Chapter 5 Thematising conceptions of information literacy

In previous chapters I have examined the different ways in which information literacy is presented in the literature by advocates and scholars, educators and researchers. I have also shown that the picture of information literacy revealed in these writings is predominantly behavioural in character and expressed in terms of information processes or attributes of information users. In each chapter I have then argued for taking a relational approach to information literacy, including information literacy education and research. Adopting an alternative view of information literacy, however, requires the availability of different pictures. We need to understand the phenomenon in terms of how it is conceived or experienced by people who make use of information. We need descriptions of information literacy, that are themselves relational, to provide a complete and internally consistent alternative framework for thinking about the phenomenon.

This chapter describes the empirical study which has provided an initial picture of information literacy as it is conceived by information users. In it, I discuss my choice of phenomenography as a research approach, key features of phenomenography including the meanings attributed to *conceptions* and *phenomena,* the form of the research outcomes, and details of how the study was implemented. Overall, the chapter explains how higher educators' conceptions of information literacy were thematised, or brought into focus and described. The following headings organise my discussion:

- Phenomenography: a research approach for understanding information literacy
- Conceptions and phenomena: the knowledge interests of phenomenography
- Categories of description and outcome spaces: findings of a phenomenographic study
- Thematising higher educators' conceptions of information literacy
- Defending the outcomes.

Phenomenography: a research approach for understanding information literacy

In the early stages of this research, phenomenography (Marton 1981a,1981b, 1992, 1993) was one of three approaches considered for exploring information users' perspectives on information literacy. The other two approaches were empirical phenomenology (Giorgi 1970) and sense-making (Dervin 1992). Both phenomenography and empirical phenomenology are well established in educational research, and sense-making has emerged as an important qualitative approach in the information needs and uses domain. Empirical phenomenology and sense-making, however, were less suitable for the study than phenomenography.

Although the sense-making approach recognises that people see the world differently, it does not make this variation the object of study. Sense-making is used to account for the reasons why information problems are experienced in particular ways and the processes through which people use information. It helps researchers understand how people bridge the gap between an information problem and the way in which they deal with that problem. Dervin, the founder of sense-making defines it as:

> ..an alternative approach to the study of human use of information and information systems.....(it is) an approach to studying the constructing that humans do to make sense of their experiences. (Dervin 1992, pp. 67&68)

The sense-making approach was not suitable because it operates on the assumption that information use should be studied in terms of information problems, information processes and gap-bridging, and assumes a constructivist view of information. These assumptions are imposed on participants in studies to the extent that they must learn and adopt the 'sense-making metaphor' in interview situations. This was problematic for my study which was re-opening the question of what it meant to be information literate with the intention of seeing the phenomenon from the user's perspective. Working from an established model of information and information use would have made it difficult to allow users' interpretations to emerge.

Empirical phenomenology (Giorgi 1970; van Manen 1990) also accepts as axiomatic that people experience the world in different ways. Phenomenological studies, however, do not focus on variations in conception; they seek the essences of phenomena through examining one or more individual's experiences:

> An essence would represent the deepest understanding available established on the basis of intersubjective agreement. (Alexandersson 1981, p. 8)

Phenomenography was finally selected because the object of study in the research approach was qualitative variation in conception, a focus which conformed with the overall relational perspective being adopted. Phenomenography is:

> ... a research specialisation aimed at the mapping of the qualitatively different ways in which people experience, conceptualise, perceive and understand various aspects of ... the world around them. (Marton 1988a, p.178)

It is a qualitative research approach, which evolved during the 1970s at the University of Gothenburg, Sweden, in response to educational questions about the different ways in which people experience or conceive of learning. Since then it has been developed, refined and applied to a range of phenomena within the field of education and beyond. Today phenomenography is seen as both a *research programme* aimed at describing people's conceptions and a *research tool* for the study of phenomena (Svensson 1994).

