INFORMED LEARNING IN THE UNDERGRADUATE CLASSROOM: THE ROLE OF INFORMATION EXPERIENCES IN SHAPING OUTCOMES

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higher education, information experience, informed learning, information literacy, learning, pedagogy, phenomenography, undergraduate, variation theory
Abstract

This research explores the relationship between a teacher and her students’ experiences of information literacy in the classroom and the role that using information may play in learning about a subject. Learning to use information is often considered a part of disciplinary learning; however, little research has explored the relationship between teachers and students’ experiences of information literacy in the classroom. Understanding the role that using information may play in learning about a subject, and how this can be enabled by the teacher, is necessary for designing effective information literacy assignments and lessons that support subject-focused learning outcomes.

Phenomenography, a research approach designed to study human experience, was used in this investigation. The study investigated lessons that encouraged a simultaneous focus on using information and subject content. Data were collected through a series of interviews and classroom observations. The objects of learning for the two observed lessons were analyzed using variation theory. Variation theory suggests that aspects and features of an object of learning must be varied for learners to become aware of the object in a new way. In the lessons that were the focus of my research, the aspects and features were related to using information and subject content. Each lesson was examined from three perspectives: 1) the teacher’s intentions for learning, 2) the interactions that occurred through lessons, and 3) the students’ lived experiences of the lessons.

The findings reveal the teacher’s experience related to developing and implementing two lessons in which students were intended to develop a nuanced understanding of a language and gender topic by analyzing how the topic evolved through research. Thus, the teacher intended for the students to experience using information and subject content simultaneously. In the first lesson, the teacher focused on and separated aspects and features related to information use and subject content. While some students experienced the lesson in the way intended by the teacher, others experienced only information use, not subject content. The focus of the second lesson was on fusing aspects and features related to information use and subject content. Following the second lesson, the students were able to discern information use and subject content simultaneously, thus experiencing the lesson in the way the teacher intended.

The results of the study provide three major contributions to information literacy scholarship. The findings reveal that the way the learner uses information to learn enables a qualitatively different content-focused learning outcome. Additionally, my study identifies an instructional pattern that enables learners to experience information use and subject
content simultaneously, which prior research has associated with greater complexity in students’ experiences of using information. Lastly, an analytical tool was developed to associate aspects and features of an object of learning with information use and subject content, enabling the use of variation theory to study information literacy in disciplinary contexts. Drawing from educational theories, the findings from this research are used to develop a design model that guides instruction in which the learning outcomes are realized through the intentional use of information.
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The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: QUT Verified Signature

Date: October 2015
Dedication

To Joe Cali (1929 - 2007)
“Don't fall down!”
Acknowledgments

If there were only one truth, you couldn’t paint a hundred canvases on the same theme.

(Picasso, 1966)

My deepest thanks go to my three supervisors, Professor Christine Bruce, Dr. Mandy Lupton and Dr. Kristen Rebmann for all the time and energy you have invested in helping me to complete this research. Thank you for the guidance and different perspectives you have all provided along the way that enabled me to shape and strengthen this research. Thank you also for the encouragement you provided that was instrumental in helping me to persist in this journey.

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Scholarship emanating from this research

Papers


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Presentations


Maybee, C. (2012b, August). *Variations in student experiences of learning to use information in context*. Conference presentation at the European Association for Research for Learning and Instruction (EARLI), Special Interest Group 9 on Phenomenography and Variation Theory, Jönköping, Sweden.

1 Investigating experiences of informed learning: A research journey

*Powerful ways of acting spring from powerful ways of seeing.*

(Marton, Runesson, & Tsui, 2004)

This research explores the relationship between a teacher and her students’ experiences of information literacy, and the role that using information may play in learning about a subject. Using information is often considered to be a part of disciplinary learning. However, little research has explored the relationship between teachers and students’ experiences of information literacy in the classroom. Understanding the role that using information may play in learning about a subject, and how this can be enabled by the teacher, is necessary for designing effective information literacy assignments and lessons that support subject-focused learning outcomes.

The research reported here is grounded in phenomenography, an approach designed to study human experience. In contrast to research underpinned by theorized views that frame using information as engagement with select tools, texts, or other contextual elements, the phenomenographic approach allows for the identification of what participants are aware of related to using information in a learning context. I investigated an undergraduate classroom where the teacher designed and implemented two lessons supporting an essay assignment. The students were to develop a nuanced understanding of a language and gender topic by analyzing how the topic evolved through research. In the first lesson, the teacher introduced select elements related to conducting the analysis (information use), and the type of understanding of a language and gender topic (subject content) that may develop from such an analysis. While some students experienced most of the elements in the way intended by the teacher, others experienced only elements related to information use, not subject content. The second lesson drew together information use and subject content by having students critique one another’s thesis statements to determine whether each statement made a claim reflective of how the language and gender topic developed through research. After the second lesson, the students were simultaneously aware of the analysis they were conducting and their emerging understanding of a language and gender topic, indicating that using information was now understood to be the same as learning about the subject content.

The results of the study provide three major contributions to information literacy scholarship. The findings reveal that the way the learner uses information to learn enables a qualitatively different content-focused learning outcome. Additionally, my study identifies
an instructional pattern that enables learners to experience information use and subject content simultaneously, which prior research has associated with greater complexity in students’ experiences of using information (e.g., Limberg, 1999; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006). Lastly, an analytical tool was developed to associate the aspects and features of an object of learning with information use and subject content, enabling the use of variation theory (Marton, 2014; Marton & Tsui, 2004) to study information literacy in disciplinary contexts. Drawing from informed learning (Bruce, 2008), variation theory (Marton, 2014; Marton & Tsui, 2004) and backwards design (Wiggins & McTighe, 2005), the findings from this research are used to develop a design model that guides instruction in which the learning outcomes are realized through the intentional use of information.

1.1 BACKGROUND TO THE STUDY

The increasing significance of information literacy education to higher education is reflected by the inclusion of information literacy goals in an increasing number of policy and advocacy documents intended to guide higher education curriculums (AACU, n.d.; ACRL, 2000; MSCHE, 2003, 2009; NEASC, 2005; WASC, 2008). However, the effectiveness of information literacy education is a major concern. A large scale, on-going study in the United States investigating undergraduates’ self-perceptions of academic and personal research suggests that undergraduates have difficulty using information to complete college-level assignments (Head, 2007, 2008; Head & Eisenberg, 2010b, 2011, 2010c). Additionally, there is no clear evidence that the information literacy education that students typically receive during their undergraduate careers actually prepares them to use information in ways identified as necessary by post-graduation employers (Head, 2012). In part, this may be attributed to a misalignment between the aspirations of the information literacy educational agenda and the instructional approaches typically deployed to teach undergraduates to use information (Kerr, 2009). While there is an expectation that information literacy supports learning in disciplinary contexts, this may not necessarily be accomplished through current educational efforts, which often construe information literacy as a separate curriculum of information skills.

A number of experiential studies of students show that when learners are focused on learning subject content they are typically using information with more complexity and versatility (e.g., Limberg, 1999; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006). This research suggests the need to develop approaches to information literacy education that emphasize how information is used within subject-focused contexts. There have been calls to make information literacy education more central to university curricula (Bruce, 2004;
The Association for College and Research Libraries (ACRL) has developed an information literacy framework suggesting overarching information-related concepts intended to be addressed within disciplinary contexts (ACRL, 2015). However, experiential research with educators suggests that while this group values information literacy for their students, they frequently do not feel capable of teaching their students to use information (Feind, 2008; Limberg & Folkesson, 2006 as cited in-press in Alexandersson and Limberg, 2005; Williams & Wavell, 2007). Informed learning has been developed as a new approach to information literacy education that accounts for contextual needs (Bruce, 2008). Informed learning reframes information literacy as a pedagogic strategy that enables the learning of subject content rather than a new curriculum to be inserted into an existing one. Continued movement towards contextualized information literacy education in higher education requires new research that supports the design of lessons, assignments, and other instruction, which would allow students to use information to enable subject-focused learning outcomes.

1.2 AIM OF RESEARCH

The broad goal of this research is to advance instructional design that supports the widespread adoption of approaches focused on learning to use information in ways that enable discipline-focused learning outcomes. Detailed in Chapter 2, this type of educational approach to information literacy has been described as informed learning, which emphasizes learning as an outcome of using information (Bruce, 2008). To support the design of lessons intended to enable informed learning outcomes, this study investigated informed learning from the perspective of a teacher and students in the naturalistic setting of the undergraduate classroom. The aim of this investigation was to understand the experiences of a teacher and students intentionally using information to learn in this discipline-focused learning context.

The main research question guiding this research was:

What are the qualitatively different ways that a teacher and students experience using information to learn in an undergraduate classroom?

The study’s three objectives were:

- To contribute to knowledge about the various ways that using information to learn subject content is experienced by a teacher and undergraduate students.
- To examine how knowledge about the various ways that using information to learn subject content is experienced by a teacher and undergraduate students may contribute to information literacy education.

- To develop an instructional design model that enables learners to simultaneously experience using information and subject content when learning in disciplinary contexts.

1.3 KEY TERMS

Phenomenographic use of the term ‘experience’

A guiding principle of this research is that to arrange effective instruction we need to understand the different ways that learning is experienced by those directly involved. By focusing on experience as the research interest, my study contrasts with research that typically places an emphasis on behavior when investigating how people interact with information (Savolainen, 2007). Phenomenography, the approach that underpins this investigation, was developed to identify and differentiate experiences. Phenomenography holds that there are a limited number of qualitatively different ways in which people experience a phenomenon (Marton, 1994), or, as is the case with my study, an object of learning.

Variation theory of learning

The theory of learning that governs my research is variation theory. Discussed in a number of monographs (Marton, 2014; Marton & Booth, 1997; Marton & Morris, 2002; Marton et al., 2004), variation theory emerged in the 1990s from educational research that began two decades earlier. Described in detail in Chapter 3, variation theory suggests that encountering variation is necessary for learning to occur.

The twentieth century witnessed the introduction of a number of new theories of learning, which have been underpinned by advancing psychological and sociological theory. Current theories of learning traverse a wide spectrum of interests. Some examples include the brain’s ability to process information, motivation as a factor in promoting engagement, power in framing the dynamics of learning environments, and the role of social interaction in fostering learning. Variation theory may be considered a counter-narrative to commonly espoused views of learning that underpin much of the current educational research. To exemplify the differences, I will make a comparison between variation theory and the widely accepted theory of social constructivism. Introduced by Vygotsky (Vygotsky & Cole, 1978), social constructivism suggests that learning is fostered through social interaction. Social constructivism explicitly or
implicitly underpins a number of pedagogic approaches currently in use in higher education, such as problem-based and collaborative learning, which emphasize group work and other techniques intended to allow students to learn through interactions with one another. In contrast, variation theory argues that specific pedagogic interventions on their own may not produce learning (Marton et al., 2004). Variation theory suggests that encountering variation is necessary for learning to occur. This is to say that learners must encounter variations of select aspects or features related to an object of learning in order to become aware of the object in a new way.

Variation theory views learning as comprised of two interrelated aspects (Marton & Booth, 1997, pp. 84–85). One aspect, referred to as the what of learning, focuses on content knowledge or practices that learners are expected to know or use. The other aspect is the process, referred to as the how of learning, through which learners become aware of new ways of understanding content. For example, a learner in a writing course may be asked to analyse a text (how of learning) to identify specific types of rhetorical arguments made in the text (what of learning). If the students are unfamiliar with the aspects and features of different kinds of rhetorical arguments that they are intended to encounter in the text, these elements will need to be varied in order to enable the students’ awareness. The role of variation as the agent of learning has been shown in an increasing number of studies (e.g., Mok et al., 2002; Olteanu, Holgersson, & Ottosson, 2008; Rovio-Johansson, 1999; Runesson, 1999; Vikström, 2008).

Information and information use

My research is centered on the notion that information is used to learn, and explores experiences of teaching and learning in which using information occurs with intentionality. The concept of information has been defined in a various ways, often by comparing it to other constructs, such as data, or knowledge. For example, data can be viewed as an abstract form of information that becomes information when situated in a context, which in turn becomes knowledge through a meaning-making process (Lloyd, 2010, pp. 10–12). Alternately, Buckland (1991) suggested that information may be understood as knowledge, with information artifacts representing knowledge. Recognizing that people understand information and its usefulness subjectively, Dervin (1977) argued that “information can be whatever an individual finds ‘informing.’” Drawing from the phenomenographic view that a phenomenon exists only as it is experienced by people (Marton & Booth, 1997, p. 13), in this study, I define information in a broad way similar to Dervin. The phrase information use has also been associated with various meanings that may include information practices, information searching, information processing, applying information, or information production (Kari, 2010). For example, information production is the meaning assigned to information use in the Association of College and Research Libraries’ (ACRL) (2000) Information Literacy Competency Standards for Higher
Consistent with informed learning (Bruce, 2008), the approach to information literacy that underpins this research, in this thesis information use encompasses any action undertaken that involves being informed.

**Information literacy**

Information literacy developed in response to social and technological changes occurring in the latter half of the twentieth century. Information literacy models developed in tandem with other literacy models being established during this time period. For example, theories focused on social aspects of literacy influenced the development of critical models that emphasised the situated nature of literacy (see: Gee, 2000; New London Group, 1996). Other models were developed that emphasized multimodal texts brought about by emerging information technologies, such as computer literacy, media literacy or digital literacy. Efforts have been made to determine the borders of information literacy in relationship to emerging notions of literacy (Bawden, 2001). More recently, it has been suggested that information literacy is a framework of which other notions of literacy may be part (Jacobson & Mackey, 2011). Recognizing that there are a variety of concurrent scholarly discourses, my research adopts the perspective that information literacy may be experienced differently by people within and across contexts. Mirroring the various ways of conceptualizing literacy generally, information literacy models may be broadly identified as generic, situated, or transformative in nature (Lupton & Bruce, 2010). Generic approaches to information literacy describe skills and process models, while situated approaches refer to perspectives that emphasize authentic disciplinary and professional ways of using information, and the transformative approach aligns with a critical perspective.

Different ways of constructing information literacy are guided by the ontological, epistemological or theoretical views of learning that underpin them (Limberg, Sundin, & Talja, 2012; Lupton & Bruce, 2010). In this thesis, I adopt a relational or phenomenographic stance that information literacy may be understood as the how part of learning or alternatively the entirety of learning (the how and the what) (Lupton, 2008b). When understood as the entirety of learning, information literacy is the content being focused on. This approach typically aligns with a generic view of information literacy. In contrast, when information literacy is seen as part of learning, it is understood as the process by which information is used to learn about a disciplinary subject. This approach may be associated with situated or transformative views of information literacy.

Described in detail in Chapter 2, the how and what of learning have been identified in two studies of student experiences of information literacy (Diehm & Lupton, 2012, 2014; Lupton, 2008b).
Informed learning

Informed learning is an approach to information literacy that emphasizes learners using information in ways that focus on learning subject content (Bruce, 2008). Discussed in detail in Chapter 2, the framework is grounded in the experiential research on information literacy. The term, “informed learning,” is intended to emphasize learning as an outcome of using information in a way that other constructions of information literacy do not explicitly define. Three principles govern informed learning: 1) builds on learners current informed learning experiences (typically through reflection), 2) promotes simultaneous learning about disciplinary content and the information using process; and 3) enables learners to experience using information and subject content in new ways (Hughes & Bruce, 2012b).

1.4 SIGNIFICANCE OF THE STUDY

This study contributes to information literacy research in a number of ways. Defining information literacy as the process of using information to learn (Bruce, 2008), my research emphasizes subject learning developed through information literacy education within disciplinary contexts. Expanding from workplace and personal life studies which have also construed information literacy as using information to learn (e.g., Abdi, Partridge, & Bruce, 2013; Gunton, Bruce, & Stoodley, 2012; Yates, Partridge, & Bruce, 2009), my study adopts this perspective to study higher education. My study also illuminates how the stakeholders in a formal learning environment, that is a teacher and students, experience information literacy through specific learning activities. Building on earlier studies that have separately examined student experiences (e.g., Andretta, 2012; Diehm & Lupton, 2012; Limberg, 1999; Lupton, 2004, 2008b; Parker, 2006), or teacher experiences (Alexandersson & Limberg, 2005; Feind, 2008; Webber & Johnston, 2004; Williams & Wavell, 2007), my investigation focuses on the relationship between these experiences. My research offers insights into assignments and lessons that foster subject-focused learning outcomes through the intentional design and implementation of specific ways of using information.

1.5 OVERVIEW OF THE CHAPTERS

Following this introduction, Chapter 2 reviews the scholarly literature related to this research. First providing a background on information literacy and learning, the chapter then reviews research into how learners experience information literacy and related concepts. This research reveals that when learners’ experiences of information literacy focus on learning about a subject, they are more complex (e.g., Limberg, 1999; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006), and may involve a simultaneous focus on information use and subject content (Lupton, 2008b). The chapter then reviews approaches to
information literacy and explores scholarship suggesting models for addressing information literacy in context (Bruce, 2008; Lloyd, 2010). The approach to addressing information literacy in context that underpins my research, informed learning (Bruce, 2008), is described, including the principles, characteristics and supporting frameworks. Research on educators’ experiences of information literacy pedagogy are reviewed ( Alexandersson & Limberg, 2005; Feind, 2008; Webber & Johnston, 2004; Williams & Wavell, 2007), revealing that while educators may value information literacy, development may be required to enable them to incorporate it into their teaching. Finally, studies of teachers and students’ experiences of learning enabled through lessons are examined and suggested as an approach for exploring lessons intended for students to use information to learn in higher education.

Chapter 3 outlines the theoretical framework and study methods guiding my investigation. This research is part of a growing body of scholarship that takes an experiential perspective to investigate how people interact with information. Research conducted with this focus aims to uncover or reveal people’s experiences of the world from their own perspectives. Phenomenography, the research approach used in this investigation, was developed to study experiences of learning (Marton, 1994). Developments in phenomenography led to the formation of the variation theory of learning, which provides analytical tools for investigating learning in the naturalistic setting of the classroom. This chapter discusses in detail why phenomenography provides an appropriate research approach to investigate qualitative differences in experience related to using information to learn. The last part of the chapter delineates and discusses the specific research methods used to collect and analyze data and establish the trustworthiness of the research.

Chapters 4 and 5 present the findings that answer the research question that underpins this investigation. The study examined a teacher and students’ experiences of two lessons in a course which intentionally focused on using information to learn. Both chapters are broken into four parts, with the first describing the teachers’ intentions for the lesson, the second describing how the enacted lesson enabled learning, and the third describing the students’ experiences of each lesson. The fourth section of each chapter describes the relationship between the teacher’s intentions and the enacted lessons, and the enacted lessons and students’ experiences.

Chapter 4 describes the findings that resulted from the investigation of the first lesson. In this lesson, the teacher intended to enable the students to understand the subject content (a language and gender topic) by using information in a specific way (analyzing how the topic evolved through research over time). In the enacted lesson, the teacher primarily separated aspects and features of the object of learning related to information use and subject
content. While some students experienced the lesson in the way intended by the teacher, others experienced only information use, not subject content. Chapter 5 describes the findings that resulted from the investigation of the second lesson. The second lesson was intended to enable students to develop thesis statements reflective of their understanding of a language and gender topic resulting from the analysis of how the topic evolved through research. The enacted lesson focused on fusing subject content (a thesis statement making an assertion about a language and gender topic) and information use (analyzing how the topic evolved through research over time). Following this lesson, the students experienced the aspects and features of the object of learning related to information use and subject content in a simultaneous manner that aligned with the teacher’s intentions.

Chapter 6 discusses the significance of the findings by relating them to prior information literacy research. The chapter compares the findings to the informed learning framework developed by Bruce (2008), and discusses how the findings from this study support advances in information literacy education in higher education. Drawing from an instructional design theory (Wiggins & McTighe, 2005), informed learning (Bruce, 2008), variation theory (Marton, 2014; Marton & Tsui, 2004) and the findings from this research, the Chapter concludes by introducing informed learning design. Informed learning design is an instructional design model for designing lessons and assignments that enable students to learn about using information and subject content simultaneously.

Chapter 7 concludes the thesis. The chapter discusses how my research contributes to the growing body of informed learning research. The utility of variation theory as an analytic tool for investigating informed learning is explored. Limitations of this study are outlined. The chapter concludes by identifying three opportunities for future research suggested by my study. The first recommendation is for researching informed learning in educational contexts. The second recommendation is for research identifying contextualized information literacy threshold concepts. Lastly, the findings suggest opportunities to research using information to learn with an approach referred to as learning study, which applies a methodology similar to the one used in my research to iteratively examine and develop lessons.
2 Experiences of information literacy in higher education

If we do not understand where they are coming from, then we cannot develop strategies to help their further development.

(Edwards, 2006)

In Chapter 1, I argued that approaches to information literacy education need to be developed that emphasize how information is used within the contexts in which students are learning about a discipline or profession. In other words, students need to learn about using information as they are learning about subject content (Bruce, 2008; Lloyd, 2010). The approach taken in my research is grounded in the notion that we need to understand how using information supports teaching and learning as it is experienced by educators and learners. To this end, this chapter describes experiences of information literacy and related concepts, such as information use or seeking, which have been revealed through research. A number of experiential studies with students show that when learners are focused on learning subject content they typically use information with more complexity and versatility (e.g., Andretta, 2012; Edwards, 2006; Limberg, 1999; Lupton, 2004, 2008b). Reframing information literacy, not as a new curriculum to be inserted into the existing one, but as a pedagogic strategy that enables the learning of subject content, informed learning has been developed as a new approach to information literacy education that accounts for contextual needs (Bruce, 2008). Although in the initial stages of development, this theoretical approach to information literacy has opened the door for research that focuses on learning as an outcome of using information (Bruce, Somerville, Stoodley, & Partridge, 2013). Continued movement towards contextualized information literacy education in higher education will require teachers to design and implement lessons, assignments, and other instruction in ways that enable students to learn about using information as they explore a subject. The current investigation supports the development of this type of instructional design.

2.1 BACKGROUND ON INFORMATION LITERACY

The ubiquitous information environment brought about by the advancement of information technologies in Westernized societies has caused changes to the ways that individuals and organizations engage with and use information. One response to this change has been the development of the concept of information literacy, which has been used to define peoples’ capabilities and educational needs regarding the use of information. The term information literacy was first introduced in the U.S. in the 1970s (Zurkowski, 1974), and by
1987 the American Library Association (ALA) had appointed a Presidential Committee on Information Literacy, which produced a report espousing the role of information literacy in engendering enterprise and democracy (ALA, 1989). Called for in the report, the National Forum on Information Literacy was created. As a testament to the growing global significance of information literacy, in 2003 the National Forum on Information Literacy (NFIL), together with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and National Commission on Libraries and Information Science (NCLIS), sponsored an international conference in Prague to discuss the importance of information literacy within a global context. The work of this group resulted in the Prague Declaration (2003), which identified information literacy as "key to social, cultural, and economic development of nations, communities, institutions and individuals in the 21st century."

A growing number of specialized professional associations, dedicated journals, international conferences, professional positions, educational programs, distinctive language, and evolving research base, suggest that information literacy may be considered an emerging discipline (Johnston & Webber, 2006). Summarized in a number of review articles (Bawden, 2001; Gunton, Bruce, & Davis, 2014; Hughes, Middleton, Edwards, Bruce, & McAllister, 2005; Loertscher & Woolls, 1999; Rader, 2002; Virkus, 2003), information literacy has emerged as an international research agenda, particularly in westernized, post-industrial countries. In an effort to provide meaningful ways of understanding information literacy as well as developing effective information literacy education, scholars continue to bring to the fore alternative ways of conceptualizing information literacy which are typically associated with broader theoretical perspectives (Limberg et al., 2012; Lupton & Bruce, 2010). Information literacy research has passed through initial and exploratory phases, and has now entered a phase emphasizing contextual concerns (Bruce, 2011).

2.2 WORKPLACE AND COMMUNITY EXPERIENCES OF INFORMATION LITERACY

A number of studies have been conducted from an experiential standpoint identifying the nature of information literacy in workplace or community contexts. Supporting the notion that information literacy education needs to prepare learners to use information in various contexts, this research reveals that information literacy may be experienced quite differently in the varied contexts in which people work and live. This has been shown to be the case in a number of phenomenographic studies of workplace experiences of information literacy, including development workers (McMahon & Bruce, 2002), nurses providing phone health consultations (O’Farrill, 2010), website designers (Abdi et al., 2013) and public librarians (Demasson, Partridge, & Bruce, 2010). For example,
website designers may experience information literacy as building a successful website (Abdi et al., 2013), while public librarians may understand information literacy as developing technical skills for accessing information (Demasson et al., 2010). As an indicator of different ways that information literacy may be understood within various contexts, the terminology used to refer to how information is used in different professional settings may vary as well (Partridge, Edwards, & Thorpe, 2010).

Lloyd and colleagues have conducted investigations using grounded theory and other inductive research methodologies in a number of workplace and community settings, including studies of people with end-stage kidney disease (Bonner & Lloyd, 2012), refugees in Australia (Lloyd, Kennan, Thompson, & Qayyum, 2013), firefighters (Lloyd, 2007), ambulance drivers (Lloyd, 2009b) and nurses working in renal units (Bonner & Lloyd, 2011). This research suggests that not only is information literacy experienced differently in these various contexts, but it also highlights that what counts for information varies across contexts as well. This is exemplified by the study of nurses working in renal units who depend on bodily information from their patients to make decisions:

…when they’re in the chair and they’re having treatment, I mean you can see a patient becoming hypotensive before they actually are, you could just look over and think you don’t look right and you’ll say are you okay and they say ‘I was just starting to feel a bit light headed you know or they’ll yawn’…You go with your gut feeling that they’re not right. (nurse quoted in Bonner & Lloyd, 2011, p. 1217).

Since the introduction of informed learning as a theoretical construct (Bruce, 2008), a growing number of workplace and community studies have been conducted that may be considered informed learning research. Utilizing a number of qualitative methodologies, the unifying element of informed learning research is that the object of research is using information to learn. Leading to qualitatively different research outcomes (Partridge & Yates, 2014), the emphasis is not only on understanding how using information is experienced, but also on understanding how using information relates to learning (Bruce et al., 2013). For example, Harlan, Bruce and Lupton (2012) employed an informed learning perspective to investigate teen content creators in digital environments. The grounded theory analysis of interviews with seven teens revealed a complex and nuanced set of processes these youth engaged in as they gathered, and thought about, information to create new content. Other informed learning studies have focused on how information was used to learn through a participatory design process (Somerville & Howard, 2010), health information literacy of aging Australians (Yates et al., 2012, 2009), religious or spiritual information
literacy (Gunton, 2011; Gunton et al., 2012), and information literacy as it is experienced in crisis situations (Yates, 2014).

Reporting on ways information is used in professional environments or as a member of a community, specific studies in this body of research may influence higher education curricula. However, collectively this body of research suggests another change to information literacy education if it is to support learning and future professional and community endeavor. Noting that the same person may work and live in more than one of the contexts described in these studies, that is to say that someone could work in IT, belong to a religious community and also have health concerns, suggests that many people need to be able to use information within a variety of contexts. The diversity in ways of experiencing information literacy present in various workplace and community contexts suggests that students in higher education may need to use information differently to learn in each of the contexts in which they learn and work.

2.3 EXPERIENCES OF LEARNING

My study suggests that information literacy education should be grounded in an understanding of how students experience using information to learn. By doing so, my investigation is part of a broader educational research agenda that began in the 1970s, which argues that knowledge of learners’ experiences is necessary to understand learning and develop effective instruction.

Educational research has typically focused on determining student ability and motivation. Examining research from psychology and educational psychology on intelligence, motivation, and study habits, Entwistle (1997) observed that such studies tended to reflect theoretical perspectives on learning, which did not take the student perspective into account. He suggested that much of the research conducted from these perspectives adhere to a deficiency model that blames students for any lack of academic success due to inability or disinterest. Entwistle also concluded that while these studies may have explored the nature of learning, they provided little that would help us understand how to enable learning. This, he suggested, required research into the student experience of learning such as the research developed in the 1970s by a group at the University of Gothenburg in Sweden. The early projects of this group investigated how students approached academic tasks, such as reading a journal article for a class assignment (Marton, 1974, as cited in Marton, Hounsell and Entwistle, 1997), or reading sections of a textbook followed by answering either factual questions or questions about what they thought the text was trying to convey. The results of this work indicated that students’ approach to a task was defined by their understanding of the nature of the task (Marton & Säljö, 1976). For example, the
students reading the article either focused on the text itself, specifically on trying to remember it, or the meaning of the text, such as the author’s intentions and point made (Marton & Säljö, 1997). Originally published in 1984 (Marton, Hounsell, & Entwistle, 1984), other studies investigated how learners approached and experienced writing (Hounsell, 1997), listening to lectures (Hodgson, 1997), and problem-solving (Laurillard, 1997).

These early efforts informed the development of phenomenography, which aimed to explore and describe learners' experiences of concepts they were studying in different disciplines, such as chemistry (Renström, Andersson, & Marton, 1990), mathematics (Crawford, Gordon, Nicholas, & Prosser, 1994), physics (Walsh et al., 1993) and computer programming (Bruce et al., 2004). Revealing the different ways that a concept may be understood by students offers insight into what to focus on in teaching intended to enable students to experience the concept in a new way. This was exemplified in the study by Walsh and colleagues (1993). In this research, thirty first-year undergraduates and sixty high school seniors at various institutions were interviewed to determine how they experienced select scientific concepts, including relative speed. Relative speed was understood in six different ways, two of which were ways typically taught. The details of the different experiences provide the necessary information to guide instruction aimed at enabling the students to experience relative speed in a new way:

The relations between conceptions [experiences] highlight for the teacher those aspects of a concept, principle, or phenomenon on which the students focus. In doing so, those aspects that have been overlooked are also highlighted for particular conceptions or understandings. For example, a teacher who is teaching about relative speed can identify the way in which some students focus on comparing the distances traveled by two moving bodies, while overlooking their speeds (or distances) relative to one another; these students focus on two independent bodies rather than the system. (Walsh et al., 1993)

Researchers interested in information use and information literacy also recognized that knowing learners’ experiences was necessary for adding to our understandings of information literacy, and informing information literacy education. Research revealing learners’ experiences will be discussed in the following sub-section.

2.4 STUDENT EXPERIENCES OF INFORMATION LITERACY

In the 1990s, research began to be conducted in a variety of educational settings with the aim of revealing how using information is experienced by students. For example, music composition students experience using information, such as music theory, but also their own
feelings and beliefs, to develop compositions (Lupton, 2014), while experiences of many of the students in a Masters-level information studies course could be traced back to their work in libraries or other information-focused workplaces (Andretta, 2012). There are also findings that are shared or are similar across a number of studies reporting on learners’ experiences of information literacy in various contexts (Edwards, 2006; Limberg, 1999; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006). In the majority of these studies, students’ experiences within the same context are nested. This is to say that more complex experiences subsume the ways of using information present in less complex experiences. For example, in my prior research with undergraduates, the learners with the more complex experience of building a knowledge base were able to use techniques to locate quality sources, and engage with information processes, which were the foci of the less complex experiences (Maybee, 2006, 2007). This has been shown to occur in different learning contexts, such as a specific discipline (e.g., Andretta, 2012; Locke (Diehm), 2009) or participation in a course (e.g., Limberg, 1999; Lupton, 2004, 2008b). The foci of the research reviewed in this chapter include information seeking, information literacy, and using information, as well as more complex constructions, such as learning information literacy, and the relationship of information literacy and learning.

From an educational perspective, it is desirable to enable learners to experience information literacy in more complex ways, as this means that these learners would be able to use information in a variety of ways. This is exemplified in the first research of this sort, which studied experiences of information seeking of Swedish high school students as they researched an essay (Limberg, 1999, 2000). The foundation for future studies of this kind (Lupton, 2004), Limberg’s study took place just prior (1993/94) to Sweden becoming a member of the European Union (EU), and the essay assignment focused on the students evaluating the positive or negative consequences of EU membership. Twenty-five students were interviewed three times during their work on the essay assignment. The analysis revealed that the students experienced information seeking in three nested ways: 1) fact-finding, 2) balancing information in order to make correct choices, and 3) scrutinizing and analyzing. In addition to information seeking, Limberg also analyzed how the students experienced the topic they investigated. Outlined in Table 2-1, one of the most significant findings from Limberg’s study was that it suggested that the students’ understandings of the subject content influenced how they searched. It also suggested that their prior experiences of information seeking and use influenced both their approach to searching and what they learned about the content.
Table 2-1: Interconnected experiences of seeking information and subject content

<table>
<thead>
<tr>
<th>Information Seeking</th>
<th>Subject Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fact-finding</td>
<td>1. Consequences of EU membership cannot be assessed due to lack of facts. Fragmentary knowledge about the EU</td>
</tr>
<tr>
<td>2. Balancing information in order to choose right</td>
<td>2. Possible consequences of membership were related to the subtopic. The EU is understood as mainly economic cooperation</td>
</tr>
<tr>
<td>3. Scrutinizing and analyzing</td>
<td>3. EU membership is considered as a matter of ethical or political decision or commitment. The EU is seen as a power block</td>
</tr>
</tbody>
</table>

Adapted from Limberg, 1999, 2000

As discussed throughout this section, complex student experiences of information literacy focus on learning subject content (Alexandersson & Limberg, 2003; Edwards, 2006; Limberg, 1999; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006). Additionally, the most complex experiences of information literacy may involve one or more of the following three characteristics:

- Transformational – learners change as a person or effect change in others;
- Simultaneous – using information and learning are focused on at the same time; and
- Real-life application – subject content is applied to accomplish something beyond the classroom.

2.4.1 Subject content focus

Across the range of experiences within a contextual setting, the less complex experiences tend to focus on using information, while the more complex experiences tend to focus on disciplinary subject content (Andretta, 2012; Edwards, 2006; Limberg, 1999; Locke (Diehm), 2009; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006). This can be seen in Locke (Diehm) (2009) and Lupton’s (2008b) descriptions of experiences of information literacy in which they mapped experiences to the how and what of learning revealing that in some experiences both the how and what of learning focus on using information, while in others the how focuses on using information and the what focuses on subject content. Locke interviewed fifteen undergraduate and graduate students enrolled in an education program in an Australian university to determine how they experienced learning information literacy.
Lupton (2008b) researched how undergraduate students in a tax law course and two different music composition courses experienced information literacy and learning while engaged in coursework. Eighteen of the student participants were enrolled in a third year-level Australian tax law course that required students to write an academic paper and client letter. Participants in the undergraduate music composition courses were twelve students in a Sound Composition course and seven students in a Jazz Composition course. As Table 2-2 reveals, when information literacy is the what of learning, one part of the how (act and indirect object) will be closely related or the same as the what of learning as it is construed within the experience.

Table 2-2: Information literacy as the entirety of learning

<table>
<thead>
<tr>
<th>Study</th>
<th>Experience</th>
<th>HOW Act</th>
<th>HOW Indirect object</th>
<th>WHAT Direct object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educators</td>
<td>Find information</td>
<td>Learning skills/sources</td>
<td>Finding information</td>
<td>Information</td>
</tr>
<tr>
<td></td>
<td>Engage a process</td>
<td>Process</td>
<td>Developing a process</td>
<td>Process</td>
</tr>
<tr>
<td>Tax Law</td>
<td>Applying academic techniques</td>
<td>Applying</td>
<td>Techniques</td>
<td>Techniques</td>
</tr>
<tr>
<td>Music Composition</td>
<td>Applying craft</td>
<td>Applying</td>
<td>Acquiring techniques</td>
<td>Acquiring techniques</td>
</tr>
</tbody>
</table>

Adapted from Lupton, 2008; Locke, 2009

Exemplified in Table 2-3, when the what of learning is subject content, then only the how aspect of learning represents information literacy.
While the *how* and *what* have not been identified in other student-focused research, it is still possible to determine if different experiences are primarily focused on using information or disciplinary content (see Table 2-4 for an overview). In all of the studies, experiences focused on using information are less complex than experiences focused on subject content. Owing to the nested nature of these experiences, when learners’ information use is focused on learning subject content they tend to engage in more powerful approaches that subsume the ways of using information present in less complex experiences. This is exemplified in the three varied experiences identified in research conducted by Lupton (2004, 2008a) that revealed how students in a first-year undergraduate course experienced
information literacy while researching an essay about environmental issues. The twenty student participants interviewed for the study were researching an environmental problem. The nested categories describing the experiences of information literacy were: 1) seeking evidence, 2) learning about their topic, and 3) learning as a social responsibility. For students seeking evidence, the focus was on searching for information to complete the assignment, while students learning about their topic searched for information to enlighten themselves. Drawing from the ways of using information present in both of the other experiences, students experiencing learning as a social responsibility used information to make connections across fields and disciplines.

With the exception of one study, the contexts of these studies were defined by their disciplinary focus. In contrast, one experiential research project focused on how students learn to search Internet resources, coursework that itself may be considered using information (Edwards, 2006). The data in this study was collected primarily from interviews with Information Technology undergraduate and graduate students taking a course on information resources. The analysis revealed four different experiences of learning to search electronic information resources: 1) looking for a needle in a haystack, 2) finding a way through a maze, 3) using the tools as a filter, and 4) using tools to pan for gold. The students who experienced learning to search electronic information resources as looking for a needle in a haystack drew upon their existing knowledge as they felt they needed to understand the topic thoroughly or they would “never find it out there” (p. 94). This experience was not related to the other three experiences, which progressively made use of search techniques and conceptual understanding of search engines to find information and learn about a topic. Across the four categories a shift occurs from knowledge of the topic being completely separate from searching to learning about the topic is the purpose of searching. This suggests that even when the aim of coursework is learning to use information, more powerful learning may be achieved when using information is directed toward learning subject content.
Table 2-4: Foci of undergraduate experiences of information literacy

<table>
<thead>
<tr>
<th>Study</th>
<th>Using information</th>
<th>Disciplinary subject content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researching an essay</td>
<td>1. Seeking evidence</td>
<td>2. Learning about a topic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Learning as a social responsibility</td>
</tr>
<tr>
<td>Internet searching</td>
<td>2. Finding a way through a maze (partial awareness)</td>
<td>4. Using tools to pan for gold</td>
</tr>
<tr>
<td></td>
<td>3. Using the tools as a filter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: Category 1 - Looking for a needle in a haystack focus does not focus on information or learning</td>
<td></td>
</tr>
<tr>
<td>Music composition</td>
<td>1. Applying craft</td>
<td>2. Discovering process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Expressing art</td>
</tr>
<tr>
<td>Tax Law</td>
<td>1. Applying academic techniques</td>
<td>2. Discovering the big picture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Understanding the tax law system</td>
</tr>
<tr>
<td>Education</td>
<td>1. Learning to find information</td>
<td>3. Learning to use information to create a product</td>
</tr>
<tr>
<td></td>
<td>2. Learning a process to use information</td>
<td>4. Learning to use information to build a personal knowledge base</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Learning to use information to advance disciplinary knowledge</td>
</tr>
<tr>
<td></td>
<td>Note: Category 6 - Learning to use information to grow as a person and to contribute to others was experienced only by graduate students</td>
<td></td>
</tr>
</tbody>
</table>

Locke (Diehm), 2009; Edwards, 2006; Lupton, 2004, 2008

2.4.2 Transformational

The most complex experiences in some of the studies illustrate that information literacy may be understood as supporting personal change or growth. Personal changes in understanding of the self has been theorized as an element of transformative learning (Mezirow, 2009). Parker (2006) investigated graduate student experiences of using information to learn by interviewing six graduate students at multiple points as they prepared a report on a specific area of the information industry in Australia for an Information Environments and Networks course. Of the six experiences identified through Parker’s
research, the two most complex experiences were progressively transformative: growing and changing, and changing views about information in the world. The three most complex experiences identified in Locke’s (2009) study of education students also were indicative of personal growth. The fourth and fifth experiences identified in this context involved personal growth as one sets out to build a knowledge base or extend disciplinary knowledge. This is exemplified by a quote from a student experiencing information as learning to use information to advance disciplinary knowledge:

Learning to use information effectively is an essential component of one’s growth. Information and knowledge challenges where you stand and what you believe in and to be able to use information properly and appropriately and to be able to see the value of gathering information and gaining information it will change the way you are. Not necessarily who you are but what you think. (Student interview, Locke (Diehm), 2009, p. 110)

In the sixth experience identified in Locke’s (2009) study, which was only experienced by graduate students, personal growth become a major focus. Locke suggests this may result from these students being involved in original research. However, Lupton (2004, 2008b) identified that in the most complex experiences uncovered in her study with undergraduates writing an essay about an environmental issue, studying tax law and creating music compositions, information literacy was also experienced as transformative in nature.

2.4.3 Simultaneous focus (on using information and learning)

A significant finding from Lupton’s (2008b) research was that in the student experiences identified in both the tax law and the music composition courses using information and learning were experienced in three different ways: linearly, cyclically or simultaneously (see Table 2-5). The tax law students who experienced applying academic techniques experienced it as a linear process of learning techniques. In the two experiences that focused on discovering the big picture and understanding the tax law system, using information and learning were engaged in iteratively. Focused on either building a knowledge base or using information to support practice, the students experiencing discovering the big picture engaged in a recurring process of determining what they already knew, searching, reading, discovering various viewpoints, and building their knowledge base of the topic.
Table 2-5: Sequentiality of using information and learning

<table>
<thead>
<tr>
<th>Linear</th>
<th>Learning techniques</th>
<th>Applying techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclical</td>
<td>Applying techniques</td>
<td>Learning from the information generated</td>
</tr>
<tr>
<td>Simultaneous</td>
<td></td>
<td>Using information is learning</td>
</tr>
</tbody>
</table>

Adapted from Lupton, 2008

Similar to the tax law students, the music composition students experienced information literacy and learning both linearly and cyclically (Lupton, 2008b). However, the students who understood information literacy and learning in the most complex way, that is expressing art, did not experience them separately, but instead both were brought into focus simultaneously. In this experience, using information was perceived as a form of learning, and learning was considered a type of information. Students experiencing information literacy and learning simultaneously would not experience the two separately, but instead would experience information literacy and learning holistically.

