reports and more, as well as open access sources available freely online.

⁹ Google Scholar is a free online search interface for finding academic and scholarly material. Students can log in and link it to library holdings to find full text from the library as well as open access sources.

	Greta [†]	One Search, discipline specific databases (Informit), National and state libraries, AIATSIS, national and state archives, university research collections, museums, other Aboriginal and Torres Strait Islander organisations through work at an Aboriginal Corporation
4 th	Adam [*]	Google, Google Scholar, One Search
Postgraduate		
Coursework Master's	Eleanor ^{†‡}	One Search, work and/or university health specific databases (Medline, CINAHL), other university libraries
Higher degree by research	Chloe ^{*§}	One Search, discipline specific databases (JSTOR, Informit), Google Scholar, research repositories (e.g. ResearchGate, Academia.edu)
	Amelia ^{†‡}	One Search, discipline specific databases (Informit), national and state libraries, AIATSIS, national and state archives, university research collections, other Aboriginal and Torres Strait Islander organisations
	Brooke ^{†¶}	One Search, discipline specific databases (Informit), North Queensland Collection, state library

Note.

1. Age at university entry for current degree - ^{*} school leaver; [†] mature aged student
2. Postgraduate students' highest prior completed degree - [‡] Bachelor's degree; [§] Bachelor's with honours; [¶] Master's by coursework
3. [^] For analysis purposes, Daisy has been classified as a school leaver as she does not have a previous background of using sources for work or study and therefore has similar traits to new students.

How Students Learn about Sources. In Table 2 above, students can be grouped into two categories: new learners, who are predominantly school leavers (Fern, Hayley, Adam, Chloe) and prior learners, who are predominantly the mature aged students in the study (Amelia, Brooke, Eleanor, Brian and Greta). However, Daisy, who began as a mature aged student, did not have prior knowledge of sources before starting university and therefore has been included in the new learners group for the analysis in this section.

One noticeable difference between these groups that can be seen in Table 2 is the number and range of sources used by the new learners (Adam, Chloe, Daisy, Fern, Hayley) in comparison to the prior learners (Amelia, Brian, Brooke, Eleanor, Greta). However, it must be noted that a direct comparison between the two groups was not possible as the only year in which there were both new and prior learners was the third year students (Daisy compared to Brian and Greta). Table 2 shows that new learners (Adam, Chloe, Daisy, Fern, Hayley) seem to progressively expand their range of sources with every year level. Fern, having just finished first year, has the least knowledge

of sources and mostly uses One Search, although she is aware there are other databases 'out there'. Hayley, halfway through second year, and Daisy in her third year, both use discipline specific databases in conjunction with Google Scholar or One Search. Chloe, doing research, uses the most sources. However, this model does not fit Adam, who predominantly uses the sources he had learned about at high school in his fourth year of study.

While the school leavers needed to build their knowledge of sources, the prior learners (Amelia, Brian, Brooke, Eleanor, Greta) all seemed to know of sources that they learned about before they commenced university studies because of their age, work, life experiences, and for some, prior education. Amelia, Brooke, Eleanor and Greta had all previously learned about sources for their previous degrees or were undertaking personal family and/or community research. These sources include research collections from institutions such as AIATSIS and other Aboriginal and Torres Strait Islander organisations as well as sources in local, state, national or university libraries, archives and museums.

Workplaces are also sources of information. Both postgraduate student, Eleanor, and undergraduate, Brian, accessed the library at the hospitals where they worked and Greta used sources she learned about working for her nation's Aboriginal Corporation. Therefore, they already had some knowledge of where to search when they started university and did not need to build this over the time of their degree. However, as mentioned earlier, Adam, the other school leaver in the study, did not fit either model as he neither had prior knowledge and nor had expanded his range of sources since starting university. What was more influential for Adam were the information needs of his discipline, how much information was available for his topic and how easy it was to find.

Differences in discipline related information needs are a major factor in the range of information sources participants used to meet their information needs. Fern and Adam are taking most if not all their subjects in 'hard' sciences such as chemistry, biology and IT. They generally have straightforward information needs for which not many resources are required, apart from textbooks and readings provided by academic staff. Both students are able to satisfy these information needs by using Google, Google Scholar and One Search. While Adam mainly uses Google and Google Scholar, only using One Search to locate the full text of resources found elsewhere, Fern predominantly uses One Search, with Google as a second source. Fern mentioned that she knows she could find other discipline specific resources if needed, indicating that she would expand her sources when she could not meet her information needs through her known sources. However, Adam is very confident that he does not need to look further as the sources he uses are able to meet all his needs throughout his four years of study.

In the health disciplines, from early on, both Eleanor and Hayley were encouraged to use discipline specific databases because most relevant literature is discoverable in a few key databases

that provide advanced discipline related search tools and limits. While Hayley, in her second year, still uses Google Scholar as her first place to search, Eleanor starts her searching with specific health databases and only uses Google Scholar as a backup. This indicates that by the postgraduate level, discipline specific tools are more useful. Health students use a wide range of source types, including textbooks for background information, journal articles and specialist sources such as drug information databases.

Greta, Daisy, Amelia, Brooke, Chloe and Brian, who are studying the humanities, arts and social sciences, have to know about the widest range of disciplines and sources for their subjects as information is often spread across many databases, collections and institutions. This means they have had to develop a broader range of sources for information, particularly when undertaking subjects across different research fields. Discipline differences also affected where students look and the types of materials they need. Daisy relies more on books found through One Search for one of her disciplines than Brian, who sources literature from journal articles as well as books and other published sources. Greta has the most extensive information needs and uses the largest variety of sources from both inside and outside the university, as her discipline requires historical research scattered across a wide variety of cultural institutions.

As shown, discipline differences make a large impact on the range of sources that students are aware of, although personal experiences outside study may offset where students may lack knowledge. Learning about these sources is also influenced by discipline differences. Neither Adam nor Fern, taking science, IT and design subjects, have had many formal opportunities to learn about other sources. Both have only received an introductory information literacy training in class time during their first year, from which Fern received minimal information and Adam remembered no information about discipline specific resources.

Health students Hayley, in second year, and Eleanor, a postgraduate coursework student, have had more learning opportunities. Both experienced introductory information literacy training early in their undergraduate degrees due to the need to learn of specialised sources for their discipline. Hayley has had multiple small learning opportunities in her two years of study and Eleanor has received training during her undergraduate degree and in the final semester of her postgraduate coursework degree. Although she had no information literacy training at the beginning of her postgraduate degree, this was mitigated by knowledge of sources learned through work and life experiences.

The students in the humanities, arts and social sciences, Greta, Daisy, Chloe, Amelia and Brian, have had the most learning opportunities. Most spoke of multiple opportunities in different subjects. For instance Brian said, *"Probably 80% of my lecturers so far have spoken to us about obviously the library, where to search for things in the library"* and mentioned that at least two had

invited librarians to provide sessions. Amelia has also attended training outside the university to improve her family research skills. However, this is not the case for all students. Brooke, doing educational research, has had few opportunities for formal information literacy training. She does not remember having any training during her undergraduate or postgraduate coursework degrees and has only received information literacy training as part of her research induction at the beginning of her Masters by research.

The information literacy training provided or arranged by academics is also influenced by the information needs of the discipline. Academics teaching science and IT subjects tend to rely on textbooks and readings and require few additional references, in most cases. Fern, for example, spoke of academics for IT subjects *“literally tell[ing] you not to look things up because they want you to do that very specific way”* and her design subjects tend not to involve much research. Meanwhile, academics in the health sciences actively encourage students to use discipline specific sources and find resources using the library guide for their discipline, which Hayley and Eleanor have done. Finally, in the humanities, arts and social sciences, examples such as Brian’s comment above, or Daisy’s lecturer telling her about a specific database for a topic, show that academic staff do actively teach students about sources of information, both in person themselves and through librarian-led sessions, and students learn in these ways about a range of such sources. However, knowing which sources to search in is only part of the equation for finding information. The next section comprises an exploration of how students learn about and use these to find information.

What can be seen from this section is that students develop their understanding about a wide range of sources within which to search for information, either before coming to university or progressively throughout their studies. However, this could be affected by discipline information needs or learning opportunities. In addition, whilst having knowledge of a wide range of sources is important, being able to find the information they need from within these sources is a vital consideration in establishing how useful these sources actually are for students. The next section is a discussion of participants’ information searching behaviours and how these affect students’ ability to satisfy their academic information needs.

How they Search. Findings from this study show that all participants are able to find information for their academic needs. While it seems reasonable to assume that students develop search skills in a similar way to how they develop knowledge of sources, this is not always the case. Factors influencing how students learn and adopt search techniques include students’ progression through their degree, prior knowledge and education, discipline information needs, information literacy learning, digital skills and the amount of literature available for their topics. Students with prior knowledge of many sources do not necessarily have the advanced search skills needed to use them proficiently, nor do students who use few resources necessarily have limited search skills.

Rather, participants' search skills can be placed along a spectrum from simple techniques to quite advanced searches, irrespective of the sources they use. Table 3 shows the year levels of each student, the sources they use and the search strategies they adopt.

Table 3

Students' range of sources and level of utilisation of search terms and techniques

Degree & year level	Who	Search sources used	Search terms	Search techniques	Number of IL opportunities
Undergraduate (all undertaking Bachelor's degrees)					
1 st	Fern [*]	One Search, Google	Simple keywords, sometimes 'dumbed down'	none	one (BA core 1 st year)
2 nd	Hayley [*]	Google Scholar, health specific databases	Simple keywords, synonyms, plain language descriptions	phrase searching [*]	a few brief ones
3 rd	Daisy ^{+^}	One Search, discipline specific databases	Simple keywords, some use of synonyms	phrase searching [*]	multiple
	Brian ^{+^}	One Search, discipline specific databases available through university or workplace, professional association library	Simple keywords, sub-topics	none	multiple (mentioned at least 2 specifically)
	Greta ⁺	One Search, discipline specific databases, other library and cultural institution collections (local,	Keywords, synonyms, related concepts	Boolean searches using phrases and truncation	multiple (including BA core 1 st year)

		state and national levels)			
4 th	Adam*	Google, Google Scholar, One Search	Keywords, Google suggested terms	phrase searching* Boolean NOT searching	one (BSc core first year subject) + EndNote
Postgraduate					
Coursework Master's	Eleanor ^{†‡}	One Search, health specific databases available through university or workplace, other university libraries	Keywords, suggested subject headings	None (until last subject)	one undergraduate (first year) one postgraduate (final subject)
Higher degree by Research	Chloe ^{*§}	One Search, discipline specific databases, Google Scholar, research repositories (e.g. ResearchGate)	Keywords, synonyms, related concepts	Boolean searches using phrases and truncation	multiple undergraduate multiple postgraduate (including BA core 1 st year)
	Amelia ^{†¶}	One Search, discipline specific databases, other library and cultural institution collections (local, state and national levels)	keywords	None Had learned Boolean but could not apply it	multiple undergraduate multiple (non-university research libraries) one postgraduate
	Brooke ^{†¶}	One Search, discipline specific	Keywords, synonyms,	Minimal usually but	no undergraduate

		databases, other library and cultural institution collections (local and state)	related concepts	could apply Boolean searches	one postgraduate
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Note.