Phenomenographic studies over the last twenty-five years have influenced significantly interest in a relational approach to teaching and learning in higher education. Since the early 1970s, studies have illuminated how people learn, that is how they conceive of learning tasks such as reading texts (Marton and Saljo 1984; Marton, Carlsson and Halasz 1992), writing essays (Hounsell 1984; Prosser and Webb 1992, 1994) and literature reviews (Bruce 1992a, 1994b); as well as what they learn, that is how they conceive of aspects of the world as the outcome of learning, such as the concepts of force (Svensson 1989), number (Marton and Neuman 1990), or price (Dahlgren 1984b). Phenomenography has also been applied to uncovering conceptions of teaching (Dall'Alba 1991; Samuelovicz and Bain 1992) and a range of other phenomena such as computers (Nordenbo 1990) and political power (Svensson and Theman 1983).

Three important phenomena relevant to meta-learning: skill (Svensson 1984), learning (Saljo 1979; Marton and Saljo 1984; Marton, Dall'Alba and Beaty 1993) and competence (Sandberg

1994) have already been interpreted relationally. Our deepening understanding of these phenomena, each of which is closely aligned to the idea of information literacy, has been a direct result of phenomenographic investigation. This suggested that an attempt to similarly reinterpret information literacy using the approach was likely to be successful.

Marton accounts for the strength of the phenomenographic approach in terms of explaining differences in the outcome of learning and notes the occurrence of a discrete number of conceptions of any one phenomenon as an established pattern:

> People in general hold qualitatively different conceptions of the phenomena they are surrounded by... Such differences would constitute a highly potent source of explanation when it comes to the questions of how to account for ... qualitative differences in the outcome of learning. This is of course the basic idea of phenomenography, and it has been confirmed many times...again and again we find a limited number of qualitatively different ways in which the phenomena...are... apprehended. (Marton 1988a, p.189)

The continued development and use of the phenomenographic approach may also be attributed to the following advantages, which make it particularly attractive for use in describing people's differing conceptions of information literacy:

- it has the potential to provide us with direct descriptions of a phenomenon;
- it aims to describe conceptions in a holistic and integrated way;
- it has the potential to capture a range of conceptions due to its focus on variation in people's experiences;
- its purpose is to produce descriptions of conceptions which are useful in teaching-learning contexts (Sandberg 1994, pp.48-9);
- it focuses on groups of people rather than individuals (Marton 1986a); and
- its research outcomes are generalisable (Gerber 1993).

Conceptions and phenomena: the knowledge interests of phenomenography

The knowledge interest of phenomenography is in describing the different conceptions of a phenomenon which are present amongst groups of people in a particular context. At the heart of the knowledge interest is the nature of a conception. This is a concept which is central to phenomenography and needs to be clearly understood.

For many years, the nature of a conception was described, somewhat vaguely, by phenomenographers as a way of seeing or experiencing the world. The lack of precision in use of the term has been criticised by Bowden (1994, p.14). Common early descriptions of conceptions include: 'a way of thinking about a specific object..' (Lybeck and others 1988, p.83), and 'the relation between human beings and the world around them' (Marton 1988a, p.181). However the characteristics of that relation were not well defined. Furthermore the difference between *conceptions* and *conceptualisation* was largely disregarded, the two terms often being used interchangeably.

More recently, however, the nature of conceptions has been the subject of attention. Svensson first distinguished between the terms concept, conceptualisation and conception within the phenomenographic domain. He described a *concept* as the abstract general meaning attributed to a phenomenon 'as it is present in a language'; a *conception* as the experienced meaning of a phenomenon and a *conceptualisation* as cognitive activity, 'the thinking through which a conception is constituted' (Svensson 1989, p.531).

The nature of conceptions themselves has also been formulated more precisely using language borrowed from Gurwitsch's theory of consciousness (Marton 1992, 1993, 1994) and Husserl's theory of intentionality (Sandberg 1994). As alternative ways of delimiting conceptions these two approaches are not incompatible because both draw on phenomenological theory. It will be seen that, in this study, the use of both approaches to interpreting conceptions was required to identify how the various conceptions were related to each other.