2.4.4 Real-life application

A number of the experiences of information literacy and related concepts, focused on subject content, conceptualize information literacy as applying subject content to accomplish something beyond the immediate learning context. It should be noted that experiencing information literacy as involving real-life application may not necessarily result from contextual factors alone, such as the work of a certain field or a specific type of assignment. This is to say that the real-life application may or may not be a part of experiences of information literacy within the same learning context. This was exemplified by the three experiences of writing an essay uncovered by Lupton (2004). Two of the learner experiences were focused on completing the assignment, while the third and most complex experience of information literacy involved learning as a social responsibility. These students intended to use what they learned to promote social change around environmental issues. As was the case with students studying about information environments (Parker, 2006) and tax law (Lupton, 2008b), in some complex experiences the notion of real-life application may focus on preparing for future professional duties. In other studies, the real-life application aspect was experienced in the present. For example, the most complex way of experiencing information literacy and learning uncovered in Lupton’s (2008b) research
with the music composition students focused on creating art. In Locke’s (2009) study, one of the two most complex experiences of learning information literacy focused on advancing disciplinary knowledge. Although this was only experienced by graduate students who were engaged in original research, it suggests the potential for enabling complex experiences of information literacy through undergraduate research initiatives.

2.5 INFORMATION LITERACY EDUCATION

In the preceding section, the examination of studies of learners revealed that within the same learning context learners tend to experience information literacy across a range of ways that progress in complexity. The experiences focused on learning disciplinary subject content were more complex than experiences focused solely on using information. The most complex experiences of information literacy may also be transformative in nature, simultaneously focused on using information and learning, or involve real-life applications of subject content. Learners with complex experiences of information literacy are able to use information in ways that encompass key elements of less complex experiences. Therefore, it is desirable to develop information literacy education that enables learners to experience using information in increasingly complex ways. In the next section, I review different approaches to information literacy education, and discuss each approach’s suitability for enabling students to experience using information in complex ways.

2.5.1 Information literacy: An additional curriculum

In this sub-section, I outline pervasive approaches in higher education that frame information literacy education as a new curriculum. In the proceeding sub-section, I introduce alternative approaches intended to address information literacy education in disciplinary contexts. The approaches that treat information literacy as a new curriculum aim to introduce students to information-related concepts, such as database use, or the function of Boolean operators. These approaches are grounded in theoretical notions of learning that frame using information as the content-focus of instruction, rather than a part of learning that supports new understandings of subject content. As such, pervasive approaches to information literacy education are not likely to enable learners to experience the full complexity of information literacy in the various contexts in which they learn.

The early constructions of information literacy that informed the approaches to information literacy education now in place were underpinned by the learning theories being used in higher education in the mid-twentieth century. Behaviorist theory was persuasive at the time, while cognitive development theories were coming to the fore. Doyle (1992) conducted the first study aimed at defining information literacy, which used the Delphi
Technique to develop a list of attributes of an information literate person based on the views of experts primarily from the field of education. The resulting list of attributes aligned with ALA’s (1989) description of an information literate person as someone able to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (p. 1). Approaches to information literacy education underpinned by behaviorist theory aim to develop certain behaviors in learners that will allow them to utilize select information skills within a physical or virtual information environment, such as an academic library. While generally no longer considered adequate to describe complex learning, behaviorist theory continues to implicitly underpin many educational practices, including information literacy.

Cognitive development theories challenged behaviorist theories. One of the most widely accepted cognitive theories in education is constructivism, which focuses on how individual meaning is constructed, rather than stored as it would be conceptualized in the behaviorist paradigm. Information literacy educational approaches underpinned by cognitive development theory, such as the process models introduced in the 1980s and 1990s (e.g., Eisenberg & Berkowitz, 1990; Eisenberg, Lowe, Spitzer, & Spitzer, 2004; Irving, 1985; Kuhlthau, 1993; Pappas & Tepe, 2002; Stripling & Pitts, 1988), emphasize learners developing information skills as they relate to various stages of a linear process. One of the most influential models in higher education is the Information Search Process (ISP) developed by Kuhlthau (1993), which takes into consideration students’ affective states as they engage in a research process. Process models derived from other fields, such as problem-based learning (Diekema, Holliday, & Leary, 2011) and inquiry-guided learning (Kuhlthau, 2007), have also been used to teach students about using information. Typically, the goal is for students to learn strategies, comprised of different skills, for using information. While it may be easier to envision process models like inquiry-guided learning enabling students to use information in contextually-related ways, such as undergraduate research, the issue remains that rather than learning different ways that information may be used within a context, students are typically taught one process assumed to be applicable across contexts.

In spite of their effectiveness being disputed by scholars, behaviorist and cognitive development approaches to information literacy were codified in higher education through the publication of the Information Literacy Competency Standards for Higher Education by the Association of College and Research Libraries (ACRL) (2000). Used to develop and validate information literacy instruction and assessment efforts, the Standards describe an
information literate student as possessing select information skills. Such a person would be able to:

- determine the nature and extent of the information needed;
- access needed information effectively and efficiently;
- evaluate information and its sources critically and incorporate selected information into his or her knowledge base and value system;
- individually or as a member of a group, use information effectively to accomplish a specific purpose; and
- understand many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally. (ACRL, 2000)

The ACRL Standards (2000) have been influential in propagating a skills-centric view of information literacy. They were used as the basis of subject-focused standards developed to guide information literacy instruction in various disciplinary settings (ACRL, 2008, 2008, 2011a, 2011b, 2013) as well as information literacy standards developed in other westernized nations (Bundy, 2004; SCONUL, 2011). With their emphasis on quantifiably assessable generic information skills, the ACRL Standards have also underpinned constructions of information literacy in prominent higher education advocacy organizations (AACU, n.d.) and accrediting agencies (MSCHE, 2003, 2009; NEASC, 2005; WASC, 2008). The ACRL Standards have exerted considerable influence over information literacy research, which has frequently relied on the standards to predefine information literacy, and thus limited the exploration of the concept (Lundh, Limberg, & Lloyd, 2013).

Approaches to information literacy underpinned by both behaviorist and cognitive development theories emphasize applying the same tasks, respectively information skills or steps of a process, to use information in different contexts. Repetition of the same tasks, rather than exposure to variations of information skills and processes relevant within specific contexts, are unlikely to prepare learners to transfer the skills and processes they have learned to new situations (Andretta, 2007; Fazey & Marton, 2002). Due to the focus on using information (rather than subject content), approaches to information literacy education based on behaviorist or cognitive development theories are unlikely to produce transformative experiences of learning, and incapable of enabling a simultaneous focus on using information and learning. Therefore approaches based on behaviorist or cognitive
development theories may be ill-suited to enabling complex experiences of information literacy.

2.5.2 Information literacy: A new pedagogy

ACRL (2015) has recently begun to acknowledge and move beyond the limiting scope of the information literacy standards produced in 2000. Suggesting that the generic set of competencies outlined in the 2000 standards could not be transferred across all disciplines and contexts, the Association has recently put forward a new framework for information literacy that recognizes the contextualized nature of information literacy (ACRL, 2015). The new framework is grounded in two concepts: metaliteracy and threshold concepts theory. The metaliteracy model aims to broaden the scope of what is typically considered information literacy. The model draws together technology-related literacies, such as media and digital literacies, under a broadly defined construct of information literacy (Jacobson & Mackey, 2011) and is encompassing of skills associated with various modes through which information is used (Jacobson & Mackey, 2013). Threshold concepts theory (Meyer & Land 2003b) suggests that certain concepts pose barriers that are thresholds to be attained before further learning can occur. This approach has been explored with information literacy (Hofer, Brunetti, & Townsend, 2013), and the new framework has put forward six specific information-related concepts that are determined to be thresholds:

- Scholarship is a Conversation (sustained discourse within a community of scholars or thinkers, with new insights and discoveries occurring over time as a result of competing perspectives and interpretations);

- Research as Inquiry (research is iterative and depends upon asking increasingly complex questions whose answers develop new questions or lines of inquiry in any field);

- Format as Process (processes of developing information resources originate from different needs, motivations, values, conventions, and practices, and result in different formats, but the underlying questions about value of the information and its potential use are more significant than the physical packaging of the information source);

- Authority is Constructed and Contextual (information quality needed for a particular purpose varies, will use various types of evaluative criteria to match that purpose, and will trust the authority of that information with an attitude of informed skepticism, remaining open to new perspectives, additional voices, and changes in schools of thought);
• Searching as Exploration (searching and locating information involves defining an information need; knowing the universe of possible tools, collections, and repositories that may be useful in locating information; using appropriate search vocabularies and protocols to design specific search strategies or questions for using systems, databases, and other organized collections of knowledge; and refining and adjusting search strategies during the process of investigating the research topic); and

• Information has Value (acknowledges that the creation of information and products derived from information requires a commitment of time, original thought, and resources that need to be respected by those seeking to use these products, or create their own based on the work of others; information may be valued more or less highly based on its creator, its audience/consumer, or its message). (ACRL, 2015)

While still providing targets for increasing students’ facility in using information, the threshold concepts presented in the information literacy framework (ACRL, 2015) may be addressed within discipline-focused curriculums. However, this requires a pedagogic strategy through which these concepts are addressed while learning subject content within existing curricula. Two theoretical frameworks have underpinned approaches to information literacy that emphasize using information as defined by the context in which it occurs (Bruce, 2011; Limberg et al., 2012). A socio-cultural approach emphasizes how information literacy manifests as part of cultural and professional practices, while the relational approach focuses on understanding variation in contextualized experiences of information literacy. In this sense, both approaches involve using information in the ways in which it will be used authentically, that is within a context of learning or communicating in a “real-life” manner. In so doing, these two approaches have the potential to influence continued efforts to advance information literacy education in ways applicable to broader learning goals for higher education.

Community of practice

Several approaches have emerged that emphasize information literacy as part of a larger context. For example, a socio-technical perspective on information literacy emphasizes socially negotiated meanings focused on the use of technical artifacts (Marcum, 2002; Tuominen, Savolainen, & Talja, 2005), while critical information literacy, which draws from critical literacy theory, such as Freire (1993) and the New London Group (1996), emphasizes the adoption of a critical stance when using information (Elmborg, 2006; Kapitzke, 2003; Pawley, 2003; Whitworth, 2009a). Some critical constructions of
information literacy highlight linguistic processes (Talja, Tuominen, & Savolainen, 2005), and are exemplified by scholars stressing the need to attend to the power dynamics inherent in language (Kapitzke, 2003; Pawley, 2003). While the specific foci of these approaches, e.g., technical affordances, criticality and power dynamics, are elements of contextualized information use, this research is interested in notions of context more broadly construed. A socio-cultural approach emphasizes using information as defined by the context in which it occurs (Bruce, 2011; Limberg et al., 2012), and in so doing, has the potential to influence continued efforts to advance information literacy education in ways applicable to the broad needs of higher education.

A community of practice pedagogic model has been suggested as best suited to enable information literacy from a socio-cultural perspective (Lloyd, 2010). The community of practice model views learning as a process of enculturation that takes place through participation, enabling an understanding of the tacit practices taking place within the learning context, such as a workplace or community setting (Brown & Duguid, 2000; Lave, 1996; Lave & Wenger, 1991). Socio-culturalists are interested in how information practices are influenced by social norms (Savolainen, 2008, pp. 64-66). A community of practice approach aligns with the socio-cultural view of information literacy as situated and developed through interactions within a social system (Lloyd, 2007, 2010). Socio-cultural constructions of information literacy are currently in use in limited ways in higher educational settings. For example, this approach has been identified in web-based information literacy tutorials in Scandinavian universities (Sundin, 2008). One interesting challenge posed by community of practice theorists, in suggesting that significant learning results from authentic participation in “real” settings (Lloyd, 2007; Lloyd, 2009), is the notion that formal education may play a somewhat limited role in preparing learners to use information in the workplace (Lloyd, 2013). While it is reasonable to assume that workplace settings provide relevance for learners, and thus are likely to produce important learning, educational learning goals are varied and go beyond preparing students solely for the workplace. So while the community of practice model is centered on the real-life application of disciplinary content and may enable a simultaneous focus on using information and learning, as well as be capable of producing transformative experiences of learning, it is most suited for use in higher education in select instances, such as internships, practicums or service learning.

Informed learning

Informed learning is an approach to information literacy that focuses on learners using information in ways that enable learning subject-content (Bruce, 2008). Introduced in
the monograph in 2008 (Bruce, 2008), and further elaborated on in journal articles authored by Bruce and colleagues (Bruce & Hughes, 2010; Bruce, Hughes, & Somerville, 2012; Bruce et al., 2013; Hughes & Bruce, 2012b), informed learning emphasizes academic or professional information practices and how they are experienced, how people interact with and use information while learning, information and knowledge-practices relevant to discipline-centered curriculum, and creative, reflective and ethical use of information for learning. The informed learning framework is grounded in the experiential research on information literacy, and encourages experiences of information literacy that are transformational, simultaneously focused on using information and learning, and emphasize real-life application. The term, “informed learning,” is intended to emphasize learning as an outcome of using information in a way that other constructions of information literacy do not explicitly define, and in so doing places using information in a learning context. In contrast to the normative focus on information practices within a specific site emphasized in a socio-cultural perspective (Lloyd, 2010), informed learning defines context as an aspect of a person’s experience.

Informed learning developed from relational information literacy, an approach based on findings from Bruce’s (1997b) study identifying the seven ways that information literacy is experienced by higher educators. Drawing from the work of other relational learning theorists (Marton & Ramsden, 1988), Bruce (1997a) outlined five pedagogic strategies for applying a relational information literacy model: 1) make learners’ experiences explicit to them, 2) limit learning objectives to address select critical elements; 3) highlight misconceptions, 4) create learning situations that enable learners to come into contact with relevant aspects of various experiences besides their own, and present learners with ways that others experience information literacy (Bruce, 1997a). The major shift between relational information literacy and informed learning, as reflected in three governing principles and twelve characteristics (see Table 2-6), is the emphasis placed on the interrelated nature of using information and learning subject content. The three principles state that informed learning:

- builds on learners current informed learning experiences;
- promotes simultaneous learning about disciplinary content and the information using process; and
- enables learners to experience using information and subject content in new ways. (Hughes & Bruce, 2012b)
The three frameworks that contribute to informed learning are:

- GeST windows model (Lupton & Bruce, 2010);
- six frames of information literacy (Bruce, Edwards, & Lupton, 2006); and
- seven faces of information literacy (Bruce, 1997b).

The GeST windows model theorizes approaches to information literacy as 1) generic, 2) situated, and 3) transformative (Lupton & Bruce, 2010). Generic approaches to information literacy describe skills and process models, while situated approaches refer to perspectives that emphasize authentic disciplinary and professional ways of using information, and the transformative approach aligns with a critical perspective. The six frames of information literacy is a pedagogic model that draws from major approaches taken in teaching and delineates how information literacy is typically represented in those
approaches (Bruce, Edwards, & Lupton, 2006). Table 2-7 provides an overview of the six frames model.

Table 2-7: Six frames of informed learning

<table>
<thead>
<tr>
<th>Frame</th>
<th>Pedagogic Focus – enabling learners to…</th>
<th>Information Literacy is…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Know about information literacy</td>
<td>Knowledge about information</td>
</tr>
<tr>
<td>Competency</td>
<td>Acquire required competencies</td>
<td>Set of competency skills</td>
</tr>
<tr>
<td>Learning to Learn</td>
<td>Construct knowledge appropriately, and develop learning processes</td>
<td>Way of learning</td>
</tr>
<tr>
<td>Personal Relevance</td>
<td>Experience information literacy in ways that aid students to engage with the subject matter</td>
<td>Different for different people</td>
</tr>
<tr>
<td>Social Impact</td>
<td>Understand how information literacy can be leveraged to benefit society</td>
<td>Social critique and reform</td>
</tr>
<tr>
<td>Relational</td>
<td>Discern more powerful ways of seeing the object in question</td>
<td>Complex of different ways of using information</td>
</tr>
</tbody>
</table>

Adapted from Bruce, Edwards, and Lupton, 2006

The seven faces of informed learning revisits the findings from Bruce’s (1997b) study on educators’ experiences of information literacy (Bruce, 2008). This research identified seven ways that information literacy is experienced by educators working in higher education:

- Information technology (using information technology for information retrieval and communication);
- Information sources (finding information located in information sources);
- Information process (executing a process);
- Information control (organizing information for future use);
- Knowledge construction (building up a personal knowledge base in a new area of interest);
- Knowledge extension (working with knowledge and personal perspectives adopted in such a way that novel insights are gained); and
- Wisdom (using information wisely for the benefit of others). (Bruce, 1997b)
Ideally, learners would become aware of all seven of the experiences of information literacy represented in the seven faces model (Bruce et al., 2012). In practice a teacher may aim to enable students to extend their current experience to become aware of more complex ways of understanding information literacy. For example, after determining that learners’ experiences of information literacy focused on finding credible sources, a teacher may attempt to enable the students to experience aspects of building a knowledge base. This would require a shift from a primary focus on using information to a focus on different aspects of subject content centered on a specific topic, and would then be a means to develop the base of knowledge. Reflection is suggested as a way of fostering an expanded awareness of other ways of using information (Bruce, 2004; Bruce & Hughes, 2010; Hughes, Bruce, & Edwards, 2007).

Each of the three frameworks examines information literacy from a different perspective: theoretical (GeST windows), pedagogic (six frames) and experiential (seven faces). Table 2-8 outlines the relationship between these three frameworks, suggesting that the adoption of a specific theoretical, pedagogic or experiential understanding would be indicative of how information literacy was understood in the other two frameworks. That is to say if a teacher emphasized learning to learn as a pedagogic strategy, they may experience (or desire their students to experience) information literacy as an information process, information control, or knowledge construction, which theoretically aligns with a situated view. By contrast, if a teacher adopted a transformative perspective, they would likely focus on social relevance or on an approach inclusive of several pedagogic foci (relational) in their teaching, and experience information literacy as extending knowledge or enabling wise approaches for the social good.
Table 2-8: Informed learning frameworks

<table>
<thead>
<tr>
<th>Theoretical (GeST windows)</th>
<th>Pedagogic (Six frames)</th>
<th>Experiences (Seven faces)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic</td>
<td>Content</td>
<td>Information technology</td>
</tr>
<tr>
<td></td>
<td>Competency</td>
<td>Information sources</td>
</tr>
<tr>
<td>Situated</td>
<td>Learning to Learn</td>
<td>Information process</td>
</tr>
<tr>
<td></td>
<td>Personal Relevance</td>
<td>Information control</td>
</tr>
<tr>
<td></td>
<td>Social Impact</td>
<td>Knowledge-base</td>
</tr>
<tr>
<td>Transformative</td>
<td>Relational</td>
<td>Wisdom</td>
</tr>
</tbody>
</table>

Adapted from Bruce, 2008; Bruce, Edwards, and Lupton, 2006; Lupton and Bruce, 2010

The frameworks may be used both as a design tool to develop informed learning instructional units, and diagnostically to identify how information literacy is reflected in existing instructional units. For example, the six frames model has been used to draw awareness to the implicit and explicit pedagogic perspectives in a course (Whitworth, 2009b), as well as education more broadly (Whitworth, 2011). Due to its focus on learning disciplinary subject content, and therefore supportive of discipline-focused educational goals, informed learning enables learners to use information in traditional as well as online educational settings (Hughes & Bruce, 2012a). Informed by a study with international students (Hughes, 2009), informed learning has been extended to leverage diverse students’ prior experiences in a pedagogic strategy referred to as “inclusive informed learning” (Bruce & Hughes, 2010). Owing to its emphasis on authentic learning and focus on the role of using information in learning disciplinary and professional knowledge and practices, informed learning enables the transference of information skills and practices between contexts, and thus supports lifelong learning (Bruce et al., 2012).

APPLICATIONS OF INFORMED LEARNING

A relatively small number of informed learning projects are currently taking place. These diverse projects provide insight into the implications of using an informed learning approach rather than a skills-centric information literacy approach. Outside of formal learning contexts, informed learning has been used as part of the design of a project by the Center for Colorado and the West to build a digital archive (Somerville & Echohawk, 2011). In framing the project with informed learning principles, project planners considered how
using information could enable the community to learn from photographs, and other artifacts, to become aware of their cultural heritage. Similar outcomes were possible when informed learning was applied in the development of library management and programming (Hughes, 2011; Somerville, 2009), as well as in developing a charrette-style workshop to guide space design within libraries (Hughes & Bruce, 2012b). For example, in the workshop different stakeholders were asked to use various types of information to learn about space design as well as engage in activities that would support the design of a new space.

Hughes and Bruce (2012b) outlined ways that informed learning is being applied in online and blended learning courses in two information science-related masters-level programs at Queensland University of Technology (QUT). When compared to the non-educational applications of informed learning, it may be more difficult to grasp the significance of an informed learning approach describing course activities which often include descriptions of using information in addition to the subject content that students are intended to learn. The difference is that in an informed learning approach, activities focused on using information are intentionally designed to enable students to learn about using information as well as be supportive of content-focused learning outcomes. For example, in the online QUT course students were to learn about cyber-learning, and the course aimed to enhance students’ understanding and equip their practice as educators in online environments. To achieve this, the students learned to use online tools as they simultaneously learned about theories related to learning in online environments. As outlined in Table 2-9, the two blended courses also focused on students using information in semi-authentic ways closely related to the content-focus of the courses. One of the blended courses aimed to enable the students to understand users’ experiences of information, technology, or services. The other blended course taught students about information literacy education. In this course, students investigated and used informed learning through designing and implementing an information literacy education event.
In comparison to the non-contextualized approaches to information literacy education discussed previously, informed learning aligns more broadly with higher education by supporting existing curriculum. While informed learning would require teacher development in order to enable teachers to adopt informed learning pedagogic approaches, there would not be a need to add curriculum typically required by skills-based approaches to information literacy education.

2.6 EDUCATOR EXPERIENCES OF INFORMATION LITERACY

If information literacy education were to be reframed as informed learning and implemented in the discipline-focused classroom, it would most likely be taught by educators who are discipline experts. Research on educators’ experiences of information literacy provides some insight into the preparedness of this group to address information literacy in the discipline-focused classroom. In contrast to a number of studies that have framed information literacy using the ACRL standards (2000) or some other pre-existing model (Gullikson, 2006; Leckie & Fullerton, 1999; McAdoo, 2008), the research discussed in this section focus on how teachers in different contexts experience information literacy or information literacy education. Following Bruce’s (1997b) research, other studies were conducted to determine educators’ experiences of information literacy in varied educational contexts. All of these studies focused on educators’ experiences of information literacy pedagogy (Alexandersson & Limberg, 2005; Feind, 2008; Webber & Johnston, 2004;
Williams & Wavell, 2007); one of the studies had the additional aim of revealing educators’ experiences of information literacy generally (Webber, Boon, & Johnston, 2005).

While one might expect educators to experience information literacy in more sophisticated ways than learners, research findings suggest that this is not the case. As outlined in Table 2-10, educators experience information within the same contextual setting in various ways. As with student experiences of information literacy, some educator experiences focused solely on using information, while others focused on disciplinary content. This is exemplified in research conducted by a team in the United Kingdom (UK) that investigated how academics in the disciplines of (Bruce, 1997b) marketing and English experience information literacy and information literacy pedagogy. The team interviewed twenty English and twenty marketing academics (Boon et al., 2007; Webber et al., 2005). The English academics experienced information literacy in four different ways: 1) accessing and retrieving textual information, 2) using IT to access and retrieve information, 3) possessing basic research skills and knowing how and when to use them, and 4) becoming confident, autonomous learners and critical thinkers (Webber et al., 2005), while the marketing academics experienced information literacy in six different ways: 1) accessing information quickly and easily to be aware of what’s going on, 2) using IT to work with information, 3) possessing a set of information skills and applying them to the task in hand, 4) using information literacy to solve real-world problems, 5) becoming a critical thinker, and 6) becoming a confident, independent practitioner. For the marketing academics, the first three experiences clearly focus on using information, while using information literacy to solve real-world problems involves understanding information to develop appropriate solutions, and becoming a critical thinker requires understanding and interpreting information. Becoming a confident and independent practitioner requires making sense of information to be applied in real world contexts. In contrast, the English teachers did not associate meaning making as part of information literacy, but rather experienced the exploration of meaning as a fundamental part of the discipline of English.

The marketing academics’ experiences of information literacy pedagogy were identified as: 1) someone else’s job, 2) upgrading students’ information toolbox at an appropriate point, 3) facilitating access to a variety of resources, 4) showing students how and when to use information skills, and 5) helping students understand how information literacy is critical to them, for marketing and life (Webber & Johnston, 2004). While the researchers noted that there is a relationship between experiences of information literacy, and information literacy pedagogy, the marketing academics’ experiences of pedagogy only focused on using information and not subject content. Unlike the other experiences, the
experience of helping students understand how information literacy is critical to them, for marketing and life is not directly concerned with skill development, but instead emphasizes how these skills are important.

Across different contexts, educators’ shared experiences of information literacy, and information literacy pedagogy were: accessing information (Bruce, 1997b; Feind, 2008; Webber et al., 2005; Webber & Johnston, 2004; Williams & Wavell, 2007), critical thinking (Webber et al., 2005; Williams & Wavell, 2007), or becoming an independent learner or practitioner (Webber et al., 2005; Webber & Johnston, 2004; Williams & Wavell, 2007). This research did not explicitly examine if educators approached using information and learning simultaneously. However, the wisdom experience identified in Bruce’s (1997b) study emphasizes the transformative nature of information literacy. Experiences in several studies also suggest applying subject content to learn or accomplish something (Bruce, 1997b; Webber et al., 2005; Williams & Wavell, 2007).

This research suggests that while some educators could transition to a model of information literacy education designed to enable learners to use information to learn, others would require development. Specifically, educators would need to be aware of the full range of information literacy experiences within the context in which they teach in order to design instruction that encourages students to experience information literacy in complex ways that foster discipline-focused learning outcomes.
Table 2-10: Educators’ experiences of information literacy

<table>
<thead>
<tr>
<th>Study</th>
<th>Using information</th>
<th>Disciplinary subject content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary school</strong></td>
<td>1. Finding information</td>
<td>3. Draw meaning from information</td>
</tr>
<tr>
<td></td>
<td>2. Comprehend texts</td>
<td>5. Show critical awareness</td>
</tr>
<tr>
<td></td>
<td>4. Perform information skills</td>
<td>6. Engage in independent learning</td>
</tr>
<tr>
<td></td>
<td>3. Draw meaning from information</td>
<td></td>
</tr>
<tr>
<td><strong>Higher education, general</strong></td>
<td>1. Information technology</td>
<td>5. Knowledge construction</td>
</tr>
<tr>
<td></td>
<td>2. Information sources</td>
<td>6. Knowledge extension</td>
</tr>
<tr>
<td></td>
<td>3. Information process</td>
<td>7. Wisdom</td>
</tr>
<tr>
<td></td>
<td>4. Information control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Accessing and retrieving textual information;</td>
<td></td>
</tr>
<tr>
<td><strong>Higher education, English</strong></td>
<td>2. Using IT to access and retrieve information;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Possessing basic research skills and knowing how and when to use them</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Knowledge extension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Becoming confident, autonomous learners and critical thinkers</td>
<td></td>
</tr>
<tr>
<td><strong>Higher education, marketing</strong></td>
<td>1. Accessing information quickly and easily to be aware of what’s going on</td>
<td>5. Becoming a critical thinker</td>
</tr>
<tr>
<td></td>
<td>2. Using IT to work with information</td>
<td>4. Using information literacy to solve real-world problems</td>
</tr>
<tr>
<td></td>
<td>3. Possessing a set of information skills and applying them to the task in hand</td>
<td>6. Becoming a confident, independent practitioner</td>
</tr>
<tr>
<td></td>
<td>6. Becoming a confident, independent practitioner</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Bruce, 1999; Webber, Boon and Johnston, 2005; Williams and Wavell, 2007

2.6.1 **Barriers to addressing information literacy**

In addition to considerations of educator preparedness necessary to advance information literacy in the ways suggested by this research, there are other potential barriers to addressing information literacy in the disciplinary classroom. With the exception of some of the marketing academics in Webber and Johnston’s (2004) study, the findings from the various studies with educators indicate a misalignment between the value placed on information literacy, and willingness or ability to teach it. In the research on educators’ experiences of information literacy, three barriers were identified to addressing information literacy in their classrooms:

- views of learning or learner characteristics that suggest limitations to learning;
• learners’ lack of preparedness; and

• curriculum constraints.

The participants in Feind’s (2008) study of higher educators suggested the lack of class time, and the language skills of some students, could be barriers to teaching students to use information. Barriers to teaching information literacy were also uncovered in the two studies that investigated educators in K-12 environments, but these concerns are highly relevant in higher education settings as well. Limberg and Folkesson (2006 as cited in-press in Alexandersson and Limberg, 2005) draw our attention to how teachers’ views of learning, implicit or explicit, shape their pedagogic actions. Limberg and Folkesson’s research investigated how teachers and librarians in Swedish schools experience information literacy education. The eighteen teachers and librarians who were interviewed once a year over a three year period had three different ways they understood how students learn to critically evaluate information sources: 1) a process of maturity, 2) a personal characteristic, and 3) a process of conscious learning. The researchers point out that the teachers in the study who understand learning to use information as requiring maturity or select personal characteristics would not consider it possible to teach in ways that would enable students to use information unless they perceived the students possessed the required maturity or potential.

As outlined in Table 2-11, the secondary school teachers interviewed in Williams and Wavell’s (2007) study expressed an inverse relationship between the prioritization of an information literacy experience, and their ability to teach in a way intended to make students aware of aspects of that experience. The teachers placed a lower value on information skills, yet noted that they could include this into their classwork. However, citing curriculum constraints as well as unprepared learners, the teachers thought it would be difficult to address the three experiences they had identified as the most important, which included drawing new meaning from using information, comprehending texts (traditional literacy), and enabling independent learning.
Table 2-11: Secondary school teachers’ value of and influences on teaching information literacy

<table>
<thead>
<tr>
<th>Category</th>
<th>Priority</th>
<th>Influences on ability to teach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding information</td>
<td>Not valued</td>
<td>Easy to administer</td>
</tr>
<tr>
<td>Perform information skills</td>
<td>Low</td>
<td>Some control</td>
</tr>
<tr>
<td>Show critical awareness</td>
<td>Varies</td>
<td>Some control</td>
</tr>
<tr>
<td>Draw meaning from information</td>
<td>High</td>
<td>Unsure how to influence</td>
</tr>
<tr>
<td>Comprehend texts</td>
<td>High</td>
<td>Not always sure how to influence</td>
</tr>
<tr>
<td>Engage in independent learning</td>
<td>High</td>
<td>Unsure how to influence</td>
</tr>
</tbody>
</table>

Adapted from Williams and Wavell, 2007

The development needed to enable higher education classroom teachers to teach in ways that encourage their students to experience the full complexity of information literacy will need to address perceived barriers. Views of learning held by teachers that are incompatible with immediate learning, such as developmental theories suggesting students need to be at a specific maturity level to grasp select notions, applies as much to learning subject content as it does to using information. Learner preparedness is also commonly cited as a concern in undergraduate education. In bringing information literacy into the subject-focused classroom, learner preparedness would not be a new concern. Views of learning held by teachers that are incompatible with immediate learning and learner preparedness are barriers to learning that are not specific to information literacy education. Curriculum constraints, an oft expressed barrier to the suggested addition of new content, would not be a concern if an informed learning approach were adopted to address information literacy education in higher education. Informed learning would not add new content to the curriculum, but rather take a specific pedagogic approach to learning existing content.

2.7 EXPERIENCES OF LESSONS

Enabling learners to experience the full complexity of information literacy by implementing an informed learning approach to information literacy education requires empowering educators in higher education to teach in new ways. The principles and characteristics of informed learning provide some guidance for teaching from this perspective (Hughes & Bruce, 2012b). However, effective teaching involves designing and implementing lessons to facilitate the kind of learning that a teacher intends. In the case of
informed learning, these lessons would encourage students to use information to learn, and focus simultaneously on using information and disciplinary subject content. These lessons might utilize an approach that emphasizes a real-life application of learning. To understand the effectiveness of these lessons would require understanding the experience of the teacher, specifically the teacher’s intentions for learning, and the experiences of the learners after the lessons were implemented. With the exception of some meta-analysis comparing studies of teachers’ experiences of information literacy to studies of students’ ways of using information to complete assignments (Alexandersson & Limberg, 2005; Limberg, Alexandersson, Lantz-Andersson, & Folkesson, 2008), this has not been the focus of information literacy research. However, there is a growing body of research that investigates how lessons intended to address discipline-focused learning are experienced by teachers and students. These studies compare teachers’ intentions for the learning to be accomplished through a lesson with the implementation of the lesson, and finally to the students’ changes in awareness that result from participating in the lesson.

There are two research approaches that use similar methods to study experiences of lessons from various perspectives. In both approaches, the variation theory of learning is used as a theoretical tool to determine the elements of an object of learning that are necessary for a learner to be aware of to experience the object of learning in a new way (Marton et al., 2004). Variation theory is discussed in detail in Chapter 3. The first approach has a pure research interest, indicating that the primary purpose of the research is to develop new understandings. A number of studies have been conducted from this perspective (e.g., Åkerlind, McKenzie, & Lupton, 2014; Mok et al., 2002; Olteanu et al., 2008; Rovio-Johansson, 1999; Runesson, 1999; Vikström, 2008). The outcomes of this type of research are exemplified in Vikström’s (2008) study of seven to twelve year-old’s ways of understanding cellular respiration and photosynthesis.

In Vikström’s (2008) study, six secondary school teachers agreed to what constituted the object of learning for the lesson, the lessons were video-taped, and following the lesson select students were interviewed. The analysis revealed that how the students understood cellular respiration and photosynthesis was closely related to their teacher’s presentation of the concepts in the lesson. In one of the classrooms it was not possible for students to discern the function of sugar and oxygen within the plant, only that this was important, yet in another classroom the students were enabled to discern that sugar is used as a building material, but the function of oxygen was still unclear. The most complex understanding was only made possible in one classroom, and the students in this class were the only ones to express this understanding during the post-lesson interviews. These students were also the
youngest participants in the study, suggesting that a complex understanding of cellular respiration and photosynthesis was not the result of the students’ maturity.

The second approach also uses variation theory, but places it in a *lesson study* framework. Developed in Japan, lesson studies are lessons that are typically selected to address problematic material, collaboratively planned, and then observed by a group of teachers, as well as video-recorded and then discussed (Lewis, 2000). Stigler and Hiebert (1999) are credited with introducing lesson study methodology to the West. Lesson studies can be understood as a specific kind of *pedagogical action research*, in which teachers are also educational researchers (Elliott & Tsai, 2008). The approach that resulted from bringing together variation theory within the lesson study framework is referred to as *learning study*. In learning studies, lessons are planned and implemented iteratively until the lessons produce the intended learning experiences for the students. To date, learning studies have primarily taken place in secondary educational settings (Chik & Marton, 2010; Davies & Dunhill, 2008; Holmqvist, 2011; Ling, Chik, & Pang, 2006; Lo, Pong, & Chik, 2005; Pang & Marton, 2003, 2005; Runesson, 2005).

### 2.8 GAP IN KNOWLEDGE

Informed learning outcomes require intentionally designing lessons and assignments in which using information supports subject focused learning outcomes. To date, very little research has been conducted that explores informed learning in the disciplinary classroom. Hughes and Bruce (2013) have conducted a case study to investigate how informed learning enabled international students to extend their disciplinary knowledge of English language teaching. The analysis of eighteen reflection papers and eleven interviews with students revealed that informed learning, with its emphasis on varied experiences, creates a learning environment supportive of diverse learners and learning needs. Whisken (n.d.) is currently conducting a doctoral study using an action research approach in which she is working with twenty-five high school teachers to develop course curricula that emphasizes the role of information in enabling students to learn. In addition to these efforts, research is needed that investigates informed learning at the lesson level from the teacher and students’ perspectives.

The need for the research presented in this thesis is illustrated in a study in which students were required to use information, yet not enabled to use information in the ways necessary for achieving subject-focused learning outcomes (Alexandersson & Runesson, 2006). In this study, the teacher of a ninth grade social science course was interviewed prior to instruction to determine his intentions for the learning that should result from an independent learning assignment. In this assignment, students worked in groups to search for webpages
introducing them to conflicts in the world, and to determine causes of conflict generally (Alexandersson & Runesson, 2006). Sixteen students were observed as they engaged in searching the Internet, and were interviewed after the assignment was completed. During the course of the assignment each student had engaged with approximately sixty webpages with variable types of content. However, the analysis revealed that the students were primarily focused on the timeline of events relating to the conflicts they investigated rather than other dimensions, such as political, socio-economic, and so forth. Although the students had access to a wealth of online information, the unguided nature of the assignment did not result in the students becoming aware of causes of conflict, which was the teacher’s intended outcome for the project. This study exemplifies the need for instructors to attend to information use as well as subject content when designing lessons and assignments in which using information is intended to support learning.

To develop the design of lessons intended to enable informed learning outcomes, we must understand how information is used to learn from the perspective of the teacher and students in the naturalistic setting of the classroom. To address this gap in knowledge, the findings reported in this research (described in Chapters 4 and 5) uncover the relationship between a teacher’s intentions for, and implementation of, lessons intended for students to use information in select ways to understand subject content, and the students’ experiences of those lessons.

2.9 CHAPTER CONCLUSION

This chapter reviewed research related to how learning, information literacy, and other information-related concepts, are experienced in various contexts. Experiencing the full complexity of information literacy involves focusing on using information to learn disciplinary content. Current approaches to information literacy education make information skills and strategies the content focus, and thus may not enable complex ways of experiencing information literacy. By contrast, informed learning is an approach to information literacy education that may enable complex understandings (Bruce, 2008). While studies have been conducted examining the relationship between teachers’ intentions, what is enacted in the classroom, and student learning, this research has yet to examine information literacy as an outcome of subject-focused lessons. Chapter 3 discusses how the theoretical framework and study methods used in this research guide data collection and analysis to reveal experiences of using information to learn in a disciplinary undergraduate classroom.
3 Approach to studying informed learning in the undergraduate classroom

...cognosco ergo sum (I experience, therefore I am)

(Marton, 1996)

Emphasizing the experiential nature of learning, Marton, Runesson, and Tsui (2004, p. 5) made the statement, “Powerful ways of acting spring from powerful ways of seeing.” This deceptively simple statement argues for the need for research that reveals the experiences (the ways of seeing) of learners. It suggests that our abilities to perform in any number of ways, scholastically, professionally and so forth, are informed by how we experience that which we are trying to achieve. Phenomenography, the research approach used in this study, was developed to investigate experiences of learning (Marton, 1994). Research conducted with this focus aims to uncover or reveal people’s experiences of the world from their own perspectives. Developments in phenomenography led to the formation of the variation theory of learning, which provides analytical tools for investigating learning in the naturalistic setting of the classroom.

This chapter discusses the nature of phenomenography and variation theory, relating them to the study of people’s experiences of using information. It also discusses the suitability of phenomenography as an appropriate research approach to investigate qualitative differences in experience related to using information to learn. The methods related to data collection and data analysis are described, as well as the approach taken in establishing the trustworthiness of the study.

3.1 PHENOMENOGRAPHY

Phenomenography has always had a research interest in learning (Marton, 1994). Developed in the 1970s out of the work of a research group at Gothenburg University in Sweden, phenomenography was part of a new wave of educational research methodologies that offered alternatives to positivist or behaviourist methodologies that emphasized an objective stance in which people are separate from the phenomena with which they are engaged (Svensson, 1997). Early projects that informed the development of phenomenography investigated how students approached academic tasks, such as reading a journal article for a class assignment (Marton, 1974, as cited in Marton, Hounsell and Entwistle, 1997). In what is sometimes called the first phase, phenomenography was used to explore and describe learners’ experiences of concepts they were studying in different disciplines, such as chemistry (Renström et al., 1990), mathematics (Crawford et al., 1994), physics (Walsh et al., 1993) and computer programming (Booth, 1992).
Studies reviewed in the information literacy domain exemplify this type of research (e.g., Andretta, 2012; Bruce, 1997b; Edwards, 2006; Limberg, 1999; Lupton, 2004, 2008b).

My research may be considered part of a second direction of phenomenography, which began in the late 1990s. During this phase, phenomenographic methods and analytical tools were developed to investigate teaching as well as learning for the purpose of revealing the relationship between them (e.g., Mok et al., 2002; Olteanu et al., 2008; Rovio-Johansson, 1999; Runesson, 1999; Vikström, 2008).

3.1.1 Relationality: The phenomenographic view of experience

The term phenomenography may have been first introduced by Sonnemann (1954). In distinguishing between Karl Jaspers and Martin Heidegger’s conceptualizations of phenomenology, Sonnemann referred to the former as phenomenography. Marton (1981) adopted the term to describe an approach to educational research being developed by he and his colleagues that focused on mapping out variations in ways of understanding select phenomena. The development of phenomenography was influenced by the writings of phenomenologists, such as Husserl (1980) and Gurwitsch (1964). Marton (1981) described the research aims of this type of phenomenography as finding and systematizing the “forms of thought in terms of which people interpret aspects of reality” (p. 180). Referred to as relationalist or constitutionalist, the central tenet of phenomenography is that experience is “constituted as an internal relation between” a person and the world (Marton & Booth, 1997, p. 13). This ontological view contrasts with both constructivism (which argues that individuals create internal mental models that represent aspects of the world), and sociocultural perspectives (which view existence as shaped and formed by the world) (Marton, 1996). The phenomenographic view of experience is non-dualist, meaning that there is no separation between a person and the world (Marton & Booth, 1997, pp. 12–13). From a phenomenographic perspective, the world does exist independently, but humans can only perceive it through their experiences (Marton, 1996).