1. Age at university entry for current degree - *school leaver; † mature aged student
2. Postgraduate students' highest prior completed degree - ‡ Bachelor's degree; § Bachelor's with honours; ¶ Master's by coursework
3. ^ For analysis purposes, Daisy and Brian have been classified in the new learners group as they do not have a previous background of studying or researching outside university and therefore have similar use patterns to school leavers.
4. In the columns 'search sources used; search terms, search techniques and number of information literacy tutorials, colour coding has been applied to indicate each students' levels of use or training as

Minimal or basic	Average	High
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As shown in the previous section, students could be clearly grouped into those who had already learned about sources (the prior learners group) and those who had not (the new learners group). When analysing reasons why students may or may not learn complex search techniques, once again it is important to look at students' skill levels before and during their studies to see how this may affect their adoption of skills. In this analysis, instead of being in the prior knowledge group, Brian has been included in the new learners group. This is because although he had some prior knowledge of sources from his workplace experience, he had not needed to conduct research in that role so had limited search capabilities when beginning university and therefore arrived as a new learner.

As can be seen in Table 3, the new learner group (Adam, Brian, Chloe, Daisy, Fern, Hayley) seems to show a clear progression in the acquisition of information literacy skills, from Fern (1st year) using the fewest search tools to Hayley (2nd year) and Daisy (3rd year) searching for synonyms and using phrase searching, with more (Daisy) or less (Hayley) success. Adam (4th year) uses even more advanced techniques such as Boolean searches and phrases. Finally, Chloe, who has been studying the longest, also has the most advanced search techniques and provided the most detailed description of her search process, starting from the broad topic area and slowly narrowing the search "*us[ing], like, Boolean and search strings*", so she does not miss relevant information. Although progression could be seen for most students, Brian (3rd year) is still only using very basic techniques, making him an outlier in this analysis. Additionally, Adam has not developed his skills at

university. He mentioned he has been using the same techniques since high school. However, for two thirds of this group, the idea that the academic information literacies and behaviours of students will improve through the course of their studies seems to mostly hold true.

Prior knowledge of sources does not seem to influence having advanced search skills. Those students with prior knowledge of sources have not necessarily developed more advanced search techniques when using these sources, nor have they necessarily advanced their skills throughout their university studies. Brian did not undertake prior study or research and has been analysed in the school leaver group. In the group with prior knowledge, Amelia described using basic search skills, Brooke and Eleanor have developed some advanced techniques and only Greta uses a wide range of advanced techniques. This is because Greta had learned her skills at university through a pathways program and progressively advanced throughout the three years since.

This evidence, taken together, shows that more knowledge of sources does not equate to better search skills, for most participants in this group. Even without prior knowledge, the other students in this cohort are advanced enough in their studies that, with progression, they should be at least transitioning level searchers if not advanced. However, this was not the case, as the students taking the highest degrees are only basic or transitioning searchers.

As can be seen in Table 3, students' information literacy experiences do not necessarily help them improve their skills in finding and using information, either before or during university. However, a clearer indicator is how well students could understand the content of information literacy sessions. All three basic searchers, Amelia, Brian and Fern, have received instruction on using advanced search techniques, but none use them due to confusion and forgetfulness. Fern, starting second year, stated *"My brain is just like, no, I just couldn't absorb it. I'd have to have, like, a sheet and have to read it every time I go to Google something"*. For Brian, who has attended multiple information literacy sessions over three years of study, it had *"gone in one ear and out the other"* as he searches in a simpler way although this takes him longer. Amelia, taking a research degree and with extensive training before university, also has issues remembering how to search as she has experienced trauma related memory loss.

The transitioning students are starting to incorporate more advanced search techniques but some are still mostly confused whilst others find training mostly useful for reinforcing skills and learning about changes to sources. Hayley, in her second year, still considered information literacy sessions often *"just went over my head... it's a bit too fast... I can't understand some of the words they use... I get so caught up trying to understand that it ends up not making any sense"*. On the other hand, Daisy has found the multiple sessions over her three years of study very useful, with any repetition helping reinforce her learning and picking up things she had missed. However, she noted

that she needs to practice them after the session or she would quickly forget, indicating that to learn these skills requires repetition.

Brooke and Eleanor have also each received an information literacy session during their postgraduate studies, after which are very close to becoming advanced searchers. In fact, Brooke could be considered an advanced searcher, except that she only uses advanced techniques when searching for her literature review and has stopped using it since. She described herself as 'lazy' and able to locate information without using more complex methods. Eleanor is also close to becoming an advanced searcher after attending information literacy training in her final subject. She found that after the training she knows how to apply search techniques to "*kind of squish it down to the most relevant ones*". She stated, "*I really wish that I learned that sooner*".

The students with all advanced search skills included Chloe, Greta and Adam. Whilst Adam taught himself these techniques, Chloe and Greta both have used multiple information literacy learning opportunities throughout their studies and have practised these skills due to the high information needs of their assignments. Like Daisy, Chloe and Greta also mentioned repetition as a useful reinforcement of prior learning, as well as helping identify changes to sources and acquiring skills missed in previous sessions. Greta also spoke about how the pathways subjects she undertook scaffolded learning information literacy skills, which helped her build a foundation for developing more advanced search techniques. Whilst Adam had shown initiative in teaching himself advanced search techniques, the way he described applying them also indicated that he may not have updated his skills since, as some of the techniques he described are no longer supported by Google. As he has had few formal information literacy learning opportunities since that time, he has not had opportunities to update his skills or learn new ones, indicating that the lack of information literacy training may have a greater impact when doing more in-depth research as part of a research degree.

While information literacy training did have some impact on how students adopted academic information behaviours, the digital skills to interact with search interfaces and the academic skills to conduct research seem to be more influential in how students have adapted to advance their skills. Although Amelia, a basic searcher, uses the widest range of sources, she has poor digital literacy skills and often struggles to find information through databases. The two other basic searchers, Brian, mature aged, and Fern, a school leaver, are both very confident with computers but not familiar with researching online so they have less developed search skills.

Brooke and Eleanor, both transitioning searchers, developed digital skills for their workplaces but either did not have or did not use the internet during their undergraduate studies. Thus, although they have some knowledge of more advanced techniques, they have not fully developed advanced digital research skills. This is also the case for the school leaver, Hayley, who had restricted access to technology at high school and finds searching confusing.

Of the advanced searchers, Adam taught himself digital and advanced search skills at high school but as he then found most information easily, he did not need to further hone his skills. Finally, the two other advanced searchers, Greta and Chloe, show the most comfort in using technology for research, with Chloe having a keen interest in technology and using it for research since high school, and Greta noting that she was familiar with doing so because of her work with her family's Aboriginal Corporation. This is particularly important for them as both are studying disciplines involving high information needs and requiring them to search multiple sources.

Although discipline information needs have been a driver for Greta and Chloe to develop advanced search skills, this is not necessarily the case for all students in the study. Other students with high information needs have not learned advanced skills, whilst some students in disciplines with lower information needs, such as Adam, have advanced skills.

What seems more relevant is the amount of information available on the topic of interest and how widely that information is spread across sources. Apart from Adam, who once again is an outlier in the analysis, the advanced searchers, Greta and Chloe, both studying in disciplines with high information needs, have had to find information that is fragmented and scattered across multiple sources. This has encouraged them to learn a wide range of sources and techniques so as to locate information on their topics. For Eleanor, Hayley, Daisy or Brian, the problem is that they often have too much information for their topic and spend considerable time going through the results to find what they need. Whilst this is obviously frustrating, they do not seem to have changed the way they search. However, Eleanor noted that, after information literacy training, she spends less time searching and finds fewer but more relevant results, indicating that the training could help students improve their skills.

As can be seen from the above, learning academic information behaviours is influenced by multiple factors, including the length of time studying, prior experience, the level of digital skills, and information literacy learning opportunities that make sense to students. As a result, students may not always have the search behaviours to be able to find the information they need. To overcome these problems, when their searches are unsuccessful, students also use a range of other strategies to find information.

The Impact of Search Skills on Completing Assignments. When asked to describe a time when they had problems finding information for an assignment, most students were unable to do so and did not discuss this. Four students who mentioned having difficulty with finding information all experienced issues locating information on Aboriginal and Torres Strait Islander specific topics (Fern, Eleanor, Adam and Daisy). Greta and Adam spoke about the fact that doing research on Aboriginal and Torres Strait Islander topics also took time as it involved arranging many small pieces of information found through multiple sources. Whilst most students did not talk about having

problems finding information, a number spoke of the amount of time it took them to evaluate and choose results.

Other Strategies for Finding Information. Despite the fact that most students did not mention difficulties locating information, other evidence presented above in the section on how students search indicates this is a difficult process for many students. This may involve time spent looking through large lists of results or not being able to find information for their topics. To overcome this difficulty and supplement the information identified through searching, many students use alternative methods to locate resources, such as browsing or consulting with people who could provide information or guide them to sources.

Browsing Print Collections. Browsing for sources is used by several students as a strategy to avoid having to search for information in other ways, e.g. via databases or Google Scholar. This includes browsing shelves or checking reference lists and citations. Some students prefer to browse book collections in print format, such as Daisy, whose discipline relies heavily on books and who also works in the library. Daisy browses the library collection and has a good understanding of how books are organised using the Dewey Decimal System. Chloe also browses the book collection, although she would always use this as her last step as she does most of her research online. Brooke also noted that she prefers to browse print collections as this is how she found information during her undergraduate studies when she did not use computers. However, she reflected it is now difficult to do so as she is studying externally.

Fern, Hayley and Greta, take advantage of the small book collection housed at the Indigenous Centre because it is easily accessible and they can avoid going to the library. Nevertheless, Fern indicated she would also browse the library collection for sources for an upcoming design assignment. However, many participants did not discuss using the library's print collection at all. As discussed in Chapter 5, most students search for and find online materials rather than visiting the library. This was especially the case during the pandemic when access to campus was restricted. They also feel less comfortable using the library as students described library spaces as confusing, mazy and easy to get lost in, which would also prevent some from using the print collections, particularly as they can find sufficient materials online.