Sandberg (1994, p.52) describes a conception as denoting 'the basic meaning structure of individuals' experiences of a specific aspect of their reality'. That meaning structure, he argues, characterises the intentional relation between the individual and the object in the relation. In turn, the intentional relation may be described in terms of '...a conceived meaning and a conceiving act... the noema or noematic correlate for the conceived meaning, and the noesis or noetic correlate for the conceiving act' (1994, p.55). This means that a conception is constituted by a way of focussing on some aspect of reality (the noetic correlate) which leads to a particular meaning being conferred upon it (the noematic correlate). Both of these must be described to convey adequately the nature of the conception. In addition, each conception has a 'horizon which indicates the fringes or limit of the conceived meaning' (Sandberg 1994, p.56). The terms noema and noesis are here used to label what are usually referred to by phenomenographers as the referential and structural components of a conception.

Marton (1992), on the other hand, describes conceptions in terms of awareness, or consciousness. In this sense, a way of experiencing the world, that is a conception, is also equated with the internal relation between a subject and an object. According to Marton, however, this internal relation exists because awareness is structured in such a way that 'certain things come to the fore whilst others recede to the ground' (1992, p.9). The object of focal awareness, as it appears to the subject is also referred to as the 'theme'. The internal relation, or way in which the object appears to people, is described as constituted structurally and referentially.

The structural aspect of the conception includes both an internal and external horizon. These are described as 'a way of delimiting the object from its context and relating it to the same or other contexts' (the external horizon) and 'a way of delimiting component parts of the (conception) and relating them to each other and the whole' (the internal horizon) (Svensson 1984, cited in Marton 1992, p.7). The structural aspect is seen as dialectically intertwined with the referential aspect, which is the meaning attributed to the phenomenon in question. In order to adequately describe the conception, both the structural and referential components of the internal relation between subject and theme (or object) must be specified; furthermore the thematic field (aspects of the world related to the theme), and the margin (aspects of the world not related to the theme) must be identified (Marton 1994, p.98). Thus a conception is described in terms of its internal structure and the way in which it is delimited in people's consciousness.

The actual forms that conceptions take in any one study are nevertheless derived from the empirical work rather than from any metaphysical position (Svensson 1994). There are, however, a number of general assumptions that can be made on the basis of multiple phenomenographic studies now completed. These assumptions are consistent with the views of conceptions portrayed by Marton and Sandberg:

- The most important elements of conceptions are the relations between subject and object. Thus any conception must have at least two related parts which together create meaning (Svensson 1994, p. 14; Svensson and Theman 1983, p. 4). The relation is sometimes labelled an 'internal relation'. (*Internal relation* means that meaning is constituted within the subject-object relation; *external relation* means that meaning is imposed from outside that relation, for example from a discipline framework.)

- Dialectically related structural and referential components characterise the internal relation (Marton 1992).
- Conceptions represent the organised content of thinking (Svensson 1994, p.17).
- Conceptions are dependent on both human activity and the world or reality external to any individual (Svensson 1994, p.14).
- The relation between thought and external reality.... is varying in character (Svensson 1994, p. 15).
- Conceptions are not entirely naturally given entities, neither are they totally subjectively constructed entities (Svensson 1994, p.15).

An important implication of these views of conceptions is that the outcomes of phenomenographic research, descriptions of conceptions, are not 'mental models' (Marton 1988b, p.43; Johansson, Marton and Svensson 1985, p.247; Svensson 1994). They also confirm that when seeking to uncover conceptions we need to adopt a second-order perspective:

> ... we are not trying to look into the (person's) mind, but we are trying to see what he or she sees, we are not describing minds, but perceptions; we are not describing the (person) but his or her perceptual world. (Johansson, Marton and Svensson 1985, p.247).

Identifying conceptions as the knowledge interest of phenomenography points to the central importance of phenomena. Illuminating conceptions is the same as illuminating phenomena when a phenomenon is defined as the combination, or 'complex', of the relevant varying subject-object relations (Marton 1994, p.92). In many phenomenographic studies it has been discovered that there are logical relations between the various conceptions, which form a structural framework within which the various conceptions may be described. The focus on uncovering this structural framework has, in some cases, led to new understandings of the whole phenomenon under study (see, for example, Lybeck, Marton, Stromdahl and Tullberg 1988; Marton, Carlsson and Halasz 1992).