There are two other notions that govern the phenomenographic view of experience. First, phenomenography belongs to a group of differentiation theories (Marton, 2014, p. 55). This group of theories suggest that the exact way the world is constituted may vary between people. Phenomenography holds that there are a limited number of qualitatively different ways in which people may experience any phenomenon (Marton, 1994). A substantial number of phenomenographic research studies conducted since the 1980s support this finding (Marton & Pang, 1999). Second, from the phenomenographic perspective, experience is understood as composed of two aspects: 1) referential, and 2) structural (Marton & Booth, 1997). Referential
elements refer to the different meanings. Structural elements indicate what someone focuses on when experiencing a phenomenon in a particular way. These structures are made up of an internal and external horizon, referring to what is the focus of attention and what is in the background. As outlined in Chapter 2, learning is comprised of two aspects, the what (also called the direct object), which relates to the referential aspect, and the how, which relates to the structural aspect. The how of learning is a formation of two separate but interrelated parts: the act of learning, e.g., applying, memorizing, synthesizing, and so forth, and the indirect object of learning, which refers to what the act is directed at, i.e., the capabilities the learner is trying to develop (Marton & Booth, 1997, pp. 84–85).

3.1.2 **Variation theory framework**

Signifying the second phase of phenomenography, in the 1990s a group of phenomenographic scholars developed *variation theory*, a theory of learning that reflects what phenomenographic researchers had learned from their work in the preceding two decades. This marked an important shift in the focus of the phenomenographic community from methodological to theoretical concerns (Marton & Pang, 1999). Over the next two decades, the evolution of variation theory was discussed in four monographs (Marton, 2014; Marton & Booth, 1997; Marton & Morris, 2002; Marton et al., 2004). Variation theory suggests that to understand the meaning of something requires that a learner notices how it differs from other things (Chik & Marton, 2010, p. 10). Teaching is typically considered one of the chief ways in which learners are enabled to notice differences. That is to say that how a teacher varies a topic through classroom interaction influences what the students may learn about the topic (Marton & Morris, 2002, p. 133).

Variation theory describes learning as a change in awareness (Marton, 2014; Marton et al., 2004). The focus of learning is referred to as an object of learning (Marton et al., 2004, p. 4). An object of learning involves an act, e.g., memorizing, interpreting, etc., which is directed towards a subject, e.g., formulas, concepts, history of a period, etc. An object of learning is also made up of aspects and features (Marton, 2014). Being aware of an object of learning in a particular way requires a learner to discern one or more of its critical aspects or features. An aspect is a common element of the object, while a feature is a specific type of aspect (p. 43). For example, “color” is an aspect of a vehicle, but “blue” is a feature of a blue vehicle. Also called *synchronic simultaneity*, discerning critical aspects or features mean focusing on parts within wholes, and wholes within the greater context, simultaneously. Not all aspects or features are critical, but the discernment of critical aspects and features is necessary to promote changes in awareness. For example, if a teacher introduces her class to “scholarly journal articles,” then “peer review” is a critical feature, while “scholarly
“publishing” provides a background from which the concept of “journal articles” can emerge. A pattern of variation describes how the critical aspects and features are varied in a way that is necessary for discerning an object of learning. There are three types of variations that can come together to create a pattern:

- **Contrast** is when an aspect or feature is compared with something else. The feature of peer review may be compared to another review process, such as editorial review.

- **Generalization** is a form of “diachronic simultaneity,” meaning that two instances of an aspect or feature encountered at different points in time are experienced at the same time. For example, a critical feature of scholarly journal articles may be the “genre” of the “journal.” Students might be asked to identify instances when they have encountered this genre. One can identify a “journal” because they simultaneously connect previous encounters with journals to other instances when they encountered the genre of “journal,” e.g. popular magazines, personal journals, etc.

- **Fusion** is a type of variation that happens when critical aspects and features are focused on simultaneously. (Marton, 2014)

Earlier work described a fourth variation, **separation**, in which select elements of an object of learning are considered to be experienced as varying while other aspects remained “invariant” (Marton et al., 2004). However, in his most recent work, Marton (2014) argues that contrast and generalization are forms of separation. Variation theory views the research object in the study of a learning situation as the **object of learning**, which is comprised of three linearly distributed, but inter-related, parts (Marton et al., 2004):

1. Intended object of learning (the teacher’s intent for the learning);

2. Enacted object of learning (the object of learning that is co-constructed by the teacher and the students in the classroom; typically consisting of the teacher’s presentation, but includes any educational interaction, such as peer teaching, engagement with informative materials, etc.); and

3. Lived object of learning (the learner’s experience or understanding of the object of learning after participation in the enacted object of learning). (Marton et al., 2004)
The intended object of learning is taken from the teacher’s perspective and reflects his or her experience of the subject matter and what they plan for students to focus on and manipulate in the lesson. The intended object of learning can be equated with learning outcomes, learning objectives, learning goals or targets (Lo et al., 2005; Pong & Morris, 2002, p. 16). The enacted object does not always match the intended one. As Chik and Marton (2010) point out, “teachers frequently have to make instant adjustments during the course of lessons in response to real and dynamic classroom situations, which may end up in a deviation from, or enrichment of, what they had originally intended” (p. 14). The enacted object of learning describes the researcher’s experience of what constitutes the actual conditions for learning, and how the object of learning may have been brought to the students’ awareness. The lived object of learning describes the students’ experience of what they actually discerned from what was being taught in the lesson.

3.1.3 **Studying information experience with phenomenography**

My research is an example of *information experience* research, meaning that it examines how people experience using information. The umbrella concept of information experience was discussed in 2014 in a monograph titled *Information experience: Approaches to theory and practice* (Bruce, Partridge, Hughes, Davis, & Stoodley, 2014). Until fairly recently, research that focused on humans using information has typically been labelled as part of the *information behavior* paradigm (Chelton & Cool, 2007; Fisher, Erdelez, & McKehnie, 2006; Spink & Heinström, 2011; Wilson & Macevičiūtė, 2012). Information behavior has been associated with a cognitive viewpoint which holds that handling information is normally triggered by needs and motives (Savolainen, 2007). Savolainen pointed out that some research exploring people using information is underpinned by other perspectives, and suggested the need for researchers to be more explicit concerning their approach to promote greater intentionality concerning the concepts underpinning research. Typically, two concepts, information experience and *information practice*, have offered alternative ways of understanding and framing information literacy research. Exemplified in several studies (Lloyd, 2007; Lundh & Limberg, 2008; McKenzie, 2003; Savolainen, 2008; Talja, 2005), information practice is grounded in a sociocultural perspective, and, as the name suggests, explores how people engage in information *practices* as part of interacting within a broader context (Lloyd, 2009a; Tuominen et al., 2005). By contrast, information experience is associated with what phenomenology refers to as *lived experiences* (Bruce, Davis, Hughes, Partridge, & Stoodley, 2014). Typically information experience research provides insight into what people experience as information, as well as how people experience using information. While information experience research may use various
methodologies, this type of research is in alignment with phenomenography, which aims to uncover experiences.

3.2 SUITABILITY FOR THIS STUDY

Phenomenography was selected as the research approach to investigate teacher and student experiences of using information to learn in the higher education classroom because of its ability to:

- identify experiences of an object of learning;
- offer established methodological procedures for the investigation of lessons; and
- utilize variation theory as an analytical tool, which allows teaching to be related to learning.

Phenomenography recognizes that different experiences of the same object of learning may exist, and provides the researcher with the necessary analytical tools to identify and compare these differences. This notion that people experience the same thing in different ways is supported by a number of findings (see Section 3.4 for an overview of this research). At the outset of this study, I considered different ways of gathering and analysing data related to teacher and student experiences of learning in the subject-focused classroom. The analysis needed to enable the representation of participants’ experiences, rather than frame those experiences with an existing theory. Grounded theory was one of the methodologies considered. Grounded theory, developed by Strauss and Glaser (1967), is an interpretive approach sometimes described as inverting the traditional research process as the process begins with collecting data and analysing it to develop theory. The comparison of data to existing theory is typically suspended until after analysis is completed and conclusions have been drawn. However, phenomenographic methods are also designed to withhold the application of theory or other researcher input while gathering data and the phenomenographic analysis is also interpretive in nature. Phenomenography has been developed in ways that specifically support the study of experiences of teachers and students as they come together to focus on learning. The phenomenographic approach for examining experiences related to learning typically utilizes variation theory as an analysis tool. This enables insights into the relationship between teaching and learning. This phenomenographic approach has been used in an increasing number of studies (e.g., Mok et al., 2002; Olteanu et al., 2008; Rovio-Johansson, 1999; Runesson, 1999; Vikström, 2008). The following section discusses the specific methods used in this approach and how they supported the needs of the study.
3.3 PHENOMENOGRAPHIC RESEARCH METHODS

Phenomenography guides the selection of various methodological procedures, which aim to reveal different experiences. Since the late 1990s, phenomenography has advanced the theoretical framework of variation theory as a way of defining what is required for learning to take place. This framework can be used to examine formal learning environments, with the intent to understand what enables learning to occur as a result of instruction. This is to say that phenomenographic methods can be used to collect and analyze data to understand an *object of learning* as it is intended by a teacher, enacted by a teacher with the students, and then realized through the lived experiences of the students. Table 3-1 describes each step of the data collection and analysis process used in this study, which will be described in detail in the proceeding sections of this chapter.
Table 3-1: Overview of study design

<table>
<thead>
<tr>
<th>Planning phase</th>
<th>1st lesson</th>
<th>2nd lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant selection</strong></td>
<td>Determined:</td>
<td>Identified:</td>
</tr>
<tr>
<td></td>
<td>1. Potential sites</td>
<td>1. Students for interviews who agreed to participate</td>
</tr>
<tr>
<td></td>
<td>Received:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Teacher’s agreement to participate and permission to use course as site of research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Teacher and participating students’ permission to observe</td>
<td></td>
</tr>
<tr>
<td><strong>Phased data collection</strong></td>
<td>Prepared:</td>
<td>Conducted:</td>
</tr>
<tr>
<td></td>
<td>1. Interview protocols</td>
<td>1. Teacher pre-lesson interview</td>
</tr>
<tr>
<td></td>
<td>2. Observation protocols</td>
<td>2. Lesson observation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Student post-lesson interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Teacher post-lesson interview</td>
</tr>
<tr>
<td><strong>Data analysis</strong></td>
<td>Developed and revised:</td>
<td>Conducted:</td>
</tr>
<tr>
<td></td>
<td>1. Analysis procedures</td>
<td>1. Initial analysis (pilot)</td>
</tr>
<tr>
<td></td>
<td>2. Analysis of full data set</td>
<td></td>
</tr>
<tr>
<td><strong>Report findings and engage in methodological discussions</strong></td>
<td>Published:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Journal article reporting on initial findings (Maybee, Bruce, Lupton, &amp; Rebmann, 2013)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Book chapter discussing study as example of information experience research (Maybee, 2014)</td>
<td></td>
</tr>
</tbody>
</table>
3.3.1 **Data collection methods**

*Selecting the research site*

For the current research to investigate the experiences of a teacher and undergraduate students using information to learn in a subject-focused context, I needed to locate objects of learning with a focus on the contextualized use of information. In line with prior classroom-based phenomenographic research, purposive sampling allows for the selection of “information-rich cases,” which can lead to “in-depth understanding” of the object of the research (Patton, 1990, p. 46). One of my research objectives was to develop an instructional design model that would resonate with higher education teachers. In my prior experience as an information literacy educator, I had been involved with courses in which the teacher had the students use information in intentional ways to learn about a subject, typically without formally acknowledging, or, perhaps, even realizing the fact. I purposefully did not seek a course designed specifically from an informed learning perspective. Instead, I sought an undergraduate course like those I had worked with previously. The primary selection criterion was that the teacher would be having the students use information in intentional ways to learn about a subject.

I used the informal contacts that I had developed through my academic post as an information literacy educator to locate colleagues who taught in ways in which the learning of subject content involved the intentional use of information. In the process of locating a research site, I met with several colleagues whose descriptions of their pedagogic efforts suggested that their lessons had the potential to meet the necessary criterion. During these meetings, I outlined the aims of my research, and asked them to provide more details about their pedagogic objectives and techniques. I provided an overview of informed learning and answered their questions. I asked the teachers I met with to identify and explain classroom activities that met the criterion of the investigation. Out of this group of higher education teachers, I identified two cases that most closely matched the interests of my study. One was a course about research methods used in anthropology; the other was a course on language and gender issues offered via the Writing and Rhetoric Department. I rejected the anthropology course, because the teacher’s description suggested that the course focused primarily on teaching a research process. Subject content, beyond research skills, was not a specific learning outcome of the course. By contrast, the language and gender course had a dual aim of having students learn about language and gender issues while learning academic practices related to researching and writing an essay. The content focus of language and gender is evident in the course description:
This course explores the intersection of linguistic theory and feminist theory, defining gender as essentially cultural, but without assuming beforehand that women and men do, in fact, use different language. …The course looks at English from theoretical, political, and social viewpoints, with readings taken from a wide range of fields, but with a particular focus on linguistics and feminist theory. (Appendix B1)

In our discussion, the teacher described how she required the students to engage with scholarship in a specific way to learn about a language and gender topic. The students had to trace the development of a language and gender topic over time by identifying how the topic evolved through research. There are a set of assignments related to the essay: a paper proposal, research logs, and an annotated bibliography, that may typically be associated with teaching undergraduates select research and writing skills. These assignments support the development of an essay in which the students report what they concluded about the language and gender topic after investigating how it developed over time. One of the teacher’s goals for the assignment was that students adopt, in an initial way, the stance of a language and gender scholar to explain a language and gender topic or issue. In order to do this, the students needed to understand how the topic or issue evolved historically.

The teacher described the two lessons that supported the assignment. The first lesson introduced the major intent of the assignment to enable learning about a language and gender topic by tracing its development. This lesson also focused on identifying information and writing practices for reporting the learning that had occurred. The second lesson had the students work in small groups to peer review drafts of each other’s introduction to the paper and identify and discuss if the thesis statement described a claim about a language and gender topic developed through an analysis of how that topic evolved through research. The primary focus of the lesson was on making students aware of how, and to what degree, their understanding of the topic was grounded in their analysis. In Table 3-2, I have related the teachers’ description of the assignment to the description of informed learning (Bruce, 2008).
Table 3-2: Assignment related to informed learning

<table>
<thead>
<tr>
<th>Informed learning</th>
<th>Assignment and lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses information to learn</td>
<td>Students were to develop an understanding of a language and gender topic based on how it evolved through research.</td>
</tr>
<tr>
<td>Draws on ways of using information in academic, professional, and personal life</td>
<td>The assignment was inspired by a book edited by Bucholtz that includes a reprint of Robin Lakoff’s, <em>Language and Women’s Place</em>, a seminal work in language and gender studies (Lakoff &amp; Bucholtz, 2004). The book included essays by scholars responding to Lakoff’s research. The book is framed by two essays by Bucholtz (2004a, 2004b) outlining research trajectories that emerged in response to Lakoff’s work. These texts were to serve as models for students, who are to adopt a similar, though initial, scholarly stance in their own project.</td>
</tr>
<tr>
<td>Considers varied experiences of using information to learn</td>
<td>Drawing from her experiences with previous students in this course and from her perceptions of undergraduate education more generally, the teacher expressed feeling that students typically do not understand a topic as the culmination of research. Instead, she suggested that they typically select sources that support foregone conclusions. The teacher’s aim was to make them aware of how language and gender topics evolve over time.</td>
</tr>
<tr>
<td>Draws on academic or professional information practices and how they are experienced</td>
<td>The students were to describe their understanding of a language and gender topic based on how it evolved over time in an essay modeled after a scholarly essay. The intent was for them to learn about academic discourse applicable in college as well as assume the role of emerging scholars.</td>
</tr>
<tr>
<td>Recognizes how people interact with and use information while learning</td>
<td>The students were to locate and analyze textual materials in order to determine the relationships between various texts and the seminal text from which the topic emanated. Ultimately, the students were to develop a new understanding of a language and gender topic based on this analysis. The students’ conclusions concerning a language and gender topic were to be developed through analysis of the scholarship on the topic.</td>
</tr>
<tr>
<td>Encourages information and knowledge-construction practices that are relevant to discipline-centered curriculum</td>
<td>Students were also to learn about how new ideas and theories are introduced, and, in the teacher’s words, “may be corrected” through new research efforts. Students were also learning select research and writing practices used in academic discourse.</td>
</tr>
<tr>
<td>Supports creative, reflective and ethical use of information for learning</td>
<td>Students were to develop a narrative of how a language and gender topic evolved over time based on their interpretation of the connections between studies related to the topic.</td>
</tr>
</tbody>
</table>

Adapted from Bruce, 2008, p. 3

**Participant recruitment**

I provided the teacher with a more detailed description of the study and its aims, as well as the rights and responsibilities of the teacher and student participants. Participation in this type of phenomenographic research program required that the teacher provide data through interviews and observation. The teacher signed a consent form agreeing to participate in the study (see Appendix A4). Once the teacher agreed that I could seek participation from the students in the course, I met with the students during a class session. During this meeting I
described the research project, answered questions, and asked students to participate. To maintain the anonymity of the students who agreed to participate, the teacher left the classroom for the duration of my meeting with the students. I explained the elective nature of their choice to participate or not and the rights and responsibilities of participation to the students and they were asked to sign a consent form (see Appendix A5). By signing this form, the students were indicating their willingness to participate in the study by being observed and video-taped during two classroom lessons. Fifteen of the sixteen students enrolled in the course agreed to participate in the observation phase of the research. At this time, students were advised that they might be asked at a future date to consider participation in the research interviews that would follow the classroom observations.

Immediately following the first of the two observed lessons, six selected students were contacted by e-mail and asked to participate in post-lesson interviews aimed at understanding their experience of the recent lesson. The students were selected based on two criteria:

1. prior agreement to participate during the classroom observation phase of the research, and
2. variation in the perspectives offered during discussions that occurred in the first observed lesson.

This purposive approach to sampling is in line with a phenomenographic approach, which aims to reveal different categories of understanding of experiences on a collective level (Vikström, 2008). Working with secondary school children, Vikström (2008) had the teachers in her study select student participants for post-lesson interviews whom they knew to be capable of articulating their thoughts and who would represent multiple experiences of the object of learning being researched. In the present study this was not possible, because the teacher did not know which students had consented to participate in the study. Instead, students were purposively selected for invitation to participate in post-lesson interviews based on variations in perspectives offered during the first lesson. Six students agreed to be interviewed, but one student later decided not to participate. Table 3-3 outlines the demographic information for the students who were interviewed. The five students who participated in interviews were all traditional-age students (18-22 years old), one male and four female. Four of the students had dual majors, meaning that they were majoring in two areas of study. While the students pursued a variety of majors, all majors represented were part of the liberal arts or the social sciences.
Table 3-3: Participant demographics

<table>
<thead>
<tr>
<th></th>
<th>Students interviewed N=5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>4 - Female</td>
<td></td>
</tr>
<tr>
<td>1 - Male</td>
<td></td>
</tr>
<tr>
<td><strong>Major</strong></td>
<td></td>
</tr>
<tr>
<td>1 - Educational Studies</td>
<td></td>
</tr>
<tr>
<td>2 - English Literature</td>
<td></td>
</tr>
<tr>
<td>1 - International Relations</td>
<td></td>
</tr>
<tr>
<td>1 - Sociology</td>
<td></td>
</tr>
<tr>
<td>1 - Spanish</td>
<td></td>
</tr>
<tr>
<td>1 - Women’s Studies</td>
<td></td>
</tr>
<tr>
<td>2 - Writing and Rhetoric</td>
<td></td>
</tr>
</tbody>
</table>

Note: 4 students were pursuing dual-majors

**Age**

All between the ages of 18 and 22

I later made two changes that were not reflected in the consent forms provided to the teacher and students. Although the consent form students signed agreeing to be observed during lessons indicated that they would be video-recorded (Appendix A5), a decision was made to only audio-record the students. I made this decision because it was deemed too difficult to avoid unintentionally video-recording the non-participant. A second change was that the research question listed on the consent forms (Appendices A4, A5 and A6) was later changed. The original research question: *How is pedagogy that teaches disciplinary information practices and disciplinary subject content at the same time “enacted” in a course?* was changed to: *What are the qualitatively different ways that a teacher and students experience using information to learn in an undergraduate classroom?* The revised question reflects the phenomenographic principle that research should adopt a second-order perspective to investigate people’s experiences, rather than seeking specific evidence that aligns with existing theory (Marton, 1986).

**Phenomenographic data collection methods**

My research approach was developed to focus on identifying the variations between different experiences of the same object of learning. Phenomenographers adopt what is referred to as a second-order perspective (Marton, 1986). Rather than using a theory to explain the data collected typically through interviews (first-order perspective), a phenomenographic researcher takes steps to ensure that collection methods allow the participants’ experience to reveal itself. Phenomenographers adopt a second-order perspective so that they may investigate a phenomenon, or object of learning, through the experience of the research participant, not through the lens of the researcher (Marton, 1986). For example, a phenomenographer would ask, "How do people experience information literacy?" not "What is information literacy?"
OBSERVATION TECHNIQUES

From a phenomenographic perspective, the aim of classroom observation is to capture the teacher-student and student-student interactions in a natural setting (Chik, 2006, p. 46). Video-recording is used to capture what the teacher and students do and say while making the enacted object of learning explicit. This includes the teacher lecturing, the teacher introducing tasks and asking questions, the students answering the teachers’ questions, etc. Video-recording captures non-verbal communicative elements, such as PowerPoint slides, writing on the blackboard, or other visual elements. There is concern over introducing researcher bias when using video, meaning that decisions regarding what to shoot may have an unintentional effect on the data collected (Rovio-Johansson, 1999, p. 82). However, the opportunity for bias can be greatly reduced by conducting the recording from one stationary position.

PHENOMENOGRAPHIC INTERVIEW TECHNIQUES

Semi-structured interviews are the most common data collection method utilized in phenomenographic research. Phenomenographic interviewing is similar to other qualitative interview protocols, which are designed to gather research data in a conversational manner, but have a specific purpose embedded in the communication (Luo & Wildemuth, 2009). Emphasizing a second-order perspective, a phenomenographic interview aims to orient the interviewee towards the phenomena or object of learning, without the interviewer influencing the participant regarding the nature of the object. This is achieved through the use of a specific type of open-ended questioning (Marton, 1986, p. 46). The interviewer assists the interviewee in “thematizing relevant aspects of their life world” (Bruce, 1994). For example, my earlier research asked student participants to describe their “experience using information,” rather than asking them to state what information literacy was (Maybee, 2007). Initial questions are usually followed up with clarifying questions designed to get the participant to further explain the original answer (Bowden, 2000, pp. 9–10).

To achieve the second-order perspective taken in phenomenographic interviews, “bracketing” techniques are typically applied in phenomenographic interviewing, meaning that the researcher takes steps not to impose presuppositions on the participant during the interview process (Åkerlind, 2005b, p. 108). This may require sustained alertness on the part of the interviewer. For example, in the current research, some student participants suggested that they should limit their responses to what they perceived to be the interest of the research, and needed to be gently persuaded to answer the questions comprehensively. Of course, the researcher, in constructing the questions and deciding when and what to probe, still has an active role in “constituting” an interview (Lupton, 2008b, p. 60). To minimize researcher
influence upon the interviewee during interviews, Ashworth and Lucas (2000) suggest four recommendations for bracketing in a phenomenographic interview: 1) using pre-prepared questions minimally; 2) using open-ended questions, 3) engaging in empathetic listening, and 4) silencing one’s own concerns and judgments (p. 302).

3.3.2 Data collection cycle

To collect data related to the intended, enacted, and lived objects of learning for both lessons, a total of thirteen interviews and two observations were carried out. Outlined in Figure 3-1, a detailed description of each data collection activity is provided in the following sub-sections.

Figure 3-1 Data collection cycle related to each lesson

The data collection took place over a two-month period (see Table 3-4 for timeline).

Table 3-4: Data collection timeline

<table>
<thead>
<tr>
<th>Week</th>
<th>Data Collection Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st month 2nd week</td>
<td>1st Pre-lesson interview with teacher</td>
</tr>
<tr>
<td>3rd week</td>
<td>1st Classroom observation</td>
</tr>
<tr>
<td>4th week</td>
<td>1st Post-lesson interview with students</td>
</tr>
<tr>
<td>2nd month 1st week</td>
<td>1st Post-lesson interview with teacher</td>
</tr>
<tr>
<td>2nd week</td>
<td>2nd Pre-lesson interview with teacher</td>
</tr>
<tr>
<td>3rd week</td>
<td>2nd Classroom observation</td>
</tr>
<tr>
<td>3rd week</td>
<td>2nd Post-lesson interview with students</td>
</tr>
<tr>
<td>4th week</td>
<td>2nd Post-lesson interview with teacher</td>
</tr>
</tbody>
</table>

Pre-lesson interviews with the teacher

The purpose of the pre-observation interviews with the teacher was to reveal the intended object of learning, as well as the variations the teacher intended to make to enable
the students to learn. Therefore, the teacher was asked open-ended questions in a manner consistent with phenomenographic interview techniques. The interviews focused on the teacher’s intentions for the individual lessons, including learning outcomes and strategies for enabling the students to become aware of the object of learning during the lesson. Both interviews took place in the teacher’s office at the university. The first interview occurred over a forty minute period, while the second interview took less than twenty-five minutes to complete. The first interview was longer, owing to the need for the teacher to provide more background information related to the course and the assignment. The questions listed below guided the pre-observation interviews, although additional questions were also asked to follow up on the teacher’s initial answers:

1. Describe what you want your students to learn in the upcoming lesson about __________ in your __________ class.

2. What are the most significant things you want your students to take away from this lesson?

3. Describe your view of the relationship between the information practices you will teach about in the class and the topic.

4. What strategies will you employ in the lesson to get your students to understand the topic and its relationship to the information or information practices you have described?

5. What types of activities, e.g., student discussion, etc., have you planned to help meet your goals in the session?

The following generic questions were also selectively used to probe the teacher’s initial answers:

- Can you tell me more about that?

- Can you expand on that?

- Can you give me an example?

- Why is that important?
Classroom observations

The purpose of the classroom observations was to reveal the enacted object of learning, specifically to identify variations the teacher and the students made during the lesson. Each of the observed lessons lasted for fifty minutes. Prior to formally observing the class, I informally observed two sessions at the invitation of the teacher. This enabled me to get a sense of the classroom environment, the teacher’s style of teaching, and so forth, before observing the course to collect data for the study. Due to ethical concerns regarding the capture of students’ images via video-recordings, the camera was directed only at the teacher, whereas the students’ interaction was captured using only audio-recording. I operated the video camera myself. The teacher was asked before each video-taped lesson to identify the best location in the classroom for the video camera. During the second lesson, the teacher had the students work in small groups of two or three to critique each other’s draft thesis statements. The teacher moved around the room and joined in group discussions. As has been explored in a recent phenomenographic study (Ingerman, 2014), the students’ shared interactions within their small groups may enable awareness of elements of the object of learning, independent of engagement with the teacher. However, my research focused primarily on how the variations made by the teacher enabled learning. When the teacher moved amongst the students, the video camera was tuned off, and I shadowed the teacher with an audio-recorder to capture the communication between the teacher and the students.

Post-lesson student interviews

The interviews with the students had a different objective than the interviews with the teacher. The purpose of the post-lesson interviews with the students was to collect data that could be analyzed to reveal the students’ experiences of the enacted object of learning. These experiences form the lived objects of learning. Phenomenographic interview techniques were used to orient each student being interviewed to the lesson as the object of learning, and get him or her to describe the experience of the lesson without being overtly guided by the researcher (Marton, 1986, p. 46). As a neutral space, the interviews were conducted in library study rooms on campus. These interviews were of different lengths. The shortest interview lasted fifteen minutes and the longest sixty minutes. The post-lesson interviews with the students that took place after the second lesson were shorter than the interviews conducted after the first observed lesson. The average length of the students’ interviews after the first lesson was thirty-eight minutes, while the interviews conducted after the second lesson averaged twenty-seven minutes. As with the pre-lesson interviews with the teacher, this may also be attributed to there being less need to provide background to explain responses. The following open-ended questions guided all the post-lesson interviews:
1. Tell me about the class session on __date__.

2. What did you get out of the class session?

   Optional follow up questions:
   
   a. What helped your learning?
   
   b. How will you use what you have learned?

3. How will you go about completing the ________________ assignment?

4. What do you expect to learn from the assignment?

As with the teacher pre-lesson interview, the following generic questions were also selectively used to probe the students’ initial answers to questions:

- Can you tell me more about that?
- Can you expand on that?
- Can you give me an example?
- Why is that important?

Upon completion of each interview the students were provided with a nominal thank-you gift of a $5.00 gift certificate for a local café.

**Post-lesson teacher interviews**

The teacher was interviewed after each lesson as well. The purpose of this interview was for the teacher to provide clarification about the learning outcomes, and actual classroom activities that were discussed in the pre-observation interview or were present in the observation (Chik, 2006, p. 48). These interviews were each less than thirty minutes in length. Followed up with impromptu questions that responded to the teacher’s initial answers, predetermined questions guided the interview:

1. Describe how the lesson taught students to understand the topic, and its relationship to the information or information practices you described earlier.

   Optional follow up questions:
   
   a. What strategies were the most successful?
b. What would you do differently if you taught the lesson again?

2. What is your perception of how students’ understandings changed as a result of the lesson?

3. How did your experience of the lesson compare to what you intended for the lesson?

Transcription of audio and video footage

I transcribed all the lessons and interviews verbatim, and double-checked the transcriptions for accuracy.

3.3.3 Data analysis procedures

The object of research of this study is the qualitative differences in experiences of teaching and learning about using information and subject-focused content in the two classroom lessons. The data were analyzed using the variation theory framework described earlier in this chapter (Marton, 2014; Marton et al., 2004). The analysis focused on interpreting and relating the objects of learning for each lesson, which is comprised of three parts: the teacher’s intentions, the enacted lessons, and the students’ lived experiences of those lessons. Phenomenographic analysis is iterative in nature, and sustained engagement with the data may illuminate new insights about its meanings. Therefore, although the analysis processes related to each part of the investigation are described as a series of stages, the examination of the transcripts often involved returns to earlier stages. The details of the analysis applied to investigate each of the three parts are described in this section.

Analysis of intended objects of learning

The analysis was carried out for each of the pre-lesson interview transcripts separately, beginning with the transcript of the interview that took place before the first observed lesson. It should be noted that the teacher’s intentions were not derived from an explicit use of variation theory to guide instruction. Variation theory suggests that for learning to occur, learners must become aware of aspects and features of an object of learning (Marton et al., 2004). Therefore, it is possible to identify the variations the teacher intended to make through the analysis. The analysis of an intended object of learning is comprised of six stages. The first stage in the process began with reading each transcript a number of times to become familiarized with the content. In the second stage, I examined each transcript to determine the aspects and features of the object of learning intended to be varied. An aspect is an element of the object, while a feature is a specific instance. For
example, length is an aspect of a pair of shorts, while board shorts or running shorts each have the feature of specific length. The aspects and features I identified were assigned labels that were drawn from the transcript data. I will provide an example from the first lesson. In this lesson, the object of learning was to understand a language and gender topic through deliberate examination of research on that topic as it evolved over time. Aspects or features of this object of learning were the elements that made up such an understanding and the elements of a paper reporting it. Described in more detail in the following chapter, one feature of this object of learning was a sequence of research. The word “sequence” was used by the teacher to describe a method of engaging with and analyzing research. The feature was identified in the interview transcript when the teacher described instructing the students to gather and read texts that reflected the evolution of a language and gender topic. Similarly, one aspect identified in the analysis of the first pre-lesson was topic, which was identified when the teacher referred to language and gender topics. This stage of analysis was the most time consuming, requiring numerous passes over each transcript.

The third stage of the analysis involved identifying the specific kinds of variations that the teacher planned to use in the lesson to enable the students to develop a new awareness of the object of learning. Possible variations included contrast, generalization, or fusion. This is to say, I would go over the area of the text where an aspect or feature was identified, and determine how it was intended to be varied. For example, in the first lesson the teacher intended to contrast the aspect of type of paper by comparing model essays the students read to prepare for the class session with the papers the students were to write.

The fourth stage focused on determining how the aspects and features were associated with using information and subject content. This involved examining how the aspects and features were being addressed within the context. For example, in the context of this course the notion of a sequence of research refers to an analysis the students were to complete, in which they identified how research on a select topic evolved over time. This was associated with using information, although in other contexts the notion of a sequence of research may have represented a different meaning.

In the fifth stage, the analysis focused on determining which of the aspects and features intended to be varied were critical for students to become aware of in order to experience the object of learning as intended. Criticality was determined by the necessity of learners to be aware of the aspect or feature in order to experience the object of learning in the way the teacher intended. For example, the students needed to be aware of the feature of a sequence of research, as it was a central part of understanding a language and gender topic through an exploration of evolving research on the topic. In contrast, the aspect of
organizational elements (of an academic paper) may be useful for a student writing an academic paper, but that aspect is not necessarily part of an awareness of the type of learning intended for the assigned paper. Collectively, these elements describe the intended pattern of variation. Detailed in the proceeding chapters, the findings that result from this part of the study reflect the teacher’s perspective of the object of learning. See Figure 3-2 for an outline of the process.

![Diagram of analysis process](image)

**Figure 3-2: Stages of analysis to determine the intended object of learning**

**Analysis of enacted objects of learning**

Determining the nature of the enacted object of learning involved the analysis of the classroom observations of the two lessons focused on in the study and the post-lesson interviews with the teacher. The analysis processes are nearly identical to the analysis of transcripts of the pre-lesson interviews with the teacher. The main focus of the analysis was on the transcripts and video-footage from the classroom observations. The post-lesson interviews with the teacher were used to clarify interpretations of what occurred during the lessons identified in the various stages of the analysis. In contrast to the pre-lesson interviews, which focused on what the teacher intended, the focus in the analysis of the classroom observations was to identify the pattern of variation that actually occurred during the lessons.

During the classroom observation, the teacher was video-recorded only when she was at the front of the room and no students were in the camera’s view. Teacher interactions with students, or students interacting with one another, were audio-recorded. While Rovio-
Johansson (1999, p. 68) recommends only examining the transcriptions of the video-recorded lessons, Mok et al. (2002) suggests examining the video footage itself, as it may include visual details significant to understanding the enacted object of learning. During the first stage of the analysis process, I read the transcripts and reviewed the video-footage of the lessons. However, the teacher did not use visual aids and did not move around the classroom, so the review of the video-footage added little to augment the audio transcription. After becoming familiar with the transcripts of the lesson, I engaged in the same stages as described in the analysis of the pre-lesson interviews with the teacher. Figure 3-3 provides an overview of the analysis stages I followed.

There were two differences between the analysis of the lessons and the pre-lesson interviews with the teacher. In addition to presenting to the students, the teacher also facilitated class discussion and had the students work in small groups. Unlike the pre-lesson interview, which involved variations made solely by the teacher, both the teacher and students varied aspects and features through their interactions. For example, in the first lesson the teacher asked the students to suggest potential language and gender topics. Their suggestions varied the aspect of paper topic. Then the teacher offered her own example, in which she described how the topic of “interruption” evolved through various studies over time. In so doing, the teacher fused the aspect of paper topic with the feature of a sequence of research. The second difference between the analysis of the pre-lesson interviews and the observed lessons related to the fifth stage of the analysis process. The fifth stage focused on determining which aspects and features were critical to the object of learning. In the analysis of the pre-lesson interview data, criticality was determined based on the interpretation of the teacher’s intentions for each lesson. The findings from the analysis determining the intended objects of learning were considered during the analysis determining the critical aspects and features for the corresponding enacted lessons.

This is not to suggest that the aspects and features determined to be critical in the pre-lesson interviews were the same as those identified in the lessons. While there was a great deal of overlap, some new critical aspects and features were identified in the analysis of the enacted object of learning. In the first lesson three aspects (type of paper, thesis statement, and claim) and two features (sequence of research and seminal text) were identified in the analysis of the pre-lesson interview as critical for understanding the object of learning in the manner intended. Although all of these aspects and features were determined to be critical through the analysis of the transcript of the enacted lesson, one additional aspect (paper topic) and one additional feature (themes related to the seminal text) were also identified as critical through the analysis of the transcript of the enacted lesson.
The aspect of paper topic was considered critical, because when fused with the feature of sequence of research, it exemplified an understanding of a language and gender topic as an evolution of research over time, which was the object of learning for the lesson. Similarly, the feature of themes was considered critical to the object of learning as the analysis revealed that thematizing responses to a seminal text was necessary to communicate claims about the seminal text. As with the analysis of the intended object of learning, the critical aspects and features and how they are varied form patterns of variation for each of the enacted lessons. The pattern of variation for each enacted lesson indicates how a learner’s awareness may be enabled through the lesson.

Figure 3-3: Stages of analysis to determine the enacted object of learning

**Analysis of lived objects of learning**

The purpose of the analysis of the post-observation student interviews is to describe students’ awareness of the object of learning. Collectively, the students’ awareness describes the lived experiences of using information to learn. There can be different approaches taken to reporting the lived object of learning. These include reporting the pattern of variation as experienced by individual students (Rovio-Johansson, 1999), or an aggregation of each lived object of learning (Vikström, 2008). In this research, the findings describing students’ experiences of the objects of learning will be reported in aggregate. Consistent with phenomenographic research, this allows for the development of categories as a way of describing different experiences of the lived objects of learning. As outlined in Figure 3-4,
six stages guide the analysis of the post-lesson interviews with the students. While the stages are similar to those used in the analysis of the intended and enacted objects of learning, there are several key differences.

As with the intended and enacted objects of learning, the analysis of the lived objects of learning began with becoming familiar with the interview transcripts by reading each several times. In the second stage, aspects and features described by the students during the interviews were identified through iterative examination of each transcript. The lived objects of learning describe the students’ awareness, which reflects their discernment of aspects and features. Therefore, the stage in the intended and enacted analyses that involved determining the variations being intended or made is not a stage in the analysis of a lived object. The third stage in the analysis of the lived objects of learning corresponds with the fourth stage in the analysis of the intended and enacted objects. This stage focuses on determining how the aspects and features were associated with using information and subject content. The fourth stage involved comparing the aspects and features identified in the student interviews with the critical aspects and features identified in the analysis of the enacted lesson. The aim is to determine the critical and non-critical aspects and features of which students are aware.

The fifth stage focused on determining if the students were experiencing aspects and features associated with using information and subject content individually or simultaneously. In the last stage, the findings from the analysis up to this point were used to develop categories describing the students’ experiences of the objects of learning. The categories are a description of essentialized elements intended to emphasize the qualitative differences in ways that the students experienced an object of learning. This is exemplified by the three categories that resulted from the analysis of the transcripts from the post-lesson student interviews conducted after the first lesson. As will be seen in Chapter 4, one category was characterized by a simultaneous focus on subject content and using information, while two other categories only focused on using information. The two categories focused on using information were further delineated by their emphasis on techniques for completing the assigned paper and generic research techniques. Collectively, the categories that resulted from the analysis represent the lived objects of learning for each of the two lessons.
The last phase of the analysis compared the intended, enacted, and lived objects of learning for each lesson. First, I examined the similarities and differences of the intended object described by the teacher and the enacted object that was constructed by the teacher and the students during a lesson. Second, I determined how the pattern of variation identified in the enacted object of learning related to the students’ awareness revealed through the analysis of the lived objects of learning. This part of the analysis aimed to reveal the relationship of the object of learning as experienced from the perspectives of the teacher and the learners. As such, it addresses the research objective of developing greater understanding of the relationship between teaching and learning focused on using information to learn subject content.

3.3.4 Testing analysis processes

To determine if the phenomenographic analysis process planned was able to meet the needs of this research, that is, able to adequately answer the research question, I analyzed a small part of the data collected for the main research as a pilot. For the pilot, I examined only the data related to the first enacted lesson and the lived objects of learning (students’ experiences of the lesson). The lesson that was the focus of the pilot investigation introduced the students to an assigned paper in which they would report on their understanding of a language and gender topic, tracing how research on the topic evolved over time. I applied
variation theory in the analysis of the transcript of the observed lesson and to the transcripts of the post-lesson student interviews. I first identified the features critical to the enacted object of learning and how they were varied (contrast, generalization, and fusion) by the teacher and the students during the lesson, and then I analyzed student awareness as it related to their lived experiences of the lesson.

I also engaged in a secondary analysis for both sets of transcripts that identified the *how* and *what* aspects of learning. The *how* and *what* are two interrelated aspects of learning (Marton & Booth, 1997, pp. 84–85). The *what* refers to content knowledge or practices that learners are expected to know or use. The *how* refers to the process on learning, which is comprised two parts: an act of learning, e.g., applying, memorizing, synthesizing, and so forth, and the indirect object of learning, which refers to what the act is directed at, i.e., the capabilities the learner is trying to develop. Using information may be associated with the *how* aspect of learning or alternatively the entirety of learning (the *how* and the *what*) (Lupton, 2008b). For an outline of the *how* and *what* aspects of learning from the pilot see Table 3-5. Overall, the analysis process indicated that a similar process should produce the necessary results in the main study. The findings from the pilot analysis were reported in a peer reviewed journal article (Maybee, Bruce, Lupton, & Rebmann, 2013). However, while the analysis process provided valuable insights, reflection and continued engagement with the analysis process led me to the conclusion that the secondary analysis was unnecessary. It is possible to associate those aspects and features that are critical for students to be aware of in order to experience the object of learning in the way intended by the teacher with the *how* and *what* aspects of learning. Therefore, the analysis process used in the main study was adapted to relate information use and subject content to aspects and features that learners may encounter when the objects of learning were varied. The data analysis procedures developed in the pilot were applied in the analysis of both lessons.

Table 3-5: Aspects of learning identified in pilot study for the enacted lesson

<table>
<thead>
<tr>
<th>Aspects of learning</th>
<th>Aspects of learning in the first enacted lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act (How)</td>
<td>Analyzing and interpreting</td>
</tr>
<tr>
<td>Indirect object (How)</td>
<td>Research trajectory</td>
</tr>
<tr>
<td>Direct object (What)</td>
<td>Topics related to the course</td>
</tr>
</tbody>
</table>
3.4 ESTABLISHING TRUSTWORTHINESS

Phenomenography is part of the qualitative research tradition, and as such “attempts to make sense of, or interpret, phenomena in terms of the meanings people bring to them” (Denzin & Lincoln, 2008, p. 4). In contrast to quantitative research emphasizing the measurement and analysis of causal relationships, qualitative research focuses on understanding the “processes and meanings” of human experience (Denzin & Lincoln, 1994, p. 4). The concepts of “reliability,” meaning that findings are reproducible, and “validity,” referring to the ability of the methods employed to address the research inquiry, are typically associated with the quantitative paradigm. These methods assume ability to measure in an absolute manner, which is not appropriate to apply to qualitative research investigating experience (Collier-Reed, Ingerman, & Berglund, 2009). Although specifically focused on naturalistic research, Lincoln and Guba (1985) argued for using the concept of trustworthiness. Drawing from concepts such as credibility, dependability and transferability to evaluate qualitative research, notions related to trustworthiness have been found to be appropriate in interpretive research approaches like phenomenography (Bruce, 1997b, p. 106; Collier-Reed et al., 2009; Sandberg, 2005).