Using Citations to Find Materials. Checking citations in reference lists and tracking future citations for papers is a strategy used by all the postgraduate students (Chloe, Amelia, Eleanor and Brooke), as well as Hayley when they fit her required date range. Amelia uses readings she has saved from her previous studies and checks their reference lists to avoid searching databases as *"it just made it much easier... I sort of found my research that way, rather than going through One Search."* Eleanor, Chloe and Brooke, on the other hand, note citations in conjunction with searching and checking the references of relevant search results to expand their resources. Brooke and Chloe also

implement more advanced features such as forward citation tracking to locate more recent articles, with Brooke mentioning using this method to track papers in which useful original sources that are unavailable have been cited. Chloe, the most advanced database user in the study, also sets up citation alerts to keep track of new research citing key papers. In this way, she becomes aware of new articles without having to search for them.

Personal Sources of Information. Aboriginal and Torres Strait Islander and non-Indigenous people are sources of information for some participants. Chloe, Brooke, Greta and Eleanor all receive information about relevant resources through their supervisors, other research students and/or work colleagues. Eleanor spoke of getting papers from one of her colleagues who had previously taken the same subject, and Chloe spoke of her lecturer giving her a list of authors to investigate. They also consult members of their Aboriginal and/or Torres Strait Islander community, including family and elders. Eleanor, Brooke, Adam, Brian and Fern all mentioned consulting elders and family to find published resources, both for information on Aboriginal and Torres Strait Islander topics in general and information specific to their community or culture. Brooke, for example, was able to track down older papers for a language related topic because of *“family members [who] remember where someone has interviewed them or someone they know”*. On the other hand, Adam’s consultation with family and community members did not help him with his assignment as he *“did ask them but they unfortunately didn’t know of any [sources] that could be adequately referenced in assignments”*. This comment could raise questions about what constitutes proof in academia and would add to the debate about how other worldviews are incorporated into the western academic model. However, this topic is much broader and is not the focus of the study.

Another theme evident when students consult family and community elders is that they talk to people to help build and confirm their awareness of their culture and incorporate it into their own research. Brooke spoke of using Aboriginal and Torres Strait Islander family and elders *“to get the ‘other perspective’ or confirm stories”*, while Fern would consult with her family’s cultural committee to help guide her in being more conscious of her culture’s role in her research as well as getting information. Brian has also consulted several elders for advice on information he wanted to use in his assignments to *“seek approval to share sensitive personal information, this is our tradition and something I cherish and respect”*.

As can be seen above, some participants use these personal sources to locate additional research and to confirm stories and information that they had found elsewhere. This indicates these people are consulted to critically assess other sources and increase students’ awareness of culture within their research. However, this does not work for all students as the requirement for proof from an academic perspective means some personal communications cannot be included. What is evident from this study, however, is that students use a range of other strategies to overcome any

limitations in their information searching behaviour. These strategies are often very important complementary behaviours when researching Aboriginal and Torres Strait Islander related topics, due to the difficulties students can encounter when navigating the cultural interface to locate, access and interpret Indigenous related information.

Researching in the Corpus

Researching in the Indigenous space can be problematic. In his cultural interface theory, Nakata (2012) introduced the idea of the corpus of literature about Indigenous peoples being a space of 'complex and contested knowledge terrains' (p. 1). This space is populated by information and knowledge created by 'outsiders', including missionaries, governments, anthropologists and other stakeholders who have framed what we know about Indigenous people based on their own interests and desired outcomes, as well as knowledge created by and for Indigenous people themselves. For students, this provides opportunities to better understand their own culture and how colonising institutions have influenced their position, with most students wanting to include this type of research in their studies.

However, navigating this space can be difficult as they need to be able to understand who is contributing to the literature, their purposes and the underlying biases that have influenced what information is produced. This can also impact upon their mental health and well-being as a large proportion of the literature is negative, derogatory and can be traumatic to read.

Connecting to Culture. As mentioned in the section Indigenising Assignment Topics, most participants are interested in exploring their Aboriginal and Torres Strait Islander heritage and incorporate Aboriginal and Torres Strait Islander aspects into their assignment topics. At the time of interviewing, all the students participating in this study had already completed or were about to take Indigenous related subjects, either as an elective or a compulsory part of their course. In addition, many participants had also undertaken Aboriginal and Torres Strait Islander research related activities outside university. They did this by exploring their family histories through published literature and/or primary sources located in archives and libraries or by negotiating information and research rights and conditions, either as the requestor of information or the controller of access to information.

When studying an Indigenous Studies subject, Adam, the science student, had taken the opportunity to research more into his grandfather's language. Before university, Greta, Fern and Daisy were all involved with their nation's cultural organisation and had taken part in developing a research framework for others working with their community as well as informing cultural institutions about cultural heritage materials held in institutions' collections. Amelia had undertaken research training and conducted research at the Northern Territory State Library, the State Library of Queensland, the AIATSIS and the National Library of Australia when investigating her father's

people. This shows that many of the participants either have a close connection to their culture and heritage and/or a desire to learn more about it.

Difficulties Engaging with the Corpus. There are many gaps in research on Indigenous related topics and by Indigenous authors. These gaps are discipline and topic specific as Indigenous research is extensive in some fields such as health, education and anthropology but less so in others. Brooke, when researching an education related topic, did not find difficulty locating information on it but acknowledged that she could imagine it being hard to find and interpret information for some other topics. In general, Eleanor and Hayley, both studying nursing-related degrees, reported few problems identifying information on general Indigenous health topics. Fern mentioned that she never really had to look that much as she'd "*search a word and then just so much is just there*".

However, Eleanor did have problems locating information on narrower health-related topics, such as specific topics related to her role as a nurse educator, or an Indigenous literacy related topic. Eleanor also undertook a cultural exchange with the Navajo and found that Australian Aboriginal and Torres Strait Islander research was lacking in comparison to literature about Native Americans. She stated she identified a big difference in "*how much more advanced they are in regards to the literature they've all got over there. It's, it's kind of sad to see that we're so far behind in that aspect*". Other students also experience trouble finding information for some of their topics. Fern, the design student, mentioned substantial difficulty locating information for a built design project and ended up having to "*completely come up with my own, like, [a] way to draw them together, because it just wasn't talked about at all*". Greta, studying humanities, found that "*not everything's heavily researched, I guess. So you'll have to glean little tiny, tiny bits of information from everywhere*".

Students also aim to identify information written by Indigenous authors. Greta recognised that although there was lots of Indigenous related research, "*it is through the lens of the other, I guess*." She would love to see more Indigenous authors published but it did present an overwhelming challenge for her research if she could not locate them. Daisy encountered problems looking for works by a prominent Indigenous poet and stated even the librarian could not help her find anything. Adam also mentioned that when he undertook an Indigenous Studies elective, "*It's more looking for, looking for the right thing, but usually doesn't come up first and you need to go and explore different articles*", which was not required for his science research.

Conflicting information sources also cause problems for students, particularly when little research is available. Adam, for example, was able to locate limited information about translations of his great grandfather's people's language, with only two conflicting sources, making it difficult to draw conclusions. As the evidence in this section has shown, students are easily able to find

information on some Aboriginal and Torres Strait Islander topics that are well researched, but less researched topics offer insufficient or unverifiable information, which is a challenge for students.

Disturbing and Traumatic Information. Researching Aboriginal and Torres Strait Islander topics could also be distressing and quite traumatic for some students. This is particularly so when reading information sources but could also occur during the search process. Greta stated *“I didn't realise that other people's experiences would probably affect me so much... it was quite challenging”*. She even experienced that when searching databases *“there have been times where just even the titles in the search, like, of the articles, have been a little bit triggering, more so that they're ignorant... written from the perspective of the other and a bit insensitive”*. Greta also identified that having to use outdated and derogatory terms when searching could be triggering at times.

Fern remarked that going through search results can be hard because it would include results covering *“all of our terrible history again... I understand... it's very important. But sometimes I just want to be able to like, Google things without having to deal with all that. It's not even relevant to what I'm trying to do”*. Hayley also considers the literature can be a little depressing and upsetting but stated it also provides explanations for Aboriginal and Torres Strait Islander issues and disadvantage, noting *“I don't think I have any issues with reading some of the things. I've gotten used to it now... it was, I didn't really like it. I don't know how to explain why... I just felt inside like I didn't really want to read this”*. Students also discussed how they did or did not cope with these issues. Hayley has difficulty reconciling her western educational viewpoints and her Aboriginal and Torres Strait Islander knowledge and belief when reading information, noting:

“Myself, I have like two different parts. I have one who's very educated. I guess I don't like using that word, but in the sense of the western style. Yeah. And then you got the other side of me. And because I got those two sides I'm just so torn”. [Hayley]

Daisy also finds reading about Aboriginal and Torres Strait Islander people in literature upsetting, explaining that it made her question her position in society as an Aboriginal person and discussing strategies for coping with the issues this information raised, by speaking with her lecturer who was of both Aboriginal and Torres Strait Islander heritage. Brian spoke of the challenge of changing his outlook from a personal perspective of his culture to a more holistic cultural viewpoint to cope with confronting information and how he used his experience to help other Torres Strait Islander students navigate this issue.

Other students engage in information avoidance as a coping mechanism to deal with disturbing or traumatic content. When reading a particularly racist source, Amelia *“shut the book up, I was just like, shocked, you know.”* She also mentioned avoiding watching Aboriginal and Torres Strait Islander stories on television by muting the television as she does not *“want to hear it or see it. Because I don't want to go into that deep place”*. This shows that Aboriginal and Torres Strait

Islander students can find researching in this area traumatic and that awareness and coping strategies are important to support students' well-being in this space.

Aboriginal and Torres Strait Islander Students' Help-Seeking Behaviour

Help-seeking behaviour is considered by some information behaviour researchers to be an integral part of information behaviour. Xie and Cool (2007) see help-seeking as a multifaceted aspect of information behaviour that overlaps with information seeking and searching. Most students who participated in the study reported having sought help from other people when having difficulties finding and using information. When seeking help, participants consult a wide range of people and sources, both internal and external to the library and university. However, who they asked, how much help they used and how they used it also depended on their attitudes towards seeking help in general. This section is arranged as an exploration of three aspects of these attitudes: whether participating students ask for help (do I ask?), why they may not ask for help (why not ask?), and finally who they ask for help (who I ask?).

Do I Ask? All participants had sought help in some way. Unlike other facets of the study, there was no clear-cut difference between the new learners group and the prior learners. Self-confidence and personal learning styles seem to have a greater role than age, experience or field of study. Of the new learners group, Adam has the greatest confidence and seems to feel the least need to seek help. He commented confidently that he had not ever needed help, *"like not even from lecturers"*. However, he later noted that he had sought help from family for an Indigenous Studies subject. Adam taught himself how to use advanced search features, showing that he prefers to learn by himself rather than seek help. Fern demonstrated that she is quite confident in seeking help when she needs it although she often has not had to. Fern has proactively sought help from her sister on using One Search and sought help from her tutor when needed. However, Hayley showed less confidence in seeking help and is more reluctant to go outside her comfort zone, although she is comfortable getting help from the staff at the Indigenous Centre.

