

# UNDERSTANDING UNDERGRADUATES: WHAT DOES PHENOMENOGRAPHY TELL US ABOUT LEARNERS

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## INTRODUCTION

Over the last three decades, librarians have championed information literacy to their institutions in a variety of ways, often taking on new roles as teachers, programmers, and departmental consultants. In their efforts to understand the best course of action to recommend for information literacy programming, librarians scrutinize information from a variety of sources, e.g., scholarly articles, books, listservs, conferences sessions, colleagues, etc. Sometimes however, the most valuable information is derived from our own environment – by gaining a deeper understanding of learners. To gain this perspective, librarians increasingly must adopt the role of researcher.

Of course, there are numerous kinds of research methodologies, each providing different types of data and ways of viewing and understanding learners. The methodology employed usually depends on the researcher's perceptions of what information is needed and likely to result from the one selected. Phenomenography is a qualitative research methodology that reveals the different ways that a group understands a phenomenon. When applied to information literacy, phenomenography can provide rich information about our learners' experiences. In turn, this information can be used to design learning activities that relate to the student experience.

This paper posits phenomenography as a viable research methodology for understanding information literacy. The contributions of various phenomenographic projects focusing on different aspects of information literacy will be discussed and two phenomenographic research projects conducted by the author focusing on undergraduate students' experiences of using information will be described. A case will be made for continuing phenomenographic research in academic settings to inform information literacy decision-making.

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## PHENOMENOGRAPHY AND INFORMATION LITERACY

Aimed at understanding and improving learning, phenomenography was first developed by a research group in the Department of Education at the University of Gothenburg. The term “phenomenography” was first coined in 1979 and first used in print in 1981 (Marton, 1981, 1986). Phenomenography is the “study of variation” where facets of a phenomenon, as it appears to people, are captured and categorized (Limberg, 2000, p. 54).

Christine Bruce (1997) adopted a phenomenographic approach when conducting her graduate research aimed at better understanding and defining information literacy. The results of her work were shared in *The Seven Faces of Information Literacy* published by Auslib Press in 1997. In this book, Bruce identifies seven ways or “faces” that information literacy is experienced by librarians and higher educators:

- information technology;
- information sources;
- information process;
- information control;
- knowledge construction;
- knowledge extension; and
- wisdom (chap. 6)

Adding to the complex picture, Bruce explained that these ways or faces are not definable as a set of particular skills. She offered, instead, that people's experience of information literacy is an “intricately woven fabric, revealing different patterns of meaning depending on the nature of the light cast upon it” (p. 151).

Bruce's (1997) model was introduced in a climate when defining information literacy was an activity of several

other researchers and organizations. For example, the Big6™ (Eisenberg and Berkowitz, 1990), one of several information literacy models based on a process, is widely used. Also well known, Doyle (1992) used the Delphi Technique to derive from experts in the field of education a list of attributes that would describe an information literate person. Several standards

were being developed during this time as well. The most widely adopted by the higher education community were the Association of College and Research Libraries' (ACRL) *Information Literacy Competency Standards for Higher Education* published in 2000. Table 1 reveals some similarities between these different definitions of information literacy.

**Table 1 - Information Literacy Models and Standards**

Eisenberg & Berkowitz	Doyle	ACRL Standards
Task definition	Recognizes need	Determines the nature and extent of the information needed
Information seeking	Recognizes accuracy	Accesses needed information effectively and efficiently
Location & access	Formulates questions	
Information use	Identifies sources	Evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system
Synthesis	Search strategies	Uses information effectively to accomplish a specific task
Evaluation	Accesses sources	
	Evaluates	
	Organizes information	
	Integrates new Information	
	Uses information	Understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

Adapted from Eisenberg & Berkowitz 1990, Doyle 1992, ACRL 2000

What did Bruce's (1997) approach to understanding information literacy offer that other models and standards did not? One primary difference is that Bruce's results were derived from in-depth analysis of the "experiences" of librarians and other higher educators – not from a concerted effort of an individual or group to determine a definition. Arguably, Bruce's research also provided a more comprehensive view, describing in detail seven different ways that information literacy is understood.

Following Bruce's seminal work, a number of other research projects were developed using phenomenography to understand information literacy. For example, Limberg (1999) conducted a phenomenographic research project to examine high school students' perceptions of "information seeking and use," as it related to learning outcomes. Limberg's study revealed three ways that these students experienced information seeking: fact-finding, balancing information in order to choose the right side, and scrutinizing and analyzing.