Most important, for the purposes of my study, is that it is possible, on the basis of the recent developments to phenomenographic theory described above, to specify what is meant by seeking to describe conceptions of information literacy. Describing conceptions of information literacy involves describing the differing internal relations between people and some aspect of the world around them, and the differing ways in which the various elements in that relation are thematised. It is also reasonable to expect that focusing on people's experience in this way

will lead to new understandings of the phenomenon of information literacy. The specific strategies I used to achieve this are described later in this chapter in sections dealing with the data gathering and analysis process.

Categories of description and outcome spaces: findings of a phenomenographic study

In a phenomenographic study it is important to differentiate between *conceptions and phenomena* and *categories of description and outcome spaces*. Failure to clearly distinguish between these is a major point on which phenomenographers have been criticised (Bowden 1994, p.14). Essentially, categories of description and outcome spaces are the outcomes of a phenomenographic study which serve as tools to capture and communicate the features of the conceptions or the phenomenon that they represent.

Outcome spaces are diagrammatic representations of the logical relationships between the different conceptions of a phenomenon. Marton describes this as the structural framework encompassing the categories of description which denote the conceptions:

> ...each category is a potential part of a larger structure in which the category is related to other categories of description. It is a goal of phenomenography to discover the structural framework within which various categories of understanding exist. (Marton 1986a, p.34)

More recently, as I have foreshadowed, he has argued that outcome spaces represent phenomena in the same way that categories of descriptions represent conceptions:

> The logically structured complex of the different ways of experiencing an object has been called the outcome space of the object. Outcome space thus turns out to be a synonym for 'phenomenon' (the thing as it appears to us, contrasted with the Kantian 'noumenon', 'the thing as such'). (Marton 1994, p.92)

The outcome space forms a 'map' (Saljo 1988) of the different ways in which information literacy is experienced amongst participants in the study. It is, therefore, a configuration of the set of categories, rather than being itself a representation of individual conceptions.

Laurillard identifies three types of outcome space that reflect different ways in which the structural relations between conceptions may be viewed:

- an inclusive, hierarchical, outcome space in which the categories further up the hierarchy include previous, or lower, categories;
- an outcome space in which the different categories are related to the history of interviewee's experience of the phenomenon, rather than to each other;and
- an outcome space which represents a developmental progression, in the sense that the conceptions represented by some categories have more explanatory power than others, and thus may be seen as 'better'. (Laurillard 1993, p.45)

In this study of higher educators' conceptions of information literacy the outcome space proved to be developmental with each category revealing increasing complexity in the meaning structure of the conceptions. Some parts of the outcome space are also hierarchically structured. Of greater interest, however, is that the outcome space reveals structural relations at three different levels: in the meaning structure, in the structure of awareness and in the varying ways in which information is perceived. This will be explained fully in the first section of chapter six which presents the outcomes of the analysis.

Categories of description are not themselves the conceptions of information literacy, rather they represent, or 'denote' the conceptions, acting as the researcher's interpretation of others' experiences of the phenomenon (Johansson, Marton and Svensson 1985, p.249). They are 'tools used to characterise ways of functioning' (Marton 1981b, p.167).

Categories of description have four primary characteristics. They are:

- relational, dealing with the intentional, or subject-object relation comprising the conception;
- experiential, that is based on the experience of participants in the study;
- content oriented, focussing on the meaning of phenomenon being studied; and
- qualitative or descriptive (Marton 1988a, p.181).

They are developed in relation to each other and in relation to the data from which they are derived. Categories of description are usually expressed 'in the form: something (x) is seen as something (y)' (Lybeck and others 1988. p.101). This expression labels, or names, the conception being denoted. The label is then elaborated with a description of the conception, including illustrative quotes from the data.