Credibility focuses on the ability of the research findings to represent a “credible” interpretation of the data. Drawing from Booth (1992), Collier-Reed, Ingerman, and Berglund (2009) suggest three aspects of credibility as necessary to establish trustworthiness:

- content-related credibility;
- credibility of method; and
- communicative credibility. (Collier-Reed et al., 2009)

Content-related credibility refers to the researcher’s understanding of topics related to the object under investigation. As Collier-Reed, Ingerman, and Berglund (2009) suggest, a research community could justifiably question the rigor of the results if a researcher was not completely familiar with the subject matter. However, they caution that “openness” to understanding possible perspectives on the topic, emphasized through techniques such as bracketing, is essential in phenomenography.

Credibility of method relates to sample composition, the context in which the interviews take place, the structure and content of the interviews, and the analysis of the data (Collier-Reed et al., 2009). In a phenomenographic study, it is crucial that the sample selected for the study be appropriate and relevant to the central research question under investigation. In the current study, this is achieved by the use of purposive sampling to ensure that the object of learning focused on aligns with the research questions. A context for
the interviews is derived from the teacher, the students, and the researcher being mutually focused on the lessons, which are different aspects of a shared experience. When reporting the findings, the interview questions and techniques have been shared to allow the scholarly community to evaluate the credibility of the interview schedule. Bracketing was used not only during the interviews, but throughout the data collection and analysis process, to ensure that the focus remains on the emerging experiences described by the participants.

Communicative credibility refers to the necessity that a researcher be able to “argue persuasively for the particular interpretation that they have proposed” (Åkerlind, 2005b, p. 330). Typically achieved through the presentation of findings at various stages of the research process at conference presentations and seminars, and in journal article publications (Åkerlind, 2005a, pp. 125–126; Bruce, 1997b, pp. 108–109; Edwards, 2007), communicability also refers to presenting the results and conclusions of a study to the research community in an open way that allows the study to be critically discussed and reviewed. The research reported in this thesis has been formally presented to the research community in six formats to date (Maybee, 2011, 2012a, 2012b, 2013, 2014; Maybee et al., 2013). See Table 3-6 for details. Full citation information is available in the “Scholarship emanating from this research” section on page xi.

Table 3-6: Presentations and publications reporting on this research

<table>
<thead>
<tr>
<th>Year</th>
<th>Presentation</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Research methodology and research domain</td>
<td>Book chapter</td>
</tr>
<tr>
<td>2013</td>
<td>Research methodology</td>
<td>Conference presentation</td>
</tr>
<tr>
<td>2013</td>
<td>Initial findings</td>
<td>Peer reviewed journal article</td>
</tr>
<tr>
<td>2012</td>
<td>Initial findings and research methodology</td>
<td>Conference presentation</td>
</tr>
<tr>
<td>2012</td>
<td>Initial findings</td>
<td>Invited presentation</td>
</tr>
<tr>
<td>2011</td>
<td>Initial pilot findings</td>
<td>Academic poster</td>
</tr>
</tbody>
</table>

Dependability must also be taken into consideration when evaluating a phenomenographic study. Collier-Reed, Ingerman, and Berglund (2009) suggest three aspects of a phenomenographic study that a researcher must consider to ensure dependability: the structure of interviews, the accuracy of transcription, and analysis verifiability. The interviews must be designed and carried out in a manner that allows the interviewees to describe aspects of the object being focused on in the interview, without
being led by the researcher. The semi-structured nature of phenomenographic interviewing can make it difficult for the interviewer to avoid accidentally interjecting leading comments or questions (p. 349). For the research reported in this thesis, I conducted all the interviews. My prior experiences with phenomenographic interviewing from my previous research (Maybee, 2006, 2007) enabled me to structure and conduct the interviews in a manner consistent with the needs of the methodological approach. I also personally conducted the transcription and ensured the accuracy of the transcriptions. To evaluate the dependability of the data analysis, Åkerlind (2005b) recommended using dialogic reliability check, where agreement is reached between researchers through discussion and critique of the data. This was achieved through continuous discussion of the data with my doctoral supervisory team and the broader doctoral community.

Transferability refers to the applicability of the research. Lincoln and Guba (1985) argue that the original researcher is not in a position to specify how transferability may occur. However, it is necessary for a researcher to provide sufficient detail so that others may make use of the research (Mertens & McLaughlin, 2004). Collier-Reed, Ingerman, and Berglund (2009) suggest that the level of detail must be such that it is possible to identify how the research is similar to and differs from other contexts in which it may be relevant. Specifically, they suggest providing analytical tools that may be applied in other contexts, allowing for new studies to be compared with an original research. My study provides details of the context that was the focus of the research. I also describe in detail how variation theory was used in my analysis to identify information use and subject content that are part of an object of learning. While it may not be possible to identify the ways that my research may be applicable to future research, the details provided may enable others to use phenomenography and variation theory to study using information to learn in various educational contexts.

3.5 ETHICS CLEARANCE

Ethics clearance was received from the Queensland University of Technology, Research Ethics Officer, in July 2010, Ethics number 1000000444. The study is classed as low-risk research involving human participants. Ethics clearance was also received from the institution where the data collection was carried out.

3.6 CONCLUSION

This chapter discussed how the research reported in this thesis belongs to the domain of information experience. Phenomenography, a research approach used to investigate experience, guided this research. Variation theory was used as an analytical
tool to guide the analysis. Phenomenographic study methods were used to collect and analyze data that related to the investigation of two informed learning lessons. Chapters 4 and 5 report the results of this research.
4 Two types of essays (first lesson)

This chapter describes the findings that resulted from the investigation of the first observed lesson. By revealing experiences related to the teacher’s intentions, the enacted lesson and the students lived experiences of the lesson, these findings, along with the findings related to the second lesson described in Chapter 5, provide an answer to my research question:

*What are the qualitatively different ways that a teacher and students experience using information to learn in an undergraduate classroom?*

The intended learning outcome for the lesson was for the students to learn an approach to understanding a language and gender topic by investigating how the topic evolved through research. The student’s learning was to be communicated through a term paper. The chapter will first provide a brief overview, followed by a detailed description of the findings that resulted from the investigation of the first lesson.

4.1 OVERVIEW OF FINDINGS

The findings reported in this chapter elucidate the teacher and students’ experiences of the first lesson. It should be noted that the teacher was not explicitly designing the lesson to create variations. Variation theory holds that learning requires discerning aspects or features of an object of learning; this learning is enabled through exposure to variations (Marton et al., 2004). Using variation theory as a theoretical tool, it was possible to identify aspects and features that were part of the object of learning, which focused on the students becoming aware of:

1. an understanding of a language and gender topic by analyzing how it evolved through research; and

2. elements of an academic paper reporting an understanding of a language and gender topic as an evolution of research.

Described in detail in the proceeding sections, the findings explicate the three parts of the object of learning for the lesson:

1. the teacher’s intentions for the lesson (intended object);

2. the enacted lesson (enacted object); and
3. the students’ lived experiences of the lesson (lived object).

The analysis of the pre-lesson interview with the teacher revealed the intended object of learning. In this interview the teacher focused on various aspects and features, five of which were identified as critical to the intended object of learning that aimed for the students to become aware of how to understand a topic as an evolution of research:

- sequence of research (feature);
- seminal text (feature);
- types of papers (aspect);
- thesis statement (aspect); and
- claim (aspect).

The analysis of the transcript of the observed lesson revealed the enacted object of learning. Five of the critical aspects and features identified in the intended object of learning: sequence of research, seminal text, types of papers, thesis statement, and claim, were focused on by the teacher and students during the lesson. An additional aspect, paper topic, and a feature, themes, were also identified as critical for students to understand the object of learning as intended. Described in the table provided in Appendix A2, the aspects and features may be associated with information use or subject content. In the context of this lesson, the feature labelled sequence of research refers to identifying and analyzing articles or other materials to determine how a language and gender topic has evolved through research. Therefore, the sequence of research may be associated with information use. The feature labelled seminal text may represent the identification of the beginning of a sequence, and therefore may also be associated with information use, or understood as the development of a new topic, which in that case would be associated with subject content. The other aspects and features identified in the analysis of the first lesson as critical to understanding the object of learning as intended by the teacher were all related to subject content.

The types of variations identified in variation theory as necessary for enabling awareness of an object of learning, generalization, contrast, and fusion (Marton, 2014), were present in the enacted object of learning. After being separated as individual features, the critical feature of sequence of research and the aspect of paper topic were fused in ways reflective of how the teacher intended for the students to understand a topic as an evolution of research. The analysis of the post-lesson interviews with the students revealed the lived
object of learning. Students experienced the lesson in one of three qualitatively different ways:

- New way of learning (students experienced the lesson as presenting a way of conducting research and writing that would lead to new insights and understandings);

- Instructions for a specific essay (students experienced the lesson as offering techniques for completing the assigned paper); and

- Instructions for any essay (students experienced the lesson as relating generic instructions about the steps involved in conducting research and writing).

The critical aspects and features that were varied in the intended and enacted objects of learning and that students were aware of in the lived objects of learning are outlined in Figure 4-1.

![Figure 4-1: Critical aspects and features of the objects of learning for the 1st lesson](image)

White denotes aspects and yellow denotes features.

Figure 4-1: Critical aspects and features of the objects of learning for the 1st lesson
4.2 CONTEXT OF THE LESSON

As outlined in Chapter 3, the course under study was an upper-level course that was part of a writing and rhetoric curriculum taught at a small liberal arts college in the eastern United States. The subject of the course was language and gender, but it was also expected that the students would learn about academic writing and research. Ways of using information for learning were clearly important in this class, because during the several years that the teacher had taught this course, she had designed an assignment to get the students to adopt a particular approach to research grounded in the deliberate examination of scholarship that evolved over time. The paper assignment provided an appropriate object of research for my study, because it aimed for the students to learn how to use information while learning about subject content. In the paper, the students were expected to make claims based on their examination of a seminal text and the research that developed in response. This approach was intended to have the students draw conclusions from scholarly evidence.

The findings described in this chapter focus on the first of two lessons related to the final paper due at the end of the term. The object of learning for the first lesson was for students to be introduced to the notion of a language and gender topic as something that evolved through research, as well as to learn about researching and writing an academic paper that would communicate this type of understanding. One of the ways the teacher attempted to make students aware of the type of learning she intended was to compare how they would research their topic and organize their paper with other papers the students may have written, which the teacher referred to as the “standard” academic paper. The teacher described a typical undergraduate paper as using evidence that supports a preconceived conclusion, whereas the paper she assigned the students in this class purposefully had them examine the research on a topic, and make claims based on that analysis. During the classroom session described in this chapter, the teacher had students consider and share language and gender topic ideas and discuss two essays read for that day's class. These essays served as a model for the students, because select language and gender research was discussed in relation to how it responded to a seminal study. The intent of the first lesson from the teacher’s perspective, the interactions that occurred in the class between the teacher and the students, and the students’ experiences of this lesson after it was concluded, were the focus of this segment of the research. This chapter will present the findings that reveal the teacher and students’ experiences of the first informed learning lesson.

4.3 INTENDED OBJECT OF LEARNING

This section reports the findings from the analysis of the interview with the teacher prior to the first lesson that was observed in this study. The analysis of this interview data
determines the intended object of learning, which is the teacher’s intention for student learning. This section will begin with a general summary of the findings related to the intended object of learning. The details of the aspects and features of the object of learning the teacher intended to vary during the enacted lesson will be provided accompanied by relevant quotes from the interview. The critical aspects and features of the intended object of learning will be identified along with the pattern of variation that the teacher intended to enact during the lesson.

4.3.1 Overview

The intended object of learning for the first lesson was for students to be aware of an approach to understanding a language and gender topic as a sequence of research that developed in response to a seminal text. The assigned paper was contrasted with what the teacher considered the typical paper assigned to undergraduates, in which students defined a topic, and then sought evidence to support pre-drawn conclusions. The teacher described how during the lesson she would refer the students to an assignment sheet shared at the beginning of the class (see Appendix B2). The assignment sheet described the nature of the assignment:

You are studying the history of a specific idea as exhibited in just these few works. So, you are not taking responsibility for a wide knowledge of the topic, but rather for what you think the sequence says about the seminal text. (Assignment sheet, Appendix B2).

In the interview, the teacher described the lesson that was to be observed as containing two distinct parts: 1) discussion of the nature of the assignment, and 2) examination of model essays for the assignment. She also described her perceptions of what the students would need to be aware of to understand a language and gender topic by analyzing how it developed through research. The object of learning for the lesson included five aspects and features that the students needed to become aware of to understand both the paper and the type of learning reported in the paper:

- sequence of research (feature);
- seminal text (feature);
- types of papers (aspect);
- thesis statement (aspect); and
Key quote

Teacher: One of my primary goals for next Wednesday’s class will be for them [the students] to understand the position that the editor [Bucholtz] of this puts herself in, and the kind of claims that she is able to make, because at a professional level, she has done the background reading. And she knows the seminal text really well, and she understands its influence and its impact in the field. (1st pre-lesson interview)

4.3.2 Intended object detail

In the interview conducted prior to the first lesson, the teacher described her intentions for the enacted lesson. This included the activities she planned for the students to engage in as well as what she hoped the students would learn from those activities. In doing so, the teacher described the critical aspects and features that she intended the students to become aware of during the enacted lesson. The first two quotes in this section will include the names of aspects and features in brackets and bold type, e.g., [thesis statement], next to the statements illustrating how the aspects or features were represented in the words of the teacher.

The teacher began the interview by referring to the assignment sheet that outlined the assignment for the students in the class (see Appendix B2), and discussed how she would go over it with the students. In so doing, the teacher contrasted the typical paper with the one she assigned to the students:

Teacher: I deliberately phrased this at the bottom of the first page, “to set up the very worst kind of research paper,” which I define here as “you go out on the internet, into the library, you find sources on a topic, develop a thesis, then you find evidence to support it and then you write a long account of it with plenty of notes.” And so what I’m going to say to them, I’m going to have them read that, and then I’m going to say, this can be a recipe for a bad paper because of the evidence being used to narrow the thinking, in a preliminary way, instead of reading widely, then coming to some kind of an understanding of the reading in which you think of all the authors that you are looking at as participating in a conversation, and then developing a thesis [types of papers].
Continuing to explain how she would review the assignment sheet, the teacher also focused on the features of sequence of research and seminal text, as elements of the assigned paper:

Teacher: …I will explain, more than once or twice, “…you are studying the history of a quite specific idea as exhibited in just these few works” [sequence of research]. So, your general reading has already taken place to select your seminal text [seminal text] and your additional texts [sequence of research], and that may take quite a lot of background reading to find the best ones to put in a sequence.

The teacher fused the aspect of thesis statement with sequence of research to describe the nature of a thesis statement appropriate for the assigned paper, and also contrasted that type of thesis statement with one designed to guide a typical undergraduate paper:

Teacher…your thesis is not about all… that whole topic and all of that background reading. Your thesis is only about the logic of the progression of these particular texts arranged in whatever sequence you, the author, think is best.

And then the teacher read from the assignment sheet:

Teacher: You are not taking responsibility for a wide knowledge of the topic, but rather for what you think the sequence says about the seminal text, which is a much narrower thesis. That is what your thesis will be about.

The teacher used the metaphor of the students listening to a conversation to describe the students’ engagement with the research, which should lead to them “designing a judgment of their own” (claim) (1st pre-lesson interview). Although the teacher did not suggest that this was part of the lesson, she did provide an example of how a language and gender topic may be understood as an evolution of research:

Teacher: …we’ve already talked about interruption [in the course], and we’ve already done the background reading that we’re going to do as a class on a phenomenon of interruption, and… they ought to be able to explain to you or someone else, that the original concept of interruption was very, very crude, and very polarized, and very much influenced by the idea that men dominate in our culture, and it has already evolved into a, or evolved right
away into a much more nuanced, complex question, so that the word interruption got redefined.

The teacher assumed that the class would be approximately half over at this point, and intended to spend most of the remaining time focusing on the two readings that were assigned for the day. The readings were an editor’s introduction (Bucholtz, 2004b), and a second essay where the editor discusses the subsequent contributions to the volume (Bucholtz, 2004a), which consists of scholarly essays responding to a seminal text in linguistics (Lakoff & Bucholtz, 2004). The teacher contrasted the model essays with the student papers, indicating that Bucholtz’s essays were a scholarly version of what the students may produce.

Focusing on claim, the teacher planned to have the students complete an exercise where they individually spend three to five minutes writing down a list of claims that Bucholtz makes in her essays in relationship to Lakoff’s work. The teacher indicated that in the discussion following the exercise she intended to convey to the students that the claims Bucholtz makes may be similar to the claims they may make in completing their assignments. Bucholtz’s essays are to be considered scholarly versions of the assigned paper. The teacher also planned to discuss the organizational elements, such as layout, of Bucholtz’s essay as an example of how the students might organize their papers. In part, this was to convey to the students that the model is aspirational, and they are not expected to produce the same quality. This results in the aspects of claim, type of paper and organizational elements being generalized. The teacher also expressed a desire for the students to learn about citation, but did not describe how this would be addressed in the lesson.

4.3.3 Critical aspects and features

Awareness of the specific type of paper the teacher intended the students to write required that they experience a language and gender topic as an evolution of research that began with the introduction of a seminal text and evolved through subsequent research. It also required the students to recognize how the assigned paper was different than the papers they may write for other undergraduate courses. The teacher used the metaphor of “participating in a conversation” to describe the students’ engagement with the research that has evolved from a seminal work (1st pre-lesson interview). The teacher indicated that writing a paper reporting one’s understanding of a language of gender topic as a sequence of research involves developing a thesis statement that reflects a judgment or claim about the
sequence. As outlined in Table 4-1, five aspects and features the teacher intended to vary were identified as critical during the analysis of the pre-lesson interview transcript.

The aspect of organizational elements was also identified as assisting students in structuring an essay. As outlined in Chapter 3, an aspect is a broader concept that may encompass a number of features (Marton & Tsui, 2004). For example, an aspect of passenger vehicles is *class*, which refers to how a vehicle has been classified according to the number of passengers and amount of cargo it can hold. Specific types of class, such as a hatchback, coupe, or sedan, would be a feature of a vehicle. While organizational elements in this context may refer to the organization of the paper designed to make claims about a language and gender topic, a specific organization is not necessary to enable the intended object of learning. The organizational elements referred to by the teacher during the interview are an aspect that is not critical for experiencing the object of learning as intended by the teacher.

Table 4-1: Critical aspects and features of the intended object of learning for the 1st lesson

<table>
<thead>
<tr>
<th>Intended object</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Feature</td>
</tr>
<tr>
<td>Seminal text</td>
<td>Text presenting a highly original idea that influences the development of future research</td>
<td>Feature</td>
</tr>
<tr>
<td>Type of paper</td>
<td>Differentiation of papers by their purpose or structure</td>
<td>Aspect</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Aspect</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Aspect</td>
</tr>
</tbody>
</table>

4.3.4 **Pattern of variation**

The sub-section will describe the teacher’s intentions for varying critical aspects and features during the first lesson. The pattern of variation for the first enacted lesson began with contrasting the type of paper by comparing the assigned paper with a typical paper students will have written for other courses. To do this, the teacher planned to refer to the assignment sheet (see Appendix B2), which outlines the difference. The teacher also planned to contrast the thesis statement that guides the assigned paper with one that governs a typical paper, by conveying to the students that “…your thesis is not about… that whole topic, and all of that background reading. Your thesis is only about the logic of the progression of these particular texts arranged in whatever sequence you, the author, think is best” (1st pre-lesson interview). The second part of the fifty minute lesson focused on the two essays the students
were asked to read for the day, which would provide an example of the kind of paper the students were to produce.

The readings consisted of an editor’s introduction (Bucholtz, 2004b) and the second essay where the editor discusses the subsequent contributions to the volume (Bucholtz, 2004a), scholarly essays responding to a seminal text in linguistics (Lakoff & Bucholtz, 2004). By discussing the two texts, the teacher intended to focus on seminal text, sequence of research and claim. The teacher also intended to make the students aware that Bucholtz’s texts are scholarly versions of the assigned paper, thus generalizing the type of paper. Focusing on claim, the teacher intended to have the students individually spend three to five minutes writing down a list of claims that Bucholtz made in her essays in relationship to Lakoff’s work.

4.3.5 Conclusion

This section described the findings that resulted from the analysis of the interview with the teacher prior to enacting the lesson during a class session. The findings reflect the intended object of learning. The following section will describe the findings that resulted from the analysis of the transcribed audio and video footage collected during the observation of the enacted lesson.

4.4 ENACTED OBJECT OF LEARNING

This section reports the findings from the analysis of the first lesson. Analysis of the observation data determined the enacted object of learning, which reflects the interaction that took place between the teacher and the students during the lesson. The section will begin with a general summary of the findings related to the enacted object of learning. The details of the aspects and features varied during the enacted lesson will be provided accompanied by relevant quotes from the classroom interactions. The pattern of variation that was enacted through interactions in the lesson will be identified.

4.4.1 Overview

The first lesson focused on introducing the assignment, which was to report on an understanding of a language and gender topic that resulted from the examination of how the topic evolved through research. The lesson was discussion-based with the teacher leading the discussion but asking the students to respond to several questions throughout. The teacher began the lesson by going over the assignment sheet (see Appendix B2) that outlined the nature of the assigned paper by comparing it to what the teacher considered to be a typical undergraduate paper.
Key quote

You are studying the history of a specific idea as exhibited in just these few works. So, you are not taking responsibility for a wide knowledge of the topic, but rather for what you think the sequence says about the seminal text. (Assignment sheet, Appendix B2)

The critical aspects and features that were varied in the intended and enacted objects of learning are outlined in Figure 4-2.

![Figure 4-2: Comparison of the intended and enacted object of learning for the 1st lesson](image)

**Intended**
- Sequence of research
- Seminal text
- Types of papers
  - Thesis
  - Claim

**Enacted**
- Sequence of research
- Seminal text
- Type of paper
  - Thesis
  - Claim
  - Paper topic
  - Themes

White denotes aspects and yellow denotes features.

4.4.2 **Enacted object detail**

As students entered the classroom before the class period began, the teacher directed each of them to pick up an assignment sheet placed on an empty desk (see Appendix B2), and suggested that they begin reading it. The teacher referred to the assignment sheet throughout the beginning of the lesson as a way of outlining the requirements of the assigned paper as well as the nature of the paper. The assignment asked students to investigate the evolution of research that developed from a seminal work related to a language and gender topic. Students who read the assignment sheet before the class began may have had their attention focused on some aspects and features of the object of learning. The aspects and features mentioned in the assignment sheet included the seminal text, sequence of research, type of paper and claim made for a seminal text. Varied by the teacher during the lesson, the assignment sheet also contrasted one of the assigned essays with a typical undergraduate essay, and generalized it as an undergraduate version of the scholarly essay the students were
asked to read. The feature of a sequence of research was also generalized in the assignment sheet by outlining different types of sequences, such as chronological or theme-based.

The variation in the assignment sheet of contrasting the assigned essay and a typical undergraduate paper was made by the teacher at the beginning of the lesson and repeated throughout. One way that the teacher did this was to contrast the type of thesis statement that would guide each kind of paper. Referring to the assignment sheet, the teacher described a thesis that would guide a standard paper as being developed in advance of deep engagement with research literature:

Teacher: ...you go out onto the Internet, and into the library, you find sources on a topic, on the basis of those sources you develop a thesis, then you select to read only evidence that support that thesis, and you write a long account of it with lots of notes and hand it in. The problem with that is that you’re shaping your reading in advance to fit your preconceived idea. Do you see that? Do you see how I worded it that way? And what that means is that you’re blocking off the thinking; you’re being very efficient, but you are not writing anything that anyone would want to read - especially me. That’s what’s wrong with lots of standard student papers is that they haven’t really thought about the field, the evidence, what’s out there.

In contrast, the teacher described a thesis that guides the assigned paper and in so doing fused the aspect of thesis statement with the feature of a sequence of research. The fusion occurred as a result of the teacher describing a thesis statement that reflects the research on the topic:

Teacher: …the paper you are going to write …is not a general topic thesis, but a very, very narrow thesis about the sequence of articles that you’ve chosen to use to respond to the seminal text.

The teacher focused on and varied other critical aspects and features of the assigned paper including the paper topic, the seminal text as a beginning or turning point, and the concept of a sequence of research. The teacher and students separated paper topic when the teacher asked the students to generate potential topics that they might consider for their individual essays. The students offered answers that only focused on subject content, that is topics such as hermaphrodites, sexuality and gender (in relation to language), and the effect of language on thought. Then the teacher offered her own topic example, but in so doing fused paper topic with a sequence of research:
Teacher: …interruption, that’s a classic one, because interruption was first defined as a kind of power play of men over women. …West and Zimmer, which were researchers that I have not assigned, but which you will easily find, wrote some important essays about that, from that point-of-view, quite a long time ago. …the whole notion went through some redefinitions, and you read Debra Tannen on overlap, and on collaborative and supportive kinds of overlap. So, you see how the topic got redefined, and then there were studies done studying that, and so on. And now we have a much more complicated understanding of interruption than we did at the beginning.

The teacher generalized the type of paper the students were to complete by comparing it to a model represented by the readings assigned for that day’s class. The readings were comprised of an essay and the “Editor’s Note” from a collection of essays written in response to a seminal text in the field (Bucholtz, 2004a, 2004b). While the teacher noted that the two types of papers shared the same approach, the essays by Bucholtz were identified as a scholarly version of the paper the students would complete for the class:

Teacher: This book [holds up Language and Women’s Place: Text and Commentaries], which we are about to look at more closely, is a model and example of your project. In fact, I didn’t invent your project until this was published. Before that I did other things with this course, but when this was published, I thought, ah, that would make, a more modest version, probably not publishable by Oxford University Press, but a more modest version would make an excellent assignment for students … because of the kinds of knowledge that Bucholtz has to assemble in her own mind before she can write the paper that’s the introduction for this book … that your paper’s going to be modelled on.

The teacher again separated seminal text and sequence of research by pointing out how they were addressed in the model texts. The teacher and students varied claim when the teacher asked the students to make a list of claims that Bucholtz (2004a, 2004b) made regarding the seminal text discussed in the assigned essays. Then the teacher focused on organizational elements of the assigned paper by asking the students to identify strategies for making claims used by Bucholtz. The students focused on identifying themes (responses to the seminal text). One student also mentioned that Bucholtz acknowledged criticisms of Lakoff’s work. The teacher suggested that this is a classic technique used in writing:
Teacher: … one of the classic things you do when you construct an argument is you acknowledge, formally and in words, you acknowledge the opposite points of view, the ones that might be in the readers mind as you make a claim. … You have anticipated your reader’s objections and you have, in a masterful and super confidant way, you have dealt with those objections. It’s a very good strategy whenever you are building a persuasive argument.

The teacher ended the lesson by once again focusing on and varying the assigned paper by generalizing the model as an idealized version of what the students could expect to achieve.

4.4.3 Critical aspects and features

Four aspects and four features were varied during the enacted lesson. With the exception of one aspect, all the other aspects and features were critical for students to become aware of in order to experience the lesson in the way the teacher intended (see Table 4-2). The intended object of learning for the lesson was comprised of five aspects and features, which were determined to be critical to students understanding of the lesson. These aspects and features were all varied during the lesson:

- sequence of research (feature);
- seminal text (feature);
- type of paper (aspect);
- thesis statement (aspect); and
- claim (aspect).

When it is necessary for learners to become aware of select aspects and features to understand the object of learning as the teacher intends, those aspects and features are considered critical (Marton, Runesson, & Tsui, 2004). The lesson was intended to make students aware of two things. First, a select language and gender topic may be understood through a sequence of research that evolved over time. Second, the students were to become aware of aspects and features of an essay that could report an understanding of a language and gender topic. The five aspects and features identified in the analysis of the transcript of the pre-lesson interview with the teacher were necessary for the students to become aware of in order to understand the assigned paper in the way the teacher intended. Of course, it is
possible that aspects or features varied in the enacted lesson may have been critical for students to become aware of to experience the object of learning as the teacher intended, even if they were not identified during the pre-lesson interview with the teacher. This is exemplified by the aspect of paper topic, which was a critical aspect of the object of learning. The aspect of paper topic was introduced by the teacher when she asked the students to suggest possible language and gender topics for the assignment. While paper topic would also be a feature of any essay, in this lesson paper topic was critical because it is fused with a critical feature (sequence of research) to enable students to experience a language and gender topic in the way intended.

Near the end of the class session the feature of themes, as responses to the seminal text, and the aspect of critique, as an element of persuasive argument, were introduced. Themes and critique were related to organizational elements identified in the pre-lesson interview with the teacher. While organizational elements are a necessary aspect of any essay, in this context the teacher intended the students to become aware of specific organizational elements that enabled them to report their experience of a language and gender topic based on an analysis of how it evolved through research. Thematizing responses to a seminal text was necessary to communicate a claim or claims about a seminal text. This was a requirement of the assigned paper, and therefore the feature of themes was critical for the students to understand. However, critique, as an element of persuasive argument, was identified by the teacher as a “classic” part of structuring a paper. Although it is something expected in a general way in the students’ essays, this aspect was not critical to an essay that aimed to describe a language and gender topic as an evolution of research. Therefore, it was not a critical aspect of the enacted object of learning.
Table 4-2: Critical aspects and features of the enacted object of learning for the 1st lesson

<table>
<thead>
<tr>
<th>Enacted object</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Feature</td>
</tr>
<tr>
<td>Seminal text</td>
<td>Text presenting a highly original idea that influences the development of future research</td>
<td>Feature</td>
</tr>
<tr>
<td>Type of paper</td>
<td>Differentiation of papers by their purpose or structure</td>
<td>Aspect</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Aspect</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Aspect</td>
</tr>
<tr>
<td>Paper topic</td>
<td>Specific language and gender topic</td>
<td>Aspect</td>
</tr>
<tr>
<td>Themes</td>
<td>Themes related to a seminal text</td>
<td>Feature</td>
</tr>
</tbody>
</table>

4.4.4 Pattern of variation

Many of the variations made during the enacted lesson aligned with the intended variations identified in the pre-lesson interview with the teacher. Most of the variations that occurred during the lesson were forms of separation, which include generalization and contrast. For example, at the beginning of the lesson the teacher contrasted the critical aspect of type of paper by comparing the assigned paper with a typical paper students would have written for other courses. Later in the class session, the teacher referenced the readings that the students were assigned to read for that day (Bucholtz, 2004a, 2004b), which generalized types of essays that discussed a topic by analyzing how it evolved through research. Using these two texts as examples, the teacher separated seminal text and sequence of research. Claim was separated when the teacher had the students identify claims that Bucholtz made in her essays about Lakoff’s (2004) original text. Near the end of the class session, themes related to a seminal text was focused on when the teacher asked the students to identify strategies used by Bucholtz (2004a, 2004b) for making a claim about a seminal text. At the close of the lesson the teacher generalized the type of paper the students were to research and write with the scholarly version represented in Bucholtz’s essays.

In two instances, the teacher fused critical aspects and features after separating them. Both of these instances occurred towards the beginning of the classroom session. The first time was when the teacher, referring to the assignment sheet, contrasted the thesis statement that guides the assigned paper with one that governs a typical paper. After focusing on thesis statement, the teacher then fused this critical aspect with sequence of research when
describing a thesis that would be appropriate to guide the assigned essay. Paper topic was separated when the teacher asked the students to identify potential topics for their papers. The teacher then fused paper topic and sequence of research by providing an example of a language and gender topic and its evolution through research over time.

4.4.5 Conclusion

This section described the findings that resulted from the analysis of the transcriptions of the audio and video footage of the observed classroom enactment of the informed learning lesson. The findings reflect the enacted object of learning. The following section describes the findings that resulted from the analysis of the transcribed interviews with students after the enacted lesson. The analysis of the data resulting from the student interviews reveals what the students learned from the lesson, i.e., the lived object of learning.

4.5 LIVED OBJECTS OF LEARNING

This section reports the findings from the analysis of the interviews with the students after the first observed lesson. The analysis of the interview determines the lived objects of learning, which reflects the students’ experiences of the informed learning lesson. The section begins with a general overview of the findings related to the lived objects of learning. Then the aspects and features of the three lived objects of learnings that were discerned by the students during the post-lesson interviews are identified accompanied by relevant quotes.

4.5.1 Overview

During the post-lesson interviews, the students were collectively aware of a total of eleven aspects and features related to the assigned essay. These included three of the features and three of the aspects identified as critical to understanding the object of learning as enacted in the classroom. The critical aspects and features focused on by the students were: sequence of research, seminal text, types of papers, thesis statement, claim and themes. However, the aspects and features were focused on differently by different students. The analysis of the five transcripts of the interviews with the students following the enacted lesson revealed three ways that students experienced the object of learning:

- New way of learning (students experienced the lesson as presenting a way of gaining new insights and understandings of a topic by conducting research in a particular way);
- Instructions for a specific essay (students experienced the lesson as offering techniques for completing the assigned paper); and
• Instructions for any essay (students experienced the lesson as relating generic instructions about the steps involved in conducting research and writing).

Key quote

Amanda: …I’m used to writing analytical papers. …I’m used to having my words be the substance of it, and everything else being used to back that up. Whereas in this case I’m almost the one sort of in the background to these essays that we gather. (1st post-lesson student interview)

The critical aspects and features that were varied in the intended and enacted objects of learning and that students were aware of in the lived objects of learning are outlined in Figure 4-3.

Figure 4-3: Comparison of the intended, enacted and lived objects of learning for the 1st lesson

4.5.2 Lived objects detail

During the interviews the students described their experiences of the enacted lesson as well as the assignment. In so doing, they revealed their awareness of the aspects and features that were critical in the enacted object of learning. This section will provide details for each of the three ways that students experienced the lived object learning: new way of learning, instructions for any essay, instructions for a specific essay.
for a specific essay and instructions for any essay. Quotes are provided from the student interviews to support the findings resulting from the analysis. Pseudonyms are used for the names of the student participants.

**New Way of Learning**

Amanda and Shelly experienced a wider range of the critical aspects and features identified in the enacted object of learning than were experienced in the lived objects of learning described as instructions for any essay or the instructions for a specific essay. Both students were aware of the assigned paper as being different than a typical research paper in a way similar to how it was expressed by the teacher during the enacted object of learning. Shelly compared the two types of papers several times. In explaining what she expects to learn from the project, Shelly focused on the notion of a language and gender topic as research that has evolved over time:

Shelly: …I expect to learn more about how… how texts get interpreted, how feminist texts might get interpreted and how that might shape what another person, another researcher thinks. …it’s like a timeline of the topic that I choose. Now obviously I’m not going to say, this occurred here, this occurred here and boom that’s done. You know, I’m obviously going to examine what’s actually in the articles. …I’ll kind of get a feel like I’m actually there, like going from the seminal text and then learning with the researchers. Following the path of development, I guess.

The assigned essay was understood as an effort to obviate the short-comings of the typical research paper:

Amanda: …what do we do, we write these papers with these theses and we kind of restate what’s out there. …we aren’t really saying anything new, or really thinking in any new way or growing as students. So I think that when I said here that she… she’s trying to give us an assignment that’s a bit different than that and is… will be valuable to us, valuable to our education, what we’re supposed to be getting out of a liberal arts education, which is sort of a more critical way to think. And not feel constricted or confined by the sort of limits that we feel in other classes, I guess, with other paper assignments.

In this lived experience, the students were aware of the seminal text as a significant element of the paper, and noted that the number of times a seminal text is cited is an
indicator of importance. There was also an awareness of the concept of claim, which was mentioned in reference to claims made for the seminal text as a feature of the model essays discussed during the classroom session. Shelly was simultaneously aware of claims as both a structural element of an essay, and also as a declaration that could be made about a body of research. In contrast, Amanda described all of the same aspects and features that were varied during the last part of the lesson related to the structural elements of the model, but her understanding of each was attributed to either a way of learning or as a way of understanding something new about the content.

Students with this lived experience were aware of themes as a structural element of the model essays they read for the class (Bucholtz, 2004a, 2004b). Shelly described how themes could be used in a similar way in the assigned paper. Amanda focused on themes as a unifying element of an academic paper. Answering what she expected to learn from the assignment, Amanda simultaneously focused on the notion of themes and a sequence of research:

Amanda: …be able to sift through all that and sort of come up with something, come up with themes that connect them all, just make these connections between them.

Amanda: There are varying levels of your ability to comprehend what you’re reading, which is a lot of what we get out of a class like this I think. It just gives us different perspectives to use. You know, I can look at something from a feminist perspective. I can look at something from a grammatical perspective, even just how pronouns are used. We talked a lot about that at the beginning of this course. So I think it’s just, it’s much more complicated than you would think to try to make connections between things, between these pieces of data, I don’t know and to do so especially in a way that’s new or, you know, kind of continue or sustain a discussion about it.

Like the assignment sheet (see Appendix B2) that was introduced at the beginning of the lesson, both students made the analogy that following a sequence of research was like following a “conversation.” Amanda made this point throughout the interview, while Shelly commented on it close to the end of the interview in relation to her own project. Amanda was aware of critique as an aspect of an academic paper. Shelly focused on and varied the organizational elements of an academic paper. In addition to being aware of more of the critical aspects and features from the enacted object of learning, each of the students
experiencing this lived object of learning focused simultaneously on more than one aspect or feature three times during their interviews. For Amanda, this occurred primarily when focused on the structural aspects related to the model essay (Bucholtz, 2004b), while Shelly was simultaneously aware of more than one feature when focused on the claims made by the model essay.

**Instructions for a specific essay**

Students’ lived experiences described as *instructions for a specific essay* focused on features of the scholarly model as a way of understanding what they need to do to research and write the assigned paper. Students experiencing the object of learning in this way focused on the scholarly model as a guide for the assigned paper:

Mary Ann: …we were looking at how Bucholtz introduced Lakoff’s text, and connect it to future texts that sort of stem from it, and that’s sort of what we’re supposed to do with our own projects by finding a text and then finding texts that were influenced by it.

However, Bucholtz’s (2004a, 2004b) essays were held invariant, meaning that the students experiencing the object of learning in this way may not see differences between the model essay and the assigned paper:

Mary Ann: …it sort of is going to serve as an example of what we’re doing I think, in the way that she, Bucholtz takes this one text and then shows its importance and goes through the steps of showing why it’s important and why it’s still relevant today. I guess maybe thirty, maybe years later, thirty-five years later… and then shows how it influences the later texts, and that’s exactly what we’re doing with another text.

Both students also focused on the critical feature of seminal text. Mary Ann identified aspects related to how Bucholtz (2004b) “lays out” a case for the seminality of Lakoff’s (2004) text as “A: because it influenced other people, B: because it’s still relevant so many years later.”

And later:

Mary Ann …I think my end product will definitely be modelled after sort of Bucholtz’s introduction to Lakoff. …in terms of sort of format and how I will compile my information and findings. …the way that she sort of takes almost a persuasive stance in proving that this is an important piece of
literature, and this is where it’s been used, or expanded on, or critiqued. And so I hope to sort of follow that in that I will be taking my original article that I choose and proving that this is why it’s important, because it’s been used in the following ways, and then expand on the ways.

Amy brought to the foreground a number of elements of the research related to the seminal text by pointing out how these elements were present in one of the model essays read for class (Bucholtz, 2004b):

- how the idea has evolved over years;
- brought about social change or some kind of change;
- amount of importance or lack of importance;
- influence over time;
- relatable nature;
- accessibility (how easy it is to understand); and

- visibility (within the research literature).

Mary Ann was also aware of an aspect that was touched on briefly in the lesson, but not varied. Noting that it was important to the literature reviews in her sociology papers as well, for Mary Ann “citation” was part of the lived object of learning.

Compared to the lived object of learning described as instructions for any essay, which focused on the assignment instructions and characteristics of good academic papers in general, Mary Ann and Amy’s experiences emphasize an awareness of the elements of the scholarly essays used to model elements of the paper the students were assigned to write (Bucholtz, 2004a, 2004b). Students with this lived object of learning did not experience using information and learning simultaneously.

Instructions for Any Essay

The third lived experience the object of learning was instructions for any essay. Stephen was the only student participant to experience the lesson in this way. Stephen experienced the assigned paper as being the same as a “standard” paper. He compared the assignment to a paper he had been assigned in an earlier class, but held them invariant
indicating that he did not see a difference. Later in the interview, Stephen again talked about the nature of the academic paper, which included the assigned paper:

Stephen: I’m trying to think to some of the other research papers I’ve done because I think there’s a kind of core set of ideas that goes through every research paper regardless of what the topic is. … I think I would learn the prevailing academic thoughts or insights on the topic. What are the mainstream and maybe not so mainstream, academic arguments that are made about the topic depending on this class, what I choose.

Throughout the interview, Stephen focused on following a process comprised of a set of “steps” as an aspect of researching and writing an academic paper. This feature was not focused on in the enacted object of learning. Stephen suggested that it would be hard to complete the work of one step once the allotted time for that step has passed.

Stephen: … in the research phase I definitely want to read as much as possible… get as much done… be as thorough as possible, because one, the annotated bibliography is an assignment that we have to turn in, but not only that, but, it’s sort of the beyond all of the source list. Yeah, you could always add things later, but it’s sort of the core of the paper, and whatever I don’t have done by then just won’t happen I think.