Lupton (2004), a student of Bruce, conducted a study to ascertain the information literacy conceptions of undergraduate students enrolled in an environmental studies course. Within the context of the course, Lupton concluded that the students "experienced information literacy as the interrelationship between learning, information and the essay task" (p. 70). The categories derived from her analysis were: seeking evidence, developing an argument, and learning as a social responsibility (p. 53).

Filling in another part of the picture, Webber, Boon and Johnson (2005), conducted a three-year phenomenographic research project to ascertain the ways that university faculty understand information literacy. They have published selected results from the project revealing and comparing the differing conceptions of information literacy derived from academics in the fields of English and Marketing. The differences in the ways academics from these disciplines understand information literacy suggests developing different approaches to information literacy instruction for each discipline.

## CONDUCTING PHENOMENOGRAPHIC RESEARCH

To better understand how undergraduate students experience information literacy, the author conducted two phenomenographic research projects (Maybee, 2006, in press). The first project was undertaken at California Polytechnic State University (Cal Poly), a large institution with approximately 17,000 undergraduate students. The second project was undertaken at the author's home institution of Mills College. Mills is small liberal arts college with a women's only undergraduate program.

The same research methodology was employed for both projects. Interviewing, the most commonly used method of data gathering in phenomenographic research (Limberg, 2000), was utilized to gather data. The interviews were tape-recorded and later transcribed. The questions, similar to those employed by Bruce (1997, p. 99), adopt a "second-order"

perspective used by phenomenographers to focus on how people experience or perceive phenomena (Marton, 1986). A pre-test revealed a need to avoid using language unfamiliar to undergraduates. For this reason, the term “information literacy” was replaced by the term “information use” in the final selection of questions. The five questions used for each interview were:

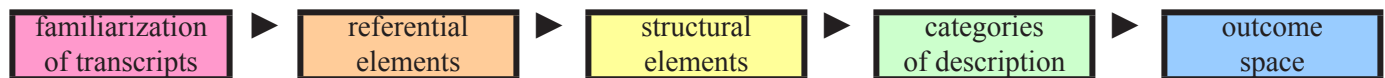
- How do you use information to complete class assignments?
- How do you use information outside of your coursework?
- Tell a story of a time when you used information well.
- Describe your view of someone who uses information well.
- Describe your experience using information.

The transcribed interview data was analyzed to determine the categories describing the different ways that the participants understood information literacy. Providing an overview of the analysis process, Marton (1986) offers:

...quotes are sorted into piles, borderline cases are examined, and eventually the criterion attributes for each group are made explicit. In this way, the groups of quotes are arranged and re-arranged, are narrowed into categories, and finally are defined in terms of core meanings, on the one hand, and borderline cases on the other. (p. 43)

Bruce (1997) describes a similar process, explaining that after familiarizing oneself with the transcripts, referential elements are identified. Referential elements refer to the “significantly different meanings ascribed to” the phenomena (p. 104). This is followed by identifying the awareness and meaning structures inherent in the participants’ conceptions. Awareness structures indicate what participants focus on in order to experience information use in a particular way. Meaning structures refer to the underlying meaning attributed to each conception. Once identified, the structural elements are compared to determine variation or agreement. The referential and structural elements are drawn together to form categories of description. These categories are arranged into an outcome space reflecting how each category is structurally related.

**Figure 1: Phenomenographic Analysis Process**



In the case of the Cal Poly project, the interviews were conducted in approximately 45 minute-long sessions over a week-long period. Students were employed to transcribe the tape recordings. Following the process described above, the analysis took several weeks to complete. The results of the study revealed three categories describing the different ways that undergraduate participants experience using information for academic as well as personal purposes (Maybee, 2006):

- Sources – Information use is seen as finding information located in information sources.
- Processes – Information use is seen as initiating a process.
- Knowledge Base – Information use is seen as building a personal knowledge base for various purposes. (p. 81)

Analysis of the Mills College project (Maybee, in press) revealed similar findings to those uncovered at Cal Poly. In addition to the three categories described above, the project at Mills revealed one more category where the primary focus was on technology, and finding information sources was secondary.