The mature aged students, Daisy, Brian, Greta, Eleanor, Chloe, Amelia and Brooke, are much more likely to be confident enough to ask for help when needed due to their life experience. They are also more self-reliant, with many preferring to teach themselves skills. Eleanor and Brian show a preference for learning by themselves. Eleanor stated, *"I know I shouldn't, but I like try to do everything myself. I'm very independent"* whilst Brian said he *"sort of self-educated myself how to look for material"*. Brian would ask his subject lecturers and tutors for help if having problems with understanding the assignment.

Despite this self-assurance, initially neither Eleanor nor Brian were confident to ask for help at the library, as both had had little experience of using libraries for research. However, after being approached by library staff offering help, both students would seek help at the library to find

information, when needed. Chloe and Brooke also try to find information for themselves. Chloe stated, *"I always see if I can figure it out myself first, before I [seek help]"*. Brooke indicated, *"I find that if I need to find something out, I'm always researching it... I tend to want to read [rather] than be told"*.

Mature aged students also proactively improve their skills when seeking help, asking to be taught how to find the answer rather than being given answers. Amelia told the librarian she wanted to learn by doing it herself and the librarian's role was to just keep her on track. Brian noted that when he did have to ask for help, he also wanted to learn skills *"so that way I learned from this experience"*. Greta also proactively sought to learn skills by booking an appointment with a librarian to learn referencing. Daisy, who returned to university after first attempting study in the 1990s, also felt confident in seeking help *"as an adult I'm like, what have you got for me bring it all on... I'm here to learn and I want to take every advantage"*. Daisy also found that university had changed since she first studied *"they are a lot more helpful... the lecturers and everybody, staff, I think it's just, it's so much more inclusive"*, which made it easier for her to seek help.

Issues with seeking help as an Aboriginal and Torres Strait Islander student were also raised by some mature aged students. Some expressed that they did not want to be seen as Aboriginal and Torres Strait Islander students as they did not want to be identified as someone who needs additional help. Brian, for example, mentioned that he did not register as Aboriginal and Torres Strait Islander with the university as he *"didn't want the university to look at me as a non-Caucasian individual and think that 'we've got to provide additional support to this individual'"*. Brooke also identifies this problem, noting *"there can be the assumption that, you know, if there's Indigenous people using the library or coming to uni that need it that they need help, but they may not really need [it]"*. As noted above, both these students tend to be independent learners and prefer to learn on their own, which may explain some of their attitude on this point. Chloe had registered as Aboriginal and Torres Strait Islander with the university but did not feel the need to identify as Aboriginal and Torres Strait Islander to get help, although she did say that *"if it happens to come up that, you know, something Indigenous there, I'll see if it works. But I've never actually used any of the Indigenous stuff as of yet"*. However other students, such as Hayley, Greta, Daisy, Fern and Amelia, all appreciate and extensively seek help as Aboriginal and Torres Strait Islander students from Indigenous Centre staff and the Indigenous Library Liaison Officer.

Why not Ask? Students were also asked why they did not seek help when having problems finding information, particularly from librarians as they are experts in searching for information. Their responses highlight a range of reasons for why seeking help could be difficult or confronting for them, including not knowing who to ask or where to find help, being too shamed to ask, feeling

uncomfortable due to a lack of familiarity, a lack of Aboriginal and Torres Strait Islander representation and not feeling they have a need to ask.

One major reason for not asking for assistance is not being sure of who to ask or where to find help, with Brian, Hayley, Chloe, Brooke, Amelia and Daisy all noting that they initially did not know where to get assistance. Hayley still seems unsure who to ask for help at the library help desk, stating *"I'm not really sure which part of the desk to ask [at] when I go into there"*. As mentioned in Chapter 5, many students in the study were unfamiliar with libraries or had only accessed small ones, and so found the library confronting or scary, at least initially. Of the ten participants, only Adam and Chloe did not mention being intimidated by the library. This feeling of intimidation led to some students' reluctance to enter the library building, which made it difficult to ask staff for help, although online and phone services make up for this to some extent. Representation could also be an issue. Amelia also mentioned that during her first degree, she was reluctant to enter the library as she did not see any Aboriginal and Torres Strait Islander or non-Caucasian staff there, noting

"The past has been a barrier because we were too afraid to even step in to a library, you know, it was just like a foreign place... and I guess you know from the past, again, not seeing another black face working... like, I won't walk into a government department unless I see another black face... I believe there's still Indigenous students that may not approach, you know, go into a library these days... the new enrolled students that are coming up". [Amelia]

Shame was another issue that prevented several students from asking for help at least once during their studies: Amelia, Brooke, Daisy, Eleanor, Brian and Hayley. This also seemed to be closely linked to students' confidence in asking for help. Amelia, Brooke and Daisy had all studied at university in the 1990s or early 2000s as the first in their families. They spoke of struggling at that time with university processes and being too shamed or afraid to ask, with Daisy withdrawing from studies partly because of this. In their current studies, while Daisy and Amelia are now confident to seek support, Brooke still does not ask for help from library staff, stating *"we don't want to ask for too much, to be a nuisance for people, we've just grown up with that. It's just where we're coming from"*. Eleanor also mentioned shame as a reason for her not to seek help because she feels that she should be able to do it herself and Brian noted that his biggest challenge is *"being vulnerable... scared... if we make a mistake, we don't want to be crucified for it"*.

However, shame seems less of an issue for the school leavers in the study, with only Hayley mentioning that she is too shy to ask questions during information literacy sessions and would love someone who knew the library to guide her but was too shy to ask. Again, confidence is the major difference between the new learners group. Hayley shows less confidence than Fern and Adam in her information seeking and help-seeking behaviours.

When looking at the reasons students did not ask for help from library staff, there is a less noticeable difference between school leavers or mature aged or postgraduate students than in other aspects of this study. Students' self-confidence levels seem a clearer indicator of their willingness to seek help, as do students' expectations that they need to be self-reliant. Of the school leavers, Adam and Fern have much more self-confidence than Hayley in seeking information and show a preference to be self-reliant when seeking information overall. Adam and Fern also sought help less often, with Fern not yet needing to ask for help from the library, although she is confident in asking her iPal tutor or other support staff at the Indigenous Centre for help when needed.

Adam, on the other hand, feels that he has never needed help, showing overwhelming self-confidence in his own information seeking behaviours and skills. Chloe also shows much more confidence in seeking information and prefers to be self-reliant. Once she knew who and where to get help from, she did not experience any problems asking for it, although she did not know who to ask when she first started.

Mature aged students Daisy, Greta and Amelia are confident in seeking help from library staff as they have gained confidence through earlier studies and life experience and are able to seek help outside their comfort zone. However, the other mature aged students in the study tend not to have the confidence to seek help from the library. Eleanor, Brooke and Brian all experience some discomfort in seeking help as they prefer to be self-reliant and feel shame when asking for help. For all, their initial interactions with library staff were passive, with staff approaching them to offer help rather than them asking, although Brian and Eleanor were later more confident in seeking help at the library. Brooke continues to be reluctant to 'be a nuisance' by asking library staff, although unlike during her first degree, she has certainly sought help from supervisors and others inside and outside the university, as shown in the following section.

Who to Ask? Students participating in the study ask a wide range of people from both within and outside JCU for help with a wide variety of information related tasks. These tasks include interpreting assignment topics, identifying and understanding concepts to search, identifying relevant sources to search, conducting searches, finding materials, organising materials and evaluating, interpreting and understanding the materials they find. The participants also seek help from a wide range of sources outside the university, including family, friends, colleagues and staff from other Aboriginal and Torres Strait Islander and non-Indigenous cultural institutions such as libraries, Aboriginal and Torres Strait Islander community corporations and museums. Table 4 shows the people from whom students seek help.

Table 4

Sources of help consulted by participants

Source	Number & level of students
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iPal tutor		3 (all UG)
Indigenous Centre staff		7
Academic supervisors, lecturers and tutors		7
Work colleagues		2
Family, friends, elders and Aboriginal and Torres Strait Islander community groups		7
Other students		6
Staff from other libraries and cultural institutions (e.g. state libraries, AIATSIS, museums)		3 (1 UG, 2PG)
University library staff	Total number of participants using the library	9 (Adam did not)
	Chat service	5? (Amelia†, Eleanor† & Brooke† once each, Hayley*)
	In person at the library information desk	6 (Amelia†, Chloe*, Brian†, Greta†, Fern*, Daisy†)
	Liaison librarian	3 (Chloe*, Brian†, Greta†, Amelia†,)
	Email / form / phone	1 (Brian†)
	Indigenous Library Liaison Officer – drop in at the JCU Indigenous Centre	2 (Greta†, Hayley*, Fern* aware but not used yet)
	Indigenous Library Liaison Officer – in library / via Zoom	2 (Amelia†, Brooke† UG)
	Specific library staff other than Indigenous Library Liaison Officer	2 (Amelia†, Chloe*)
	Online guides and tutorials	5 (Amelia†, Brian†, Eleanor†, Fern*, Hayley*)

All students in the study have been developing networks of people whom they could approach for help. The size and scope of these networks differs greatly because of their age, experience and the discipline of study. As with the rest of this study, different patterns of help-seeking behaviours can be seen between the recent school leavers who have less life experience and mature aged students who bring prior knowledge and information networks to their studies.

The school leavers group tend to have help networks that mostly focused on their community and the university, particularly around the Indigenous Centre. All three students mentioned consulting with their family or community to get help when looking for information, particularly about Aboriginal and Torres Strait Islander topics. Fern, for example, talked to her immediate family about Aboriginal and Torres Strait Islander issues in general, but would also go to her family's cultural committee for guidance about culture and to find resources if her research was directly related to her community. Adam also mentioned consulting with family and elders for his Indigenous Studies assignment. When asked about where they sought help at university, Adam declared that he had never needed to do this, but both Hayley and Fern rely heavily on their iPal tutors as sources of help and consult with other academic and support staff at the Indigenous Centre. Both students are also aware of the drop-in service offered by the library, where the Indigenous Library Liaison Officer would come to the Indigenous Centre for a few hours a week to help students, and Hayley has made extensive use of this service, saying

"I found that having that person that comes into the Indigenous Centre... really helped with referencing and finding resources... I don't know who came up with that idea. I think that was like the best thing that happened, because now I'm second year and I already like notice a difference... and now I don't feel that scared to ask for help". [Hayley]

While this service has made Hayley more comfortable in seeking help to locate information, she is still reluctant to enter the library, preferring to wait for the drop-in service. She has used the library chat service and found it helpful but also difficult to use as *"I don't know how to type it down properly... what I need doesn't really come across properly, because I don't know how to word it"*. Fern has not used the drop-in service yet, but she asked for help in the library when looking for books. Both Fern and Hayley also seek help online by using library guides, particularly for referencing. Hayley has watched videos on how to search, although she said she finds them difficult to understand. Fern has also expanded her use of guides to include those from other libraries when her university guides did not provide the information she needed. While both students use support services from the Indigenous Centre and the library, neither mentioned asking their subject lecturers or tutors or other areas of the university for help. They also did not mention asking people other than their family or community members for assistance outside the university.