Stephen varied the steps of the academic paper by comparing it to the steps he was asked to follow in a paper assignment in his first-year seminar the previous year. He focused on the aspect of the paper proposal as one step, and held the feature invariant in relation to other paper proposals he has encountered:

Stephen: … proposals are a pretty common thing in high school and in college that I’ve experienced. … they don’t want you to take, you know, spend the semester working on a project that isn’t I guess what they had in mind, or is inadequate. Although now that you ask me that and I think about it, it’s kind of a weird concept… the concept of the proposal, because ideally like as part of the research project we want to know how to sufficiently narrow our topic, how to make a concise and appropriate argument that would qualify. And it’s interesting, the proposal process almost implies that we don’t know how to do that.

Stephen also focused on the reading aspect as an element of the assignment, stating that one must read enough to have a “really wide base of knowledge that will then support
your thesis, things that go against it, and then choose the best ones to go into the paper.”
Stephen focused on the aspect of “time management,” during research, suggesting this was a possible learning outcome of the assignment. Stephen also focused on aspects and features of the assignment and the scholarly model (Bucholtz, 2004a, 2004b), in particular the thesis statement and the seminal text.

Three times during the interview Stephen focused on critique as part of a persuasive argument. Towards the end of the interview he explained that he believed the teacher would be looking for the “counter arguments” in her evaluation. An aspect experienced by Stephen that wasn’t observed in the enacted object of learning was personal opinion. Stephen declared that his own views would only go into the paper to the extent that his “views interact with the academic material.” He also focused on organizational elements as structural elements of the model discussed in class (Bucholtz, 2004b). Stephen experienced the parts of the enacted object of learning most closely related to the discussion of the assignment guidelines and the structural elements of the model. In the enacted object of learning, the subject content aspects were brought to the fore related to topic selection and claims made in the model texts (Bucholtz, 2004a, 2004b). Stephen did not experience this aspect, but rather focused mostly on applying techniques.

4.5.3 Critical aspects and features

During the post-lesson interviews, the students collectively focused on six aspects and features that were varied during the enacted lesson and six of these aspects and features were determined to be critical for understanding the object of learning (see Table 4-3). The six included: sequence of research, seminal text, type of paper, thesis, claim, and themes. However, none of the three ways that the students experienced the object of learning included all six of the critical aspects and features that were part of the enacted lesson. Students who experienced the object of learning as a new way of learning were aware of five of the aspects and features critical to understanding the lesson in the way intended by the teacher: sequence of research, seminal text, type of paper, claim, and themes. The students who experienced the object of learning as instructions for a specific essay were aware of sequence of research, seminal text and type of paper. These students were also aware of citation as an element of the assigned paper. This aspect was not addressed during the lesson, but was mentioned in the assignment sheet. This aspect was not critical to be aware of in order to experience the object of learning in the way intended. The student who experienced the object of learning as instructions for any essay was aware of seminal text, type of paper and thesis statement. This student also focused on several other aspects related to research and writing essays. They included a research process, reading, time management, critique as
part of a persuasive argument, personal opinion, and organizational elements. Although each of these foci may be important aspects of researching and writing essays, they were not critical for developing an awareness of a language and gender topic by investigating how research on the topic evolved. None of the students focused on the aspect of paper topic.

Table 4-3: Critical aspects and features of the lived objects of learning for the 1st lesson

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>New Way of Learning</th>
<th>Instructions for specific essay</th>
<th>Instructions for any essay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Feature</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Seminal text</td>
<td>Text presenting a highly original idea that influences the development of future research</td>
<td>Feature</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Type of paper</td>
<td>Differentiation of papers by their purpose or structure</td>
<td>Aspect</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Aspect</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Aspect</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Themes</td>
<td>Themes related to the seminal text</td>
<td>Feature</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

4.5.4 What the students discerned

The lived object of learning is typically comprised of critical aspects and features discerned by the students in the post-lesson interviews that were identified in the intended and enacted objects of learning. Although it is possible that new aspects or features critical for experiencing the object of learning as intended by the teachers would be uncovered during the post-lesson interviews, this was not the case. The five students interviewed after the first lesson did not all discern the same aspects and features. This resulted in the identification of the three lived objects of learning that were described at the beginning of this chapter.

Students whose lived experience was described as a new way of learning were aware of all but two (i.e., paper topic and thesis statement) of the aspects and features identified as critical through the analysis of the intended and enacted objects of learning. By contrast, the students whose experiences were described as instructions for a specific essay or as
instructions for any essay were aware of fewer of the critical aspects and features. The students experiencing the object of learning as instructions for a specific essay were concerned with research and writing an essay that met the requirements of the assignment. They were focused on understanding elements of the scholarly essays that were described as the model for this assignment (Bucholtz, 2004a, 2004b). In addition to the critical aspect of type of paper, the students who experienced instructions for a specific essay were aware of the critical features of sequence of research and seminal text. They were not aware of the critical aspect of claim or the critical feature of themes. The lived object of learning described as instructions for any essay understood the assigned essay as similar to, or the same as, a typical undergraduate essay. This was indicated by the student focusing on the type of paper, but holding it invariant. The student experiencing the object of learning in this way was aware of the critical feature of seminal text and the critical aspects of thesis statement, and type of paper. However, these critical elements were part of an experience that included six other aspects: research process, reading, time management, critique as part of a persuasive argument, personal opinion, and organizational elements. The non-critical aspects focused on in this experience may be considered generic aspects of researching and writing undergraduate essays.

There was a major difference between the discernment of the students experiencing a new way of learning and the other two experiences of the object of learning. The students experiencing a new way of learning each focused on select aspects and/or features simultaneously.

4.5.5 Conclusion

This section described the findings that resulted from the analysis of the interviews with the students after the enacted informed learning lesson. The findings reflect the lived objects of learning. The following section will describe the relationship of the three perspectives on the object of learning: intended, enacted, and lived.

4.6 RELATIONSHIP BETWEEN INTENDED, ENACTED, AND LIVED OBJECTS OF LEARNING

This section will examine the relationship between the critical aspects and features identified as part of the intended object of learning with those identified as part of the enacted object of learning. How the aspects and features were intended to be varied will also be compared with how they were varied during the lesson. The section will also examine the relationship of the critical aspects and features varied in the enacted lesson with those discerned in the lived object of learning.
4.6.1 **Intended and enacted**

The enacted lesson aimed to introduce the students to the intended object of learning. The object of learning was for students to become aware of an approach to understanding a language and gender topic by investigating how it evolved through research over time. What the students learned about a topic was to be reported in an essay. An additional goal for the lesson was to familiarize students with elements of an essay for reporting their new understanding of a language and gender topic. The teacher’s description of the intended learning activities largely aligned with the enacted lesson. The intended object of learning for the lesson was comprised of five aspects and features, which were determined to be critical to students’ experiences of the lesson: sequence of research, seminal text, type of paper, thesis statement, and claim. These aspects and features were all varied during the lesson. Of the eight aspects and features varied during the enacted lesson, seven were determined to be critical for experiencing the object of learning as intended by the teacher. Five of them were the same as the aspects and features identified as critical through the analysis of the pre-lesson interview with the teacher. One additional aspect, paper topic, and one additional feature, themes (related to a seminal text) were identified as critical through the analysis of the transcript of the video-footage of the observed lesson. Paper topic was identified as a critical aspect as it is one of the central elements of the object of learning. The feature of themes was identified as a critical feature because it is necessary for students to be aware of themes that relate to a seminal text in order to identify the related research.

4.6.2 **Enacted and lived**

Seven aspects and features were determined to be critical for experiencing the object of learning as intended by the teacher: sequence of research, seminal text, type of paper, thesis statement, claim, paper topic and themes. These aspects and features were primarily varied through contrast and generalization during the lesson. Twice during the lesson the teacher fused aspects and features. The first time this occurred was when the teacher described a thesis statement that reflected a sequence of research. During the second occurrence the teacher fused paper topic with sequence of research when providing an example of a language and gender topic that evolved through research. The analysis of the post-lesson interviews with the students revealed three different experiences of the object of learning. One of them, a *new way of learning*, aligned closely with the enacted object of learning. These students were aware of five of the critical aspects and features that were varied during the enacted lesson. They also experienced some aspects and features simultaneously. For example, Amanda focused simultaneously on themes and sequence of research when described sifting through articles to
“come up with themes that connect them all, just make these connections between them” (1st post-lesson interview). By contrast, the students experiencing the object of learning as instructions for a specific essay or instructions for any essay were only aware of three of the critical aspects or features varied during the enacted lesson. The students with either of these two lived experiences did not focus on aspects and features simultaneously.

4.6.3 Using information and subject content

An object of learning is comprised of both the how and what aspects of learning (Marton & Booth, 1997). The how is the process of learning and the what refers to subject content. Using information has been associated with the how of learning (Lupton, 2008b). As reflected in the description of the object of learning that is the focus of the analysis described in this chapter, an object of learning is also comprised of aspects and features (Marton et al., 2004). Aspects and features may be associated with using information or subject content. Table 4-4 outlines how the seven aspects and features determined to be critical for experiencing the object of learning as intended by the teacher (i.e., sequence of research, seminal text, type of paper, thesis statement, claim, paper topic and themes) are related to information use and subject content. The feature of sequence of research, as it was understood by the teacher in this study, involved locating and analyzing scholarly materials reporting on language and gender research to determine how they are related to one another. Therefore, sequence of research may be associated with using information. A seminal text refers to both an information source as well as the introduction of a new language and gender topic. Depending on the context, it may be associated with either using information or subject content. The aspect of type of paper may not be associated with either. The aspects of paper topic, thesis statement and claim and the feature of themes may be associated with the qualitative meaning of a topic. Therefore, they may be associated with subject content.
Table 4-4: Relationship of aspects and features to information use and subject content in 1st lesson

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Information use or subject content</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Information use</td>
<td>Feature</td>
</tr>
<tr>
<td>Seminal text</td>
<td>Text presenting a highly original idea that influences the development of future research</td>
<td>Depends on context</td>
<td>Feature</td>
</tr>
<tr>
<td>Type of paper</td>
<td>Differentiation of papers by their purpose or structure</td>
<td></td>
<td>Aspect</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
</tr>
<tr>
<td>Paper topic</td>
<td>Specific language and gender topic</td>
<td>Subject content</td>
<td>Aspect</td>
</tr>
<tr>
<td>Themes</td>
<td>Themes related to the seminal text</td>
<td>Subject content</td>
<td>Feature</td>
</tr>
</tbody>
</table>

During the lesson the teacher fused the aspects of thesis statement and paper topic with the feature of sequence of research. In so doing, the teacher fused a feature that represents using information with an aspect that represents subject content. However, only some students were able to experience information use simultaneously with subject content. The students experiencing a new way of learning simultaneously focused on sequence of research and themes or claim. These students were experiencing using information to learn about a topic. By contrast, the students whose experiences were described as instructions for a specific essay or as instructions for any essay primarily focused on using information, but not subject content. The students experiencing instructions for a specific essay were aware of the feature of sequence of research. However, they were not aware of the aspects and features more closely related with subject content, such as claim or themes. The student who experienced instructions for any essay was also not focused on subject content. This was exemplified by several of the aspects comprising this lived object of learning that emphasized the how part of learning, including research process, reading, time management, critique as part of a persuasive argument, and organizational elements. Focused primarily on using information, the students experiencing instructions for a specific essay or instructions for any essay did not experience the lesson as preparing them to use information to learn about a language and gender topic.
4.7 CHAPTER CONCLUSION

This chapter described the findings from the analysis of the data collected related the first informed learning lesson observed for this study. The following chapter describes the second informed learning lesson that focused on making students aware of a thesis statement containing an assertion about a sequence of research, which would guide the assigned paper.
This chapter describes the findings that resulted from the investigation of the second lesson. Along with the findings of the first lesson described in Chapter 4, by revealing experiences related to the teacher’s intentions, the enacted lesson and the students’ lived experiences of the lesson, these findings from the second lesson provide an answer to my research question:

*What are the qualitatively different ways that a teacher and students experience using information to learn in an undergraduate classroom?*

As discussed in the previous chapter, the intended learning outcome was for the students to understand a language and gender topic as a sequence of research that developed over time. The lesson described in this chapter focused on students developing thesis statements about a select language and gender topic that was understood through an analysis of how the topic evolved through research. This chapter will provide a brief overview before describing in detail the findings that resulted from the investigation of the second informed learning lesson.

### 5.1 OVERVIEW OF FINDINGS

Using the framework of variation theory (Marton, 2014; Marton & Tsui, 2004), the findings reported in this chapter elucidate the teacher and students’ experiences of a lesson. The lesson supported an assignment which intended to make students aware of the aspects and features critical to understanding a language and gender topic as an evolution of research. Described in detail in the proceeding sections, the findings explicate the three parts of the object of learning for the lesson:

- teacher’s intentions for the lesson (intended object);

- enacted lesson (enacted object); and

- students’ lived experiences of the lesson (lived object).

The analysis of the pre-lesson interview with the teacher revealed the intended object of learning. In this interview, the teacher focused on various aspects and features, three of which were identified as critical to the intended object of learning. The intended object of learning aimed for the students to become aware of a thesis statement reflective of
an understanding of a language and gender topic developed through an analysis of how the
topic evolved through research. The three aspects and features were:

- sequence of research (feature);
- thesis statement (aspect); and
- claim (aspect).

The analysis of the transcript of the observed lesson revealed the enacted object of
learning. The critical aspects and feature identified in the intended object of learning, i.e.,
thesis statement, sequence of research and claim, were focused on by the teacher and
students during this lesson. Described in the table provided in Appendix A3, the aspects and
features varied in the second lesson may be associated with information use or subject
content. As with the first lesson, the feature sequence of research refers to identifying and
analyzing articles or other materials to determine how a language and gender topic has
evolved through research over time. Therefore, the sequence of research may be associated
with information use. The aspect of claim refers to an assertion or judgment, whereas the
aspect of thesis statement refers to a statement that expresses an assertion or judgment. These
aspects may be associated with subject content.

The types of variations identified in variation theory as necessary for enabling
awareness of an object of learning are generalization, contrast, and fusion. These variations
were present in the enacted object of learning. The features of sequence of research, thesis
statement and claim were contrasted, or generalized. After being separated in these ways
individually, these features were fused in ways reflective of a thesis statement that makes an
assertion about a sequence of research. The analysis of the post-lesson interviews with the
students revealed the lived object of learning. All of the students interviewed were aware of
the feature of sequence of research and the aspect of thesis statement and focused on them
simultaneously. While the aspect of thesis statement implicitly suggests an assertion or
judgment made about a language and gender topic, two of the four students specifically
highlighted the aspect of claim as a component of a thesis statement for the assigned paper.
Experiencing the thesis statement in the way intended by the teacher required that the
students be aware of a thesis statement that expresses an assertion made about a language
and gender topic based on an analysis of how the topic evolved through research. All the
students experienced the second lesson in the way intended by the teacher; therefore, the
students were intentionally using information to learn.
The critical aspects and features that were varied in the intended and enacted objects of learning and that students were aware of in the lived object of learning are outlined in Figure 5-1.

![Diagram showing intended, enacted, and lived objects of learning]

Figure 5-1: Critical aspects and features of the objects of learning for the 2nd lesson

### 5.2 CONTEXT OF THE LESSON

The informed learning lesson described in this chapter was the second lesson that was the focus of this investigation. The subject of the course was language and gender, and the students were expected to learn about language and gender issues as well as about academic writing and research. As described in Chapter 4, the paper assignment was an informed learning assignment because it aimed for the students to learn how to use information while learning about subject content. The object of learning for the entire assignment was for students to understand a language and gender topic as something that evolved through research, as well as to learn about researching and writing an academic paper that would communicate this type of understanding.

The first lesson that supported the assignment was described in Chapter 4. The focus of that lesson was to introduce students to the requirements of the assigned paper. One of the ways the teacher attempted to make students aware that the paper she wanted the students to write was different than other papers they may have written was to compare the requirements of the assigned paper with what the teacher referred to as the “standard” academic paper. The teacher described the standard paper as using evidence that supports a preconceived conclusion, whereas the paper she assigned the students in this class purposefully examines the research on a topic and makes claims based on that analysis.
The informed learning lesson described in this chapter was the second and final lesson provided by the teacher to support the assigned paper. The second lesson took place approximately one month after the first lesson. This lesson focused on developing a thesis statement that made an assertion about the topic based on an analysis of how the topic developed through research. During the class session described in this chapter, the students worked in small groups to review and critique one another’s draft thesis statements contained within draft introductions of their paper brought to class that day. The intent of the lesson from the teacher’s perspective, the interactions that transpired in the class between the teacher and the students, and the students’ experiences of this lesson, are the focus of this chapter.

5.3 INTENDED OBJECT OF LEARNING

This section reports the findings from the analysis of the interview with the teacher prior to the second lesson. The analysis of this interview data determines the intended object of learning, which is the teacher’s intention for student learning that was anticipated to result from the enactment of the lesson. This section will begin with a general summary of the findings related to the intended object of learning. The details of the aspects and features of the object of learning the teacher intended to vary during the enacted lesson will be provided accompanied by relevant quotes from the interview. The aspects and features critical for understanding the object of learning in the way intended by the teacher will be identified. Lastly, the pattern of variation that the teacher intended to enact during the lesson will be identified.

5.3.1 Overview

The intended object of learning is for students to be aware of a thesis statement that would make a claim about a sequence of research. A thesis statement that reflected these elements would be appropriate in the assigned paper, which should reflect the students’ understanding of a language and gender topic as a sequence of research that has evolved over time. The teacher described a thesis statement that would be appropriate to govern the assigned paper in the assignment sheet she shared with students during the first lesson:

…you are not taking responsibility for a wide knowledge of the topic, but rather for what you think the sequence says about the seminal text. That is what your thesis will be about. (Assignment sheet, Appendix B2).
In the interview, the teacher described her perceptions of what the students would need to be aware of to understand a thesis statement in the intended way, which included the feature of sequence of research and the aspects of thesis statement and claim.

**Key quote**

Teacher: …they’ll [the students] produce …a kind of stab in the dark thesis statement. So, what we’ll do in class is take that apart and see its adequacies and inadequacies. (2nd pre-lesson interview)

5.3.2 **Intended object detail**

In the interview conducted prior to the second lesson, the teacher described her intentions for the enacted lesson. This included the activities she planned for the students to engage in as well as what she hoped the students would learn from those activities. In doing so, the teacher described the critical aspects and features that she intended the students to become aware of during the enacted lesson. As with the previous chapter, the first two quotes in this section will include the names of the aspects and features in bold text with brackets, e.g., [*thesis statement*], next to statements illustrating how these elements were represented in the words of the teacher.

The teacher began the interview by indicating the need for the students to shift their awareness away from the “standard” paper, to encompass the elements of the assigned paper, and in so doing focused on thesis statement and a sequence of research:

Teacher: …I know from experience that it takes some of the students a long time to appreciate that they are not writing a standard research paper. So, they need understand as soon as possible …that what they are going to produce is going to focus on a short sequence of articles, and the relationship within that sequence [*sequence of research*] rather than a standard, general thesis [*thesis statement*] about the topic.

In explaining the classroom activities, the teacher also implicitly described the variations of aspects and features she expected each activity to produce. Most of the lesson would involve a small group exercise in which students were to give feedback to one another about their draft thesis statements:

Teacher: …push will come to shove and they’ll produce just a, you know, a kind of stab in the dark thesis statement [*thesis statement*]. So, what we’ll do in class is take that apart and see its adequacies and inadequacies. And
how we’ll do that in class is each of them will be asked to read someone else’s tentative introduction including a thesis statement [thesis statement]. They’ll be asked to underline what they think is the tentative thesis statement [thesis statement]. So, one interesting thing that might happen is that they will pick a sentence that the author didn’t intend as the thesis.

As students move on to discuss the other student’s conclusions regarding the thesis statement that was identified in their introduction, the aspect of thesis statement could be generalized, highlighting different attributes, such as “too broad, too general, and too fuzzy,” or not making “a clear statement of judgment” (Teacher, 2nd pre-lesson interview). The teacher also suggested that she might have the students rewrite their own thesis statement in an effort to improve it. Later in the interview the teacher generalized thesis statement again when describing the purpose of the lesson:

Teacher: I want them to see that the thesis that they’ve got in their mind at that moment is much too general and vague and broad, and is not going to serve them well, and that they can improve it a lot by doing deeper thinking, and maybe a lot more reading.

When asked what would be an indicator of improvement of the thesis statement, the teacher focused simultaneously on sequence of research and thesis statement:

Teacher: …if they could make a sharper thesis about influence and development. That this seminal text started these ideas in motion and these scholars responded to those ideas in their… in these ways and, therefore, the sequence shows us a development over time in this specific idea.

The teacher’s description of the third part of the lesson, the plenary discussion that would happen after the small group work, suggested that she would likely fuse together the aspects of thesis statement and claim:

Teacher: That will probably involve saying more than once or twice, “Yes, this thesis is further along than that thesis, because it offers a judgment that related to the assignment, or that’s well related to the assignment.”

5.3.3 Critical aspects and features

The thesis statement was intended to be the primary focus of the enacted lesson. The object of learning for this lesson was awareness of the specific type of the thesis statement the teacher intended the students to write. The teacher intended the thesis statements the
students produce “to focus on a short sequence of articles and the relationship within that sequence” as well offer “a judgment” or claim related to the assignment based on an analysis of research on the topic (2nd pre-lesson interview). Although the teacher mentioned a seminal work, which was a critical feature of the object of learning for the first observed lesson, here it is described as starting “these ideas in motion,” indicating that it is considered part of a sequence of research (2nd pre-lesson interview). Outlined in Table 5-1, the feature of sequence of research and the aspects of thesis statement and claim were critical for students to be aware of to understand a thesis statement in the way that the teacher intended.

Table 5-1: Critical aspects and features of the intended object of learning for the 2nd lesson

<table>
<thead>
<tr>
<th>Intended object</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Feature</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Aspect</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Aspect</td>
</tr>
</tbody>
</table>

5.3.4 Pattern of variation

The teacher’s intended pattern of variation for the second enacted lesson began with focusing on aspect of thesis statement by asking the students working in groups to identify the thesis statement in one of their peer’s draft introductions. The teacher anticipated that the attributes of each thesis statement would be generalized when readers discuss the thesis statements they identified in the draft introductions with the student authors. Fusion could occur during the small group discussions as well, e.g., when students draw together thesis statement with sequence of research. However, fusion was also expected to occur near the end of the lesson after the small group work when the teacher planned to vary the critical aspects of thesis statement and claim by suggesting that a more accomplished thesis statement would make a claim related to the assignment (i.e., based on a sequence of research).

5.3.5 Conclusion

This section described the findings that resulted from the analysis of the interview with the teacher prior to enacting the lesson during a class session. The findings reflect the intended object of learning. The following section will describe the findings that resulted from the analysis of the transcribed audio and video footage collected during the observation of the enacted lesson.
5.4 ENACTED OBJECT OF LEARNING

This section reports the findings from the analysis of the observed informed learning lesson. The analysis of the observation data determined the enacted object of learning, which reflects the interaction that took place between the teacher and the students during the second lesson. The section begins with a general summary of the findings related to the enacted object of learning. The details of the aspects and features varied during the enacted lesson are provided accompanied by relevant quotes from the classroom interactions. Describing the enacted object of learning, the critical aspects and features and the pattern of variation that were enacted through interactions in the lesson are identified.

5.4.1 Overview

The second lesson observed in the study focused on enabling the students to understand a thesis statement that would be appropriate for the assigned paper, i.e., one that made an assertion about the topic as understood as a sequence of research. The beginning of the class session was dedicated to a brief discussion of proper citation and approaches to finding appropriate sources for the assigned paper. This introduced a number of aspects into the lesson that were not critical to the teacher’s intended object of learning. For most of the lesson, students worked in small groups of two or three, and were tasked with giving one another feedback on the thesis statements in the draft introductions to the paper the students had been instructed to bring to class that day. The teacher assigned the students to evaluate if the thesis statement they identified in their peer’s introduction met the requirements of the assignment. The teacher circulated, joining a small group discussion for a few minutes before moving on to another group. The critical aspects and features identified in the intended object of learning: sequence of research, thesis statement and claim, were varied during the small group interactions. In all three group interactions, aspects or features were also fused. Fusion occurred in a number of ways. One group fused the critical feature of sequence of research with critical aspect of claim. The other two groups fused the critical feature of sequence of research and the critical aspect of thesis statement, and one of those groups also fused all three.

Key quote

Teacher:…you’re not taking responsibility for the whole topic. Your thesis statements are about the sequence. (2nd observed lesson)

The critical aspects and features that were varied in the intended and enacted objects of learning are outlined in Figure 5-2.
5.4.2 **Enacted object detail**

This section will detail all of the variations that occurred during the informed learning lesson. As students came into the classroom they were instructed to sit in specific seats so that during the small group work they would be working with classmates pre-selected by the teacher. The teacher began the class session by talking about the MLA (Modern Language Association) citation style rules, noting that some students had made errors in the citations they included in their paper proposals. In explaining the rules to the students, the teacher generalized different instances of three aspects of citations that follow the MLA format. She generalized types of sources by focusing in on how MLA distinguishes between print and web sources. The teacher also generalized the features of types of authors, such as first or second author, as well as length of work, such as article or monograph.

Then the teacher called on two students to share their experiences of searching for sources for the annotated bibliography assignment, noting that hearing about these students’ experiences could be helpful to other students. The first student, Shelley, generalized both the use of databases, i.e., subject-specific and general, as well as search terms, i.e., broad versus narrow, when describing how she had trouble locating useful articles using Academic Search Premier using narrow search terms. However, she was able to find useful articles using Sociological Abstracts and broader terms. The second student, Amanda, also generalized the use of databases, noting that very few sources on her topic were found in JStor, but that she used Google Scholar and identified the most cited articles and related articles, as well as using a women’s studies database. This student tracked down books with
chapters cited in databases in the library catalog or inter-institutional shared catalog. The teacher interjected, “Follow the citations, because don’t forget that being seminal, being considered seminal depends just as much on influence as it does on being earlier or being first.” Here she fused the features of citation pattern, seminality, and sequence and research.

At this point, the teacher outlined the small group activity that the students would be engaged in for the remainder of the class time. The teacher began by focusing on the aspect of thesis statement by instructing the students, already placed in groups of two or three, to take the draft introduction prepared by another student in the group and identify what they believed to be the thesis statement of that introduction. The teacher implicitly generalized the type of thesis that was required by telling the students that after identifying the thesis statement they should write down an answer to the question, “Does the thesis fulfil the assignment?” (to make a claim about a sequence of research). Lastly, the students were to explain their conclusion to the student in the group that hadn’t written, nor read, the introduction. The teacher gave the students a few minutes to commence this work, and then proceeded to join individual groups of students.

As the primary interest of this study is on the interaction between the teacher and the students, data collection during the lesson focused on the teacher’s enactment of the lesson. Therefore, although any students working in a group could have varied critical aspects and features in a way that might enable their fellow students to experience the lesson differently, I followed the teacher in her rounds from group to group recording the interactions between the teacher and students.

**First group**

The first group observed was one of the groups comprised of only two students. For the first group, I have included the names of aspects and features, bolded and in brackets, e.g., [claim], in the quotes by the teacher and students illustrating how the features were represented. When the teacher joined this group, one student focused on the feature of a sequence of research by describing his perception of how a sequence develops:

Stephen: That’s the pattern [sequence of research] that like in my head I’m calling like, the pendulum effect. Where it’s sort of like… they take a stance and then they find something that swings them off to the other side and then (inaudible) …narrow it down and they start getting closer and closer to like this…

Teacher: Yeah.
Stephen: …unfound answer.

Teacher: A pendulum metaphor would work for almost any pattern, not just feminists looking for (inaudible), but almost any research pattern over time [sequence of research]. If one person says something kind of radical the pendulum swings, not necessarily in the opposite, but to a strong critique of that radicalization.

Stephen: …the way I kind of picture it, because Lakoff is the one pulling back to start the swing, and then like you have this reaction, where it’s like okay, well, men are the devil, and then it’s sort of like, Tannen trying to justify it like, well, men are just different than women, and just excuse it. And then there’s the reaction to that, well, “no they’re not.” And then after that, it’s sort of like, well okay, let’s find out what those little differences are [sequence of research].

Another variation occurred when the other student in the group fused sequence of research and thesis statement and the teacher extended this by fusing sequence of research, thesis statement and claim:

Jessica: Yeah, I mean I think this thesis [thesis statement] would be, (inaudible) the last sentence, “As the relevant field of inquiry, scholars have made advances in the way they think about masculinity and language,” etc. But I think the thesis [thesis statement] could be what those shifts are… [sequence of research]

Teacher: Just what I was going to say, that you’ll work yourself to a judgment [claim] where you actually state…

The teacher moved to another group, and during her discussion with the second group was asked to return to the first group. The teacher returned to the first group to find the two students having a disagreement concerning the appropriateness of Jessica’s draft thesis statement for meeting the requirements of the assignment. In the following exchange in which Stephen stated his concerns, he contrasted a thesis statement that is fused with a feature of sequence of research with one that is not based on a sequence of research:

Stephen: I’m concerned… and then her thesis [thesis statement] doesn’t like… I feel like it contributes to the academic discussion, but doesn’t like…

Teacher: Doesn’t make a judgment [claim]?
Stephen: Doesn’t make a claim [claim] to the entire conversation.

Teacher: Okay.

Stephen: You were telling us that like it’s supposed to kind of be like Bucholtz’s discussion [type of paper] and like the thesis [thesis statement] is supposed to be about the like academic discussion on the topic [sequence of research]. …my concern with this thesis [thesis statement] is that I feel like this thesis would almost like become more of a response to a response to the seminal text more than it would become a broader… Where I feel like hers would become kind of like a new response to the seminal text. So, like citing other work that came before her…

Jessica: …and then I said… like this is kind of based off of what she said. So, I wasn’t just like making this claim on my own. I was using her text to make that claim [claim].

Stephen: I’m not saying you’re making it on your own [claim]. I’m just saying that like I feel like this is like the more, like quote unquote, traditional research paper [type of paper] that like I think you [teacher] were saying that we should avoid.

Teacher: That’s right.

Stephen: …that your thesis [thesis statement] is that… basically what she’s [author] saying is wrong because it has a lot of like consequences. There, and then here’s… those consequences are saying that they’re sexist and insufficient, but I feel like that’s a response to the seminal text, and you’re going to use these other people, who have already joined in the conversation to back up your argument. But, by doing that you kind of are like becoming part of the response.

The teacher fused sequence of research, thesis statement and claim once more when asking a probing question to clarify if Jessica agreed with Stephen’s viewpoint:

Teacher: Let me ask it this way. Do you feel that the sequence… [sequence of research], it adequately deals with Tannen’s insufficiencies?

Jessica: Like all the texts I’ve read?
Teacher: Well, yeah, the conversation [sequence of research].

Jessica: I mean I think some of the author’s do. Others tend to agree with her more.

Teacher: Okay. So, you… your… your thesis [thesis statement] is about the sequence [sequence of research]. It’s going to state that. It’s going to state what you… where you think the balance is of crit… of her point-of-view and the critique of it.

Jessica: Okay.

Teacher: And that becomes your… the point [claim] you want to make about the sequence [sequence of research].

Group two

When the teacher sat down with the two students in the second small group, one of the students, Carla, asked the teacher to respond to a comment she had made on the other student’s proposal. In her response, the teacher contrasted a thesis statement for another type of essay with a thesis statement that makes a claim about a sequence of research:

Teacher: If you’re going to give me those two options… my voice, my opinion, versus the patterns, then the answer is the patterns. ’cause this is not a personal essay, right? This is an analytic essay about a pattern… about a sequence. So, do your thesis statements so far look like that, do they look like they match the assignment?

The teacher continued to respond to Carla’s draft introduction by pointing out an assertion that Carla made and asking her to identify its significance. In doing so, the teacher focused on claim:

Teacher: …this sentence says something about today women can use expletives to their advantage presumably in a way that they could not before. So what is that advantage exactly? What does it give them? Well I’m asking you to think about it.

Then, as shown in the following interaction, the teacher fused paper topic and sequence of research by focusing first on the Carla’s topic, but then concluded by suggesting that Carla investigate the scholarly conversation on the topic:
Teacher: Alright, that’s a traditionally masculine prerogative, to speak that way. And women have been brought up that it… not to do that, because it’s feminine.

Amanda: It’s not ladylike.

Teacher: It’s not ladylike, exactly. And that’s where Lakoff is so clear. Okay. Now, so go ahead… so the young woman says to herself, Alright, I’m going to swear, I’m going (inaudible). Fuck this, fuck that, etc. etc. Now what? So you ask your writers, people you’re reading, and yourself, so what?

Next the group turned to the discussion of Amanda’s work. Amanda began by generalizing topic when describing her topic to the teacher:

Amanda: …I read an article and it had mentioned Tina Faye being.. being like kind of… she was kind of like a bully, you know, because she was like putting down women and things like that. So there’s… I think that’s, you know, sort of saying how women are, you know, using the male like raunchy humor.

In her response, the teacher again fused topic and sequence of research by telling the student to consider her topic in relationship to scholarly commentary on the topic:

Teacher: …reread your sequence with that in mind, and ask yourself… first you should say, are they interested in the question? Does it seem to fall within their purview? I’ll bet you’ll find that it does at least in some ways, because it seems like such an obvious question to ask. You know, what do women gain from acting like men? Do they really gain equality? Are they thought of more positively, because men are more privileged in our culture?

Towards the end of the teacher’s interaction with this group, the teacher fused sequence of research and critical analysis when explaining to the students how to address something the student identified as significant that was not addressed by research:

Amanda: It’s like the double bind, because you want to swear, but you don’t want to seem… be seen as, you know…
Teacher: Right. You don’t want to lose credibility as a woman. You don’t want to be unfeminine. So [Amanda], let’s pretend for a moment that it turns out to be a question of… that you can’t see any response to. (inaudible) Then that becomes one of your good questions.

Carla: Right.

Teacher: Which becomes part of your critical analysis, and…

Carla: Yeah.

Amanda: Yeah.

Teacher: And so that’s what you mean by “my opinion,” and how much of my opinion should I put in the paper? Then the answer there is, yes, go for it, because that’s… that’s a logical extension of the topic, and you should ask that.

**Group three**

The teacher met with another group comprised of three students just before the class session ended. The teacher fused thesis statement and sequence of research by asking the students if their “thesis statements are about the sequence?”

### 5.4.3 Critical aspects and features

The intended object of learning for the lesson was comprised of one feature, sequence of research, and two aspects, thesis statement and claim, which were determined to be critical to students’ ability to understand the lesson. In addition to the aspects and feature identified as part of the intended object, six other aspects and features were varied during the enacted lesson. During the first ten minutes of the class session, when the teacher described correct MLA citation and then asked two students to share their experiences of researching their topic, the aspects of citation (e.g., formatting) and search strategy (e.g., database selection, search term selection, and discovering new sources by following references) were varied along with the features of citation pattern (e.g., using citations to determine influence), and seminal text. Two additional aspects related to the assigned paper were varied during the small group activity: paper topic and critical analysis.

If it is necessary for learners to become aware of aspects and features to understand the object of learning as the teacher intends, then those aspects and features are considered
critical (Marton, Runesson, & Tsui, 2004). It is possible that aspects and features present in
the enacted lesson could be critical for students to become aware of to experience the object
of learning as the teacher intended, even if they were not identified during the pre-lesson
interview with the teacher. The lesson was intended to make students aware of a thesis
statement that would support a paper that makes a claim about a select language and gender
topic when understood as a sequence of research. While citation, searching and citation
pattern are parts of the paper assignment, they are not critical to the object of learning for the
second lesson. When the aspect of critical analysis was focused on during the classroom
interaction, it was not directly related in the interactions to the development of a thesis
statement. The teacher tells a student that part of her critical analysis would involve
identifying and commenting on what is not addressed in the research. It is not made explicit,
but presumably this would be addressed in the text. Critical analysis is not a critical aspect of
the object of learning.

When the aspect of paper topic was varied during the classroom interaction it was
also not directly related to the development of a thesis statement. In this one instance, a
student focused on the topic of women using “male” humor and the teacher fused paper topic
with sequence of research by asking the student to consider the topic in relationship to the
scholarly conversation about it. Although paper topic was identified as a critical aspect
during the first lesson observed for this study (described in Chapter 4), in almost all of the
interactions during the second enacted lesson the aspect of paper topic was held invariant,
meaning that it was focused on but not varied. Despite the one instance of the aspect being
made focal, the aspect of paper topic in the enacted lesson was part of the background from
which other features emerged. The aspect of paper topic is not critical to the object of
learning for the second lesson. Shown in Table 5-2, although nine aspects and features were
varied during the enacted lesson, only three of them were critical for students to become
aware of in order to experience the lesson in the way the teacher intended.
Table 5-2: Critical aspects and features of the enacted object of learning for the 2nd lesson

<table>
<thead>
<tr>
<th>Enacted object</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Feature</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Aspect</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Aspect</td>
</tr>
</tbody>
</table>

5.4.4 Pattern of variation

The part of the lesson that focused on the intended object of learning began with the teacher describing what was expected of the student groups. The teacher focused on the critical aspect of thesis statement when explaining to the students that they were to identify the thesis statement in the introduction written by another student in the group. She also asked the students to write down an answer to the question, “Does the thesis fulfil the assignment?” and in doing so implicitly asked the students to determine if the thesis statement made a claim about a sequence of research.

After hearing the instructions from the teacher, the students began working in groups of two or three. From this point forward the pattern of variation for the enacted lesson was not the same for all of the students, but was dependent on the aspects and features focused on and varied by the members of the group. Three groups were observed when the teacher joined them. The pattern of variation for the first group that was observed began with the sequence of research being brought into focus. The critical aspect of thesis statement was fused with sequence of research. All three aspects and features, sequence of research, thesis statement and claim, were also fused. A thesis statement that makes an assertion about a sequence of research was contrasted with a thesis statement that would guide a different kind of paper. This group also fused paper topic with thesis statement and sequence of research. The second observed group generalized the aspect of thesis statement. During the teacher’s interaction with this group, sequence of research was fused with claim, paper topic, and critical analysis. In the third group, the teacher fused sequence of research and thesis statement, by asking the students if their thesis statements reflected a sequence.

5.4.5 Conclusion

This section described the findings that resulted from the analysis of the transcriptions of the audio and video footage of the observed enactment of the second
informed learning lesson. The findings reflect the enacted object of learning. The following section will describe the findings that resulted from the analysis of the transcribed interviews with students after the enacted lesson. The analysis of the data resulting from the student interviews will reveal what the students learned from the lesson, i.e., the lived object of learning.

5.5 LIVED OBJECT OF LEARNING

This section reports the findings from the analysis of the interviews with the students after the second lesson that was observed in this study. The analysis of the interview data determines the lived object of learning, which reflects the students’ experiences of the informed learning lesson. This section will begin with a general summary of the findings related to the lived object of learning. The details of the aspects and features of the object of learning discerned by the students during the post-lesson interviews will be provided accompanied by relevant quotes.

5.5.1 Overview

The analysis of the post-lesson interviews revealed that the students were aware of nine aspects and features of the assigned paper. This included the three aspects and features that were identified as critical for understanding the object of learning as intended by the teacher. The critical feature of sequence of research, and critical aspects of thesis statement and claim were focused on in various ways. All of the students experienced thesis statement and sequence of research simultaneously. This indicates that the lived object of learning involved an awareness of the lesson as focusing on understanding a thesis statement that reflected a language and gender topic as a sequence of research evolving over time.

All four of the students were simultaneously aware of thesis statement and sequence of research. This is to say, the students experienced a thesis statement that would make an assertion or judgement about a language and gender topic based on an analysis of the evolution of research on that topic. Two students did not explicitly focus on the aspect of claim, but claim was implicitly experienced as an attribute of a thesis statement appropriate for guiding the essay. The other two students specifically described an assertion or judgement about a language and gender topic. To varying extend, all students were simultaneously aware of sequence of research, thesis statement and claim.

Key quote

Amanda: …it’s radically different than any other thesis statement I’ve had to write for a paper, because it’s… it’s not focused on us and our opinions
exactly. It’s more focused on the actual texts themselves, and thesis has to
do with the sequence. (2nd post-lesson student interview)

The critical aspects and features that were varied in the intended and enacted objects
of learning and that students were aware of in the lived object of learning are outlined in
Figure 5-3.

5.5.2 **Lived object detail**

During the interviews the students described their experiences of the enacted lesson
as well as the assignment. In so doing, they revealed their awareness of aspects and features
critical to the enacted object of learning. In the interviews all of the students except one
compared the assigned paper with the typical research paper. As exemplified by the
following quote, students compared the two types of papers by focusing on the feature of
sequence of research as a defining element of the assigned paper that is not part of a typical
research paper:

Shelley: …we were going to critique each other’s rough drafts, just, you
know, looking for some sense of chronology. Because she doesn’t want just
like a research project, so it had to, you know, show that it developed over
time.
Two of the students, including the one who did not make this specific comparison between the assignment and a typical research paper, compared the typical research paper with the scholarly model version of the assigned paper. Three out of the four students discussed gathering and using information for the assignment. One student compared what she defined as the “research” required of the assignment with what she perceived as being the tacit nature of research in assignments in other courses. Search strategy, encompassing activities such as database selection, determining search terms, or following citations, were aspects of the assigned paper that were focused on and varied by all three of these students. Two students discussed specific resources, such as JStor or Google Scholar. Amanda noted differences between the types of databases she used to locate information about her topic by generalizing between multidisciplinary databases, which she referred to as “just the generic EBSCO, and Academic Search Premier... and JStor” with a “very specific sociological article database.” Amanda also generalized between broad and narrow searches when she described becoming aware of the implications of using different search terms in particular ways. Two students also focused on using reference lists as ways of determining relevance. One did so by examining references to see if a specific author was listed, which she indicated increased the possibly that this author's work should be considered seminal. The other student had already decided on a seminal text, and checked reference lists of articles related to her topic to determine if the authors of the seminal work had been cited, which she considered an indicator of relevance to her project. Only Stephen focused on sorting as a feature by commenting on the need to “sift through” numerous articles to discover the articles that are “actually helpful for the project.”