Categories are illustrated with quotes from the interview transcripts (Marton, 1986, p. 43). These quotes not only support the analysis, but also provide an insightful and meaningful way for others to understand the research findings. For example, here is a quote from a participant in the Mills College project (Maybee, in press) that exemplifies the Sources category:

...because I’m getting information from my professors in the form of lectures, in the form of reading for many,

many, many hours all the other information that I get from outside, like, the news, and newspapers, and conversations with people affect the way that I see specific things. - Ethnic Studies, Junior

The following quote from a participant from the Cal Poly project (Maybee, 2006) illustrated another aspect of the Sources category – participants focusing on the attributes of different kinds of sources to aid them in locating information:

I definitely think that the amount of information you get from something like that depends a lot on just how that book is organized, indexed, because most of the books will not have very much information on that specific topic that you are trying to research, and they have bits and pieces of it spread out through the book, and the better that they index it or give you some kind of reference to it, the better you can locate the information that you are going to need so that you can actually make use of it. - Computer Science, Junior (p. 82)

The same student then compared using book indexes to the tools searching electronically:

On the web, it is a lot easier because you can—using like searching tools—you can find exactly topics that you want. And if you have a large document that you have to read, there are ways to go through it and search for, you know, key words just to locate the types of things that you are looking at, and kind of narrow it

down to what you need to read a lot better. (Computer Science, Junior (p. 82)

Likewise, quotes from participant interviews reflecting the Processes category described initiating and employing a process to locate and use information. Excerpts from a participant from the Mills College project exemplified this:

I think there's steps definitely. Knowing, having an idea first, and clarifying that in your head so that you know what you're looking for, what kind of information you need to get. So, yeah, the first step is knowing what your question is, or what you're seeking...

...So that would be the next step, to just do as much thorough research as you can in as much time as you have...

...then it's probably really important to apply it to, whatever, the intention that you started with. And also, you know, maybe because of the information that you've collected you might take a new route from your original intention, or it might broaden, or it might, you know, things may change. - Dance/Music, Sophomore

The Knowledge Base category differed significantly from the others. In the knowledge base category, using information became the primary focus (see Table 2), and there is a shift from externalizing information to internalizing it. Participants revealing the Technology, Sources or Processes categories separated finding information from applying it, while those building a knowledge base integrated the two (Maybee, 2006, in press).

**Table 2 - Primary and Secondary Focuses of Categories**

Category	Primary Focus	Secondary Focus
Knowledge Base	Information Use	Knowledge Base
Processes	Processes	Information Use
Sources	Sources	Information Use
Technology	Technology	Information Sources

Adapted from Maybee 2006, in press

The interview transcripts illuminate these changes in understanding. The following excerpts exemplify aspects of the Knowledge Base category from the Cal Poly project (Maybee, 2006):

... if I can take some sort of information that either has been presented to me, or that I have gone and found, and I can take that, apply it, like use it and understand it deeply enough to apply it, then that is pretty much as far as you can get with anything. - Animal Science, Sophomore (p.83)

and

It is my view that whenever you do an assignment like that, it sticks with you. I then can adopt that into whatever part of my life I'm at, such as conversation, social interaction, and issues that may come up in the future outside of education. Who knows, maybe a year down the road an issue will come up outside the sphere of education and that information that I pursued to do that assignment will be relevant. - Political Science, Junior, male (p. 83)

## PHENOMENOGRAPHIC RESEARCH AND DECISION-MAKING

Phenomenographic research offers a lot to the librarian researcher trying to understand how their institutions' learners experience information literacy. Obviously, greater understanding of our learners can better enable the development of meaningful

pedagogy. One of the advantages of working with the results of phenomenographic research is that the outcome space provides a roadmap for designing a successful pedagogy. For example, the results of the two projects conducted by Maybee (2006, in press), support encouraging learners to change their understandings of information literacy and move towards building a knowledge base, because it is more comprehensive and information use is not separated from overall goals. Therefore, pedagogy should be designed to promote student examination of their approach to information literacy – encouraging the adoption of a different understanding when possible.

Lupton (2004, pp. 81-88) recommends reflection as a way of getting students to understand information literacy in a more complex way. Tactics for soliciting student reflection on their own use of information include class discussion, brief essays, one-minute writings and open-ended questionnaires. Informed by the research results, use of reflection as a tool to get learners to understand their own way of experiencing information literacy, and hopefully expanding that view, would need to be addressed at the curricular level, e.g., embedded into select programs, academic levels, etc. As more phenomenographic research projects are undertaken, focusing on different aspects of information literacy, the results will inform other initiatives designed at improving learning.

## CONCLUSION

The unique information provided by phenomenography make it an essential methodology for broadening our view of information literacy. Offering us a way to understand our students

and library and teaching-faculty colleagues, phenomenography also provides a powerful tool for guiding our programmatic decision-making. Librarian researchers should conduct phenomenographic research projects to understand how different groups experience information literacy – providing useful learner-centered information to their institutional communities as well as contributing to the rich portrait evolving from the existing phenomenographic research.

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