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1-1-2013

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Recommended Citation

Learning to use information: Informed learning in the undergraduate classroom

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Abstract

"Informed learning" is a pedagogy that focuses on learning subject content through engaging with academic or professional information practices. Adopting the position that more powerful learning is achieved where students are taught how to use information and subject content simultaneously, the research reported here investigated an informed learning lesson. Using phenomenographic methods, student's experiences of the lesson were compared to what the teacher enacted in the classroom. Based on an analysis of student interviews using variation theory, three ways of experiencing the informed learning lesson emerged. Some students understood the lesson to be about learning to use information, i.e., researching and writing an academic paper, while others understood it as focusing on understanding both subject content and information use simultaneously. Although the results of this study are highly contextualized, the findings suggest criteria to consider when designing informed learning lessons.

1.   **Introduction**

Scholarly debate continues regarding the most effective ways to teach students to use information. Academic librarians might say this happens through a variety of information literacy programs, such as tutorials, guest lectures, and stand-alone courses. Nevertheless these offerings do not teach students how to use information in situations where they are asked to actively construct knowledge by engaging with information sources to understand a context-specific problem or case. A clear line of scholarly investigation supports the need for educational approaches in which students learn to use information in ways that are part of discipline-focused learning outcomes (Andretta, 2007; Bruce, 2008; Limberg, 2008; Lloyd & Williamson, 2008; Lupton, 2008; Maybee, 2007; Webber & Johnson, 2000). Extending the phenomenographic line of scholarly investigation supporting this idea (Bruce1997; Edwards, 2006; Limberg, 1999;

Lupton, 2004, 2008; Maybee, 2007), Bruce (2008) developed *informed learning*, a pedagogy that focuses on learning subject content through engagements with academic or professional information practices. Informed learning provides a framework that emphasizes both information use and subject content. It is a natural fit for collaborations that draw together librarians' information literacy expertise and disciplinary teachers' subject expertise (Hughes & Bruce, 2012).

The research question explored in this study asks how students experience a lesson designed to enable them to learn to use information while simultaneously learning subject content. The study reported here investigates an informed learning lesson where the teacher introduced her undergraduate students to an approach to understanding a topic by examining its development through research across the last four decades. The teacher's intention was to get the students to think critically about a language and gender-related topic by tracing the influence of a particular scholar rather than using what she referred to as a "standard" approach to research, in which one takes a stance early in the process and then seeks evidence to support an already existing view. The findings from this study revealed different ways that the students experienced the informed learning lesson. Some students emphasized information use but not subject content, while others brought the two together as they adopted a new way of learning about language and gender. The analysis of the different ways that students understood the lesson suggests ways the lesson could be revised to encourage more students to holistically learn about a subject while learning to use information. While derived from a specific discipline context, the findings suggest broader implications for our understanding of the role information plays in learning. In particular, the findings inform criteria to be considered in the learning design process for lessons intended to teach students to use information while learning about a subject.

2. **Problem statement**

Undergraduate students need to learn to use information in ways that enable them to deeply engage with and understand disciplinary knowledge. Informed learning (Bruce, 2008) is a pedagogic approach that focuses on using information in various ways to learn about a subject. Little research has explored informed learning as an approach being practiced in educational settings, and no research has examined how informed learning is enacted through classroom

lessons. Acknowledging that a teacher's enactment of a classroom lesson influences learning outcomes (Marton, Runesson, & Tsui, 2004), it is necessary to understand student experiences of informed learning lessons to inform effective lesson design. To address this need, this study investigates student experiences of a lesson designed to teach the students how to understand a topic by examining how it evolved through research over time.

3. **Literature review**

Teaching students to use information as a set of stand-alone skills has been justified by research that articulates information literacy as either a set of attributes (Doyle, 1992), or a process that involves following certain steps (Eisenberg & Berkowitz, 1990; Kuhlthau, 1993; Stripling & Pitts, 1988). Information literacy scholars have argued that both these models are in fact underpinned by positivist and behavioral learning theories, which frame information objectively. They hold that attribute and process models are not capable of supporting learners engaging with information to construct new knowledge (Bruce, 1997; Kapitzke, 2003; Lloyd, 2010; Webber & Johnson, 2000; Whitworth, 2011). Two influential approaches have emerged that focus on information literacy in context: 1) a relational approach which views learning as becoming aware of new ways of understanding a topic (Bruce, 1997, 2008; Edwards, 2006; Limberg, 1999; Lupton, 2004, 2008; Maybee, 2006, 2007), and 2) a socio-cultural approach which emphasizes the role of social construction of meaning in learning (Lloyd, 2007, 2010; Wang, Bruce, & Hughes, 2011).