In this study conceptions of information literacy are described drawing on both Sandberg's and Marton's views in order to provide the fullest possible descriptions of the variation

experienced. The descriptions allow others to see information literacy as it is experienced or conceived by the participants in the study, and inform them about the particular focus of attention which causes information literacy to be interpreted in that way.

All the categories, therefore, have a structural component and a referential component. They describe the meaning (that is, the referential component or *what* is conceived), and the figure-ground relations between the elements of each conception as well as the focus of attention from which that meaning is derived (that is, the structural component or *how* it is conceived). The structural aspects of each category form the platform upon which the outcome space is built. The categories, presented in chapter six, are my representations of higher educators' conceptions of information literacy discovered in the course of the study.

Thematising higher educators' conceptions of information literacy

The next section of this chapter deals with how the empirical study was implemented using the following headings:

- The pilot study
- The participants: higher educators
- Designing the data gathering instruments
- Data gathering strategies: conducting interviews and collecting written data
- Analysis: finding and describing conceptions of information literacy.

To reiterate, the aim of this study was to identify variation in conceptions of information literacy that would be useful to the higher education community. Higher educators were selected as the group within which conceptions would be identified.

The pilot study

A pilot for the study was conducted between July and August of 1994. The purposes of the pilot were to trial data-gathering instruments and data-gathering strategies. While the details of the data-gathering instruments and strategies will be discussed in the following sections, the preliminary work on which some decisions were based is presented here.

In the pilot study several questions were trialled in three different contexts: face to face interviews, e-mail, and written responses during seminars. My original intention was to gather data, which would have equal weight in the analysis process, using all three data-gathering strategies.

The 'questions' trialled during the pilot were:

1a) *Describe a time when you demonstrated that you were (or were not!) information literate.*
1b) *For you, what is involved in being an information literate person?*

2a) *Please describe your experience of being (or trying to be) an information literate person.*
2b) *For you, what is involved in being an information literate person*

3a) *How do you use information in your every day life and work?*
3b) *What does it mean to be a competent information user?*

4a) *How do you keep informed about your professional or research interest?*
4b) *Describe your experience of being or trying to be an information literate person.*
4c) *Describe your picture of an effective information user.*

Written responses to 1a and 1b were obtained during a staff development seminar where participants devised desirable information literacy characteristics for graduates of their university (See Figure 5.1). Fourteen tertiary educators including librarians and academic staff

Describe a time when you demonstrated that you were
(or were not!) information literate.
For you, what is involved in being an information literate person?

Your responses to these questions will contribute to our task today by revealing something of your own experience of information literacy. They may also assist me in designing data gathering questions for my doctoral study into *qualitative variation in tertiary educators' experience of information literacy.* Please return this sheet to me after the workshop if you are willing to share your response. Thank you, Christine Bruce.

Figure 5.1 Worksheet used for gathering written responses at an information literacy seminar.

from a range of disciplines such as nursing, education and engineering submitted their responses at the end of the session. Each person wrote a paragraph of between one and two hundred words in response to the two questions. While responses to the first question tended to be brief anecdotes, responses to the second question tended to be lists of characteristics. Responses to both provided limited insights into people's experience. Large numbers of written responses would have been needed if this had been used as the primary data-gathering strategy, and different questions would have been required. Written responses obtained in seminar situations based on more suitable questions were used as supplementary data in the final study.

My attempt to use electronic mail interviews in the pilot study, using questions 2a and 2b failed. Three participants, two female, and one male, all of whom were avid users of electronic mail did not respond to the messages sent to them over a period of one month. Each of these participants had agreed to a personal request to participate in the pilot study before they received the initial electronic mail message. A copy of the message used appears in Figure 5.2. One of the two women claimed lack of time as the reason for not responding but agreed to be interviewed when that alternative was suggested. On the basis of this experience electronic mail was also not used as a primary data gathering strategy. I did, however use it to communicate with a small number of educators who accepted the medium readily. As no responses to questions were obtained via this medium, I included the second question in the set in the interviews which followed.

3rd August 1994

Dear (Colleague),

As you know I am looking for people who may be willing to talk with me about their experience of being, or trying to be!, information literate.