All of the students were aware of the critical aspect of thesis statement. All four students compared the specific type of thesis statement required of the assigned paper with the thesis statement of a typical research paper. This happened by noting that the thesis statement for the assigned paper needed to align to the specific assignment, or that it was focused on research. Two of the students provided more detail when describing the differences between a thesis statement for the assigned paper and one for the typical research paper. One student did this by emphasizing the characteristics of the typical paper:

Shelly: It’s different because you’re not just coming up with a thesis. I mean, you’re coming up with a thesis, but you’re not just coming up with a thesis, finding articles that support it, and putting it all together in some sort of, you know, very like jumbled, I guess you could say, way research paper.
Another student, comparing a thesis statement for the assigned paper with one for a typical research paper, focused on the attributes of the thesis statement for the assigned paper:

Stephen: …you’re not trying to stake a claim and like necessarily like… I mean you are going to stake a claim as your thesis, but you’re not trying to respond directly to one claim and then back yourself up. You’re supposed to comment broadly on the, you know, the broader academic discussion…

Stephen also compared a thesis statement for the assigned paper with a thesis statement for a typical research paper when describing his interaction with the student he worked with in the small group exercise during the enacted lesson:

Stephen: …I didn’t think her thesis was answering the question, because I thought it was kind of going down the more quote unquote traditional research path. I found it wasn’t addressing the question in the way that like Professor ___________ wants. I just recommended that she go back and look at Mary Bucholtz’s introduction to Language and Women’s Place, which is supposed to be kind of like the model for a this paper. And so I’m… I’m hoping that worked out for her, because I wasn’t sure her thesis was going in the right direction…

In discussing possible documents that could serve as the seminal text for her assignment, one student discussed a seminal work by describing different formats that a seminal work may appear in, such as a popular book or research-based article. All of the students were aware of the feature of sequence of research. For example, Stephen focused on a sequence of research by suggesting that he needed to “map” his “way through this kind of like academic discussion” on his topic, while Amy described herself as “just kind of tracing the evolution of the change…” Two students described how the sequence of research discussed in their papers would be presented chronologically rather than another form of organization. Only one student focused on the aspect of paper topic by describing her topic, female humor, as a topic, not in relationship to the sequence of research, or other aspects of the assignment.

All the students focused on more than one aspect or feature simultaneously during the interviews. This was expressed in a number of ways. For example, one student simultaneously focused on paper topic, paper structure and themes, when discussing the themes she noticed arising from the materials on her topic, and how she would use these themes to structure her paper. In so doing, she described her evolving understanding of the
language and gender topic she selected to investigate, as well as her considerations for how to report it in her essay:

Amanda: … Caldecott award winning children’s picture books. …They analyzed sort of the statistics of all these books and looked at how often…women were portrayed as the central characters versus not, what sort of traits, were they more passive, were they more active in their roles? Were they indoors, were they outdoors? Were they featured as much in titles or not? … all of the articles that come after that do similar things, look at similar categories. …But what I noticed is that …this trend that emerged of just asymmetry. And that the women were sort of… were featured more often … in masculine roles, but the men were not featured in feminine roles. And, so a lot of the later ones… the later articles discuss that and then my final article looks at the books that were chosen, because they were non-sexist, to be read in schools and examining if those really are non-sexist at all … how does our culture define sexism comes out of that. …so I don’t know, there are sort of these overarching themes of like this asymmetry and I’m probably going to structure my paper around those themes.

Two of the students simultaneously focused on paper topic and sequence of research. Amanda did this when describing what she thought were potential benefits of examining a topic over time:

Amanda: …we’re sort of following the evolution of… of an idea, because it brings it up to modern, you know, modern times today. You could be including an article written like two months ago, because it makes… makes it very much like a real world issue and makes it feel a lot more tangible and a lot more important that way.

In another instance, paper topic and sequence of research were simultaneously focused on when speculating on potential topics for the paper. In this instance, the student has not yet decided on a topic, and as a result may not speculate about the expected outcome of the investigation:

Stephen: …masculinity over time in language and gender studies is a huge topic. I mean you’d have to do a massive meta-analysis to see, …starting with Language and Women’s Place until something that was written last week, to see how, …attitudes towards men have changed in feminist writings and in language and gender studies… so I’ll probably pick
something, you know, a sub-topic within that. So, you know, perhaps gender differences, specifically. How have gender differences between men and women, you know, how have those been looked at, and how has the discussion of just gender differences changed over time? Or, you know, the difference between the way men and women, these are just some of the things that I’m considering right now, the difference between the way men and women use compliments, and how has that discussion panned out? Or the differences, I mean my, my sub-topic within it is going to be differences, but then even within differences there is a ton of different things that can play out.

Stephen also focused simultaneously on sequence of research and claim, when describing his perceptions of the teacher’s guidance for how to approach the assigned paper:

Stephen: …Professor …had good insight into that. She said, you know to comment on the sequence, the sequence being the sequence of academic discourse and the papers that came out over time. Comment on that, rather than inserting yourself into it and contributing (inaudible) the sequence.

All the students were aware that the thesis statement of the assigned paper must focus on a sequence of research. This is exemplified by Amanda when she compared the thesis statement required of the assigned paper with a “traditional” paper, and in so doing focused simultaneously on thesis statement and sequence of research:

Amanda: …it’s radically different than any other thesis statements I’ve had to write for papers, because it’s… it’s not focused on us and our opinions exactly. It’s more focused on the actual texts themselves, and the thesis has to do with the sequence.

Another student simultaneously focused on thesis statement and sequence of research when describing possible thesis statements that derived from her exploration of women’s humor:

Shelly: Oh, this is another place that I’ve problems …maybe our thinking about women’s humor has… hasn’t changed so much …as the women’s humor has changed itself. … in that way, I have like two chronological things. I could trace the chronology of thinking about, you know, women’s humor, but at the same time women’s humor was also changing… I should
…include that in my thesis too …because I know that like our thinking has changed about it … for example, not saying that …females are humorless, but saying that their humor might be different.

Two of the students emphasized that the thesis statement should make a claim about the sequence of research. One student had described throughout the interview the need to identify a sequence of research, but towards the end of the interview began to speculate about ways that a thesis statement could make an assertion about the sequence of research:

Shelley: …I don’t think your thesis is supposed to make like a conclusion. I think it’s probably supposed to be more like open-ended, because, you know, this topic still is evolving. You don’t want to say like, oh, and now here we are in 2010 and this is where it’s going to stay. …you’d probably say something about expecting it to continue changing, or …how you look at topic, you know like, broadly, might bring up questions that haven’t been answered, and how that might like affect the future …of the topic too. I mean if you want to say that yours, your paper, could somehow influence the study of it.

Another student had claim at the fore of his awareness, as exemplified by his simultaneously focusing on sequence of research, thesis statement and claim when describing a thesis statement appropriate for the assignment:

Stephen: …you are going to state a claim as your thesis, but you’re not trying to respond directly to one claim and then back yourself up. You're supposed to comment broadly on the, you know, the broader academic discussion…

This section described the aspects and features that the student participants focused on during their interviews after the second lesson. This section also described ways that students focused simultaneously on two or more aspects or features when describing their experience of the informed learning lesson and assignment.

5.5.3 Critical aspects and features

During the post-lesson interviews, the students collectively focused on nine aspects and features related to the assigned essay and enacted lesson. Six of the aspects and features focused on by the students were the same as the ones varied during the enacted lesson. These included the aspects of paper topic and search strategy and the feature of seminal text, as well as the three critical aspects and features identified as part of the intended and enacted
object of learning: sequence of research, thesis statement and claim. Two aspects, research and paper structure, and one feature, themes, were not part of the intended or enacted objects of learning. Each of these aspects or features was focused on by only one student. The feature of seminal text was only focused by one student as well, whereas three students were aware of the aspects of search strategy and paper topic. Described in Table 5-3, all of the students focused sequence of research and thesis statement during their interviews. Focusing on thesis statement suggests an awareness of the notion of an assertion or judgement about a sequence of research, which would be expressed in the statement. The critical aspect of claim was focused on and varied separately by two of the students.

Table 5-3: Critical aspects and features of the lived object of learning for the 2nd lesson

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
</tr>
</tbody>
</table>

5.5.4 **What the students discerned**

As with the first lesson, after the second lesson the students discerned aspects and features of the object of learning for the entire assignment that went beyond the aspects and features related to the object of learning for the lesson. The lived object of learning is comprised of critical aspects and features discerned by the students in the post-lesson interviews that were identified in the intended and enacted objects of learning. These aspects and features include sequence of research, thesis statement and claim. The students compared the thesis statement of the assigned paper with the thesis statement of a “typical” research paper. Each of the students also focused on the sequence of research as a critical feature of the assigned paper.

Select features were also focused on simultaneously, indicating that the students experienced the two features in a holistic way. The critical feature of sequence of research was focused on simultaneously with other features. One student focused simultaneously on sequence of research with paper topic. Sequence of research was also focused on simultaneously with aspects identified as critical in the intended and enacted objects of learning. This occurred in three different ways. First, a student simultaneously focused on sequence of research and claim. Second, two of the students simultaneously focused on sequence of research and claim. Second, two of the students simultaneously focused on sequence of research and claim.
sequence of research and thesis statement. For example, Shelley referred to thesis statements as being “based on the evolution of a topic.” Third, two other students simultaneously focused on all three of the critical elements together: sequence of research, thesis statement, and claim. This is to say, these students intentionally emphasized that a thesis statement should make an assertion or judgment about a sequence of research. This was exemplified by Stephen, who suggested that the thesis statement was to “comment broadly on…the broader academic discussion…” This variation indicated an explicit awareness of a claim based on a sequence of research as an element of the thesis statement for the assigned paper.

5.5.5 Conclusion

This section described the findings that resulted from the analysis of the interviews with the students after the second enacted informed learning lesson. The findings reflect the lived object of learning. The following section will describe the relationship of the three perspectives on the objects of learning: intended, enacted, and lived.

5.6 RELATIONSHIP BETWEEN INTENDED, ENACTED, AND LIVED OBJECTS OF LEARNING

First, this section examines the relationship between the critical aspects and features that were identified as part of the intended object of learning and the enacted object of learning. It includes a comparison of how those aspects and features were intended to be varied with how they were enacted during the lesson. Second, this section examines the relationship of the critical aspects and features varied in the enacted object of learning with the critical aspects and features discerned by the students in the lived object of learning.

5.6.1 Intended and enacted

Two aspects, thesis statement and claim and one feature, sequence of research, had been identified by the teacher as critical to experiencing a thesis statement appropriate for the assigned paper. The teacher’s intentions for the lesson focused on making students aware of these three elements, and how they could be combined (fused) resulting in an understanding of a thesis statement reflecting a topic as a sequence of research that evolved over time. Although other aspects and features of the assigned paper were discussed during the classroom session, the critical aspects and features were implicitly fused by the teacher when addressing the entire class. The teacher’s introduction to the group activity asked the students to evaluate if the thesis statement they identified in a group member’s draft introduction met “the requirements of the assignment” (2nd observed lesson). The critical aspects and features were also varied in each of the three groups that were observed during the lesson. It is not possible to know if they were varied in other small group interactions as
the groups were not observed for this study. The teacher’s instructions encouraged students to fuse two or more of the aspects and the feature when determining if a group member’s thesis statement reflected a sequence of research. In each group that the teacher interacted with, she fused sequence of research with thesis statement, claim or both. In two of the student groups that were observed, two of the three critical elements were fused, while in the other group all three of the critical elements were fused. Typically, this was achieved by the teacher extending the discussion to vary an aspect or feature that the students were not focusing on. This occurred when the teacher was meeting with the first group. The group was discussing if Jessica’s thesis statement was based on a sequence of research. The teacher told Jessica that her thesis statement should present the seminal author’s “point-of-view and the critique of it,” which she said would become “the point you want to make about the sequence” (2nd observed lesson). In so doing, the teacher fused sequence of research, thesis statement and claim.

5.6.2 Enacted and lived

Although it is not possible to know how the critical aspects and feature were varied in every small group during the enacted lesson, the critical feature of sequence of research and the two critical aspects of thesis statement and claim were fused in some combination by every group that was observed. One of the observed groups fused all three. The teacher’s introduction to the group activity encouraged students to fuse two or more of the aspects and feature to determine if a group member’s thesis statement reflected a sequence of research. The lived object of learning aligns with the intended and enacted objects of learning. When describing their lived experiences of the lesson during the post-lesson interviews, the students focused simultaneously on the critical aspects and feature in different ways. All four of the students simultaneously focused on sequence of research and thesis statement, while two specifically focused on claim as well. Stephen focused simultaneously on all three elements when he explained, “…you are going to state a claim as your thesis, but you’re not trying to respond directly to one claim and then back yourself up. You’re supposed to comment broadly on … the broader academic discussion…” (2nd post-lesson interview). In this context, thesis statement was understood as a statement that reflected an assertion or judgment (i.e., claim). Therefore, all of the students experienced the lesson as focused on developing a thesis statement that made a claim about a sequence of research.

5.6.3 Using information and subject content

The teacher intended for students to understand a thesis statement for the assigned paper as focusing “on a short sequence of articles, and the relationship within that sequence,” as well offer “a judgment” or claim related to the assignment based on a sequence of
research (2\textsuperscript{nd} pre-lesson interview). Although commonly associated with the field of composition studies, becoming aware of the technique of developing a thesis statement through peer critique may be considered information use. However, the focus on thesis statement development in the informed learning lesson observed in this research serves an additional purpose. The teacher’s intended object of learning is for the students to become aware of the thesis statement as not only making a claim about a topic, but also reflective of the topic as a summation of the development of that topic over time. Her aim was for the students to become aware of, and adopt an approach to, understanding a language and gender topic that requires a specific use of information, i.e., discovering a seminal study and other research that responded to it and analyzing the relationships in that body of research. All of the students interviewed experienced the thesis statement as reflecting a sequence of research that shapes an understanding of a language and gender topic. The students had discerned that an approach to understanding a language and gender topic that aligned with the teacher’s intentions for the assignment required a specific way of using information. The relationship between the aspects and features of the object of learning and information use and subject content is outlined in Table 5-4.

Table 5-4: Relationship of aspects and features to information use and subject content in 2\textsuperscript{nd} lesson

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Information use or subject content</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Information use</td>
<td>Feature</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion</td>
<td>Subject content</td>
<td>Aspect</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
</tr>
</tbody>
</table>

5.7 CHAPTER CONCLUSION

This chapter described the findings from the analysis of the data collected related to the second lesson observed for this study. The following chapter discusses the findings contribution to research, their relationship to informed learning theory, and how the findings may influence the advancement of information literacy education. The findings are then applied to the development of an instructional design model supporting the design of courses and course modules focused on using information to learn.
6 Advancing information literacy in higher education

The aim of teaching is simple: it is to make student learning possible.
(Ramsden, 2003)

This chapter discusses the implications and contributions of my research. Throughout this thesis, I have argued that information literacy should not only be viewed as an emerging curriculum of information-related concepts and skills, but also as an approach to learning (e.g., Kuhlthau, 1993; Lupton, 2004). The thrust of my investigation has centered on the notion that there is a relationship between the ways that people use information in learning situations and how they experience subject-focused learning outcomes. Using phenomenography and applying variation theory as an analytical tool, this study identified the qualitative differences in experiences of lessons intended to enable using information to learn in an undergraduate classroom. The findings revealed the teacher experienced using information and subject content simultaneously. By separating them in the first lesson and fusing them in the second lesson, the teacher enabled the students to discern information use and subject content simultaneously as well. Thus, the students came to experience the object of learning in a way that aligned with the teacher’s intentions. Described in Chapters 4 and 5, the findings from my study have addressed the main research question guiding this investigation:

What are the qualitatively different ways that a teacher and students experience using information to learn in an undergraduate classroom?

In this chapter, I discuss the findings in relationship to the research objectives:

- To contribute to knowledge about the various ways that using information to learn subject content is experienced by a teacher and undergraduate students.

- To examine how knowledge about the various ways that using information to learn subject content is experienced by a teacher and undergraduate students may contribute to information literacy education.

- To develop an instructional design model that enables learners to simultaneously experience using information and subject content when learning in disciplinary contexts.
In the first sub-section, the implications of the findings regarding pedagogy and learning will be discussed. The proceeding sub-sections will discuss how the experiences of using information to learn uncovered in my study may offer additional understandings related to the informed learning theory developed by Bruce (2008), and, along with variation theory, may be used to exemplify pedagogic strategies supportive of the advances taking place in information literacy education. Lastly, variation theory (Marton, 2014; Marton et al., 2004), informed learning, and backward design theory (Wiggins & McTighe, 2005), as well as the findings from my research, will be used to theorize an instructional design model focused on developing higher education instruction that enables using information to learn.

6.1 TEACHER AND STUDENTS’ EXPERIENCES OF USING INFORMATION TO LEARN

In this section, I will discuss the contribution to knowledge my study makes by uncovering the various ways that using information to learn subject content is experienced by a teacher and her students. One of the distinctive qualities of my research is that it focused on experiences of teaching and learning about using information to learn in the naturalistic setting of the undergraduate classroom. While experiences of teaching and learning have been the focus of research into learning environments, this approach has only recently begun to be used to explore the ways that teaching may enable learning related to information literacy. While my research identifies a teacher’s experiences of using information to learn, it also reveals the specifics of how the teacher enabled this type of learning for her students. This section will discuss the findings related to the teacher’s experience of planning and implementing two lessons, the enactment of the lessons, and what the students may have learned as a result of the lessons. Two of the major contributions from the study will be discussed as they relate to the findings from each of the intended, enacted, and lived objects of learning. The study reveals that:

- the arrangement of information use may enable qualitatively different content-focused learning outcomes; and that

- a specific instructional pattern may enable learners to experience a simultaneous focus on using information and learning about subject content.

6.1.1 Teaching as arranging interactions with information

The participating teacher’s experience of designing for informed learning was investigated as she developed and reflected on the essay assignment and the lessons intended to enable the students to complete the assignment. The elements of the general description of informed learning (Bruce, 2008), which were described fully in Chapter 2, were present in the
teacher’s intentions for enabling the students to use information to learn about a language and gender topic. Therefore, the teacher’s experience may be understood as an experience of informed learning as theorized by Bruce (2008). The identification of this experience confirms, through experiential research, an understanding of informed learning that had previously only been theorized. The two essential elements of the teacher’s experience include:

- using information is part of disciplinary learning, which may be experienced simultaneously; and
- the qualitative nature of subject content learning outcomes are influenced by ways of using information.

**Information literacy is part of disciplinary learning**

The teacher in my research did not intentionally adopt an informed learning approach in designing her assignment and lessons, yet did develop instruction that emphasized intentionally using information to learn. The research object in the part of study focused on the teacher’s intentions aimed to explore an experience of designing and implementing instruction that emphasized such an approach. This was different from previous research in which information literacy pedagogy was explored as a general phenomenon; however, it is possible to draw some general comparisons between the current study and prior research. As discussed in Chapter 2, educators’ experiences of information literacy education and pedagogy have been shown to include:

- accessing information (Bruce, 1997b; Feind, 2008; Webber et al., 2005; Webber & Johnston, 2004b; Williams & Wavell, 2007);
- critical thinking (Webber et al., 2005; Williams & Wavell, 2007); or
- becoming an independent learner or practitioner (Webber et al., 2005; Webber & Johnston, 2004; Williams & Wavell, 2007).

Critical thinking and independent learning have been associated with a focus on subject content (see Table 2-10). In the current study, the teacher did not focus specifically on the development of independent learners, although this may only be reflective of the study’s focus on the assignment and lessons, rather than on information literacy more generally. Only mentioned once, the teacher did associate the assigned essay with enabling the students to become critical thinkers:

Teacher: …one of my purposes in designing this whole assignment is to side step that normal process and instead to design a project that is much narrower in
scope, much shorter in its final draft, and yet I would like to believe just as
demanding of critical thinking. (1st pre-lesson interview)

However, the teacher in my research did focus on accessing information as a part of
her experience of using information to learn. The teacher assumed that the students had
experience with locating materials through the college library gained from researching and
writing papers for other courses. The teacher’s experience, as it relates to her students
accessing information, was focused on strategies to enable the students to locate and
determine the relationship between language and gender research articles to understand how
a select topic evolved over time:

Teacher: …they realize how hard it is to read widely enough to select the
best essays for the project. And then they, they start asking like, how do I…
will I know which one is the seminal essay? How will I know about
influence if they don’t actually credit each other, you know, if they are
writing along and they don’t say “I have been very influenced by so-and-
so’s essay over here,” which is a gift to my students when that happens. But
it doesn’t happen very much. …first of all they have to read as much as
possible, they can’t just locate sources on a list somewhere, and actually
read this stuff. They have to read as many sources as possible, and they have
to practice a kind of listening, which they are not habituated to, which is
something like, okay this person seems to be saying, blah, blah, blah. Now it
was published on a certain date. I’ve got this other thing over here that was
published earlier. Is there any way of thinking that the later one had
somehow been influenced by the former one? And that’s a hard question to
answer. (1st pre-lesson interview)

In developing the object of learning to focus on understanding a language and
gender topic through engagement with how the topic evolved through research, the teacher
was experiencing both using information (engagement with research literature) and subject
content (the development a language and gender topic). The findings suggest that the teacher
experienced the how aspect of the object of learning as engaging with information
(engagement with research literature) and the what aspect of the object of learning as
discipline-focused content (the development a language and gender topic). The two parts of
the how of learning were identified in the preliminary analysis, which was conducted to
reveal the intended object of learning related to the first lesson (Maybee et al., 2013). These
two aspects were analyzing and synthetizing (the acts), and evolving research (indirect
object). It is reasonable to assume that when experiencing information literacy pedagogy as
focused on subject content (see Table 2-10), one would likely also experience information literacy as the *how* of learning. While this has been identified in experiential research on learners who were engaged in academic work (Locke (Diehm), 2009; Lupton, 2008b), this type of experience has not been identified in studies with educators. Such studies have tended to focus on teachers’ experiences of information literacy pedagogy at a general-level, not as the teachers are engaged in designing specific instruction. This suggests that research focused on specific teaching contexts, such as teaching a course, may result in the identification of new ways of experiencing information literacy pedagogy.

Outlined in the two preceding chapters, the findings from this study suggest that using information and subject content may be identified as aspects or features of an object of learning that involves using information to learn. The findings reveal that different aspects or features may also be focused on simultaneously, so that they are essentially inseparable elements of learning. Simultaneously focusing on using information and subject content was theorized as part of informed learning (Bruce, 2008), and was observed in an experiential study of music composition students (Lupton, 2008b). The students in Lupton’s study who experienced the relationship of information literacy and learning as expressing art made no distinction between using information and learning. To the teacher who participated in my research, the simultaneous focus on using information and subject content was an implicit learning outcome of the assigned essay and the supporting lessons.

**Framing content-focused outcomes through interactions with information**

The teacher in my research also experienced subject learning outcomes as being influenced by the way information is used to learn about the subject. The notion that how we use information will influence our understanding of a subject may be considered self-evident (Bruce & Hughes, 2010); however, the evidence suggests that a lack of specific direction concerning how to use information to complete assignments emphasizes the need for greater intentionality (Head & Eisenberg, 2010a). The teacher reveals her awareness that different ways of using information may result in different understandings of the subject content by comparing the learning intended from the assigned essay with the typical undergraduate academic paper. This was also contrasted in the assignment sheet (see Appendix B2) and by the teacher during the first observed lesson. The teacher suggests that the typical paper, which would likely involve gathering sources that aligned with a pre-determined argument, would not result in a critical understanding of the topic as intended by the approach required of the assigned essay:

Teacher: The problem with that [the typical academic paper] is that you’re shaping your reading in advance to fit your preconceived idea. …And what
that means is that you’re blocking off the thinking… That’s what’s wrong with lots of standard student papers is that they haven’t really thought about the field, the evidence, what’s out there. (1st enacted lesson)

Instead, the teacher suggested a different understanding of a topic that would result from using information in a specific way:

Assignment sheet: You are studying the history of a specific idea as exhibited in just these few works. So, you are not taking responsibility for a wide knowledge of the topic, but rather for *what you think the sequence says about the seminal text*. (See Appendix B2, italics added for emphasis)

The teacher’s experience is supported by variation theory, specifically the notion that an object of learning is comprised of two aspects: the *how* and the *what* (Marton & Booth, 1997). Information use may align with the *how* aspect of learning and subject content with the *what* aspect of learning (Lupton, 2008a). The act part of the *how* of learning may take many forms, including such things as identifying, analyzing, interpreting, and so forth. The act is focused toward the indirect object. The indirect object is the capabilities the learner is trying to develop and when using information to learn may be described as information use. Different types of acts may result in a different way of understanding the subject. As shown in Figure 6.1, identifying elements related to the subject content will result in a qualitatively different outcome for learning than, say, analyzing or interpreting elements related to the subject content.

![Figure 6-1: Relationship between using information and subject-focused learning outcomes](image)

Figure 6-1: Relationship between using information and subject-focused learning outcomes
6.1.2 Lessons that enable informed learning: Separation and fusion in the classroom

This research examined lessons that focused on using information to learn, which may also be referred to as informed learning lessons. The purpose of this part of the analysis was to determine how the students were enabled to use information to learn as a result of participation in the lessons. Variation theory underpinned the examination of the lessons, including the teacher’s intentions for those lessons as well as what took place inside the classroom. The theory enabled the identification of various aspects of the object of learning that was the focus of each lesson, including the aspects and features that were part of each object of learning, and the pattern of variation through which the features were presented to the students. The pattern of variation is the key to enabling students to become aware of the aspects and features of the object of learning. Once separated, some critical aspects and features were fused back together. As described in Chapter 3, Marton (2014) suggests that critical aspects and features must be separated, in the form of contrast and generalization, then fused in a way that represents the object of learning as the teacher intends for the students to experience it.

In the current study, the teacher contrasted or generalized critical aspects and features related to using information and subject content before fusing them together. This occurred in both lessons. For example, in the first lesson, fusion occurred when the teacher provided an example of a topic (subject content) by describing it as a sequence of research that evolved over time (using information). In the second lesson the students were instructed to peer review one another’s draft introductions to identify the thesis statement and determine if the thesis statement made a claim (subject content) about a language and gender topic (subject content) as a result of examining how the topic evolved through research over time (using information). Fusion was a major variation of the second lesson that focused on developing a thesis statement reflective of the object of learning intended by the teacher. Fusion of critical aspects and features related to both using information and subject content may enable learners to experience using information and subject content simultaneously in the lived object of learning.

6.1.3 Learning through using information

This research also reveals students’ experiences of an object of learning focused on using information to learn. In Chapter 2, the review of studies of students suggested that complex experiences focused on learning discipline-specific subject content, rather than making information use the content focus (Alexandersson & Limberg, 2003; Edwards, 2006; Limberg, 1999; Lupton, 2004, 2008b; Maybee, 2006, 2007; Parker, 2006). The most complex experiences of information literacy were associated with one or more of the following three characteristics: 1) transformational (learners change as a person or effect change in others), 2) simultaneous (using
information and learning are focused on at the same time) and 3) real-life application (subject content is applied to accomplish something beyond the classroom). While not a major focus, students were intended to experience transformative learning by adopting the role of a scholar, at least in an initial way, through the work of the assignment. In the analysis conducted in the current study, real-life learning was not emphasized in the teacher’s intentions for student learning outcomes. It should be noted that my research explored specific lessons aimed at enabling students to learn in intended ways. Learning that occurred as a result of completing the assignment, which may have included real-life learning outcomes, was not the focus of this investigation. In spite of not being an intended outcome, one student did associate her experience of learning with her intended professional work after college, suggesting that perhaps a connection could have made between the assignment and real-life learning:

Amanda: I am also interested in going into publishing after college. So, this is obviously sort of very real-world applicable for me. So, just sort of having these ideas in my mind as I go about being an English major and hopefully someday in publishing. Hopefully, I will not fall into the same trap as so many of the authors of these articles accuse publishers of being. Which is just sort of taking… making these superficial changes. Now a lot of the articles talk about the superficial changes of just including more female characters as a way to sort of make them, the books, appear less sexist, but then they’re still in these really traditional roles and so it’s like well, has this really changed, no. So, it will be good for me, I think, hopefully professionally, to be more conscious of that and avoid perpetuating that trend. (2nd post-lesson interview)

Of the three elements associated with complex ways of using information to learn, simultaneity was the primary one that the teacher in the current study intended for the students to experience when using information to learn. Specifically, the teacher intended for the students to experience using information and subject content simultaneously in the learning they reported in the assigned essay. Discussed in the previous sub-section, the two observed lessons separated and fused critical aspects and features related to using information and subject content, with the intention of enabling students to become aware of an object of learning in which these aspects and features were experienced simultaneously. While the variation of fusion was a major part of the second lesson, it only occurred at a couple of points in the first lesson. The analysis revealed that after the first lesson, only some of the students experienced the critical aspects and features simultaneously. The experience in which this occurred was categorized as a new way of learning. Drawing from the framework identified by Lupton (2008b), other lived experiences of the object of learning for the first lesson approached using information to learn either sequentially (using
information and then learning) or cyclically (an iterative process of using information and then learning). It was not possible to identify whether students experiencing the object of learning as instructions for a specific essay were taking a sequential or cyclical approach. However, the one student who experienced the lesson as instructions for any assignment, which emphasized a linear set-of-steps for researching and writing, was primarily experiencing using information and learning in a sequential manner:

Stephen: in the research phase I definitely want to read as much as possible… get as much done… be as thorough as possible, because one, the annotated bibliography is an assignment that we have to turn in, but not only that, but, it’s sort of the beyond all of the source list. Yeah, you could always add things later, but it’s sort of the core of the paper, and whatever I don’t have done by then just won’t happen I think. (1st post-lesson interview)

As reported in Chapter 5, after the second lesson all of the students experienced simultaneity. The second lesson was the thesis workshop, in which students peer reviewed one another’s draft thesis statements to determine if the thesis statement made a claim about a language and gender topic as a result of examining how the topic evolved through research. The analysis determined that the students’ lived experiences of this lesson involved a simultaneous focus on the critical aspects and features of sequence of research and thesis statement, sequence of research and claim, or sequence of research, thesis statement and claim. The findings reveal that between the first post-lesson interview and the second enacted lesson students came to experience the object of learning for the entire assignment in a new way that was closely aligned to the teacher’s intentions. While it is possible that other activities the students engaged in related to the assignment encouraged them to experience aspects and features identified in the first lesson simultaneously, it is reasonable to assume that the second lesson is largely responsible for this change in the students’ awareness, as it was the intention of the lesson. Across the two lessons, the teacher separated aspects and features critical for experiencing a language and gender topic as a sequence of research that evolved over time, while the second lesson focused on fusing critical aspects and features. Experiencing using information and subject content simultaneously as one object of learning suggests a complex way of using information to learn (Lupton, 2008b). After being separated, fusion is a variation that enables learners to focus on two or more aspects or features of an object of learning simultaneously (Marton et al., 2004). The findings from my research suggest that enabling learners to simultaneously experience critical aspects and features related to using information and subject content involves separating and fusing those aspects and features.
Content-focused outcomes enabled through information use

It was part of the teacher’s experience that the specific ways that information is used to learn qualitatively influences subject-focused learning outcomes. In the post-lesson interviews, students expressed what they expected to learn from the assignment. As exemplified in the following quotes, all of the students expressed their expectation to understand a language and gender topic as an evolution of research:

Shelly: You’re like coming up with a thesis that’s based on the evolution of a topic, not just like where the topic is today, but, you know, where it’s been and how it’s gotten there and the conversation that… the theoretical conversation that authors have had… (2nd post-observation interview, italics added for emphasis)

Amanda: I think it’s important to sort of appreciate the evolution of it. And in so doing you can sort of understand where it has the potential to go from here. And, it just makes it feel like we’re more of a part of, you know, we’re kind of jumping in at the middle of something and you like see where it’s coming from and you just feel like you can be part of… I don’t know, part of the discourse on this, and the debate… (2nd post-observation interview, italics added for emphasis)

6.1.4 Recommendations for the teacher

The experiences of using information to learn revealed in this study align with the theorized notions of informed learning developed by Bruce (2008). Nevertheless, it is not my intention in this section to recommend additional goals for learning, for those are appropriately determined by the teacher within the context that the learning occurs. Rather, I offer suggestions regarding how the teacher may make variations that more effectively enable the students to become aware in the way the teacher intends.

The findings related to the first lesson suggest that the students experienced the object of learning for that lesson in one of three ways: a new way of learning, instructions for any essay and instructions for a specific essay. The new way of learning experience most closely aligned with the teacher’s intentions for learning in the first lesson. The teacher was not necessarily explicitly aware of the other ways that the students may have experienced the lesson (instructions for any essay or instructions for a specific essay). Nevertheless, the teacher made variations intended to enable students to become aware of the object of learning in a way similar to a new way of learning. The pattern of variation for the first
lesson involved separating and then fusing select critical aspects and features. Fusion was exemplified when the teacher discussed interruption as a language and gender topic by describing how an understanding of the topic may result from tracing its development through research. This variation provided the students with an example in which the feature of sequence of research and the aspect of paper topic were focused on simultaneously. Thus, information use and subject content were focused on simultaneously. A simultaneous awareness of information use and subject content was part of the new way of learning experience. The other two lived experiences of the lesson did not involve this type of simultaneity, suggesting that the students were aware of information use and subject content as separate concepts. I would recommend that in future iterations of this lesson, the teacher fuse sequence of research and paper topic in different ways by providing additional examples. This may allow more students to become aware of this aspect and feature in the simultaneous manner intended by the teacher.

In the second lesson, I would recommend that the teacher vary the aspect of claim to better enable the students to understand the object of learning in the way intended. Describing an assertion made about a language and gender topic, the aspect of claim was only implicitly varied by the teacher when engaging with the entire class. This occurred when the teacher instructed the students to determine if the thesis statements they identified in their group mate’s introductions fulfilled the assignment. As expressed in the assignment sheet, students were asked to determine what they “think the sequence says about the seminal text” (Appendix B2). The aspect of claim was varied in the interactions with the first two groups that the teacher met with during the small group activity. As the other groups were not observed, it is unknown whether the aspect of claim was varied during those discussions. As an implicit part of the aspect of thesis statement, all the students had some awareness of the aspect of claim. However, only two students specifically focused on claim, suggesting that the incorporation of different variations of the aspect of claim may better prepare the students to develop a thesis statement reflective of an assertion about a sequence of research.

Overall, the findings suggest that knowledge and application of variation theory may enrich the teacher’s ability to design effective lessons that better enable students to experience learning in the ways intended. The findings from the present study will be discussed in relationship to informed learning theory in the following section.
6.2 INFORMATION LITERACY EDUCATION

In this section, I examine how the experiences of the teacher and students revealed through my research may contribute to information literacy education. First, I discuss how the findings from my research align with or extend informed learning theory (Bruce, 2008). Second, drawing from the recent discussions of threshold concepts for information literacy (ACRL, 2015), I explore how the findings may be used to enable learners to pass through information literacy-related threshold concepts.

### 6.2.1 Informed learning revisited

As described in Chapter 2, using information to learn is the central tenet of informed learning (Bruce, 2008). The teacher’s experience of using information to learn identified in this research largely aligns with informed learning, thus confirming the existence of an experience of informed learning that had previously only been theorized. Although the teacher in my research only exemplifies one highly contextualized instance of such an experience, variation theory may be used to support elements of the teacher’s experience. In the following sub-section, the findings are mapped to the frameworks that comprise informed learning, suggesting the utility of the frameworks in describing learning that involves using information. The findings and variation theory are then compared to the principles and characteristics of informed learning.

**Framing the findings with informed learning**

The findings from my research exemplify informed learning. As such, those findings may be further explored by comparing them to the frameworks that comprise informed learning: GeST windows (Lupton & Bruce, 2010), seven faces (Bruce, 1997b, 2008), and the six frames (Bruce, Edwards, & Lupton, 2006). The relationship of these frameworks and the findings from my research will be discussed in this section.

#### VIEWS OF INFORMATION LITERACY (GEST WINDOWS)

The GeST windows model theorizes approaches to information literacy as 1) generic, 2) situated, and 3) transformative (Lupton & Bruce, 2010). Generic approaches to information literacy describe skills and process models, while situated approaches refer to perspectives that emphasize authentic disciplinary and professional ways of using information, and the transformative approach indicates changing as a person. The assignments and lessons investigated in this study were intended to enable learners to understand a language and gender topic by analyzing how it evolved through research. The model essays by Bucholtz (2004a, 2004b) were offered as a scholarly example of what the students were intended to understand about the evolution of a language and gender topic. The essays also provided strategies for structuring writing that would reflect this kind of
experience of the topic. The assignment and corresponding lessons primarily relate to the situated window.

**PEDAGOGIC APPROACHES TO INFORMATION LITERACY**

The six frames pedagogic model draws from major approaches taken in teaching and delineates how information literacy is typically represented in those approaches (Bruce, Edwards, & Lupton, 2006). The six ways or frames suggested by the model are: content, competency, learning to learn, personal relevance, social impact, and relational. The teacher’s pedagogic approach taken in the learning situation focused on in this research was learning to learn, which emphasizes constructing knowledge appropriately and developing learning processes. From this perspective information literacy is experienced as a way of learning. This pedagogic approach aligned with the teacher’s intended learning outcomes, which emphasized enabling students to understand a language and gender topic by tracing research developments emanating from a seminal work on the topic. However, it should be noted that one student’s experience may also be associated with the social impact frame. When asked about the learning she expected to result from the assignment, Amanda described how her new awareness of sexist depictions in literature would help her future professional work in publishing. This was exemplified in the following quote:

> Hopefully, I will not fall into the same trap as so many of the authors of these articles accuse publishers of being. Which is just sort of taking… making these superficial changes. Now a lot of the articles talk about the superficial changes of just including more female characters as a way to sort of make them, the books, appear less sexist, but then they’re still in these really traditional roles and so it’s like well, has this really changed, no. So, it will be good for me, I think, hopefully professionally, to be more conscious of that and avoid perpetuating that trend. (2nd post-lesson interview)

While not prescriptive, the six frames of the informed learning model suggest how the assignment could be refocused pedagogically. Although the teacher’s intentions were satisfied by her pedagogic approach, it may be possible in future iterations of the course to change the assignment to enable the students to become aware of a language and gender topic in ways more personally relevant or socially impactful. This could occur in a number of ways, including encouraging the students to apply what they learned about a language and gender topic to a professional endeavour, as suggested by Amanda.

**EXPERIENCES OF INFORMED LEARNING (SEVEN FACES)**
Previous phenomenographic research that investigated information literacy typically aimed to identify the various experiences within the same context. With the exception of Parker’s (2006) study that revealed patterns of change related to postgraduate students’ experiences of a research-based assignment, prior research has not examined how information literacy experiences may evolve or change over time. The research findings reported in this thesis describe the lived objects of learning to reveal qualitative changes in the students’ experiences that resulted from lessons and other educational activities. Although this research describes the experiences of the teacher and her students of lessons focused on using information to learn, the findings reported in this thesis may be mapped to the seven faces of informed learning (Bruce, 2008). Additionally, it is possible to show how the students’ experiences, when mapped to the seven faces, changed over time, from the first lesson introducing the essay assignment, to the second lesson, which focused on developing a thesis statement that made a claim about a sequence of research.

Drawn from Bruce’s (1997b) research with educators, the seven ways that information literacy may be experienced are: 1) information technology, 2) information sources, 3) information process, 4) information control, 5) knowledge construction, 6) knowledge extension, and 7) wisdom. It is considered desirable that learners become aware of all seven of the experiences of information literacy represented in the seven faces model (Bruce et al., 2012). Although my findings describe the teacher’s experience of information literacy pedagogy, prior research suggests that a teacher’s experience of information literacy would be closely related to their understanding of pedagogy (Webber & Johnston, 2004). The outcome for learning described by the teacher, which emphasized understanding a language and gender topic through engagement with scholarly literature, aligns with the knowledge construction experience of information literacy from the seven faces research (Bruce, 1997b).

Two experiences identified from the analysis of the interviews conducted after the first lesson, described as instructions for any essay and instructions for a specific essay, most closely aligned with the information process experience described by Bruce (1997b) as executing a process. The experience described as instructions for any essay emphasized a generic information process that involved a set-of-steps that were assumed to be standardized. In contrast, the process described in instructions for a specific essay focused on understanding and following techniques that would result in successfully completing the assignment. In this case, the process was determined by the specific needs of the assignment as experienced by these students during the first lesson. As with the teacher, the student experience of a new way of learning aligned with the knowledge experience from the seven
faces model. This student experience emphasized learning about a language and gender topic by examining it from different theoretical perspectives.

The second lesson focused on enabling the students to craft a thesis statement describing a claim drawn from an analysis of the scholarship they had read on a language and gender topic. The students were focused on understanding a language and gender topic in relationship to their analysis of how research developed over time. Emphasizing an understanding of a language and gender topic, this experience is indicative of the knowledge construction experience from the seven faces model. The students whose lived experience of the first lesson was instructions for any essay or instructions for a specific essay experienced the second lesson as focused on identifying or making a claim for a sequence of research. As outlined in Figure 6-2, this suggests that these students experienced a change in awareness, shifting in focus from information processes to knowledge construction.

Figure 6-2: Alignment of student lived experiences with Bruce’s seven faces model

A new principle of informed learning

The findings from this study provide insights into the principles of informed learning as theorized by Bruce and colleagues (Hughes & Bruce, 2012b). As fundamental assumptions, all three principles must be present for informed learning to occur. As described in Chapter 2, the principles emphasize the simultaneous focus on subject content and using information, in that they:

1. build on learners’ current informed learning experiences;
2. promote simultaneous learning about disciplinary content and the information using process; and

3. enable learners to experience using information and subject content in new ways. (Hughes & Bruce, 2012b)

Of the three principles (Hughes & Bruce, 2012b), the first was the least attended to in the learning scenario investigated in this research. That is to say, the teacher had no formal way of identifying students’ existing experiences of using information to learn. Rather, the teacher assumed that the students had an existing shared experience of researching an academic paper that she referred to as the “standard paper.” In the enacted lesson, the teacher quoted the assignment sheet, which articulated this type of paper as requiring students to make claims about a topic and then gather evidence to support those claims. Instead of following this pattern, the teacher wanted the students to engage with the research literature on a language and gender topic and make a claim about the topic based on their analysis of that literature.