Informed learning is grounded in a relational view of learning, and suggests strategies for helping learners to focus on information use and subject content simultaneously (Bruce, 2008). This simultaneous focus was noted by Lupton (2008) to be a characteristic of more sophisticated ways of experiencing the relationship between information literacy and learning. Limberg (1999) also found a dual focus on information seeking and subject content to result in a deeper understanding of the content by the students. A number of information literacy models are drawn together in informed learning to holistically describe relationships between teaching, learning, and using information, including the seven faces of informed learning (Bruce, 2008) adapted from Bruce's (1997) earlier work, which describes the ways in which information use can be experienced.

Another model that is central to informed learning is the six frames of information literacy education (Bruce, Edwards, & Lupton, 2006). This model identifies varying ways of experiencing teaching and maps them to views of information literacy, information, curriculum focus, learning and teaching, content, and assessment. For example, teachers adopting a Content frame expect their students to retain select information about the topics covered in the course. To address students' information literacy needs, the teacher would have an expert come to class to introduce key information literacy facts and concepts. Information literacy would be understood as additional course content. In the Competency frame, information literacy would be taught as skills separate from course content. The Learning to Learn frame would incorporate different strategies for using information to learn. The Personal Relevance and Social Impact frames shift away from techniques or strategy-based learning outcomes to emphasize attaining personal or social meaning through learning activities. In this case, students would be taught to use information in ways that would support the personal or socially-focused learning outcomes. The Relational frame draws together some or all of the other approaches, and emphasizes coming to be aware of different ways of experiencing information use and the subject matter being learned.

Informed learning has been researched in a variety of contexts, such as: teen social media use (Harlan, Bruce, & Lupton, 2012), religious information literacy (Bruce, in press; Gunton, 2011; Gunton, Bruce, & Stoodley, 2012), organizational management (Somerville & Howard, 2010; Somerville & Brown-Sica, 2011; Somerville, 2009), secondary education (Whisken, 2011), and health information literacy (Yates, Partridge, & Bruce, 2009). In higher education, a study of diverse students engaged in informed learning led to the development of *inclusive informed learning*, a pedagogic strategy to leverage diverse students' prior experiences using information (Bruce & Hughes, 2010; Hughes, 2009). The seven faces of informed learning (Bruce, 2008) were mapped to student learning in a course focused on using web 2.0 tools while learning about web 2.0 (Hughes, 2012). In another study, problem-based learning was used to design an online course underpinned by informed learning (Diekema, Holliday, & Leary, 2011). The current study also investigates the learning experiences of students who have engaged in informed learning. However, this research examines these learning experiences in relation to the teacher's design and delivery of the informed learning lesson.

4. **The informed learning lesson**

The course under study was an upper-level writing course 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 over the several years that the teacher had taught this course, she developed an assignment designed to get the students to adopt a particular approach to research, i.e., the deliberate examination of a sequence of research that happened over time. The lesson that was the focus of this research introduced the students to a term paper that they would work on for the rest of the semester. In the paper, the students were expected to make claims based on their examination of the research sequence. This approach was intended to have the students draw conclusions from scholarly evidence rather than find evidence to support a preconceived stance. During the lesson, the teacher repeatedly contrasted the approach students needed to take to researching and writing the assigned paper with what she referred to as the research paper typically written for college courses:

> …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… (Teacher, Classroom Observation)

The teacher also described aspects of the final paper she wanted the students to write. For example, she described the thesis of this kind of paper as a "very narrow thesis about the sequence of articles" related to a seminal language and gender text. The class had spent time earlier in the semester discussing what makes something seminal. Collectively, a seminal text and the research that developed in response to it were referred to as a research trajectory. Students would be able to select their own language and gender topic for the assignment, and during the lesson the teacher asked the students to identify potential paper topics. Different students offered examples, such as hermaphrodites, and sexuality and gender in relationship to language use. The teacher then offered her own topic examples, such as the role of "interruption" in discourse as a concern of language and gender scholars. Unlike the students, however, the teacher described interruption by identifying how the topic had been reappraised over time through various research efforts.