The mature aged students in the study, Greta, Brian and Daisy, have much wider networks from which to seek help. All three seek help from family members and their Aboriginal and Torres Strait Islander communities when needing information for their topics, particularly when Aboriginal and Torres Strait Islander related. Brian, for example, advises his elders of assignment topics and seeks guidance on sharing cultural information. Greta also seeks help from a wide network of people other than family outside the university, as she has extensive experience in Aboriginal and Torres

Strait Islander research related issues through her role working in her people's Aboriginal Corporation. These people work at cultural institutions such as museums, galleries, libraries and Aboriginal and Torres Strait Islander organisations, as well as JCU and other universities in Australia.

Greta, Brian and Daisy all mentioned that one of their main sources of help at JCU are subject lecturers and tutors whom they often ask first. They also all asked for assistance from other students, with Daisy attending supplementary tutorials run by past students. Greta and Daisy both also look for help from staff at the Indigenous Centre, with Greta noting that she has asked her tutor for help at various times. Brian, however, does not use the services at this centre as he has not identified as Aboriginal and Torres Strait Islander. When it comes assistance from library staff, all three students have asked at the information desk in the library. Greta has also asked the Indigenous Library Liaison Officer at the drop-in session at the Indigenous Centre. None mentioned using the chat service, but both Brian and Greta have consulted with liaison librarians, with Brian seeking help via email and Greta meeting with a librarian. This shows that they actively seek help when needed from library staff.

The postgraduate students, Eleanor, Brooke, Amelia and Chloe, have the widest information networks of all study participants. Eleanor, the Masters by coursework student, has different networks of information to the other postgraduate students who were doing research. She mostly asks people outside the university, such as work colleagues, library staff at her hospital workplace or elders and family. However, she is less comfortable asking new library staff at the hospital for help, indicating that the personal relationship she had with previous staff was part of the reason she felt comfortable seeking help from them.

This lack of personal direct relationships may have also been why she did not mention asking her lecturers for help, as well as why she has only sought help from the JCU library once through the chat service. Another reason that Eleanor does not tend to ask university staff for help is because she also works full time, *"a big chunk of my studying is done from like 10:30 at night... there's not really people always around at those times"*. Instead, she relies on library guides for help, having bookmarked them for easy reference. While Eleanor has not specifically sought help from the Indigenous Centre or academic staff for her current degree, she has used an Indigenous Centre in previous studies and received contact from the university to ensure that she is on track. She appreciated this contact, mentioning that *"the guys from JCU, they'll contact me regularly to make sure I'm okay. Which is really good. I feel like I'm in the loop even though I'm thousands of kilometres away"*. Once again, this highlights the importance of relationships.

The postgraduate research students, Brooke, Amelia and Chloe, also rely heavily on relationships when seeking help. They usually ask university staff first, starting with their supervisors, other academics and/or other research students in their field. Amelia and Brooke both

ask help from their supervisors and other academic and support staff in the Indigenous Centre for their Aboriginal and Torres Strait Islander research topics. They have also both asked library staff who were Aboriginal and Torres Strait Islander people for help, although Brooke's experience was during her undergraduate degree. Until told at interview, she was not aware there is an Indigenous Library Liaison Officer to help her in her current degree. Otherwise, Brooke makes little use of library help, only having used the chat service once.

Relationships with library staff contribute to why Amelia and Chloe look for help from the library. Chloe, in her late 20s, has a friend who is a librarian so she often seeks her help when she cannot find information. This shows that having the relationship with that person helps make it easy to ask her for help first, although she noted that she also has no problem approaching staff at the information desk or using the chat service for help when that person is not available.

Amelia, who is in her late 50s, prefers to build relationships with staff. She tended to look for one particular librarian who was friendly and helpful in early interactions. Although she has tried to build a similar relationship with other librarians after that staff member left, she has been unsuccessful. As she is studying externally, Amelia then started using the chat service although she worried at first when she was answered by unfamiliar staff at other campuses. Finally, when the new Indigenous Library Liaison Officer started work at JCU, she began asking her for help almost exclusively. Amelia remarked that she was very unfamiliar with libraries in her early life and tends to look for "black faces" before entering any institutional buildings, adding that this is now less of an issue because universities are much more culturally safe spaces now. For Amelia, there still remains a desire to build relationships in her help networks.

Summary

As can be seen above, participants agentically develop networks of sources and people they can ask to find information they need, both inside and outside their university. They use these networks to source materials as well as to cross check their results. The breadth and depth of these networks often relies on the experiences of the students.

The undergraduate school leaver group, Adam, Hayley and Fern, expressed using fewer sources than most other participants, mainly One Search, Google Scholar and Google, together with family and community members for information and guidance. Fern and Hayley also tend to browse the Indigenous Centre's printed book collection as they can access textbooks easily there rather than trying to navigate the confusing library collection. Reasons the school leaver participants may have less developed networks of sources and contacts include age, experience, self-confidence and discipline information needs. As all three school leavers were aged less than 22 at the time of the study, it is unlikely they have developed wide networks of personal contacts through university or workplaces that could support them in their research. Hayley and Fern were also quite new to their

studies, with Fern only having completed her first year and Hayley being halfway through her second year. This implies they were less familiar at the time with sources that would be useful for their studies. With Adam in his final year, he was able to find what he needed easily through Google and Google Scholar. His self-confidence in finding information this way means he felt no need to improve.

However, Adam's need for information has been heavily influenced by discipline information needs, which also affect the learning of other school leavers in the study. Adam (science) and Fern (design) tend to have lower information needs because their subjects are predominantly textbook based and do not require them to conduct research. On the other hand Hayley (health) relies mostly on Google Scholar but also mentioned using health specific databases such as drug information databases and literature databases such as Medline and CINAHL to meet the information needs of her nursing degree.

The mature aged undergraduate students have a more developed network and use a wider range of sources to meet their information needs, whilst the postgraduate students have the widest range of sources and are the most likely to use complex strategies when seeking information. These participants have gathered knowledge of these sources and developed information networks through current and previous educational experiences as well as through personal and work experiences. Although they also predominantly use One Search and Google Scholar, they are also more likely to access other discipline specific databases, both at university and through their workplaces or community. They also have wider networks of personal contacts from whom to gather information. These networks include work colleagues, contacts made through personal or work-related research, academic staff and other students from within and outside the university.

However, the development of this expansive range of sources may also be because this group of students are all studying humanities and social science disciplines for which the information needs are more detailed. It may also be because these students were all in the final years of undergraduate degrees or undertaking postgraduate study at the time of the research study.

The following chapter provides a discussion about these findings and how they relate to the wider literature around students' academic information literacy and academic information behaviours. It includes a reflection on the study and its limitations. It also gives an overview of the theoretical and educational implications of this research and recommendations for future research in this area.

Chapter 7: Discussion and Conclusion

This study was designed to explore the research question “How do Aboriginal and/or Torres Strait Islander students develop and use academic information literacy skills and/or behaviours” using interpretive research methods. Nakata’s (2007a) cultural interface and Indigenous standpoint theories were used as reflexive frameworks to highlight and prioritise Aboriginal and/or Torres Strait Islander students’ perceptions and experiences of information literacy and academic information behaviours during the data analysis process. This chapter is a discussion of how the findings about this research question relate to the wider literature on both Indigenous and non-Indigenous students’ academic information literacies and academic information behaviours. I also look at the study’s limitations and provide directions and recommendations for future research and practical applications.

Discussion of Findings

When conducting this research, I found that in most ways, Aboriginal and Torres Strait Islander students have similar experiences and encountered the same types of issues with identifying information needs, finding, analysing and using information as those identified in the wider Australian and international literature exploring students’ information literacies and information behaviours (e.g. Head, 2013; Pashkova-Balkenhol et al., 2019; Rubinić, 2012). However, as with many Aboriginal and Torres Strait Islander students in higher education, several participants started university underprepared for academic study due to a complex range of factors and therefore did not have the academic information behaviours required for university. Furthermore, Aboriginal and Torres Strait Islander students participating in this study do not always improve their understanding of information literacy or use more academic information behaviours while at university, due to personal reasons as well as insufficiencies in available formal training.

Although participants do not have much difficulty finding information in most cases, reasons for this include the ‘googlisation’ of search interfaces (Head, 2013; Vaidhyanathan, 2009). This has simplified search methods and lessened the need for complex search techniques. The proliferation of published information has also made it easier to find enough

information for many topics. However, participants have more difficulty when finding information on less researched topics and in selecting, evaluating and analysing the information due to the large numbers of results they find. Whilst information literacy training provided within subjects and through generic training by academic support services such as the library helps students learn academic information behaviours to some extent, students do not necessarily learn more complex higher order skills for a variety of reasons. These reasons include students' interest in learning skills, problems with the delivery and content of information literacy training and a lack of support from academic staff.

To compensate for a lack of the academic information behaviours to research complex topics, students seek help from a range of people from within and outside the university when they encountered difficulties seeking and using information. Participants in this study are more likely to seek help from people with whom they have existing relationships, such as family or friends, or who are located where students feel comfortable, such as the Indigenous Centre. This indicates that students may not seek help from people considered to be experts (such as teaching staff or support staff who are trained in teaching academic and information literacies).

An example of where students in this study encounter difficulties in applying academic information behaviours and where gaps in skills become more obvious is in researching Aboriginal and Torres Strait Islander topics. Most participants in this study expressed wanting to research Aboriginal and Torres Strait Islander topics when possible, and all have researched at least one such topic for an assignment. However, due to the complex nature of the Indigenous corpus, seeking information requires knowledge of a wide range of sources and the use of more complex higher order skills and strategies for finding information and evaluating, interpreting, analysing and using it (Nakata, 2007b).

Findings

Progression ≠ Improvement and Success. Most psychological models of education view learning as progressive, with students starting from a clean slate and cumulatively building on knowledge to become experts in their fields, either through discovery learning or instructor-led learning (Kozulin, 2004; Vygotsky, 2016). This would suggest that postgraduate students should have more comprehensive academic information behaviours and be more information literate than undergraduates and final year undergraduates should

be more advanced than first year students. However, this is not always the case, as this study indicates.

In his sociocultural theory of learning, Vygotsky recognised that a student's upbringing, including their social and cultural backgrounds, influence how that student integrates and understands information when learning (Kozulin, 2004; Shabani et al., 2010; Vygotsky, 2016). This study also found that a range of personal, sociocultural and academic factors influence how information literate students depend on the information behaviour processes they use. Personal and sociocultural factors include students' personality traits and confidence levels, personal information seeking experiences prior to study, their digital literacy level and their attitudes and perceptions of learning to be information literate, whereas academic factors include content delivery issues, discipline information needs and information literacy learning opportunities (Burke et al., 2005; Folk, 2018b; Hill et al., 2019).