The purpose of the discussion is to try to discover the different ways in which tertiary educators (this includes you!) experience information literacy. I believe this is important because the ways in which educators mould students' experience of information literacy is likely to be shaped by their own experience.

As tertiary educators we also need to understand what it means to be an information literate person and what is involved in helping students at all levels to become information literate. If you would like to participate in my study, would you begin the conversation by responding to the following questions, by letter, fax or e-mail, in as much detail as possible:

1) Please describe your experience of beir g, or trying to be!, an information literate person.

2) For you, what is involved in being an inf·rmation literate person?

Would you please also indicate, if you are willing to respond to requests from me for clarification or further information?

With many thanks for your interest,

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P.S. If you would prefer to converse with me face to face, instead of writing, please don't hesitate to ask.

Figure 5.2 Electronic-mail messag e sent to colleagues who had agreed to correspond

Face-to-face interviews were conduc ted with one male, a senior lecturer in an engineering faculty and one female, a librarian providing information design and development services to academic staff, using the remaining t ree sets of questions. As a strategy the interview proved to be successful. Descriptions of ex perience were easily obtained with little prompting from the interviewer. The question '*What does it mean to be a competent information user?*' required impromptu redesign. I paraphrased it as: '*What in your view would be a competent information user?*' This latter ques ion, together with '*What is your picture of an effective information user?*' provided useful nsights. The use of orienting questions, prior to asking these, were however, clearly neces ary. By the end of the interview both participants were using the phrase information literacy in their responses, despite the fact that the phrase had not been emphasised in the questions. On the basis of this, the face-to-face interview was chosen as the primary data-gathering strateg , and a final set of questions selected.

The participants: higher educators

Sixty higher educators from eight u iversities participated in the study. The core participants were a group of sixteen interviewees from the Queensland University of Technology and

Griffith University, with a further forty-four supplying written data. Although details of individual participants are not provided in order to protect their identities, information about the character of the group, their gender, discipline backgrounds, occupations and universities, is presented in Tables 5.1, 5.2 and 5.3. Most details are in relation to the interviewees because suppliers of written data did not consistently provide the personal information requested.

Table 5.1 Participants' universities

Name and location of university	Number of Participants
Griffith University (Queensland, Australia)	15
Southern Cross University (New South Wales, Australia)	1
Queensland University of Technology (Queensland, Australia)	20
University of Central Queensland (Queensland, Australia)	14
University of South Pacific (Suva, Fiji)	1
University of Queensland (Queensland, Australia)	4
University of Wollongong (New South Wales, Australia)	1
UMIST (Manchester, England)	1
Other (not identified)	3
Total number of participants	60

Table 5.2 Gender and discipline backgrounds of interviewees.

Griffith University		Queensland University of Technology	
Male	**Female**	**Male**	**Female**
(1)Commerce and Admin	(1)Commerce and Admin	(1)Engineering	(1)Business Education
(1)Higher Education	(1)Higher Education	(2)Psychology	(2)Higher Education
(1)Science	(1)Music		(1)Information Science
(1)Music	(1)Information Science		
(1)Environmental Eng			
Total Number of Interviewees: 16 (Number of participants appears in brackets)			

Table 5.3 Interviewees by occupation

	Griffith University (Number of interviewees)	Queensland University of Technology (Number of interviewees)
Lecturers	2	2
Librarians	3	1
Counsellors	2	2
Staff Developers	2	2
Total Number of Interviewees: 16		

Participants in the study were selected both on the basis of '...intended use of the research outcomes and ...the internal requirements of phenomenographic research per se' (Bowden 1994, p.4). At a general level, higher educators were the focus because conceptions of information literacy were being studied with the intention of influencing information literacy education in universities. It seemed reasonable to assume that their views of information literacy would be likely to influence their approaches to information literacy education. I also wanted to elicit the conceptions of experienced, rather than neophyte information users. Again, higher educators were a better choice for this purpose than, for example, undergraduates.