The second half of the lesson focused on two essays assigned to be read for that day's class (Bucholtz, 2004a, 2004b), in which various language and gender-focused research is related back to the introduction of a seminal work in the field. This was to serve as a model for what the students were to undertake in their own papers. The teacher emphasized that the essays were scholarly versions of the students' own efforts. The model essays were from a monograph edited by Bucholtz, which included a re-publication of *Language and Women's Place*, a seminal piece by Robin Lakoff originally published in 1975, along with writing by other authors responding to the Lakoff text. The teacher pointed out the techniques used by Bucholtz in her essays, which tied together the various responses to Lakoff. She asked the students to list the claims that Bucholtz made in her essays for Lakoff's seminal text. The teacher re-focused on using information when varying the critical feature of strategies for making claims and had the students identify the different kinds of strategies used by Bucholtz.

5. **Methodology**

This research investigates the question: How do students experience a lesson designed to enable them to learn to use information while simultaneously learning subject content? As mentioned earlier, this type of learning is informed learning (Bruce, 2008). To create informed learners, we need to understand the different ways in which students experience this type of learning. Phenomenography and its accompanying theory of learning, variation theory, underpin this research. Earlier phenomenographic research has used variation theory to reveal critical differences in learners' experiences (e.g., Marton & Pang, 1999; Rovio-Johansson, 1999; Runesson, 1999)**.** Variation theory frames a learning scenario, or object of learning, as comprised of three parts: 1) the teacher's intentions, 2) the enacted lesson itself, and 3) the students varying experiences of the lesson (Marton, Runesson, & Tsui, 2004). The findings being reported here focus on the students' experiences. The brief summaries of the teacher's intentions and the delivery of the classroom lesson shared in the previous section provide the context for understanding the student experiences.

Variation theory posits that to help learning occur the teacher must vary the critical features associated with the content being learned, as encountering variation is necessary for learning to occur. Critical features are the parts of an object that can be seen against the backdrop of the

whole. 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. Key to this study, the theory also maintains that learning is comprised of three interrelated parts: 1) a direct object (subject content), 2) an act (e.g., remembering, synthesizing, etc.), and 3) an indirect object (that which the act is directed towards, e.g., processes, concepts, etc.) (Marton & Booth, 1997). For example, in the enacted classroom lesson observed for this study, *language and gender topics* was the subject content focus (direct object), which would be understood by *analyzing and interpreting* (act) a *research trajectory* (indirect object). Information use, as noted by Lupton (2008), can be associated with all three parts. Thus, different ways of experiencing information use can be delineated by analyzing the focus of the direct object, the act, and the indirect object of learning.

5.1 Participants

The aim of phenomenographic research is not to identify behavioral trends, but rather to reveal varying experiences of a phenomenon. Therefore, rather than seeking a large sample, purposive sampling is used in phenomenographic research to identify participants that are experiencing the phenomenon under investigation, e.g., an informed learning lesson. The writing course was selected because it would provide data to explain how students experience lessons designed to enable them to learn to use information while learning subject content. The teacher confirmed that the lesson matched the primary tenet of informed learning, i.e., that it intended to simultaneously focus on using information and subject content. The 16 students in the class and the teacher were invited to participate. Fifteen of the students consented to be observed during the lesson and five of those agreed to be interviewed after the lesson. The interviewees were traditional age students (18-22 years old) with majors in the humanities and social sciences. Four were women, one was a sophomore, two were juniors, and two were seniors.

5.2 Data collection and analysis

The data gathering process was consistent with similar phenomenographic studies focusing on how learners experience lessons (e.g., Marton & Pang, 1999; Rovio-Johansson, 1999; Runesson, 1999). The classroom lesson was videotaped, and after the lesson five students were interviewed using a semi-structured interview protocol designed to allow them to reflect on and describe how they experienced the lesson. Four questions were asked of each student participant:

1. Tell me about the class session on (the date of the lesson).
2. What did you get out of the class session?
3. How will you go about completing the paper assignment?
4. What do you expect to learn from the assignment?