This study found that students at different life stages are influenced by different personal and socio-cultural factors that supplement or inhibit the progression of their learning. Prior research experience and the acquisition of digital literacy skills are major factors influencing students. Most mature aged students have previous research experiences for work, study or personal reasons, and so have prior experience in information seeking in online sources and a knowledge of sources, which is also found in the broader literature for mature aged students' information behaviours (Folk, 2018a; MacMillan, 2009a).

Whilst being more aware of sources, the mature aged students in this study do not always have the digital literacies to effectively use these sources. On the other hand, younger participants have less knowledge of sources but tend to have more developed digital literacy and search skills to find information. They are also more likely to develop information literacy knowledge while progressing through their studies as they do not have knowledge gained through life experience. This is consistent with the broader literature relating to students' information behaviours (Kaletski-Maisel & O'Neill, 2018; MacMillan, 2009b; Perruso, 2016).

Students' digital self-efficacy also influences their progression. As Byrne (2003) notes, academic libraries are often inaccessible to students not just because of technology related access issues but also because the lack the opportunity to learn digital skills, which affects their ability to access information. This study found that, in general, participants who are more digitally literate have more self-efficacy in finding information than those who are

not, a finding also confirmed by other studies (Aharony & Gur, 2017; Bhatt & MacKenzie, 2019; Jeffrey et al., 2011; Mizrachi & Shoham, 2004).

Participants with greater digital literacy are more likely to want to teach themselves how to search online and do so. They use information literacy training to confirm their behaviours and expand their knowledge. Students who are less digitally literate are more likely to find alternative paths to finding information, such as browsing shelves or tracing citations. Attainment of digital literacy for participants seems linked to a personal interest or need to use technology for academic purposes than to a need to access information and communications technology, although access issues have also affected some participants.

Self-confidence is another factor influencing students' adoption of academic information behaviours taught in information literacy training. Students show a range of behaviours, from very confident to very unsure. While self-confidence can be an indicator for self-efficacy, it is not always an indicator of competence. Previous studies have found that students are often overconfident of their search abilities, which was also demonstrated by one participant in the study who stated he had already taught himself everything he needed to know about searching (Gustavson & Nall, 2011; Head & Eisenberg, 2009). This student treated information literacy training as a checklist to confirm he already knew what he needed, rather than an opportunity to learn new skills.

Other students in this study are less confident, with their descriptions of searching indicating a long process in which they eventually find what they need but are not quite sure how they do so. Finally, those students least comfortable and confident in using online search interfaces often avoid searching for information altogether by using other systems such as browsing. Several students mentioned finding resources through recommendations from others, tracking references or browsing library shelves. This is also reflected in the literature, which shows that references and recommended resources are a major source of information seeking processes for many students (e.g. Head & Eisenberg, 2009; Lacović, 2014). While confidence has a big impact on students' use of information literacy capabilities and academic information behaviours, their purposes and attitudes for learning also influence their attitudes towards research.

Goal orientation and attitudes towards learning also influence students' information and help-seeking behaviours. In academia, goal orientation either focuses on mastery of the subject through exploration and developing understanding, or on performance, in other

words, meeting the task requirements (Folk, 2018b; Kaplan & Maehr, 2006; Sakiz, 2011). In this study, students who exhibit mastery orientations tend to use more comprehensive academic information behaviours and show more information literacy traits than those who focus on performance. The latter tend to see seeking information as a process to meet the assessment requirements rather than an exploration of the topic. This result agrees with those in other studies that have found that students develop higher information literacy knowledge when following mastery goal orientations (Folk, 2018b; Kaplan & Maehr, 2006; Sakiz, 2011). Research has also shown that students following mastery goal orientations are also more likely to seek help than those oriented towards performance goals, as shown by the overconfident student who declared that he had never had to ask for help throughout his four-year degree (Sakiz, 2011).

Formal Information Literacy Training Helps to Some Extent. This study found that formal information literacy training during their studies helps students become somewhat information literate and develops academic information behaviours to some extent. Most participants mentioned that they find information literacy training useful when they learn about new sources to search or techniques to improve their search results. They also consider that information literacy training helps them develop a better knowledge and understanding of sources and how to navigate them to explore complex topics. Similar findings exist in many studies that explore student feedback about information literacy programs (e.g. Dubicki, 2015; Kim & Shumaker, 2015; Latham & Gross, 2013). However, this student feedback is often collected directly after training has occurred and does not take into account how students apply what they have learned to their academic information behaviours.

Other studies that have examined students' information practices over a number of years of their study have found that students progressively learn academic information behaviours throughout their studies and become increasingly information literate by the time they complete their studies (Kaletski-Maisel & O'Neill, 2018; MacMillan, 2009a; Perruso, 2016). Whilst this study did not map progress of students over multiple years, because its participants are spread across all year levels it was possible to see that students at later years have a more advanced knowledge of sources and improved search techniques compared to younger students. Nevertheless, this may also be influenced by the fact that

most of the more advanced students are also mature aged or undertaking postgraduate research and had prior research experience to draw on.

Students also reported that they had noticed that their academic information behaviours had refined throughout their studies, noting improvements such as having more awareness of and ability to navigate sources for specific disciplines and topics, being more precise about what to look for, being able to use sources more efficiently and quickly, being able to develop more complex search strategies or being more aware of how to critically evaluate sources to select the most relevant. This shows that students recognise that information literacy training helps them develop their academic information behaviours and use these behaviours across their studies.

Almost half the students in the study also recognised that the academic information behaviours learned through information literacy training can be transferable and they use these behaviours for research in other subjects, in workplace settings or for personal research. This shows that some students develop broader conceptual understandings of information literacy and are able to apply these in different situations. This was an encouraging finding as the literature on information literacy as a transferable skill shows that although information literacy skills should be able to be applied to any information search, students do not always grasp this concept and have difficulty in understanding how to apply skills when different examples are used (Burke et al., 2005; Hyland & Johnson, 1998; Martini, 2019). However, whilst some participants recognised that the academic information behaviours learned during information literacy training are transferable and all but one participant found it useful in some way, it has not always changed their academic information behaviours, particularly for information seeking.

One of the major reasons that students have not learned or used more advanced academic information behaviours is because they do not feel that they need to learn them to find and use information. Most students in this study reported beginning their searches in easy to use databases such as the library's discovery layer One Search or Google Scholar. This aligns with other studies of students' information behaviours which have also found that most students start their research process with easy to use interfaces such as Google or Google Scholar that tend to bring up relevant results (e.g. Bloom & Deyrup, 2015; Head & Eisenberg, 2009).

What is different in this study is that the library's discovery layer One Search was mentioned as the most used tool because it is provided by the university and is easy to use. However, as One Search is designed to work similarly to Google Scholar, this indicates that, for most students in the study, One Search is similar enough to negate the need to use Google Scholar.

In addition to mostly using library resources over Google, this study also found that students expand their range of sources beyond One Search as they progress through their studies. Although they still predominantly started searching using One Search or Google Scholar, most students at higher levels of undergraduate study or postgraduate study supplement these with discipline specific databases and other search engines. This finding agrees with other longitudinal studies that show that students widen their range of sources throughout their studies (MacMillan, 2009b; Perruso, 2016; Thomas et al., 2017). However, while the literature shows students progressively use a wider range of sources, as shown in Chapter 6: How they search this does not necessarily mean that they improve or expand their methods of querying these sources.

Another reason students have not needed to learn or use academic information seeking behaviours taught in information literacy sessions is because they already have their own systems for finding information such as searching Google for keywords. However, because Google automatically applies techniques behind the scenes such as truncation, finding synonyms and ranking relevance based on the proximity of search terms, students do not always know about these functions. Most students described using simple search techniques and few were using more complex techniques such as Boolean operators or truncation, a finding that is also supported by previous studies (e.g. Bloom & Deyrup, 2015; Head & Eisenberg, 2009; Korobili et al., 2011). However, whilst other studies have identified that students use strategies that take the least amount of time and follow the 'close enough is good enough' rule when selecting articles due to time constraints and pressures (Bury, 2016; Cope & Sanabria, 2014; Godbey & Dema, 2017; Rosman et al., 2016), this study found that students are happy with their search methods because they are easy to apply and they are willing to spend time looking through large numbers of results. However, as noted elsewhere, this result may have been due to how the question was asked rather than an indication that students are not using more advanced methods. What can be seen from

these results is that most students are able to find information without having to use complex strategies, although it may take them more time.

A number of participants have encountered barriers to learning during information literacy instruction due to issues with delivery. As many had little experience of using libraries, particularly for academic purposes, before starting university, many of the concepts and strategies introduced during information literacy training were new to students. Some students reported being unable to learn skills due to delivery issues, such as speakers going too fast or practical skills being taught in a lecture format with no hands on learning activities so as to practise techniques. Others found that the terms used included lots of jargon and library specific terms and so they would not remember how to apply the strategies they learned without 'cheat sheets'. Literature relating to information literacy instruction has also highlighted similar problems with students' learning from instruction, particularly for students who have English as a second language (Harkins et al., 2011; Zhao et al., 2021). This is important to note as although Aboriginal and Torres Strait Islander students learn English as the common language of Australia many do not use Standard English in everyday life and therefore instruction may need to be tailored to meet these needs.

In addition to finding content confusing, some students are also reluctant to ask for help or clarification during training due to shame and shyness, which is a known problem (Folk, 2018b; Novak & Robinson, 1998; Yevelson-Shorsher & Bronstein, 2018). Finally, students also encountered problems with the format of information literacy training. Although students in this study did not differentiate between different types of training, many information literacy sessions are in lecture format, which does not provide students with opportunities to practise what is presented while it is being presented. This is now discussed in further detail.

A major factor that influences learning is repetition and practice (Clark, 2007; Eisenberg, 2008). Participants who had multiple learning opportunities stated that while they also learned new skills, they found the repetition of content useful to reinforce and remind them of what they had previously learned, help them fill gaps in learning they had missed in previous training or help them become aware of interface and usability changes in sources they used. However, as indicted above, some students noted a lack of opportunity to learn and practise academic information behaviours taught in information literacy training. Most information literacy training within classes was provided through a single,

short session which often covered multiple topics and did not provide formal time for the instructor to go around the group and check whilst students practise what they are learning about. As reported in the literature, this is a common problem with 'one shot' sessions (Furay, 2014; Marshall & Wagner, 2019; Perruso, 2016). However because students do not get these opportunities to practise or reinforce learning through activities, they are less likely to comprehend and embed the academic information behaviours taught in information literacy training into everyday practice. For example, as noted above, students in this study found learning how to create complex search strategies difficult to comprehend and remember. Furthermore, because they did not have opportunities to practise using these skills during classes, they often applied techniques incorrectly or did not use them at all. Others noted that they needed to practise the techniques and skills they learned immediately after classes to remember them. Multiple learning opportunities across subjects help reinforce some learning but as sessions are for different topics, not all content is repeated across sessions, which prevents some knowledge being embedded. In addition, not all students in this study have had multiple learning opportunities, which means they had no opportunities to reinforce what they learned or learn more new skills.