The findings provide more insight into the second and third principles of informed learning (Hughes & Bruce, 2012b). The second principle, “promotes simultaneous learning about disciplinary content and the information using process,” aligns with one of the objects of this research, which focused on promoting a greater understanding of an object of learning comprised of using information and disciplinary subject content. As discussed in the previous section, the findings from this study reveal experiences in which using information and learning disciplinary content are considered to be one and the same, which is to say they are experienced simultaneously. The findings from this research also suggest a pattern of variation that may result in enabling students to experience using information and subject content simultaneously. The third principle of enabling “learners to experience using information and subject content in new ways” was also observed in this research. This was exemplified in the teacher’s intentions for the students to learn how to locate and identify a seminal text and to track scholarship reporting on research that was developed in response to the seminal work. The teacher’s intentions for subject content learning focused on having the students understand a language and gender topic.

Variation theory suggests that experiences of learning are shaped by the how (the process) as well as the what (subject content) of learning (Marton & Booth, 1997). This aligns with Limberg’s (2000) study, which showed that qualitatively different ways of experiencing information seeking may be related to qualitatively different understandings of research topics. In my study, the teacher’s experience emphasized that the specific ways the students were to use information would shape their understanding of the language and gender topic they chose to
investigate. Grounded in variation theory and supported by these findings, the following additional principle may be suggested for informed learning:

*Enables learners to experience subject content in new ways as a result of using information in specific ways.*

The principles of informed learning, including the suggested fourth principle are presented in Table 6-1. While the third principle specifies that informed learning involves the learning of subject content and information use, the fourth principle posits that different ways of using information may enable learners to experience subject content in qualitatively different ways. The addition of this principle suggests that designing instruction to enable informed learning should be underpinned by an understanding of how using information to learn subject content may impact the way that the subject content is experienced by the learners.

Table 6-1: Revised principles of informed learning

<table>
<thead>
<tr>
<th>Builds on learners current informed learning experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotes simultaneous learning about disciplinary content and the information using process</td>
</tr>
<tr>
<td>Enables learners to experience using information and subject content in new ways</td>
</tr>
<tr>
<td><strong>Enables learners to experience subject content in new ways as a result of using information in specific ways</strong></td>
</tr>
</tbody>
</table>

Adapted from Hughes & Bruce, 2012; Blue text indicates the additional principle suggested by my research.

**Revisiting the characteristics of informed learning**

The findings from my research may also be compared to the characteristics of informed learning (see Table 6-2). In contrast to the principles, which are the foundation of informed learning, the characteristics describe qualities or attributes that may be associated with this type of learning. The assignment and lessons that were the focus of my research align with most of the theorized characteristics of informed learning (Bruce, 2008; Hughes & Bruce, 2012b) (see Table 2-6 for an overview). Informed learning tends to emphasize how information is used in professional or disciplinary contexts (Hughes & Bruce, 2012b), and it may also focus on academic ways of using information (Bruce, 2008). The learning scenario that was the site of this study focused on enabling students to become aware of a language and gender topic in a specific way, as a result of using information in select ways. Using information to understand the topic in the intended way involved a specific approach to researching and writing an academic paper. While writing academic papers is a professional activity for scholars, in this course the teacher distinguished between the scholarly essay and
the undergraduate essay. In so doing, the teacher also indicated a relationship between the
two types of essays, suggesting that undergraduate papers are not capable of being as
comprehensive as scholarly essays, but aspire to report similar analyses.

As outlined in Table 6-2, one of the twelve characteristics of informed learning
described by Hughes and Bruce (2012b) was not observed in the object of learning that was the
focus of this research. The characteristic that emphasized diverse student populations
sharing perspectives with one another was not identified through the analysis of the object of
learning in this research. As described in the previous section, students were able to learn in
a way described in the three principles of informed learning: building on learners’ current
experiences, simultaneously learning about disciplinary content and using information, and
experiencing both using information and subject content in new ways. Unlike the principles,
all twelve of the characteristics need not be part of an informed learning experience.

My study suggests the clarification of two other characteristics that have been
identified as qualities of informed learning (Hughes & Bruce, 2012b). The first of these
characteristics focuses on active learning techniques. The active learning techniques focused
on in my research include discussion and written reflection in the first lesson, and small
group peer review activities in the second lesson. While active learning techniques, such as
problem-based or case-based learning, can be used to enable a pattern of variation which
allows learners to become aware of aspects and features related to using information and
subject content simultaneously, it is not necessary to do so (Marton et al., 2004). This is
exemplified in the first observed lesson in my research, where the variations are primarily
introduced through the teacher speaking to the class. Based on this, I would recommend
restating this characteristic as follows:

Pedagogy that enables learners’ simultaneous awareness of
information use and subject content may encourage informed learning.

Second, one characteristic asserts that informed learning is a shared responsibility
amongst educators in the various disciplines, information technologists, librarians and others.
While all of these professionals may have an interest in information literacy education, I
suggest that the responsibility lies with those designing and implementing informed learning
assignments and lessons. For example, in my professional role as an information literacy
educator I met with the class after the first observed lesson that was focused on in this study.
This session introduced the students to techniques for tracking citations to identify related
scholarship. While this activity was supportive of the students work, it was the design of the
assignment and the accompanying lessons requiring students to use information in specific
ways that enabled the students to experience informed learning. Irrespective of the professional perspective that one may bring, the key agent to enabling informed learning is designing and implementing assignments and lessons that separate and fuse critical elements related to using information and subject content. Therefore, I suggest this characteristic be extended to indicate that informed learning is a:

*Shared responsibility amongst educators in particular disciplines, information technologists and librarians, etc., whose primary concern is the design and implementation of assignments and lessons that enable students to become aware of critical aspects and features related to information use and subject content.*
Table 6-2: Experienced characteristics of informed learning

<table>
<thead>
<tr>
<th>Informed learning characteristics</th>
<th>Contextualized findings</th>
<th>Revised list of informed learning characteristics (changes are in blue)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of different ways of using information</td>
<td>New way of using information to research and write an academic essay</td>
<td>Awareness of different ways of using information</td>
</tr>
<tr>
<td>Information practices drawn from academic, disciplinary or professional practices</td>
<td>Academic and disciplinary information practices</td>
<td>Information practices drawn from academic, disciplinary or professional practices</td>
</tr>
<tr>
<td>Ethical uses of information</td>
<td>Knowledge of a body of research should proceed making claims about it</td>
<td>Ethical uses of information</td>
</tr>
<tr>
<td><strong>Subject content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focuses on knowledge creation</td>
<td>Claims based on knowledge of a sequence of language and gender research</td>
<td>Focuses on knowledge creation</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disciplinary information</td>
<td>Language and gender research</td>
<td>Disciplinary information</td>
</tr>
<tr>
<td>Diverse forms of information, e.g., textual, visual, auditory, embodied, etc.</td>
<td>Textual information</td>
<td>Diverse forms of information, e.g., textual, visual, auditory, embodied, etc.</td>
</tr>
<tr>
<td><strong>Pedagogy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active learning techniques, such as collaborative and independent learning, problem-solving, evidence-based practice, and independent research</td>
<td>Brief in-class written reflection; lecture; discussion; peer review</td>
<td>Pedagogy that enables simultaneous awareness of information use and subject content</td>
</tr>
<tr>
<td>Draws on learners’ previous experiences</td>
<td>Prior experiences of using information to research an academic paper assumed to involve finding evidence to support existing thesis</td>
<td>Draws on learners’ previous experiences</td>
</tr>
<tr>
<td>Holistic approach to using information to learn</td>
<td>Using information viewed as enabling learning about a language and gender issue</td>
<td>Holistic approach to using information to learn</td>
</tr>
<tr>
<td>Shared responsibility amongst educators in particular disciplines, information technologists and librarians, etc.</td>
<td>Teacher designed and implemented assignment and lessons; workshop on tracking citations provided by a librarian</td>
<td>Shared responsibility amongst educators in particular disciplines, information technologists and librarians, etc., whose primary concern is the design and implementation of assignments and lessons that enable students to become aware of critical aspects and features related to information use and subject content</td>
</tr>
<tr>
<td>Diverse student populations share perspectives</td>
<td>Not a major aspect of the lessons</td>
<td>Diverse student populations share perspectives</td>
</tr>
<tr>
<td><strong>Transformative change</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learners may change their understandings of themselves, their discipline and their</td>
<td>Learners take on the role of a language and gender scholar</td>
<td>Learners may change their understandings of themselves, their discipline and their</td>
</tr>
</tbody>
</table>
6.2.2 Advancing information literacy education

There continues to be a growing curricular focus on information literacy in higher education. Recently, there have been deliberations on the national level by the library community in the United States regarding what information literacy concepts students need to learn in higher education (ACRL, 2015). The documentation describing these concepts suggests that information literacy education needs to address how information is used in various disciplinary learning contexts. In this section, I discuss how my research may be used to support such efforts. Through exploring experiences of teaching and learning related to using information to learn, my findings reveal how qualitative experiences of subject content are influenced by specific ways of using information. The proceeding sub-section discusses how the findings from my research may support the continual advancement of information literacy education, offering pedagogic tools for enabling learners to use information to learn in various disciplinary contexts.

Decisions regarding what information skills and practices should be learned are determined by a number of interests beyond the instructor or designer of a course, including the perceived role of the course within the broader departmental curriculum, and the goals for learning described by accrediting agencies and other advocacy organizations. In the United States, the goals for information literacy advocated by accrediting agencies and other advocacy organizations have been strongly influenced by the national standards for information literacy produced by library advocacy organizations. However, the introduction of the new Framework for Information Literacy for Higher Education by ACRL (2015) may result in organizations reconsidering the goals for information literacy.

The information literacy framework developed by ACRL (2015) draws from two theories: metaliteracy and threshold concepts theory. The metaliteracy framework aims to broaden the scope of what is typically considered information literacy by drawing together technology-related literacies (Jacobson & Mackey, 2011). Of primary interest to my research are the threshold concepts outlined in the new framework. Threshold concepts theory suggests that specific concepts act as gateways or portals to further learning of related disciplinary knowledge (Meyer & Land, 2003b). Threshold concepts are not necessarily fundamental or core concepts within a discipline (Meyer, 2010), but rather are concepts defined as having some or all of the following attributes:
• transformative (prompts changing one’s understandings, possibility informing one’s perception of their own identity);

• irreversible (once understood, it is unlikely to be forgotten);

• integrative (new information or understanding is connected to other concepts);

• bounded (potentially a border between conceptual areas and may indicate limits of a conceptual area or discipline); and

• troublesome (initially counter-intuitive or may cause discomfort to the learner). (Meyer & Land, 2003b)

A growing number of studies have been undertaken to determine threshold concepts in a wide variety of disciplines (e.g., Åkerlind et al., 2014; Carstensen & Bernard, 2007; Davies & Mangan, 2006; Kabo & Baillie, 2009; Land, Meyer, & Smith, 2008). A sub-set of this research has aimed to determine threshold concepts for learning related to using information in different ways, including:

• information literacy (Blackmore, 2010; Hofer, Townsend, & Brunetti, 2012; Rodrigues & Sedo, 2008; Townsend, Brunetti, & Hofer, 2011);

• literature-based research (Yorke-Barber, Atkinson, Possin, & Woodall, 2008); and

• online searching. (Tucker, Weedman, Bruce, & Edwards, 2014)

The studies conducted by Townsend, Brunetti and Hofer (Hofer et al., 2012; 2011) have informed the new ACRL information literacy framework (ACRL, 2015). Outlined in Chapter 2, the framework describes six threshold concepts related to information literacy:

• Scholarship is a Conversation;

• Research as Inquiry;

• Format as Process;

• Authority is Constructed and Contextual;

• Searching is Strategic; and

• Information has Value. (ACRL, 2015)
Meyer and Land (2003b) associate threshold concepts with subject-focused ways of knowing. An unresolved challenge in identifying threshold concepts for information literacy relates to whether information literacy is understood as discipline, as Webber and Johnson (2006) suggest, or if it resides as part of other disciplines. Studies identifying threshold concepts for information literacy have not been consistent in how information literacy is framed (Hofer et al., 2012). In line with other research (e.g., Locke (Diehm), 2009; Lupton, 2008b), the findings from my study reveal experiences of information literacy as using information to learn about a subject. The implications of this are significant. For in order to address information literacy in a disciplinary context, information literacy needs to be understood as the how of learning (process), which is focused on a what of learning (subject content).

A key element that is not addressed in the ACRL framework (ACRL, 2015) is how to enable students to grasp or pass through threshold concepts related to information literacy. In line with earlier phenomenographic work with threshold concepts, my findings may illuminate pedagogic strategies for addressing information literacy threshold concepts in higher education.

6.2.3 Enabling students to cross threshold barriers

If the higher education sector continues to identify and utilize threshold concepts theory to determine what students need to learn regarding using information, it will be necessary for teachers and instructional designers to adopt pedagogic strategies to enable the learning of these concepts. In this section, the coursework that was the focus of my research is used to exemplify teaching designed to enable learning related to a threshold concept.

Suggested by Meyer and Land (2003a, as cited in Baillie, Bowden & Meyer, 2013), variation theory has already been identified as a pedagogic strategy for enabling students to understand threshold concepts in disciplinary contexts (e.g., Åkerlind et al., 2014; Baillie, Bowden, & Meyer, 2013; Carstensen & Bernard, 2007; Davies & Mangan, 2006). For example, Davies and Mangan suggest two ways of introducing variations as part of a strategy to enable students to grasp threshold concepts related to economics. First, variations may be used to enable students to grasp foundational concepts necessary before focusing on a threshold concept. Second, variation may enable the use of key procedures reflecting the ways scholars in the discipline apply those procedures. Baillie, Bowden and Meyer (2013) suggest reflection may be necessary in addition to varying critical aspects and features in order to enable learners to understand a threshold concept. Using methods similar to those in my research, Åkerlind, McKenzie and Lupton (2014) worked with teachers from four
universities to address threshold concepts in physics and law courses. After identifying specific threshold concepts, the student interview data were used to determine features that were critical to each concept, and pedagogic changes were made with the intention of enabling student awareness of these features.

My findings offer insights concerning how to enable learners to understand threshold concepts related to information literacy. The assignment and lessons that were the focus of my research share a number of similarities with elements of the Scholarship as Conversation frame that is presented in the ACRL (2015) framework (each frame represents a threshold concept). The teacher made an explicit connection to the concept of participation in a scholarly conversation in the pre-lesson interview that occurred prior to the first observed lesson:

Teacher: …I ask them to imagine the conversation. …I invented that on my own, but I learned later working with that textbook for the 100-level, that in fact that’s exactly how that textbook presents research – that the student researcher is participating in a conversation, or trying to. (1st pre-lesson interview)

In their documentation outlining the new framework, ACRL (2015) has included a list of knowledge practices, which are practices through which learners can increase their understanding of the information literacy threshold concepts. As shown in Table 6-3, the teacher’s intentions for the essay assignment that was the focus of my research align with knowledge practices associated with the Scholarship as Conversation frame.
Table 6-3: Similarities of the assigned essay and scholarship as conversation knowledge practices

<table>
<thead>
<tr>
<th>Knowledge practices (related to the Scholarship as Conversation threshold concept)</th>
<th>Aspects of the assignment focused on in my research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the contribution that particular articles, books, and other scholarly pieces make to disciplinary knowledge.</td>
<td>This bibliography will be composed of the background reading you've been doing in order to find your sequence, except you'll leave out the dead-end ones.</td>
</tr>
<tr>
<td>Summarize the changes in scholarly perspective over time on a particular topic.</td>
<td>...select a sequence of four or five short pieces (article or chapter length) that, considered in the sequence you choose, display a logical thread of intellectual development, beginning with the seminal essay.</td>
</tr>
<tr>
<td>Contribute to scholarly conversation at an appropriate level.</td>
<td>...your actual essay, which we imagine as the introduction to an enlarged edition of the seminal work, a smaller and more modest version of what Mary Bucholtz compiled in honor of Robin Lakoff's Language and Woman's Place.</td>
</tr>
<tr>
<td>Recognize that they are often entering into the midst of a scholarly conversation, not a finished conversation.</td>
<td>...imagine your seminal author sitting at a table with the three (or four) other authors, discussing the ways their works interact with each other. What would they want to say to each other? What would they be able to say, having read each other's work plus others that they acknowledge in their own citations?</td>
</tr>
</tbody>
</table>

Adapted from ACRL, 2015; Directions for Annotated Bibliography (Appendix B3)

Table 6-4 relates key elements of the Scholarship as Conversation threshold concept (ACRL, 2015) with variations made by the teacher in the first observed lesson when she introduced the assigned essay. After each quote from the observed lesson, the critical feature and type of variation (contrast, generalization or fusion) introduced by the interaction is listed. While the teacher’s intentions were not formed with any knowledge of the ACRL framework, nor were they specifically aimed at enabling students to pass through a threshold concept, the similarity of the teacher’s intentions to the Scholarship as Conversation frame may suggest ways to enable the learners to pass through such a threshold.
Student responses provided in the post-observation interviews suggest awareness of the elements described in the Scholarship as Conversation frame (ACRL, 2015). After the second lesson, all students experienced a language and gender topic as research that evolved over time. As exemplified by the following quote, the students who experienced the object of learning in the first lesson as a new way of learning were already experiencing the notion of conversation between researchers as an outcome of the assignment:

Shelly: I sort of imagine this project as sort of a conversation between the researchers. You know you have the first text and someone answering that or trying to clarify what that said. (1st post-lesson interview)

After the second observed lesson, Stephen also noted this aspect of the assignment:

Stephen: …this is what Tannen said, and this is what people have said and my thesis kind of attacks that from the side saying, you know, over time the way that gender differences have been discussed and viewed by the academic community has changed in ways x, y, and z. (2nd post-lesson interview)

While it was not part of the study to determine if the students grasped information literacy-related threshold concepts, the examination of the coursework from my study exemplifies how informed learning and variation theory may enable such learning outcomes. An information literacy threshold concept would be comprised of specific ways of using information. To enable students to experience informed learning, subject content would need to be the focus of the information use. Both of these elements would form goals for learning that
would reflect the threshold concept. Assessments and learning activities would guide the students to learn in ways that enabled or led towards the students passing through a threshold. In the case of designing informed learning instruction to address the threshold concepts as presented in the ACRL framework, the knowledge practices may also guide the development of learning activities intended to enable students to grasp a threshold concept. As with the coursework that was focused on in my research, the learning activities would form a pattern of variation that involves separating critical aspects and features of the threshold concept through contrast or generalization, and then fusing those critical aspects or features.

Finally, to address information literacy education in disciplinary contexts in higher education requires greater involvement from educators across disciplines. As was noted in Chapter 2, earlier research focused on educators’ experiences of information literacy pedagogy has revealed that some views of learning are incompatible with the notion of students learning to use information in context (Limberg & Folkesson, 2006 as cited in-press in Alexandersson and Limberg, 2005; Williams & Wavell, 2007). These notions must be challenged with research-based evidence, introduced through teacher development programs, which would also provide the knowledge and guidance of instructional design models for teaching students to use information to learn in disciplinary contexts. Developing such a model was an objective of this research. Drawing from informed learning (Bruce, 2008), variation theory (Marton, 2014; Marton & Tsui, 2004), backwards design (Wiggins & McTighe, 2005) and the findings from my research, informed learning design outlines steps for designing effective instruction that enables learners to use information to learn in the subject-focused higher education classroom. Informed learning design will be discussed in detail in the proceeding sub-section.

6.3 INFORMED LEARNING DESIGN

In this section, I will outline informed learning design, an instructional design model that enables learners to use information to learn in disciplinary contexts. Informed learning design was developed by drawing together essential elements from informed learning (Bruce, 2008), variation theory (Marton, 2014; Marton & Tsui, 2004) and the findings from my research into an instructional design process adapted from backwards instructional design (Wiggins & McTighe, 2005). Backwards design is an approach to designing instruction that reorders the steps typically undertaken, to first develop learning outcomes and then design assessments and learning activities, such as assignments and lessons. This approach aligns with the design needs of informed learning, which require broadly determining intentions for learning related to using information and subject content before determining appropriate assessment instruments, assignments and lessons. There are three broad stages of informed learning design:
1. identify informed learning outcomes;

2. develop informed learning assessments; and

3. develop informed learning lessons and activities. (Wiggins & McTighe, 2005)

Following an overview of the backwards design model (Wiggins & McTighe, 2005), each stage of informed learning design will be discussed in detail in this section.

6.3.1 **Overview of instructional design**

In the latter half of the twentieth century, instructional design models, sometimes referred to as curriculum design, were developed with the intent of making education and occupational training programs more effective and efficient. Instructional design models developed in parallel to emerging theories of learning, such as constructivism and relational learning. Different design models present similar processes describing various elements of designing instruction. A commonly used model, called ADDIE, was originally designed by Florida State University for use in training programs by the United States Army (Branson et al., 1975). ADDIE stands for: Analysis, Design, Development, Implementation and Evaluation, which are the steps of the design process. The ADDIE analysis process begins by considering aspects of the learning environment, such as identifying learner characteristics, delivery options, and constraints imposed by the environment on the intended learning. Typically each model emphasizes a specific aspect of design. For example, the Dick and Carey model offers a similar list of steps to ADDIE, but emphasizes a systems view, suggesting that the various elements, such as the instructor, learners, materials, instructional activities, delivery system, and assessment components, must be understood holistically (Dick, Carey, & Carey, 2009). Discussed in the following section, the backwards design model contrasted with many other instructional design models by explicitly underscoring student learning as the primary objective of the design process (Wiggins & McTighe, 2005).

6.3.2 **Backwards design theory**

The backwards design instructional design model developed by Wiggins and McTighe (2005) was structured to emphasize student learning outcomes, which reflected specific ways they envisioned students understanding course content. Rather than placing an emphasis on what is to be taught, backwards design focuses on what is to be learned. The model, introduced in a monograph (Wiggins & McTighe, 1998), has been the focus of journal articles describing its application in various educational contexts (e.g., Graff, 2011; Hendrickson, 2006; Marshall & Matesi, 2013). Wiggins and McTighe (2005) suggest that learning should result in new understandings. They posit that teaching activities should enable what they term *enduring*
understanding. They suggest that this type of learning may result in transferability, allowing learners to apply their newly gained understanding to their work in other contexts. To achieve this, the model inverts the steps that are typically part of other instructional design models. Illustrated in Figure 6-3, backwards design is comprised of three stages. The design process begins with determining what students are intended to know or do after the completion of the instructional unit. Once the outcomes for learning are established, they drive the development of assessments, and learning activities.

Figure 6-3: Stages of backwards curriculum design

6.3.3 Blending theories to develop informed learning design

As with backwards design (Wiggins & McTighe, 2005), informed learning emphasizes learning as the purpose of instruction (Bruce, 2008). However, it should be noted that the notions of learning that underpin backwards design are not the same as those that underpin informed learning. Backwards design is grounded in a notion of learning as cognitive development and emphasizes enabling understanding rather than knowing or memorization. Informed learning is underpinned by the phenomenographic notions of learning that led to the development of variation theory (Marton, 2014; Marton & Tsui, 2004). Phenomenographic research into experiences of learning has recognised memorization and understanding as ways of experiencing learning. These experiences are part of a range of experiences of learning that include:
1. accumulation of knowledge;

2. memorizing and reproducing;

3. application;

4. understanding;

5. seeing something in a different way; and

6. changing as a person. (adapted from Marton, Dall’Alba, & Beaty, 1993; Säljö, 1997)

The first three experiences of learning focus on tasks of learning, while the latter three focus on finding meaning through learning tasks (Marton & Booth, 1997, p. 35). Informed learning, with its emphasis on learning through information use, aims to enable the types of learning reflected in the latter three experiences. This type of learning may sound similar to the description of learning posited by Wiggins and McTighe (2005); however, it must be noted that the learning described by phenomenographic research is not focused on cognitive development, but instead describes learning as changes in learners’ awareness resulting in more complex ways of experiencing the object of learning. Developed from reflections of phenomenographic findings, variation theory emphasizes the aspects and features related to different ways of experiencing something.

Notions of teaching and learning that underpin the informed learning design process are derived from informed learning theory and the findings from my research. For example, informed learning design is intended to enable teachers to design instruction that reflects the principles of informed learning identified by Bruce and colleagues. The three principles suggest that informed learning:

1. builds on learners’ current informed learning experiences;

2. promotes simultaneous learning about disciplinary content and the information using process; and

3. enables learners to experience using information and subject content in new ways. (Hughes & Bruce, 2012b)

The process of the informed learning design model also supports the principle identified in my study and recommended in the previous section. The additional principle suggests that informed learning:
• enables learners to experience subject content in new ways as a result of using information in specific ways.

The findings from my research that guide the development of informed learning design are also supported by variation theory (Marton, 2014; Marton & Tsui, 2004). Grounded in the notions from informed learning theory (Bruce, 2008), variation theory, and the findings from my research, the following sub-sections adapt the structural framework of backwards design as outlined by Wiggins and McTighe (2005) to develop a design approach that emphasizes student learning that may result from using information.

6.3.4 Stages of informed learning design

Outlined in Figure 6-4, this section describes in detail the three stages of informed learning design.

![Figure 6-4: Stages of informed learning design](image)

Although informed learning design is presented as a process with three stages, it should be noted that teachers applying informed learning design to design a course or module may not complete the stages in a linear fashion. In practice, educators may begin their design work with stage two or stage three. Regardless of where one starts, as with Wiggins and McTighe’s (2005) description of backwards design, it is important that all three of the stages of informed learning design be addressed through the design process.
Developing informed learning outcomes

The first step in backwards design, as well as many other instructional design models, is to determine learning outcomes (Wiggins & McTighe, 2005). Learning outcomes generally refer to what students are expected to have learned after completing a university course. Variation theory describes learning as becoming aware of the object being studied in a new way (Marton et al., 2004). As with most instructional design models, one of the first activities in informed learning design is determining what is intended to be learned related to subject content. Informed learning suggests a pedagogic approach in which learning results from using information intentionally (Bruce, 2008); therefore, it is equally as important to determine how students will use information in the course. Furthermore, as has been discussed at various points throughout this thesis, informed learning suggests that when using information to learn about content, the two concepts are interrelated and may be experienced simultaneously. Extending the notion of simultaneously experiencing using information and learning, the findings from my research suggest that the quality of learning is influenced by different ways of using information. Explained in more detail in this section, these findings suggest that the primary consideration in determining informed learning outcomes is identifying:

- content related learning outcomes for the course; and
- specific ways of using information, which will result in the learning of course content as intended.

A number of elements may influence learning outcomes related to subject content. Typically, these include the instructor’s or designer’s notions of what the students should be capable of after taking the course. Discussed in detail in the proceeding sub-section, an element that should be considered before determining course-level learning outcomes is the students’ capability related to those goals prior to taking the course. Content-focused outcomes for learning are also typically driven by programmatic or institutional needs or expectations, as well as from external advocacy or accrediting organizations through standards and other policy documents.

Informed learning design also requires that the designer determine how the students in the course need to use information to learn in the course. It is possible that some educators wanting to use an informed learning approach may not know what information skills or practices to draw into the course. These choices may be guided or influenced by departmental or institutional goals or external standards as well. The GeST windows model may also be used to define if students are intended to experience information literacy in either generic, situated, or transformative ways (Lupton & Bruce, 2010). Focusing primarily on information skills and processes, not subject content, generic approaches to information literacy would be unlikely to be
adopted for informed learning. However, emphasizing authentic disciplinary and professional ways of using information, situated approaches may enable a simultaneous focus on information use and subject content. The transformative approach indicates changing as a person, which may also involve a simultaneous focus on information use and subject content. While information skills or practices could be similar in a situated or a transformative approach, the overarching learning outcomes would emphasize the specific focus of each approach differently. In either case, Bruce (2008) suggests drawing from disciplinary information practices, and selecting those that are most applicable to be addressed in the specific course. For example, an introductory biology instructor had students engage with the biological scholarly literature to enable them to begin to understand the investigatory practices used by biologists (Pelaez, Maybee, & Slebodnik, 2012).

The interrelationship between ways of using information and learning about subject content influences informed learning outcomes. Informed learning theory views information literacy to be the how (process) of learning, while content is the what (subject content) of learning (Lupton, 2008b). Using information and learning subject content may be experienced simultaneously (Bruce, 2008). This notion is reflected in the second principle of informed learning, which focuses on promoting “simultaneous learning about disciplinary content and the information using process” (Hughes & Bruce, 2012b). Only when using information and subject content are parts of same object of learning is it possible to experience them simultaneously. This was exemplified by the teacher in my study. The teacher aimed to have the students use information and subject content simultaneously. In both the pre-lesson interviews and in the observed lessons, the teacher focused on aspects and features related to using information (e.g., sequence of research) and subject content (e.g., paper topic or claim). The teacher’s broader goal for the assignment was for students to understand a language and gender topic as the culmination of research that occurred over time. Described in this way, the teacher’s intentions for learning reflect a simultaneous focus on using information and learning about subject content.

However, the findings from my research also suggest a key aspect that must be considered when determining informed learning outcomes. When using information and subject content are simultaneously experienced, how information is used to learn may influence learners’ experiences of subject content. In my research, the teacher intended for the students to analyze how a language and gender topic evolved through research over time, and to make a claim about the topic based on the analysis. The interpretive act of making a claim about the topic required engaging with and analyzing the research literature related to the topic, to identify the connections between research and what the teacher referred to as “corrections” brought about through research explorations of the same topic. This finding
was the basis of the proposed addition of a fourth informed learning principle suggesting that enabling learners to experience subject content in new ways is a result of using information in specific ways. From an informed learning design standpoint, the designer of an informed learning course or module needs to consider how students are intended to become capable, and then consider the specific ways the students will use information to enable this capability.

**STUDENTS’ PRIOR EXPERIENCES**

Some design models suggest collecting information related to the students who are entering a course in order to determine their characteristics, including elements such as academic majors, standardized test scores, learning styles, gender, race and so forth. This information may be useful; however, informed learning’s emphasis on changing learners’ awareness requires knowing the students’ current ways of experiencing what is intended to be taught in the course. This is reflected in the first principle of informed learning, which emphasizes building on learners’ current informed learning experiences (Hughes & Bruce, 2012b). Learning outcomes for an informed learning course or module require knowing student capabilities of using information and the subject content related to the course. Therefore, to the extent possible, students’ capabilities should be identified before teaching commences (Lo, Marton, Pang, & Pong, 2004). Three elements may guide the instructional design process regarding students’ current experiences prior to taking the course.

First, teachers with previous experience teaching the course or related courses typically develop an understanding of the ways that students experience learning the subject matter (Lo et al., 2004). Lo, Marton, Pang and Pong have suggested that experienced teachers share with new teachers, or those teaching a new course for the first time, their insights regarding how students learn about the subject. The teacher in the current study relied on her experiences with students working on the assigned paper in previous courses to develop her current pedagogic approach:

Teacher: …what I know from experience, what will confuse them… the problems they’re going to have is first of all they’re going to think that they’re supposed to be developing a thesis about the whole topic. …the last three weeks of the semester, they… most of them go through a really panicky moment when they realize how hard it is. …they realize how hard it is to read widely enough to select the best essays for the project. And then they, they start asking… will I know which one is the seminal essay? How will I know about influence if they don’t actually credit each other? They have to read as many sources as possible, and they have to practice a kind of listening, which they are not habituated to… (1st pre-lesson interview)
These insights may be used to determine what content to cover and not cover in a course as well as determining how students learn about the subject. If the course has previously involved having students intentionally using information to learn about course content, then teachers are likely to have insight into students’ experiences of this part of learning through the course as well. These insights may be leveraged as a basis for decisions related to outcomes for learning in the course.

The second element to consider regarding students’ current experiences prior to taking the course is scholarly literature. In the last few decades, there has been an increasing amount of scholarship of teaching and learning (SoTL) research, resulting in a developing body of literature focused on undergraduate classroom learning. Designers may seek out scholarship reporting on research describing similar courses, subject matter, pedagogic techniques, and so forth. In so doing, they would want to take note of the theoretical frameworks underpinning the research being examined when considering the applicability of the findings to an informed learning course or module. The seven faces study (Bruce, 1997b) may be also used as a tool to determine students’ experiences of information literacy. In this research, seven ways of experiencing information literacy were identified: information technology, information sources, information process, information control, knowledge construction, knowledge extension, and wisdom. After determining students’ current experiences, a teacher may use this framework to identify more complex ways of experiencing information literacy that they want their students to adopt. For example, determining that one of the students in my study was experiencing information literacy as an information process, the teacher may have attempted to enable him to experience aspects of building a knowledge base.

Third, instructors may also gather information about the students’ experiences of using information to learn by implementing formative assessment activities prior to or early in the course that reveal the students’ experiences at that point in time. This approach is discussed in the following section, which describes informed learning assessment.

**INFORMED LEARNING OUTCOME STATEMENTS**

Informed learning outcome statements articulate the desired learning which is to occur through intentionally using information. As with learning outcome statements generally, informed learning outcome statements may be used for a variety of purposes. For example, these statements may be used to communicate intentions for learning to stakeholders, such as students, administrators and other faculty. Within the framework of informed learning design, informed learning outcomes reflected in outcome statements guide the development of the course, including assessments, assignments and lessons.
Learning outcome statements are typically comprised of two parts. The first part describes an action that students are to perform, such as evaluating, explaining, etc. The second part describes the subject content, such as a mathematical formula or the themes that may be identified in the novel that students are intended to learn about. In practice, many educators use the verbs associated with Bloom’s taxonomy to express the action part of learning outcome statements. Bloom’s taxonomies are based on domains of learning first developed by educational psychologist, Benjamin Bloom, and colleagues. These taxonomies separate actions related to learning into a series of domains that include cognitive (Krathwohl, Bloom, & Masia, 1956), affective (Krathwohl et al., 1956) and psychomotor (Simpson & Illinois Univ., 1966). More recently, other domains within the Bloom’s framework are being developed as well, such as a social domain that emphasizes sociocultural processes related to thinking, feeling and movement (Dettmer, 2006). No matter how similar they may appear on the surface, an informed learning outcome statement underpinned by variation theory would not reflect one of the domains associated with Bloom’s taxonomy. Instead, an informed learning outcome would reflect changes in a learner’s experience, a broader concept that could encompass elements of cognitive understanding, emotion, and so forth.

Informed learning outcome statements would involve an action and subject content. Guided by variation theory (Marton & Tsui, 2004), the action expressed typically refers to the act part of the how (process) of learning, while the subject content refers to the what (subject content) of learning. In order for learning to be informed learning, outcomes for learning must also involve the intentional use of information (Lupton, 2008b). Information would be the indirect object that the act of learning is directed towards. As depicted in Figure 6-5, an informed learning outcome statement would require all three elements. That is to say, the information use, expressed as an action, would be directed towards the information source, which would result in understanding subject content.

![Figure 6-5: Elements of an informed learning outcome statement](image)

The three elements described above must be handled in a specific way to develop an informed learning outcome. As discussed above, the findings from my research suggest that subject-focused outcomes for learning are informed by different ways of using information.
To guide course development, including assessments and learning activities, this notion must be reflected in informed learning outcome statements. This is to say that, when directed at a specific type of information, the action should result in a specific way of experiencing subject content. To illustrate a statement that reflects how using information influences content-focused learning, I have developed an informed learning outcome statement that could have guided the coursework that was the focus of my study. This statement suggests that the understanding of a language and gender topic is informed by an analysis of a sequence of research.

Students will be able to:

- analyze research occurring over time to understand a language and gender topic.

To illustrate the point further, I will provide an example of an informed learning outcome from an environmental engineering course.

Students will be able to:

- compare the demographic data from two regions to determine regional environmental issues.

Typically, it is necessary to have developed informed learning outcomes in order to develop assessment strategies that align with those learning outcomes, although they may later be refined and clarified. Similarly to backwards design (Wiggins & McTighe, 2005), although informed learning design is structured in stages, it may involve starting with different stages or moving back and forth between stages. More important than the order in which they are considered, all three stages, developing informed learning outcomes, assessments, and learning activities, must be intentionally addressed through the design process. Discussed in the following sub-section, the second stage of informed learning design focuses on assessing informed learning.
Informed learning assessment

In this section, I will describe approaches to assessing student learning that align with informed learning. Assessment in informed learning design aims to determine how students’ awareness of using information to learn has changed in response to instruction. As with the backwards design model (Wiggins & McTighe, 2005), developing a plan of assessment for the course or module is the second stage of the informed learning design model. Assessment in informed learning design focuses on students’ changing awareness of the subject being studied, as a result of using information. In contrast to the approaches typically used in higher education courses, informed learning design assessment focuses on identifying students’ awareness of the aspects and features associated with subject content learning and using information that are elements of learning outcomes. Discussed in more detail throughout this sub-section, assessment developed through informed learning design will:

- determine students’ initial experiences of the subject and how this was informed by the ways they use information; and

- provide evidence of students’ changing awareness of the informed learning outcome(s), which may include activities:
  
  o that indicate awareness related to an informed learning outcome; and/or
  
  o reflect experiences of learning about the subject by using information.

As an element of a learning environment, assessment may influence how students frame their approach to learning within a course (Ramsden, 2003, pp. 67 – 72). This is to say that, if students experience the assessment of a given course as emphasizing memorization, they may approach learning with the intent to memorize. However, if students experience assessment as emphasizing another purpose, such as applying content to solve a problem, then this outcome may underpin their approach to learning in the course. Therefore, in order to enable the intended learning, it may be necessary to align ways of assessing with outcomes for learning. Typically, information literacy assessment focuses on knowing information-related concepts or being able to perform information skills. Variation theory describes learning as becoming aware of the object being studied in a new way (Marton et al., 2004). A new awareness involves experiencing aspects and features of the object in a specific way. As informed learning encourages learning in which using information and subject content are focused on simultaneously, assessment is directed towards understanding whether this type of simultaneity is part of the students’ awareness. Based on this notion, a key question to drive an assessment of informed learning is:
Are the students aware of the subject content in ways that reflect using information intentionally?

Notions of phenomenography, specifically determining students’ experiences of a subject or approaches to learning about the subject, have been used to devise assessments (e.g., Dall’Alba et al., 1989; Micari, Light, Calkins, & Streitwieser, 2007; Newton & Martin, 2013; Thomas & Martin, 2008). By contrast, little has been written so far concerning informed learning assessment, or using variation theory for assessment. Nevertheless, assessment for informed learning may be framed by drawing from informed learning theory (Bruce, 2008), variation theory (Marton et al., 2004), and the findings from my study. My findings suggest that the aspects and features of an object of informed learning may be associated with using information or subject content. While my research did not focus on the formal assessment of student learning outcomes related to the language and gender topics students investigated, the students’ responses in their interviews revealed lived objects of learning. The lived objects of learning reported in my study reflect aggregate representations of the students’ varied experiences of the object of learning after instruction. Determining the lived object of learning for my study involved two steps. First, I identified the aspects and features of the object of learning that the students were experiencing. Second, I determined how the students were experiencing those elements qualitatively, in this case as either individual elements or simultaneously. On an individual level, this process may be used to assess students’ changes in awareness during and at the conclusion of the course.

In practical terms, the educator needs to determine what evidence to collect that will enable him or her to identify students’ changing awareness of the subject being studied in the course as it is understood through using information. As mentioned in the preceding section, this type of evidence may be collected prior to the beginning, or in the early part, of a course as a way of determining students’ initial experiences of learning about the subject. Throughout a course or module, similar evidence of students’ shifting awareness of the object of learning may be collected. This evidence may be attained from two different types of student coursework. The first is student work that reflects doing something that indicates awareness related to an informed learning outcome for the course. While it is possible to envision the use of testing instruments to determine students’ awareness of an object of learning (Newton & Martin, 2013), the emphasis on the process of learning inherent in informed learning suggests the applicability of collecting data through other types of assessment instruments produced through assignments in which students use information to learn. These assessment instruments may be similar to the student work typically collected in higher education courses. However, the difference is that the assessment instruments must
reflect aspects and features, related to both using information and subject content, which are critical for awareness of the informed learning outcome. This was exemplified in the assignment focused on in my research. The term essay was the summative assessment instrument for the course, meaning that it was intended to reveal elements of what students had learned in the course across the semester. The essay needed to reflect a thesis that made a claim about a language and gender topic based on how it developed through research. To assess part of the students’ work in the course, the teacher would identify how these features were addressed in each of the students’ essays. The teacher in my investigation also offered various formative assessments to the students that enabled them to become aware of critical aspects and features. These were opportunities for the students to receive feedback intended to expand their awareness. Examples of formative assessments included a paper proposal, an annotated bibliography, and the thesis workshop. The paper proposal informed the teacher whether students understood the essay assignment as reflective of the language and gender topic based on an evolution of research. The teacher’s feedback on the proposal may have varied paper topic or sequence of research, thus enabling students to be more aware of them. Feedback on the annotated bibliography assignment may have varied the sequence of research by highlighting the relationship or lack of relationship between the articles presented. In the thesis workshop, the students received feedback as to whether their theses reflected a claim about a sequence of research.

The second type of evidence of students’ shifting awareness may come from assessment instruments in which students reflect on their experiences. Reflection has been recognized as a way of getting learners to become more aware of their own information-related experiences (Bruce, 2004; Bruce & Hughes, 2010; Hughes et al., 2007). These reflections may also serve to provide a teacher with insights into ways of experiencing the subject being studied, as well as aspects of learning about the subject. The teacher in my study used reflective assignments and exercises with the students. The students completed research logs describing their experience of gathering the materials they used to analyze a language and gender topic. Reflective assignments should be guided by informed learning outcomes; this is to say, students should be asked to reflect on using information to learn in ways that may enable them to become aware of aspects or features of the intended learning. The specific summative and formative assessment instruments used to assess students’ awareness of the subject through using information would be informed by the learning context. Frameworks, such as the seven faces of informed learning (Bruce, 2008) can aid in determining elements of different experiences of using information within a specific context.
When appropriate to a field of study, real-world tasks or simulations of real-world tasks may provide assessment instruments, so long as they are able to reveal how the students are aware of critical aspects and features of the object of learning. In the course that was the focus of my research, the major assessment instrument was an essay modelled after scholarly essays drawn from the field of linguistics (Bucholtz, 2004a, 2004b). In contrast, the assessment instruments in the environmental engineering course, whose informed learning outcome served as an example in the previous sub-section, may focus on how students use city-related data to develop a design solution. The summative assessment instrument in the environmental engineering course may be a design that reflects responsiveness to the environmental needs derived from the analysis of the city data. Formative assessments may focus on parts of the design process, such as a write-up of the analysis of collected city data, the design proposal, and so forth. Assessing changes in student awareness may be initially challenging for educators, whose experiences with assessment have focused on quantitatively measuring what students know about a subject. One typical concern regarding assessing changes in student awareness is that it may be time consuming to complete such an assessment, particularly in courses with large numbers of students. Strategies for managing this include using or developing scales that allow for the standardization of feedback while still focusing on learning as changes in awareness (Biggs, 1996). If necessary, these types of tools may also be useful for quantifying changes in awareness into a numeric system to satisfy programmatic or institutional needs (Micari et al., 2007).