The primary interview questions were followed up with additional prompts designed to get the student to clarify or expand on an initial answer. Variation theory (Marton, Runesson, & Tsui, 2004) was applied in the analysis of the data. In accordance with phenomenographic processes (Rovio-Johansson, 1999; Runesson, 1999), close passes of transcripts of the observed lesson and the interviews with student participants were iteratively made to determine and compare the pattern of variation present. The original analysis plan included identifying:

- the critical features of the entity being studied and how they are varied; and

- the direct object, act and indirect object parts of learning.

The analysis revealed that when critical features were varied there could be a shift in focus between the subject content and information use aspects of learning. For example, when a student varied the critical feature of *claims made for the seminal text*, subject content was more likely to be emphasized, but when that student later varied the critical feature of *organizational elements*, information use was more likely to be emphasized. The identification of the shifting focus of these aspects became an additional step in the analysis. Collectively, the results of these procedures determined categories which describe the different experiences of the informed learning lesson.

6. **Results**

Following these analysis procedures, variation theory was used to reveal the students' ways of experiencing the informed learning lesson. 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.

Imitating essays - students experienced the lesson as offering techniques for completing the assigned paper.

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

From a relational perspective it is accepted that the same phenomenon, in this case the informed learning lesson, may be experienced in different ways. The three categories reflecting the different ways that students experienced the object of learning (the informed learning lesson) were determined by an analysis of the student interviews. First, the critical features of the object of learning that were varied by the students were identified. The critical features varied in the lesson, e.g., the *type of paper*, a *research sequence*, a *thesis that makes a claim about a research sequence,* etc. (Table 1), are the parts of the object of learning that students need to become aware of to experience the object in a new way. Students varied a selection of these critical features during their interviews, indicating that these features comprised part of their experience of the informed learning lesson. Next, the different experiences of information use and subject content aspects of learning were identified in the student interviews as well. For example, some students experienced the act part of information use as generic skills, e.g., a predetermined set of steps, while others experienced it as analyzing and synthesizing. Realizing the shifting focus of the information use and subject content aspects, the critical features were examined again to determine how the focus shifted in each instance when a critical feature was being varied.

Table 1: Critical features

Critical Features	Informed Learning Lesson	New Way of Learning	Imitating Example Essays	Instructions for Any Assignment
Themes as structural and unifying elements	•	•		
Research Trajectory	•	•	•	
Claims made for the seminal text	•	•	•	
Type of academic paper, e.g., scholarly model, standard paper	•	•	•	•
Critique as an element of persuasive argument	•	•		•
Organizational elements	•	•		•
Seminal text as feature of paper	•	•		•
Thesis as feature of paper	•			•
Paper topics	•			

6.1. Critical features

The critical features the students focused on and varied partially defined the nature of each category (Table 1). Of the nine critical features varied by the teacher during the informed learning lesson, seven of them were varied by students experiencing the object of learning as a New Way of Learning. These students compared the type of paper the teacher wanted them to research and write with a typical research paper. They also varied the research trajectory as a way of understanding a language and gender topic, a seminal text as a central element of this kind of paper, the claims made for the seminal text, the themes that could be as drawn from an

analysis of the research over time, organizational elements of this kind of paper, and critique as an element of persuasive argumentation as critical features of the paper the teacher described during the classroom lesson. The students experiencing the informed learning lesson as Imitating Example Essays varied only three of the critical features that were also varied by the teacher during the classroom lesson: the research trajectory, the claims made for the seminal text, and the type of academic paper. As with the other two categories, students who experienced the lesson as Instructions for Any Assignment also focused on the type of academic paper presented by the teacher during the lesson. However, instead of varying it with the standard paper or scholarly-version of the assigned paper, it was held invariant, meaning that no difference was perceived between the assigned paper and the standard academic paper. Students experiencing the lesson as Instructions for Any Assignment also varied the critical features of critique as an element of a persuasive argument, organizational elements, the seminal text as a feature of the paper, and the thesis as feature of a paper.

The students in the New Way of Learning set varied more of the critical features than the students experiencing the lesson as described in the other two categories. This indicates that the students experiencing the lesson as a New Way of Learning were aware of more aspects of the object of learning. None of the students varied the critical feature of language and gender topics, although the teacher varied this feature in the informed learning lesson.