One of the reasons that students do not get opportunities to learn, practise and embed academic information behaviours and literacies is that the acquisition of academic information behaviours is not mapped across the curriculum and learning is not scaffolded across degrees. A major factor influencing which academic information behaviours students learn is discipline specific information needs. In this study, students in technology and science showed they have fairly low information needs, with some mentioning that their lecturers only wants them to use sources they recommend or they only need one or two articles to justify methods. This also impacts on the amount and timing of information literacy training provided to them. This is the case for the participants studying technology and science. They only had one information literacy training session at the beginning of their studies.

On the other hand, the participants studying the humanities, social sciences and health need to use sources much more heavily to back up arguments and provide evidence. Due to these higher information needs, most students in these degrees receive multiple training opportunities throughout their studies. However, even within these fields, learning

is not necessarily scaffolded across all subjects, with placements or clinical training requiring less research and therefore less need to practise finding information.

Discipline differences in academic information behaviour and information literacy training are well documented across the relevant literature (Niu et al., 2010; Sheeja, 2010; Tella, 2009; Whitmire, 2002). Whilst it is logical that different disciplines will have differing information needs, this does not mean that students do not need to be information literate to meet the needs of the discipline. In addition, the lack of reinforcement of learning through additional training means that students do not learn new skills, update themselves on changes to systems or have chances to learn skills they have missed.

In ideal learning models, it is recommended that learning be taught in steps and reinforced by being scaffolded across the curriculum (Vygotsky, 2016; Wood et al., 1976vb). However, this is not the case for the majority of degrees. Some students noted that training is helpful but it occurred later in their degree and they would have found it useful earlier in their studies. Another issue is training is delivered in a single short session that does not cover all aspects of information literacy or provide enough opportunities to practise what is presented.

One of the reasons for this is because the responsibility for teaching information literacy is divided across teaching and support staff. Whilst some academic staff fully support the inclusion of learning to be information literate and to engage in academic information behaviours within the curriculum, others do not. This means that the inclusion of information literacy training is dependent upon subject teaching staff requesting support staff to provide instruction. However, as the literature shows, teaching staff do not always support including information literacy in the curriculum due to beliefs that students are already information literate, that it is taught elsewhere either in or outside the curriculum or that students will 'somehow' learn to be information literate as they progress through their degree (Bury, 2016; Huddleston et al., 2019; McGuinness, 2006).

As a result, because students are not being given consistent opportunities to learn, practise and embed academic information literacies and behaviours at lower levels, trainers then must repeat content at lower levels within sessions, rather than teach more high-level information literacy concepts such as critical skills. Therefore, when students research more complex topics and encounter difficulties in finding information, they do not have the high-level information literacy skills to deal with these difficulties, nor in critically analysing

information for these topics. Due to these insufficiencies in training, students need to seek additional help from a range of sources so as to satisfy their information needs.

Seeking Help. This research included an exploration of students' help-seeking behaviour in relation to the information seeking process. When students encounter difficulties finding information, they look for help from a variety of sources, which usually does not include the academic support staff trained to help with these issues. Who, where and how they ask for help depends upon their attitudes about seeking help, their confidence to do so and their goal orientation. In most cases, students are willing to seek help when they need it. Although some said they preferred to teach themselves, of these, most also accept help when offered or actively seek help when they identify a need for it. Who students asked for help depends significantly who they have relationships with. Those who are older or have progressed further through their degree seek help more often and from a wider range of people because they have a broader network of people to draw on due to their life and study experience. Relationships are a very important part of the help-seeking process, with most students consulting with people they know before approaching less familiar sources of help such as library staff.

When students seek help from the library, they use a variety of methods based on the nature of the question and amount of interaction required. For simpler questions that do not require much interaction, such as help with references or finding physical items, students are likely to ask at the desk or via chat. However, when they have difficulty finding information, they tend to seek help from those with whom they have some familiarity or pre-existing relationship or who can be accessed in a familiar location. Students in this study seek help from known library staff, such as the Aboriginal and Torres Strait Islander staff member employed as an Indigenous Library Liaison Officer, discipline liaison librarians introduced during information literacy training or staff at the desk who were particularly helpful in the past. The location could also be a factor in seeking help from librarians, as some students prefer to wait to meet librarians during a regular drop in service provided at the Indigenous Centre, a familiar environment.

The finding that students prefer to seek help from Aboriginal and Torres Strait Islander people or from staff in Indigenous spaces is also documented in the literature relating to Indigenous students and libraries more widely (Bourke, 1992; Doyle, 2013; Lee, 2008; Lee, 2001; Dodson as cited in Moorcroft & Byrne, 1996). However, although other

studies reported that Indigenous students found that non-Indigenous librarians working outside Indigenous specific libraries were less empathetic and/or less knowledgeable about Indigenous related research and factors influencing Indigenous students' use of libraries, this was only mentioned as an issue by one student in this study (Ball et al., 2019; Doyle, 2013; Tuhou, 2011).

As one of the key groups responsible for teaching information literacy, library staff are also a main source of help for students. In this study, all but one student sought help from the library at some time during their studies. In most cases, students do not seem to find asking for help at the library challenging, with over half requesting assistance at the library information desk at least once. This indicates that students are not afraid to ask questions. This is unlike many other studies which identified that students can experience anxiety in seeking help at the library (Mellon, 1986; Naveed & Anwar, 2019; Savolainen, 2016). However, as all but one student who asked at the help desk are either mature aged, postgraduate or later in their degree, self-efficacy and confidence may also be part of the reduced library anxiety shown by these older students.

Confidence and self-efficacy are major factors in students' attitudes towards seeking help when they encounter difficulties. Students' confidence and self-efficacy have a major influence on students' help-seeking behaviour. For most students, this seems to have grown either with age which brought life experience and/or with how far they have progressed with their studies. Mature aged students are much more likely to express confidence in asking for help than school leavers, whilst younger students' confidence grows as they move through their studies. Other studies have also found that confidence is a key part of the help-seeking process and this confidence grows as people age (Hughes et al., 2017; Sobotka & Raman, 2020; van der Rijt et al., 2013; Volet & Karabenick, 2006).

However, students' confidence could also cause an overestimation of their ability because they do not try to learn new skills. One student in this study showed overconfidence in their knowledge and later found he had missed valuable sources because he did not fully understand how to access information from the library until his second year. This overconfidence is a recognised problem in the information science related literature and is known as the Dunning-Kruger Effect (Gross & Latham, 2007, 2012; Kim & Shumaker, 2015; Kruger & Dunning, 1999; Latham & Gross, 2013; Mahmood, 2016; Oliver, 2008). Part of the reason for this student's overconfidence may also be he is oriented towards performance,

only focusing on the knowledge needed to meet his task requirements rather than focusing on seeking information to learn.

Conducting Complex Aboriginal and Torres Strait Islander Research. While it can be seen above that generally students do not have issues with being able to find and use information, academically literate or not, they experience problems locating information on more complex topics. One of the more complex areas to research is within the Indigenous corpus, in which all students participating in this study have undertaken research. All participants were studying or have completed at least one Indigenous focused subject requiring research on Aboriginal and Torres Strait Islander topics and most incorporate Aboriginal and Torres Strait Islander aspects into every assignment task where they can make them fit. However, in doing so, students need to navigate the cultural interface and engage with the Indigenous corpus, which could be problematic for a variety of reasons. As found in previous research, students experience problems in finding information on less researched topics or by Indigenous authors and noted the need to search multiple sources to find sufficient information (Aase, 2017; Doyle, 2013; Lee, 2001).

Students also encounter difficulties with reading, evaluating, interpreting and critically analysing information. Some students discussed the difficulty in assessing credibility and critically analysing conflicting sources, particularly when there are few materials to compare. Others found reading information could be disturbing or traumatic, particularly historical materials that may express viewpoints not acceptable today or which describe traumatic events such as massacres. Other studies into conducting Aboriginal and Torres Strait Islander research have highlighted that investigating within the corpus can be difficult due to issues of intergenerational trauma (Bucy, 2022; Doyle, 2013; Edwards, 2019; Loyer, 2018).

Summary of findings In seeking to answer the research question: “How do Aboriginal and/or Torres Strait Islander students develop and use academic information literacy skills and/or behaviours”, this study confirms that Aboriginal and Torres Strait Islander students learn academic information behaviours and develop information literacy capabilities through a range of formal and informal learning experiences, both before and during their current studies. However, while students were generally able to find and use information for most of their academic needs, lack of academic preparedness and insufficient scaffolded formal learning and practice opportunities meant that students lacked sufficient information literacy capabilities to meet their information needs when researching complex topics. Many students also rarely sought help from formal academic

support services unless they had existing relationships with staff in those areas, which also reduced opportunities for learning.

Study Reflections and Limitations

By extending the study to include information literacy aspects beyond the use of libraries to include a broader conceptualisation on literacies and learning, this enabled me to get some tangible approaches to their academic development.

However, this study has several limitations. Because its timeframe was limited to a Master's degree, this did not allow for more in-depth research methods, follow-up questions or follow-up interviews to explore some aspects more profoundly. Many of the questions could have been explored in much more depth, particularly in relation to students' use of higher order thinking in their academic information behaviours.

While interviews have enabled a focus on Aboriginal and Torres Strait Islander students' experiences, challenges and insights about academic information literacy and behaviour, interviews rely on students being able to remember and self-report and may not always reflect students' actual practices. It would also be interesting to observe students' actual behaviours to see the processes and tools students use for a better understanding of how students apply these skills in reality.

A further possible limitation is that this study occurred during the COVID-19 pandemic, which may have impacted on the findings as students predominantly studied online from home during the 18 months before interviews were held. This may have affected new student's information behaviours and certainly influenced how information literacy instruction was delivered during this period.

Finally, there is some selection bias towards undergraduate participants undertaking Indigenous Studies subjects as five of the six undergraduate students had undertaken or were in the process taking an Indigenous Studies subject. This was part of a major or minor in Indigenous Studies or as an elective subject. This may indicate that most undergraduate participants already had an interest in learning more about their culture, which may have affected how they chose or developed their assignment topics.

Theoretical Implications

This research adds a small but significant contribution to the wider literature on Aboriginal and Torres Strait Islander academic development in higher education (e.g. Boulton-Lewis et al., 2004; Leenen-Young, 2020; Nakata & Nakata, 2023; Nakata et al.,

2018). By focusing on the Aboriginal and Torres Strait Islander students as learners, this study extends beyond looking at their cultural identity to focus on the capacity for growth in their academic preparedness and use of academic information behaviours. It also has implications for how educational institutions have the potential to contribute as part of the broader self-determination agenda for Aboriginal and Torres Strait Islander people.