Typically, assessment in informed learning design would be part of broader learning-focused activities. For instance, assessment data would be collected through assignments and other learning activities, which enable the students to learn as well as provide evidence to the teacher as to how students have changed in their awareness. In contrast to assessment of learning, assessments that enable learning can be referred to as assessment for learning (Stiggins, 2002). Step three of informed learning design focuses on developing informed learning activities, such as assignments and lessons that enable students to become aware of aspects and features related to informed learning outcomes. The following sub-section discusses informed learning activities.

**Informed learning activities**

The development of informed learning activities involves creating lessons and assignments that expose students to specific variations that enable them to become aware of using information and subject content simultaneously. The variations that are made related to an informed learning outcome form a pattern of variation. The notion that learning is enabled through exposure to a pattern of variation is the main premise of variation theory (Marton, 2014;
Marton et al., 2004). In informed learning, the critical aspects and features will be associated with using information and subject content. As exemplified by my research, a pattern of variation that enables students to experience informed learning will involve varying aspects or features related to both using information and subject content. Figure 6-6 outlines the pattern of variation that informed learning activities need to produce across a course or course module.

Figure 6-6: Pattern of variation necessary for informed learning

The information needed to develop informed learning activities may be drawn from the first two stages of informed learning design. First, through the process of developing informed learning outcomes, educators may identify outcomes for student learning that focus on using information in specific ways intended to foster a particular experience of the subject content. Second, developing assessment for the course or module requires the teacher to identify aspects and features that are critical for students to become aware of in order to experience the intended learning. Lessons are the primary vehicles through which students encounter variations. Assignments have the primary function of providing the teacher with information regarding the students’ evolving awareness of elements of the learning outcome. However, assignments may also introduce variations and therefore may provide opportunities for learning.

The primary focus of developing or selecting learning activities in informed learning design is enabling learning through variations of aspects and features that are critical. Other activities, such as those intended to promote student engagement or other elements may also be important. However, developing a pattern of variation that supports simultaneous awareness of using information and subject content is essential to enable informed learning. As exemplified in the study discussed in Chapter 1, the pattern of variation that resulted from having ninth-grade students search the Internet to learn about and determine causes of world conflicts did not enable
the intended learning outcome (Alexandersson & Runesson, 2006). Instead, students were primarily focused on the timeline of events relating to the conflicts. If the learning activities had varied aspects and features related to the political or socio-economic causes of conflict, this may have enabled the students to become aware of the intended learning outcome.

**FORMATIVE ASSESSMENTS AND INFORMED LEARNING**

As pointed out in the preceding sub-section, formative assessments may provide ways of focusing students’ attention on elements of a larger project or final assessment. Formative assessments serve as tools for providing the teacher with information regarding students’ awareness of the informed learning outcome; however, they typically enable learning as well. Examples of formative assessments from the coursework that was focused on in my research included a paper proposal, an annotated bibliography, and the thesis workshop. The paper proposal informed the teacher whether or not the students understood the essay assignment as reflective of a language and gender topic based on the evolution of research. The teacher’s comments to the students about their proposals may vary the aspect of paper topic or the feature of sequence of research, thus enabling students to be more aware of them. The annotated bibliography assignment sheet drew students’ attention to the features of the seminal text and the sequence of research:

This comment must state how and to what extent the source supports your work, bearing in mind your choice of seminal text, its relation to the subsequent texts you have chosen, [and] your tentative thesis characterizing the influence of the seminal text on subsequent research. (Directions for Annotated Bibliography, Appendix B3)

Feedback on the annotated bibliography assignment might have varied these features by highlighting the relationship or lack of relationship between the articles presented.

**DEVELOPING INFORMED LEARNING ACTIVITIES**

In this sub-section, I provide examples of informed learning activities. The teacher in my research introduced an informed learning outcome, separated critical aspects or features, and fused critical aspects and features in a way that reflected the informed learning outcome. Again, it should be noted that the teacher in my research was not explicitly using an informed learning design approach; however, the learning activities used did enable an informed learning outcome, and are therefore reflective of the informed learning design process. The specific learning activities developed or selected to enable informed learning may vary widely, depending on the content of the course and the information skills and practices the instructor has identified as relevant to the learners in the course. However, the first learning activity of a sequence would
introduce learners to the outcome as a whole and then begin to separate aspects or features of the learning outcome. The teacher in my research did this by having the students read the assignment sheet, which outlined the aim of understanding a language and gender topic through engagement with how research on that topic evolved. During the first lesson, the teacher spent the beginning of the class period describing the assignment to the students. The teacher contrasted the type of essay designed to report learning, which reflects understanding how a topic evolved through research, with the typical college essay, in which students gather evidence to support a predetermined conclusion. She also contrasted a thesis statement that would guide each of the two types of essays. In so doing, the teacher fused critical aspects and features related to using information and subject content when describing a thesis statement that would guide the assigned paper. This was intended to enable students to become aware of differences between essays they may already be familiar with and the assigned essay.

After introducing the learning outcome, learning activities would contrast, generalize or fuse more of the critical aspects and features of the learning outcome. During the rest of the first lesson, the teacher in my study shifted between imparting new information and conducting a guided discussion with the students. During the first discussion, the teacher had the students focus on subject content by asking them to suggest potential topics for their essays. After the students offered possible topics, the teacher fused the aspect of paper topic and the feature of sequence of research by providing her own example describing how the topic of interruption evolved through research. Then the teacher described Bucholtz’s (2004a, 2004b) essays and generalized the assigned essay with Bucholtz’s scholarly version of that type of essay. In the structured discussion that followed, the teacher had the students identify various elements of Bucholtz’s essays that would also be aspects or features of the assigned essay, such as organizational elements and thematized responses to Lakoff’s (2004) seminal text. The other learning activity in the first lesson was a reflective writing exercise in which the students were asked to individually write down claims that Bucholtz had made about Lakoff’s seminal work. In the second lesson, the learning activity involved students working in small groups to peer review each other’s thesis statements. The purpose of the peer review was to identify whether the thesis statement made a claim about a sequence of research. This provided opportunities for the students to fuse claim with sequence of research, thus reflecting a simultaneous focus on using information and subject content. In this case, the thesis statement, which would guide the assigned essay, was illustrative of the entire learning outcome.

Informed learning activities developed for a course in another discipline would align with the learning outcomes for that course and aim to vary aspects and features of those outcomes. For instance, in an environmental engineering course, the teacher may introduce an
assignment in which the students create a design intended to address a regional environmental concern. The teacher would develop lessons that emphasize how the design was informed by varying aspects and features related to researching and analysing regional data. There may be variability in the pattern of variation that is enabled through the learning activities developed or selected in this stage of the informed learning design process. However, as with the lessons that were the focus of my research, it is likely that the learning activities following the introduction of the learning outcome would mostly contrast or generalize critical aspects or features. Fusion would enable learners to encounter using information and subject content simultaneously as they are represented in the learning outcome. Fusion would be introduced more towards the culmination of the instructional sequence.

EVALUATING INFORMED LEARNING ACTIVITIES

Drawn from backwards design (Wiggins & McTighe, 2005), in informed learning design an emphasis is placed on the alignment of the informed learning outcomes, assessments, and activities. The preceding sub-section on informed learning assessment described the need for assessment to align with learning outcomes. Learning activities must also align with learning outcomes. This is to say, the informed learning activities need to collectively enable an informed learning outcome. It is possible, when learning activities are implemented in the classroom, they may not enable student awareness of the critical aspects and features in the ways expected. As discussed in Chapter 7, there is a research approach called learning study in which researchers and teachers analyze classroom learning activities and, when necessary, make appropriate changes until the intended learning is enabled (e.g., Chik & Marton, 2010; Pang & Marton, 2005; Runesson, 2005). Assessment data will also provide evidence to teachers concerning whether learning activities are enabling student awareness of using information and subject content in the ways intended. If activities implemented in the classroom are not enabling the intended learning, they may need to be revised or replaced with activities that do enable informed learning.

6.4 CHAPTER CONCLUSION

This chapter discussed the contributions of my study and compared them with existing understandings of information literacy and informed learning theory. Based on a number of theoretical frameworks and the findings from my research, the informed learning design model was introduced and discussed. In Chapter 7, I describe my research as part of a broader research agenda. Limitations of the study are outlined as well. Finally, recommendations are made for future information literacy research that include conducting similar research in varied disciplinary learning environments, identifying information literacy-related threshold concepts within
different disciplines, and applying a learning study approach, which brings researchers and teachers together to study and enhance information literacy lessons.
This chapter concludes my thesis by discussing how this research contributes to the larger information literacy research conversation. The findings revealed that the teacher experienced using information and subject content simultaneously. By separating them in the first lesson and fusing them in the second lesson, the teacher enabled the students to discern information use and subject content simultaneously. Thus, the students experienced the object of learning in a way that aligned with the teacher’s intentions. There are two basic differences between my research and prior investigations into experiences of information literacy and related concepts. First, the shift to investigating how *information is used to learn* adopts a significantly different focus than prior research of experiences of information literacy (e.g., Andretta, 2012; Bruce, 1997b; Edwards, 2006; Maybee, 2006), or the relationship between information literacy and learning (Lupton, 2008b; Parker, 2006). By assuming that using information involves learning, the findings from my research illuminate information literacy as it is experienced as part of discipline-focused learning. Second, my research investigated the teaching and learning of using information to learn as related parts of a holistic process.

Although student experiences of information literacy have been explored while students were engaged in specific coursework (Limberg, 1999; Lupton, 2004, 2008b; Parker, 2006), prior studies involving educators have tended to focus on their experiences of information literacy generally. One exception may be the study in which school teachers were asked to reflect on how their students used information in their classrooms before the teachers were asked to describe their experiences of information literacy (Williams & Wavell, 2007). However, this example still contrasts sharply with the present study, which reveals a teacher’s experience of using information to learn as the teacher developed and reflected on instructional sessions. As discussed in the preceding chapter, the findings from this study contribute to our understanding of two important aspects of using information to learn. First, the study reveals how a teacher’s intentions for using information to learn about subject content may be enabled through classroom interactions. Second, the study suggests that qualitatively different subject-focused learning outcomes are enabled through specific ways of using information.

Drawing from the findings and discussion that have been presented in the preceding chapters, this chapter will first discuss this research as an example of the broader agenda of informed learning research. Second, the utility of variation theory as an analytical tool for investigating informed learning will be explored. Third, the limitations of this research will...
be outlined. Fourth, the chapter will conclude with recommendations for future research informed by my study.

7.1 INFORMED LEARNING RESEARCH IN HIGHER EDUCATION

This study investigated using information to learn, which is the object of research in informed learning research (Bruce et al., 2013). Therefore, this study itself is an example of informed learning research. As discussed in Chapter 2, a limited number of informed learning studies have been undertaken to date. These studies share a focus on using information to learn rather than focusing solely on using information or how using information relates to other concepts. Although informed learning is grounded in experiential research findings from studies in educational contexts (Bruce, 2008), informed learning research has typically occurred outside of formal educational settings. Examples of informed learning research include investigations of teen digital content creators (Harlan et al., 2012), a participatory design process (Somerville & Howard, 2010), health consumers (Yates et al., 2012, 2009), religious or spiritual practitioners (Gunton, 2011; Gunton et al., 2012), and people in crisis situations (Yates, 2014). In formal educational settings, researchers have only begun to use the phenomenographic approach applied in my research to study informed learning (Abdi, Bruce, & Stoodley, 2014; Smeaton, Maybee, Bruce, & Hughes, 2015). The research reported in this thesis not only adds to the small but growing body of informed learning studies, but takes this research focus into a new arena by studying using information to learn as it is experienced in the formal educational setting of the undergraduate classroom. My study adds to our understanding of a higher education teacher and undergraduate students’ experiences of information literacy defined as using information to learn.

7.2 ANALYTICAL TOOL FOR STUDYING INFORMED LEARNING

This study adapted variation theory as an analytical tool to associate using information and subject content with elements critical to using information to learn about a subject. Applying variation theory in this way extends our ability to investigate using information to learn in disciplinary contexts. This is another major contribution of this research.

Using variation theory as a theoretical lens through which to explain learning, the research findings show that aspects and features of an object of learning that involve using information to learn may be associated with using information or subject content. This finding was significant for the informed learning design model, which aims to enable teachers to develop instruction that encourages this type of learning. Variation theory defines an object of learning as comprised of the how (process) and the what (subject content) aspects of learning (Marton & Booth, 1997). Using information may be associated with the
how or what of learning (Lupton, 2008b). When the focus of instruction is using information to learn, using information may be attributed to the how aspect of learning, while the what aspect of learning would focus on disciplinary content (Bruce, 2008). Another notion drawn from variation theory is that an object of learning is comprised of various aspects and features (Marton & Tsui, 2004). Drawing on the notions of the how and what, while considering the nature of aspects or features as varying representations of an object of learning, enabled me to associate aspects or features with information use or subject content.

The focus of variation theory on the three parts of learning: intended, enacted and lived (Marton & Tsui, 2004), guided data collection and analysis in this study. The intended object of learning was informed by the pre-lesson interviews with the teacher. The enacted object of learning was informed by the classroom observations and post-lesson interviews with the teacher. The lived object of learning was informed by post-lesson interviews with the students. Collecting data from the teacher and learners, both oriented towards the observed lesson, enabled the examination of the relationship between experiences of teaching and experiences of learning. In addition to guiding the research, variation theory, along with informed learning theory (Bruce, 2008) and the findings from my research, underpins the informed learning design model discussed in Chapter 6. Informed learning design suggests a structure for instructional design that identifies critical aspects and features of a learning outcome related to using information and subject content, and for developing a pattern of variation intended to enable students to experience these critical aspects and features simultaneously.

7.3 LIMITATIONS OF THIS RESEARCH

This study is subject to limitations. First, the research adopted an information experience perspective and used a phenomenographic approach to investigate teacher and student experiences of using information to learn. As such, this research adopted a specific theorized view of experience that guided the investigation of experiences occurring in a specific learning situation. Therefore, it may be acknowledged that different research approaches may have resulted in alternative insights concerning experiences of using information to learn. Second, variation theory guided this research by providing an understanding of learning as new awareness that results from encountering variations (Marton et al., 2004). Fundamental to my research, the understanding of learning offered by variation theory also suggests how teaching may be arranged to enable learning. The application of a different theory of learning in this research may have resulted in different insights concerning the relationship of teaching and learning when using information to learn.
Third, this research focused on lessons that intended to enable students to learn through specific ways of using information. The experiences of teaching and learning investigated relate specifically to the two lessons. As such, the study did not aim to reveal the lived experiences of learning that may have resulted from completing the paper assignment, nor the teacher’s experiences that may have been influenced by reading and evaluating the final papers. Last, in focusing on a specific assignment in an undergraduate writing course, this research purposefully examined a highly contextualized situation. As learning focuses on the learning of something (Marton et al., 2004), the examination of experiences of how information may be used to learn required that the research be focused on learning as it occurred in a contextualized setting in which the students were learning about a subject. Therefore, the findings from my research may not be generalizable to other learning contexts. Conducting similar research in other contexts, such as research focused on experiences of coursework in other disciplinary subjects, may reveal different experiences of using information to learn.

7.4 FUTURE DIRECTIONS FOR RESEARCH

My study suggests three pathways for future information literacy research:

- researching informed learning in educational contexts;
- identifying contextualized information literacy threshold concepts; and
- studying informed learning using learning study methods.

There is a need for additional investigation of how information literacy is experienced in varied educational contexts. The object of the research in future studies should be using information to learn. Using information to learn has typically been the focus of research outside of formal education. To date, only a small number of studies have focused on informed learning in formal educational contexts (e.g., Hughes & Bruce, 2012a, 2013; Smeaton et al., 2015). New research is needed to explore using information to learn in other subject-focused learning contexts. Together with the findings from my research, it would be beneficial to develop a body of research that reflects our understanding of informed learning in the various educational contexts. There is also a need to identify threshold concepts related to using information in discipline-focused contexts. In the preceding section, I discussed how threshold concepts theory is currently being used in research to identify information literacy concepts that are considered by some to be generalizable across disciplinary contexts. However, information literacy needs to be addressed within disciplinary contexts; therefore, new research efforts need to focus on the
identification of information literacy-related threshold concepts that are part of discipline-specific ways of using information.

The current research has also revealed that variation theory is a valuable theoretical tool for examining using information to learn. Variation theory has also been used in the development of a research approach known as a learning study, in which researchers and teachers work together to investigate and revise lessons in ways that enable students to become aware of critical aspects and features of an object of learning. Using the findings from my research, a learning study approach may be adapted to the development and enhancement of information literacy lessons. In the proceeding sub-sections, I discuss each of these three recommendations in greater detail.

7.4.1 Researching informed learning in educational contexts

My research investigated experiences of lessons that emphasized using information to learn occurring in the highly contextualized setting of a writing course focused on learning about language and gender issues. To date, a small number of studies have focused on informed learning in formal educational contexts (e.g., Abdi et al., 2014; Hughes & Bruce, 2012a, 2013; Smeaton et al., 2015). Although it has proven a valuable theoretical tool for examining teaching and learning of information literacy, only a couple of these studies have used variation theory to explore informed learning (Abdi et al., 2014; Smeaton et al., 2015). I would recommend that variation theory, with its ability to reveal experiences of teaching and learning (Marton et al., 2004), continue to be used to study using information to learn in various contexts. As exploratory research, the findings of my study are not considered generalizable, but may inform future research efforts intended to add to our understanding of teaching and learning of information literacy in subject-focused learning environments. Research is called for that replicates aspects of my study with higher education courses in which information is intentionally used to enable learning. Part of this research agenda may be confirmatory. This may include further exploration of the ways in which teachers experience objects of learning focused on using information to learn as involving the separation and fusion of critical aspects and features related to information use and course content.

A second objective of such research may be to identify if learners’ lived objects of learning involving using information to learn focus on information use and course subject simultaneously. This research may investigate similar contexts to the writing course that was the focus of my study, but more likely would focus on different disciplinary contexts and identify the similarities, and differences, with my research. Earlier studies have found that experiences of using information in more complex ways may involve real-life aspects (Locke (Diehm), 2009;
Lupton, 2004, 2008b; Parker, 2006). For instance, learners may conceptualize information literacy as being connected to professional or personal activities beyond the immediate learning context. An additional research focus may be the investigation of learning environments in which real-life learning is part of the intentions for the use of informed learning pedagogy. Variation theory may be used to identify features that are critical for students to experience in order to be aware of real-life aspects of objects of learning focused on using information to learn. Collectively, informed learning research in educational settings may contribute to the development of a body of knowledge about using information to learn, which may be used to further develop information literacy educational practices in higher education.

7.4.2 Identifying contextualized information literacy threshold concepts

As exemplified by the Framework for Information Literacy for Higher Education developed by the ACRL (2015), there is a growing interest in using threshold concepts theory to determine educational goals for information literacy. The documentation outlining the new framework has suggested that it may aid in bridging the gap between current practices and the need to provide information literacy education in subject-focused contexts. The experiential research presented in Chapter 2 suggests that information literacy is experienced differently within and across contexts. With the exception of the study focused on literature-based research in engineering (Yorke-Barber et al., 2008), which placed information use in context, other studies identifying threshold concepts for information literacy and related topics have tended to define information literacy as a separate subject. It will be necessary for future research to be undertaken with the aim of identifying information literacy-related threshold concepts in various educational, professional and personal settings.

A key consideration in these investigations needs to be the choice of participants. Quinlan and colleagues (2013) compared three studies that aimed to identify threshold concepts, and determined that the choice of participants needed to align to research goals. That is to say, student data supports identifying troublesome aspects of a threshold concept, while data from teachers tends to provide more insight into integrative aspects. Given the interest in employer expectations for recent graduates’ ability to use information (Head, 2012), the perspective of the professional community may also be important in the identification of subject-focused threshold concepts (Barradell, 2013). In addition to being used to develop pedagogic strategies for enabling students to understand a threshold concept, phenomenography and variation theory have been drawn together in research with threshold concept theory. The advantage of this is that, in addition to identifying threshold concepts, the research findings may enable the development of pedagogic strategies for enabling learners to understand those concepts (e.g., Åkerlind et al., 2014; Kabo & Baillie, 2009). Once threshold concepts for information literacy in specific
subject-focused contexts have been identified, phenomenographic methodology using variation theory as an analytical tool, as I used it in the current research, may be employed to investigate how teaching can be arranged to enable learners to pass through these thresholds.

7.4.3 **Studying informed learning using learning study methods**

The phenomenographic methodology used in this study to analyze an object of learning has been adapted for use with an approach called a *lesson study*. A lesson study, sometimes called *research lessons*, is a model for improving lessons developed in Japan. The lessons that are the object of the research are typically selected to address problematic material, collaboratively planned, and observed by a group of teachers, as well as video-recorded, and then discussed (Lewis, 2000). Stigler and Hiebert (1999) are credited with introducing lesson study methodology to the West (Pang & Marton, 2003). Lesson studies can be understood as a specific kind of pedagogical action research, in which teachers are also educational researchers (Elliott & Tsai, 2008). The research approach that resulted from bringing together phenomenography and the lesson study framework is referred to as *learning study*. A growing number of learning studies have been conducted (e.g., Chik & Marton, 2010; Davies & Dunhill, 2008; Holmqvist, 2011; Ling et al., 2006; Lo et al., 2005; Pang & Marton, 2003, 2005; Runesson, 2005).

A learning study typically involves a collaborative effort between researchers and classroom teachers. The teachers are introduced to types of variation related to learning, such as variation of students and teachers ways of dealing with the object of learning. Teachers’ experiences of teaching and learning underpin the design of lessons that enable variations necessary for intended learning to occur (Pang, Linder, & Fraser, 2006). These studies make use of teachers’ knowledge from prior experiences to enable students to become aware of critical aspects and features necessary for understanding an object of learning in the way intended. Sometimes this knowledge is tacit or unacknowledged until its value is emphasized in the learning study design process (Pang & Ling, 2012). By enabling teachers to design and iteratively enhance lessons from a theoretically grounded position, learning study research may also be considered a form of professional development (Holmqvist, 2011).

The benefits of using a learning study approach would be equally applicable to researching information literacy in various learning contexts. The collaborative aspect of the approach that brings together researchers and teachers could also include other stakeholders, such as librarians, who could provide additional insights into how students use information to complete their coursework within the local learning environment. Working with researchers, educators would reflect on and determine which aspects and features are critical
to an object of learning that focuses on using information to learn. Researchers would observe in-class enactments of lessons and determine the pattern of variation used by each of the teachers. Researchers would then interview students to determine which patterns of variation enabled the students to become aware of using information to learn in the way the teachers had agreed on prior to delivering the lessons. Using variation theory as a guide, the researchers and teachers would modify lessons taught to other students until students’ lived experiences of the lesson aligned with the teacher’s intentions for learning. As with my research, learning studies would extend our understanding of using information to learn in various learning contexts. The iterative process also offers the practical outcome of improving learning for the students who are participants of the research, as well as suggesting how to design similar lessons in other contexts.

7.5 CHAPTER CONCLUSION

As discussed in this concluding chapter, this research has uncovered experiences of informed learning in the higher education subject-focused classroom. In so doing, it has revealed a relationship between subject content learning outcomes and information use. Evidenced by efforts to redefine information literacy for higher education at the national level in the United States (ACRL, 2015), information literacy education continues to undergo reform. These efforts have tended to focus on skills, practices and concepts that may comprise information literacy. Confirming earlier research (Locke (Diehm), 2009; Lupton, 2008b), my research reveals that information literacy may be understood as an action that focuses upon information in order to learn about subject content. While there is a need for future research, my study suggests how educators may develop instruction intended to enable higher education students to learn by using information in intentional ways.
Bibliography


Maybee, C. (2012b, August). *Variations in student experiences of learning to use information in context*. Presented at the European Association for Research for Learning and Instruction (EARLI), Special Interest Group 9 on Phenomenography and Variation Theory, Jönköping, Sweden.


Appendices

Appendix A1: Glossary of variation theory terms used in this study

**Aspect**: An object of learning is comprised of aspects and features. An aspect is a broader concept with which related features may be associated (Marton, 2014, p. 43). For example, *blue* and *red* may be features of an automobile, of which the associated aspect would be color.

**Contrast**: A variation in which a comparison is made between an aspect or feature of an object of learning (Marton et al., 2004, p. 16). For example, the feature of *three* may be compared to the features of *two* or *four*.

**Enacted object of learning**: The interactions, typically between a teacher and learners during classroom lessons, that enable learners to become aware of an object of learning (Marton et al., 2004, p. 4). The enacted object of learning defines what is possible for learners to discern about an object of learning.

**Feature**: An object of learning is comprised of aspects and features. A feature is the specific instance of an aspect (Marton, 2014, p. 43). Marton provides the example that *breathing* is an aspect that occurs when one is on land or swimming in water, but the specific kind of breathing that occurs when one is swimming is a feature of swimming.

**Fusion**: A variation in which aspects or features are merged in such a way that they are experienced simultaneously (Marton, 2014, p. 85). For example, *form*, *meaning* and *pronunciation* were fused aspects of the same word in a Chinese language lesson (Marton et al., 2004, p. 17).

**Generalization**: A variation that is a type of separation in which the same aspect or feature is associated with different instances (Marton et al., 2004, p. 16). For example, the feature of *blue* could be generalized as a feature of many different items, such as a blue car, a blue sweater, and a blue sky.

**Intended object of learning**: The learning that is intended for learners to experience (Marton et al., 2004, p. 4). Typically, intentions for learning are determined by a teacher. The intended object of learning is the object of learning that is in the teacher’s awareness.

**Lived object of learning**: The lived object of learning refers to what students learned (Marton et al., 2004, p. 5). Learning refers to a new awareness of aspects and features of an object of learning experienced by learners. In formal education, lived experiences are usually enabled by the interactions occurring in enacted lessons or other instruction.

**Object of learning**: An object of learning is comprised an act, e.g., memorizing, interpreting, etc., which is directed towards a subject, e.g., formulas, concepts, history of a period, etc. (Marton et al., 2004, p. 4). An object of learning may be also defined as critical aspects and features of which a learner must become aware of in order to experience that object in the way intended (p. 22).

**Pattern of variation**: The variations that occur, as well as what is held invariant, across an instructional unit, such as a lesson, or series of lessons (Marton et al., 2004, p. 16). Variations are typically introduced by teachers, but may also be introduced by students.
Separation: A type of variation in which an aspect or feature is separated from the object of learning (Marton, 2014, p. 86). Contrast and generalization are forms of separation.

Variation: There are three types of variations: contrast, generalization, and fusion (Marton, 2014, p. 86). It is necessary for learners to encounter variation in order to become aware of aspects or features that are critical for understanding an object of learning in a new way (Marton et al., 2004, p. 14).
### Appendix A2: Overview of aspects and features from 1st lesson

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Information use or subject content</th>
<th>Type</th>
<th>Intended</th>
<th>Enacted</th>
<th>New way of learning</th>
<th>Instructions for specific essay</th>
<th>Instructions for any essay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Information use</td>
<td>Feature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seminal text</td>
<td>Text presenting a highly original idea that influences the development of future research</td>
<td>Depends on context</td>
<td>Feature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of paper</td>
<td>Differentiation of papers by their purpose or structure</td>
<td>Aspect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper topic</td>
<td>Specific language and gender topic</td>
<td>Subject content</td>
<td>Aspect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Themes</td>
<td>Themes related to the seminal text</td>
<td>Subject content</td>
<td>Feature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix A3: Overview of aspects and features of 2\textsuperscript{nd} lesson

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Information use or subject content</th>
<th>Type</th>
<th>Intended</th>
<th>Enacted</th>
<th>Lived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence of research</td>
<td>Analysis identifying how a topic evolved over time through research</td>
<td>Information use</td>
<td>Feature</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Thesis statement</td>
<td>Statement that expresses an assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Claim</td>
<td>Assertion or judgment</td>
<td>Subject content</td>
<td>Aspect</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>
Appendix A4: Certificate of informed consent – Faculty participant

Certificate of Informed Consent – Faculty Participant

Overview and Procedure: This research project will investigate how undergraduate students are taught to use information in various ways as part of learning the practices of the discipline they are studying. The research question underpinning this project is: *How is pedagogy that teaches disciplinary information practices and disciplinary subject content at the same time “enacted” in a course?* Through interviews and observations, the researcher will analyze the relationship between the teacher’s intent, what takes place in the classroom, and how the students’ understandings may change as a result. By granting consent to be part of this research, you agree to have the class you teach be observed by the researcher during all class periods during the semester, and observed via video-recording during select class sessions. At your discretion, video-recording of select class sessions will be reviewed and discussed with you. You also agree to participate in a minimum of two tape-recorded interviews lasting approximately 45 minutes. The attached set of questions will serve as a guide for our conversations. Your participation is completely voluntary.

Risks and Benefits: This project will not benefit you personally but will lead to the development of insightful and effective pedagogic strategies. Although no significant risks are anticipated from your participation over and above day-to-day living, you may feel uneasy about being observed or discussing your teaching in interviews.

Confidentiality: You understand that all information collected in this study will be kept confidential. If information from this project is described in a research paper or report, you will not be individually identified. If verbatim quotes from the interview are used in any publications arising, your identity will remain anonymous. If a statement you made is quoted in a research paper or report, you will only be identified by a pseudonym.

Compensation: Your participation is completely voluntary.

Your Rights: You can withdraw from the project at any time and can decline to answer any questions without prejudice. The video-tapes will be destroyed once they are transcribed. You have the right to request that their video be erased at any point in time.

Contact Information: If you do have any concerns or complaints about the ethical conduct of the project you may contact the Chair of the Institutional Review Board (IRB) committee at Colgate University, IRB_chair@psych.colgate.edu, or the QUT Research Ethics Officer on +61 7 3138 5123 or ethicscontact@qut.edu.au. Colgate’s IRB committee and QUT Research Ethics Officer are not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

This research is being conducted as part of a doctoral program. The principal researcher of this project is Clarence Maybee (cmaybee@colgate.edu). His external faculty supervisor at San Jose State University is Kristen Rebmann (kristenrebmann@gmail.com), and his principal faculty supervisor at Queensland University of Technology is Christine Bruce, (c.bruce@qut.edu.au).

By signing below, you are agreeing 1) to participate in this study, and 2) that you have read and understand all of the information provided on this form.

I agree to be video-taped________                        I do not agree to be video-taped________
Certificate of Informed Consent – Student Observation

Overview and Procedure: This research project will investigate how undergraduate students are taught to use information in various ways as part of learning the practices of the discipline they are studying. The research question underpinning this project is: How is pedagogy that teaches disciplinary information practices and disciplinary subject content at the same time “enacted” in a course? Through interviews and observations, the researcher will analyze what takes place in the classroom, and how the students’ understandings may change as a result. By granting consent to be part of this research, you agree to being observed via video-recording during select class sessions identified by the researcher. You will be notified in advance of dates when video-recording will take place. Your participation is completely voluntary.

Risks and Benefits: This project will not benefit you personally but will lead to the development of insightful and effective pedagogic strategies. Although no significant risks are anticipated from your participation over and above day-to-day living, you may feel uneasy about being observed and video-recorded in class.

Confidentiality: You understand that all information collected in this study will be kept confidential. If information from this project is described in a research paper or report, you will not be individually identified. If verbatim quotes from the observation are used in any publications arising, your identity will remain anonymous. If a statement you made is quoted in a research paper or report, you will only be identified by a pseudonym.

Compensation: Your participation is completely voluntary.

Your Rights: You can withdraw from the project at any time and can decline to answer any questions without prejudice. The video-tapes will be destroyed once they are transcribed. You have the right to request that their video be erased at any point in time.

Contact Information: If you do have any concerns or complaints about the ethical conduct of the project you may contact the Chair of the Institutional Review Board (IRB) committee at Colgate University, IRB_chair@psych.colgate.edu, or the QUT Research Ethics Officer on +61 7 3138 5123 or ethicscontact@qut.edu.au. Colgate’s IRB committee and QUT Research Ethics Officer are not connected with the research project and can facilitate a resolution to your concern in an impartial manner.
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By signing below, you are agreeing 1) to participate in this study, and 2) that you have read and understand all of the information provided on this form.

I agree to be video-taped_________ I do not agree to be video-taped_________

_________________________________  _________________________________
Participant Name (please print)       Researcher Name (please print)

_________________________________  _________________________________
Participant Signature                Researcher Signature

_________________________________  _________________________________
Date                                Date
Appendix A6: Certificate of informed consent – Student interview

Certificate of Informed Consent – Student Interview

Overview and Procedure: This research project will investigate how undergraduate students are taught to use information in various ways as part of learning the practices of the discipline they are studying. The research question underpinning this project is: *How is pedagogy that teaches disciplinary information practices and disciplinary subject content at the same time “enacted” in a course?* Through interviews and observations, the researcher will analyze what takes place in the classroom, and how the students’ understandings may change as a result. By granting consent, you agree to participate in a formal tape-recorded interview, lasting approximately 45 minutes, of the attached list of questions that will serve as a guide for our conversation. Your participation is completely voluntary.

Risks and Benefits: This project will not benefit you personally but will lead to the development of insightful and effective pedagogic strategies. Although no significant risks are anticipated from your participation over and above day-to-day living, you may feel uneasy about discussing your learning in an interview.

Confidentiality: You understand that all information collected in this study will be kept confidential. If information from this project is described in a research paper or report, you will not be individually identified. If verbatim quotes from the interview are used in any publications arising, your identity will remain anonymous. If a statement you made is quoted in a research paper or report, you will only be identified by a pseudonym.

Compensation: Your participation is completely voluntary.

Your Rights: You can withdraw from the project at any time and can decline to answer any questions without prejudice.

Contact Information: If you do have any concerns or complaints about the ethical conduct of the project you may contact the Chair of the Institutional Review Board (IRB) committee at Colgate University, IRB_chair@psych.colgate.edu, or the QUT Research Ethics Officer on +61 7 3138 5123 or ethicscontact@qut.edu.au. Colgate’s IRB committee and QUT Research Ethics Officer are not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

This research is being conducted as part of a doctoral program. The principal researcher of this project is Clarence Maybee (cmaybee@colgate.edu). His external faculty supervisor at San Jose State University is Kristen Rebmann (kristenrebmann@gmail.com), and his principal faculty supervisor at Queensland University of Technology is Christine Bruce, (c.bruce@qut.edu.au).

By signing below, you are agreeing 1) to participate in this study, and 2) that you have read and understand all of the information provided on this form.
I agree to be interviewed_________  I do not agree to be interview_________

_________________________________  _________________________________
Participant Name (please print)     Researcher Name (please print)

_________________________________ _________________________________
Participant Signature               Researcher Signature

_________________________________ _________________________________
Date                                 Date
Appendix A7: Participant demographic information sheet

Informed Learning Study – Participant Demographic Information

**Age**

- Traditional College (18-22 years old)____
- Non-traditional College (older than 22 years)____

**Major(s)**

___________________________________________________________________

__________________________________________________________________________

**Anticipated year of Graduation**

- 2011____
- 2012____
- 2013 ____
- 2014____
- Other_____ Please define_________________________________________________

**Gender**

- Male____
- Female____
- Other_____ Please define_________________________________________________

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Appendix B1: Course description

This course explores the intersection of linguistic theory and feminist theory, defining gender as essentially cultural, but without assuming beforehand that women and men do, in fact, use different language. It considers the following questions in depth: To what extent does English have a sexist, or patriarchal bias? Do women and men speak differently in our culture? Do they think differently? What is the difference between gender and sexuality in language use? To what extent should writing avoid gender-specific forms, and to what extent should classrooms honor gender differences in language use? What is "political correctness" in language and what is its value? The course looks at English from theoretical, political, and social viewpoints, with readings taken from a wide range of fields, but with a particular focus on linguistics and feminist theory.
Appendix B2: Final paper assignment sheet

Directions for Major Project: A Assigned Study in Retrospect

General Description (mostly from the syllabus). Choose a seminal (before 1980 if possible) text in feminist linguistics from our syllabus or elsewhere, for example, Martyna on the generic masculine, or West & Zimmerman on interruption. Using Bucholtz's project as inspiration and model, prepare the introduction to an expanded edition of the original study by tracing published response in the field. Collect subsequent research, three to four essays, on the same topic, and write your own commentary on how the topic has evolved over time, bringing it up to date. If possible, contact the authors and invite informal (email) retrospective comments and prepare short biographical notes on them. Prepare a "Suggestions for Further Reading" in the form of an annotated bibliography. The final draft, including the biographical notes and Suggestions for Further Reading, should total between 12 and 15 pages.

Preliminary Stages. Due Dates [redacted]

Read Bucholtz pgs 3-28 and 121-128

Library Session in Case 501

Proposal 1 pg (max)

Research Log 1 (directions on Topic 5 sheet)

Annotated Bibliography draft 1

In class rough draft workshop

Research Log 2

Final Draft due Friday, [date redacted], 4:30 PM. No extensions.

Because good research evolves over time, none of the deadlines may be extended more than 24 hours, and once I have approved your topic from your proposal, you may not change it by starting over. There is a big difference between allowing a research project to evolve in unplanned directions (OK) and starting over with a new one because you have reached a dead end with the first one, especially if that dead end is reached at the last minute (not OK). Only the final draft is formally evaluated, but the preliminary stages are mandatory.

To Think About.

You are not writing a standard 300 level research paper, which we will define here as going out onto the internet and into the library, finding sources on a topic, developing a thesis, selecting evidence to read that supports it and then writing a long account of it with plenty of notes.

What you are doing is a lot shorter in its final version and more narrowly focused, and, I believe, just as good an opportunity to demonstrate your analytic skills. First, you do some background reading in order to select a sequence of four or five short pieces (article or
Chapter length) that, considered in the sequence you choose, display a logical thread of intellectual development, beginning with the seminal essay. Altogether one seminal text plus three or at most four subsequent texts. It may take quite a lot of background reading to find the best essays for this purpose. You are studying the history of a specific idea as exhibited in just these few works. So, you are not taking responsibility for a wide knowledge of the topic, but rather for what you think the sequence says about the seminal text. That is what your thesis will be about. It might help to imagine your seminal author sitting at a table with the three (or four) other authors, discussing the ways their works interact with each other. What would they want to say to each other? What would they be able to say, having read each other's work plus others that they acknowledge in their own citations?

In order to do this, you will produce two documents. I'll describe the second one first, because it is a simple list of sources (=bibliography) of related or otherwise useful works that you offer to your reader who asks "what more can I read to understand the general picture better?" This bibliography will be composed of the background reading you've been doing in order to find your sequence, except you'll leave out the dead end ones. You will present this bibliography in standard MLA documentation form, and each work in it will be accompanied by an annotation that explains your reason for including it. This is your "Suggestions for Further Reading."

The other document is your actual essay, which we imagine as the introduction to an enlarged edition of the seminal work, a smaller and more modest version of what Mary Bucholtz compiled in honor of Robin Lakoff's *Language and Woman's Place*. This "introduction" will discuss the relationship of the works in your sequence just as Bucholtz does. The sequence does not have to be chronological, although that is often the best order of presentation. Your thesis will still govern the discussion in the usual ways, but it will be about the sequence, not about the general topic. This document should include a Works Cited page at the end that offers documentation in standard MLA format of all the works you cite in your essay, including the texts of the sequence itself. MLA is a different system from many others in that it uses no notes, but instead, parenthetical citation. Study it.

If you imagine yourself as following Bucholtz's example, and re-read her "Editor's Introduction," you will see the kinds of claims she makes for her seminal text, and this might inspire you in your introduction to an imaginary book that reprints your four (or five) essays.

It will enhance your work if you can find email addresses for your authors, and write to them having thought carefully about the questions you want to ask them in response to their writing. If they write back, all the better, but even if they don't, it will be a good exercise for you to dialogue with them. Nothing sharpens the mind quite like daring to interact with experts on their own intellectual terrain.
Appendix B3: Directions for annotated bibliography

Directions for Annotated Bibliography of "Suggestions for Further Reading"

The primary meaning of the verb ‘to annotate’ is to make notes on, or add notes to, a text (book, etc). It comes from the Latin ‘notare,’ meaning to note, or mark. By extension, my desktop dictionary defines an annotation as “a critical or explanatory note or notes.”

Your annotations will be short paragraphs (2-3 sentences), double spaced and indented like the second and subsequent lines of the citation (use MLA bibliographic format). Your annotations will show how 10-12 texts (in addition to your core 4 texts) establish an appropriate context for your seminal text.

The annotation is NOT a summary of the content of the source. No doubt you will be taking notes from your source, but they should not appear in the annotation. Instead it is a critical comment, in the sense of evaluation, not of complaint. This comment must state how and to what extent the source supports your work, bearing in mind your choice of seminal text, its relation to the subsequent texts you have chosen, your tentative thesis characterizing the influence of the seminal text on subsequent research. The comment answers these questions: how does this source work for my project? How useful will it be and how do I know? In what ways, specifically but briefly, does it contribute?

In the examples below from my own work, note how the annotation strives to place the source in the context of the topic, and ultimately, the thesis.

1. Schor’s reading of Estella is closer to my own than anything else I have read: that Pip does not listen to what she says. However, Schor does not acknowledge how Estella changes across the span of the novel; she also relies on a Freudian perspective that I do not find helpful or necessary.

2. These architectural drawings made in 1884 when Alma-Tadema renovated Tissot’s house show the ghostly outline of Tissot’s conservatory pretty well. It is possible to establish the heating pipes and the placement of the terrace and so to determine the accuracy of representation in the paintings.