6.2. Information use and subject content

As mentioned previously, subject content is equated with the direct object of learning, whereas information use can be associated with the direct and indirect objects or act of learning. How the students experienced subject content and information use was different for each category (Table 2). Together with the critical features and how they were varied, the ways that subject content and information use were experienced defined the nature of each of the three categories.

Parts of Learning		Informed Learning Lesson	New Way of Learning	Imitating Example Essays	Instructions for Any Assignment
Subject Content	**Direct Object**	Paper Topics	Various Perspectives of a Topic	Research Trajectory	Generic Techniques
Information Use	**Act**	Analyzing & Interpreting	Analyzing & Interpreting	Applying Techniques	Applying Techniques
	Indirect Object	Research Trajectory	Research Trajectory	Research Trajectory	Generic Techniques

In the New Way of Learning, information use was experienced in the same way as it was enacted by the teacher in the informed learning lesson. The act of learning was identified as analyzing and interpreting, and the indirect object was identified as the research trajectory, which was comprised of techniques used to investigate the development of a topic over time. In contrast to the teacher's enactment in the classroom, where subject content (direct object) was considered to be the language and gender topics, in the New Way of Learning subject content was experienced as various perspectives that could be brought to bear on understanding a language and gender topic. For example, one student talked about understanding language and gender topics from feminist and linguistic perspectives:

> 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. (Student 4, Interview)

There was a major difference between how subject content and information use was experienced in the New Way of Learning and the ways it was experienced in the other two categories. Students who experienced the lesson as Imitating Example Essays understood the subject content (direct object) to be the research trajectory. The research trajectory was also how these students experienced the indirect object part of information use. Information use was the subject content

focus of the lesson. Students experiencing the lesson in this way often referred to the essays read for the class as a guide:

> 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 30 maybe years later, 35 years later, and then shows how it influences the later texts, and that's exactly what we're doing with another text. (Student 3, Interview)

Similarly, in the Instructions for Any Assignment category, generic techniques related to researching and writing an academic paper was experienced as both subject content (direct object) and the indirect object.

In both the Imitating Example Essays and the Instructions for Any Assignment categories, the act of learning was applying techniques. Students experiencing the lesson as Imitating Example Essays understood the lesson as teaching them to apply techniques to identify a research trajectory. Students experiencing the lesson as Instructions for Any Assignment understood it to be teaching them to apply generic research and writing techniques. In both of these categories, the students did not experience the lesson as being about a subject other than information techniques. However, students experiencing the lesson as Imitating Example Essays understood that the paper the teacher was asking them to research and write was different from papers they write for other courses. Therefore they focused on understanding techniques that would aid them in meeting the requirements of the assignment. Students experiencing the lesson as Instructions for Any Assignment did not view the assigned paper as different from other papers they have researched and written, and therefore focused on generic techniques.

6.3. Shifting focus on information use and subject content

The critical features being varied in each student interview were further examined to determine how the direct, act and indirect parts of learning were being made focal in each instance. Students who experienced the lesson as Imitating Example Essays or Instructions for Any Assignment did not distinguish between information use and the subject content as intended by the teacher. In these experiences of the lesson, information use was the subject content, and therefore, a simultaneous focus was not discernible. By contrast, students experiencing a New

Way of Learning understood subject content in a way that was distinguishable from information use. Instances of a simultaneous focus on subject content and information use were identified in the interviews of students experiencing a New Way of Learning.

Simultaneous focus occurred when critical features of themes as structural and unifying elements, claims made for the seminal text, and the research trajectory were varied. It is possible that these critical features lent themselves to a content focus more so than other features, e.g., organizational elements of an academic paper. Here is an example of a student shifting to a simultaneous focus when varying the critical feature of the research trajectory:

> I guess controversy's interesting because it's how we learn. It's how we sort of test ourselves intellectually…take a seminal text and go from there and look at how people have responded to that. Sort of getting… I don't know, watching, sort of like an intellectual debate, and then getting to comment on it and, I don't know to what degree ourselves, but I guess learning the art of academic debate. (Student 4, Interview)

Later in the interview this same student again varied the critical feature of research trajectory, simultaneously focusing on various perspectives on a topic (direct object) and analyzing and interpreting (act):

> …by looking at this seminal work and three or four more essays that follow it, it's supposed to be a way of questioning the connections between them, where the conversation is going, what makes it controversial, what makes it worth talking about. (Student 4, Interview)

This simultaneous focus on subject content (various perspectives on a topic) and information use (analyzing and interpreting the research trajectory) present in the New Way of Learning experience of the informed learning lesson is different than what students experienced with the other categories. Students with the New Way of Learning experience described the intellectual ideas or values they associated with investigating a research trajectory along with techniques, whereas students experiencing the lesson as Imitating Example Essays only emphasized information techniques.