Specific individuals were invited to participate in interviews because they were known to have an interest in information literacy. None of them, however had written about information literacy or information literacy education, nor had they engaged in information literacy research. This was important because I was seeking conceptions from people who could be considered information literate but who were not themselves information literacy scholars or experts. (It will be seen later, however, that despite the extensive experience of information use that could be expected of *any* lecturer, librarian, staff developer or counsellor, several were confused about whether they would label themselves information literate.) Equal numbers of higher educators were selected from each stakeholder group and from each university as can be seen from Table 5.3.

Participants other than interviewees were 'self-selected' in that they provided written responses either because:

- they communicated with me via e-mail about information literacy and hence were invited to participate; or

- they attended an information literacy seminar or workshop and accepted the invitation to contribute; or
- they had previously expressed an interest in information literacy to me and accepted an invitation to contribute.

In summary, participants were chosen to ensure that maximum variation was obtained from within the selected context. This strategy has been labelled purposive sampling:

> Purposive sampling is based on the assumption that one wants to discover, understand, gain insight; therefore one needs to select a sample from which one can learn most. (Merriam 1988, p.48)

Therefore the group included academics, information services staff with a direct involvement in teaching and learning, staff developers and learning counsellors. They were drawn from a range of discipline backgrounds. The stakeholder groups were predetermined because their professional interests require them to interact with the world of information extensively and because their conceptions of information literacy are most likely to impact on the experiences of students. Although none were 'scholars of information literacy', they had varying degrees of knowledge about, and interest in, the information literacy agenda. For some, the world of information and strategies for working within it had been the subject of formal study, whereas for others it had not. Others were actively involved in teaching information literacy.

In my study sixteen participants contributed to the core data, participating in interviews, while a further forty-four participants provided supplementary data in written form (see Table 5.4).

Table 5.4 Participant profile in relation to data gathering strategies

Strategy	Lecturers	Librarians	Staff Developers	Counsellors
Seminars (written)	7	24		1
Mail (written)	5	2		
E-mail (written)	2	1	2	
Interviews	4	4	4	4
Total participants	18	31	6	5

In any phenomenographic study, the number of participants should be sufficient to yield adequately rich descriptions of the varying conceptions which, together, comprise the phenomenon. It is generally accepted that approximately twenty participants will achieve this (Sandberg 1994, p.72).

Designing the data-gathering instruments

This section describes the instruments at the heart of the procedure through which conceptions of information literacy were uncovered. As there are no standard procedures for gathering phenomenographic data, techniques have to be formulated for each study, taking into account the nature of the phenomenon under investigation and the data-gathering principles which must be adhered to. Fundamental to the data-gathering procedure, however, is the need for it to 'be sufficiently open to allow the subjects to express their own way of structuring the aspects of reality they are relating to' (Johansson, Marton and Svensson 1985, p.252). The data-gathering procedure often involves tasks, direct questions (Saljo 1988, p.39), or a combination of the two.

In an ideal world the following cues: *What does information literacy mean to you?* and *Describe your picture of an information literate person* would be likely to be effective in ascertaining tertiary educators' conceptions of information literacy. From the pilot study, however, I discovered that some colleagues were not conversant with the term *information literacy*. I had to find a way of orienting these colleagues towards the phenomenon, elements of which they regularly experience. The pilot also indicated that:

- the term *competent information user* had technological associations for some people, consequently the term *effective information user* was preferred;
- asking people about times when they were not information literate was of little value, they ended in describing a phenomenon which was not of interest to the study;
- asking people about how they kept 'informed' consistently oriented them towards sources of information, therefore the question was discarded.

The instrument selected included three questions (3a, 4b and 4c) from the pilot designed to reveal, in a detailed way, the manner in which information literacy was experienced by the participating higher educators. Before the participants responded to the questions, they were

told that the study aimed to identify the different ways in which they experience, or see information literacy, and that they would be given time to reflect on the questions if they wished:

1) How do you use information in your every day life and work?
2) Tell the story of a time when you used information effectively.
3) Describe your picture of an effective information user (or information literate person)
4) Describe your experience of being (or trying to be) an information literate person.