Educational Implications

The findings of this study reinforce the need to provide scoped and sequenced opportunities for the learning and practice of academic information behaviours taught by library staff and academics. It affirms the position that one shot training is not sufficient and students need a broader conceptual understanding of information creation and dissemination, such as that as outlined in the ACRL's (2016) *Framework for Information Literacy for Higher Education*.

Information literacy should be considered during whole of program reviews and should be included in a scaffolded manner across appropriate subjects at all year levels of degree programs. This would allow for the reinforcement of lower order skills and development of higher order skills. When delivering information literacy training, sufficient time should be scheduled for students to practise behaviours taught within sessions and hands on activities should be incorporated whenever possible to facilitate learning through problem solving. Students should also be provided with time during the times for lectures or tutorials and outside information literacy training, as well as assessment tasks that ask students to make explicit their information behaviours when researching topics. This would provide students with opportunities to reflect on their information literacy learning and practices and test their higher order thinking skills. Finally, to assist students who do not seek help from the library, Indigenous Student Support Unit and ITAS tutors should be provided with training opportunities to develop their information literacy expertise to ensure students can get sufficient help.

Recommendations and Future Work

There are many opportunities for future research in this area based on both the limitations of the study as well as the need for a deeper exploration of its findings and related topics. Although in this study, a concerted effort has been made to explore all aspects of Aboriginal and Torres Strait Islander students' academic information behaviours and how they were trained to use them, some aspects were only superficially discussed due

to the limited timeframe of the interviewing, inadequate wording of questions and difficulties eliciting information from students. Future research in this field could focus on topics such as how Aboriginal and Torres Strait Islander students orient their assignments and research topics to Indigenous themes, interpret their information needs and select, evaluate, interpret and use the information they find. This could be explored in more depth using different study designs. It is also recommended that future studies further explore Aboriginal and Torres Strait Islander students' information behaviours when conducting Aboriginal and Torres Strait Islander related research, in particular how information literacy training can be delivered more effectively to help both Aboriginal and Torres Strait Islander and non-Indigenous students navigate research in the cultural interface.

Study designs to further explore these aspects include observational and user studies to witness how students apply academic information behaviours, such as providing a research task to observe how they proceed to unpack and research the topic, or working with academic staff to create assessments that would capture information about how they apply these skills within a subject. More in-depth study designs could incorporate methods such as phenomenology or grounded theory, which are methods often used in the field of information science. Co-design projects with Aboriginal and Torres Strait Islander students could also be used to explore Aboriginal and Torres Strait Islander students' adoption of academic information skills and to develop information literacy training and instructional materials to meet the needs of Aboriginal and Torres Strait Islander students.

Conclusion

In conclusion, this study has shown that Aboriginal and Torres Strait Islander students are highly engaged in their research studies. Many are undertaking complex research, particularly on Aboriginal and Torres Strait Islander topics. However, information literacy training currently does not meet the needs of Aboriginal and Torres Strait Islander students undertaking these complex information queries.

In addition, the fact that most students seek help from those with whom they are familiar means that they are not seeking help from those most knowledgeable about the skills they need. Therefore, students should be encouraged to seek help from library and teaching staff early in their research process. Related to this, teaching and support staff should ensure that students have opportunities to learn and practise the academic

information behaviours needed to work with the Indigenous corpus and to navigate the cultural interface, both within individual subjects and across the curriculum.

Improving the information literacy and academic information behaviours of Aboriginal and Torres Strait Islander students not only benefits students during their studies, it also provides them with the skills to be lifelong learners and supports their personal, academic and career aspirations.

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Appendices

Appendix A: Information sheet and consent form for participants

INFORMATION SHEET

PROJECT TITLE: Learning from Aboriginal and Torres Strait Islander students' experiences of seeking and using information for academic purposes and information literacy training.

You are invited to take part in a research project about

- **How you find and use information for your academic studies**
- **How you seek help in finding and using information**
- **How you learn the skills you need to be able to find and use information**
- **Whether learning these skills have helped you succeed in your studies**

The study is being conducted by **Samantha Rannard** and will contribute to the attainment of a **Master of Philosophy (Indigenous)** at James Cook University.

If you agree to be involved in the study you will be invited to participate in a semi-structured interview. This interview should take approximately 45 minutes to one hour of your time to complete and will be conducted either by zoom or in person at the Townsville campus. Sessions will be recorded to capture the audio for analysis.

Interview questions will ask about:

- Your experiences about finding and using information for your studies
- Whether the ways you find and use information has changed during your studies
- What training you have undertaken to help you find and use information and whether you found it useful
- How and where you seek help when having difficulties finding and using information

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice. Should you decide not to take part in the research or withdraw from the research this will not affect your enrolment as a JCU student or your relationship with the researcher or other library staff.

If you know of others that might be interested in this study, can you please pass on this information sheet to them so they may contact me to volunteer for the study.

Benefits and Risks

It is hoped that findings from this study will lead to improved training and support for all Aboriginal and Torres Strait Islander students.

It is possible that the action of participating in this interview may cause some anxiety or distress as interviews can be stressful. It is also possible that questions may highlight some stressful experiences of using the library and the research experience. If participating in this interview does cause any distress please contact the JCU student counselling service, Lifeline or the Townsville Aboriginal and Islander Health Service (TAIHS).

- JCU Counselling service - <https://www.jcu.edu.au/student-equity-and-wellbeing/wellbeing/counselling>
Phone: Cairns campus (07) 423 21150 or Townsville campus (07) 478 14711.
- Lifeline – 13 11 14
- TAIHS – 1800 082 447 / (07) 4759 4000 or via online form at <https://www.taihs.net.au/contact/>

Confidentiality

Contact details and demographic information will be collected as part of the interview process. Contact details will be kept strictly confidential and will not be included in the analysis of data or in any reports, publications or presentations.

The data from the study will be used in research publications such as conference papers and journal articles. You will not be identified in any way in these publications unless you request it.

If you have any questions about the study, please contact – **Samantha Rannard or Dianna Hardy**.

Principal Investigator:

Samantha Rannard

Indigenous Education Research Centre

James Cook University

Phone:

Mobile:

Email: sam.rannard@jcu.edu.au

Supervisor:

Dr Dianna Hardy

Indigenous Education Research Centre

James Cook University

Phone:

Mobile:

Email: dianna.hardy@jcu.edu.au

If you have any concerns regarding the ethical conduct of the study, please contact:

Human Ethics, Research Office

James Cook University, Townsville, Qld, 4811

Phone: (07) 4781 5011 (ethics@jcu.edu.au)

INFORMED CONSENT FORM

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Appendix B: Interview questions and run sheet

List of interview questions and interview plan

*Note sub-questions are to be used as prompts for further information if not discussed by participants in their responses

Introduction:

Hi, how are you today?

My name's Sam Rannard and I am doing my Master of Philosophy (Indigenous).

So the purpose of the interview today is to explore how Aboriginal and Torres Strait Islander students seek and find information for academic purposes and how you learned how to do it.

I've been working as a librarian at university libraries, mostly in regional Queensland over the last 20+ years. A lot of my work in this role has been about teaching students how to identify their information needs, and how to find and evaluate information and how to use the library. I've also spent a lot of time creating print and online resources to support students in learning these skills. I've worked a lot with international students and am aware of challenges they face relating to language and cultural differences. However, apart from helping some Aboriginal and Torres Strait Islander students at the desk I am not so aware of the challenges facing Aboriginal and Torres Strait Islander students in using information and libraries. So this is what led me to being interested in doing this study, particularly as I found very little research on this topic.

I am hoping that what I learn about how Indigenous students experience information and learn information literacy skills will help us provide better learning experiences for Aboriginal and Torres Strait Islander students in using the library and building skills in identifying information needs, and finding, evaluating and using information sources.

So I'm going to ask you some questions about

- Your experiences about finding and using information for your studies
- Whether the ways you find and use information has changed during your studies
- What training you have undertaken to help you find and use information and whether you found it useful
- How and where you seek help when having difficulties finding and using information

Before we begin the interview, can you confirm that you would still like to participate in this study and are happy for me to record this via zoom so I can get an audio recording and transcript (I won't be keeping any video files)? The findings of your interview will be confidential and only summaries of the research findings will be published.

Questions

1. Can you tell me a bit about yourself and your studies?

- a. What are you studying?
 - i. Program / major/ subjects
 - b. Which campus do you study at?
 - c. What year level?
 - i. Previous university study
 - ii. Are you the first in your family to attend university?
 - d. How do you study? Mostly on campus or at home?
 - e. Do you have a computer that you can use at home?
 - f. Do you visit the library?
2. Could you please describe what process you followed the last time you had to find information for an assignment?
 - a. How do you work out what to look for?
 - b. Where do you start looking for information?
 - c. What sources do you use to search for information?
 - d. Do you use any particular methods when searching?
 - e. How did you choose which sources to use?
 - f. What did you do with the information once you had chosen to use it?
 - g. Could you tell me about a time when you found it difficult to find or use information?
 3. Do you think the way you find and use information has changed since you started studying? How?
 4. What type of training have you had on how to find and use information?
 - a. What do you think about it?
 - b. Did you have any problems following the class – eg issues with technology, difficulty understanding concepts?
 - c. Was it timed right, repetitive etc
 - d. Did the content raise any concerns or trauma for you as an Aboriginal or Torres Strait Islander person, such as the nature of the topic?
 - e. Was there any form of pastoral care included in the session, such as how to deal with issues such as trauma or where to seek help if you found the research personally troubling?
 - f. What did you learn about?
 - g. Have the skills you learnt been useful for other situations or subjects?
 - h. When and where did it happen? Who taught it?
 - i. What's the most useful thing you have been taught to help complete assignments?
 5. Where do you get help when you are having problems finding or using information?
 - a. Who do you ask for help?
 - b. What other ways do you get help?
 6. Do you think that being an Aboriginal and/or Torres Strait Islander students presents any particular issues or opportunities when accessing information?
 - c. Topic choices with assignments (if you get them) –
 - i. do you tend to choose Indigenous related topics if available/
 - ii. Do you think of these as opportunities or as problems?
 - iii. Are there any issues that arise from choosing these topics?
 - d. Do university library systems and/or their methods of teaching and learning conflict with your Worldviews/beliefs or present language issues for you?

- e. Was reading and writing or using computers something you did a lot of growing up? Was it part of your life outside school?
- f. Do you feel comfortable finding and using information as part of everyday life and how do you do that? Has this changed over time and in what way?

Conclusion & thank you:

Thanks so much for helping me with my study and participating in this interview. Before we finish was there anything raised in the study that you would like more information about? You can also ask for help from the library of course.

One final question, would you mind if I contact you again by email if I have any further questions or need clarification about anything you mentioned in the interview?

Thanks again, and please contact me if you have any questions later.