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7. **Discussion**

As mentioned previously, variations in student experiences of the lesson were expected. What is significant in this study is the sharp division between students who experienced the same lesson as teaching them only about using information and those who experienced the lesson as developing an awareness of both information use and subject content. Variation theory (Marton, Runesson, & Tsui, 2004)) proved useful as a theoretical frame for developing a detailed understanding of teaching and learning of information use in context. Along with informed learning (Bruce, 2008), variation theory can also be used to identify interventions regarding how the critical features of an object of learning need to be varied to better enable student learning. In the case of the language and gender lesson, it is significant that none of the students focused on language and gender topics as a critical feature of the assigned paper, even though that was how the teacher had framed subject content during the lesson. The students who experienced the lesson as a New Way of Learning, focused on perspectives, e.g., feminist, linguistic, etc., that could be applied to understand a language and gender topic. Realizing that this is how students are experiencing subject content in the lesson, the teacher may want to create variations in the classroom lesson that encourage the students to become aware of perspectives that inform an understanding of a topic, rather than variations that get the students to become aware of topics more generally. From an informed learning perspective, the personal relevance or social impact frames of the six frames model (Bruce, Edwards, & Lupton, 2006) could be used to redesign the lesson to introduce students to the same information techniques, and also to ask them to consider how these techniques make them aware of different personal or social perspectives relevant to understanding a topic. For example, the teacher might have the students identify a current issue, e.g., sexist language in children's books, but in addition to making claims about what the research trajectory indicates, the students could also identify future actions to be developed in response to those claims, e.g., educational campaigns, policy development, etc.

Extrapolating from the context-specific findings of the language and gender lesson, it is likely that any higher education course using an informed learning pedagogic approach may have students who experience only the information use aspects of informed learning lessons. The findings from this study suggest that designers of informed learning lessons need to consider the following questions:

- In what way(s) are the students in the course experiencing the subject content of the given lesson?
- Which critical features of the object being learned about provide the best opportunities for getting the students to become aware of the subject content while learning how to use information?
- How might these critical features be varied in lessons to encourage the students to experience information use and content learning simultaneously?

While encouraging students to use information to make meaning, designing learning in this way is likely to prove challenging. While many teachers may already have a sense of how the students in their courses understand content, they probably have not considered how the focus on subject content can shift to the foreground or the background when simultaneously focusing on how information is used. Variation theory could be used in future research, as it was in this study, to identify critical features of informed learning lessons in different disciplinary contexts. In other disciplinary contexts, variation theory has also been used in action research where teachers and researchers collaborate to improve lesson effectiveness (e.g., Lo, Pong & Chik, 2005; Pang & Marton, 2005). The partnership between researchers and practitioners using variation theory to explore informed learning lessons has the potential of drawing together researcher and practitioner views of information literacy pedagogy.

8. **Conclusion**

The findings from this research highlight the differences between learning to use information in a subject-focused context and learning to use information as content of its own. Despite the teacher's intentions that students should focus on information use and content learning at the same time, some students focused only on learning to use information, i.e., researching and writing an academic paper. Other students successfully coupled learning to use information with understanding perspectives on language and gender topics. Students experiencing the lesson this way emphasized meaning making as resulting from using information. Although the case examined in this study was highly contextualized, the findings suggest that knowing how students in a specific course experience subject content is necessary for designing effective informed learning lessons. In this way, the findings from this study remind us of the importance

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of designing lessons based on an understanding of the students. However, to design effective lessons, a teacher must also be able to determine the best ways to vary critical features to emphasize a simultaneous focus on subject content and information use. Although further research is required, the findings from this study begin to build a framework for designing informed learning lessons. This is a significant step towards understanding how to teach undergraduate students to use information in context.

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