The first two were intended to orient the participants towards the phenomenon. Their roles were to encourage participants to focus on their own experience of information literacy. At this stage the participants began to describe their experience of using information using their own choice of context. Responses to the first question may not have reflected an emphasis on effective use of information, which was the focus of the remaining questions.

The third was intended to elicit reflected understandings of information literacy. It focuses directly on the participant's view of information literacy or effective information use. The term *information literacy* was used here only with participants who expressed familiarity with the phrase. The term *effective use of information* was considered an acceptable substitute because it potentially incorporated all the various ways in which information literacy could be interpreted; it did not encourage interviewees down any one particular path.

The fourth questions shifted the focus from the participants' picture of an information literate person back to their own experience of information literacy. Having discussed their picture of an information literate person, they were invited to describe their own experience of being, or trying to be, information literate. The term *information literacy* was used here with all participants in the study.

All the questions complied with the following criteria:

- they were open enough to embrace all current understandings of information literacy without drawing attention to any particular approach to the phenomenon;
- they allowed the respondent to choose his or her own interpretation of the phenomenon;
- they allowed me to put aside my own views of the phenomenon when asking questions; and

- they encouraged the respondents to take a describing orientation, suggesting that it would be possible to identify, from the responses, the ways in which information literacy appeared to the people whose views were being sought.

None of the questions in the final set took the form of a 'what is x?' question. Bowden (1994, p.8) suggests that '*What is x*?' questions tend to work against the diagnostic purpose of data-gathering. The questions were used in interviews and for gathering data in written form. Follow-up probes (Prosser 1994a, p.33) were not designed after the pilot because participants' reponses did not appear to be sufficiently predictable. Common questions, however, were used for requesting elaboration, including: Please explain? Tell me more about..? Can you explain that in a different way? Give me an example? (Bruce 1994c, p. 53).

Data-gathering: conducting interviews and collecting written data

'Conceptions may be expressed in different forms of action but they are most accessible through language' (Svensson 1994, p.16). For this reason, interviews are the most commonly used method for data-gathering in phenomenographic research, while other sources have included written data, children's drawings and the product of people's work (Marton 1986a, p.42). The advantages of the interview, which are more extensive descriptions, and the ability to probe the subject's understanding in detail, often need to be weighed up against written responses from the respondent which are usually more focussed, containing less extraneous material. My study combined both these strategies in order to gain the benefits of each. Interviews were supplemented by written data obtained via electronic mail, normal mail and in information literacy seminars. Interviews were chosen as the primary strategy because the pilot study indicated this was the technique with which participants were most comfortable, and which provided the deepest, or most extended descriptions of experience. The combination of strategies also permitted efficient access to a geographically dispersed population.

Written data were collected for at least three recently published phenomenographic studies (Bruce 1994b; Marton, Carlsson and Halasz 1992; Prosser 1994b). Prosser (1994b, p.30) concludes that: '...logically related categories of description ... can be identified ... using ... written responses to open-ended questions'. For this study, written data were collected in three contexts:

- at an Australian Library and Information Association seminar *Information literacy: exploring directions for the 1990s,* in October 1994;
- at an information literacy seminar for students in the Queensland University of Technology's Graduate Certificate in Higher Education; and
- via electronic mail.

Providing written responses to the data was taken seriously by these participants. Some chose to forward their completed responses to me at a later stage giving them time to reflect on the task (see Figure 5.3 for worksheet used). The term *information literacy* was used in data-

Conceptions of Information Literacy

Thank you for participating in this study into the different ways in which people experience, or conceive of, information literacy. Your responses will help me search for these differences. Understanding these differences will lead to better communication amongst people interested in information literacy and important insights into what is involved in teaching information literacy. Please answer the following questions in as much detail as possible:

Tell the story of a time when you showed that you were information literate?

Describe your picture of an effective information user

.....(Please continue over the page)

Thank you for your response. If you are willing please indicate 1. the name of your library, or other workplace....., 2) your discipline area....., 3) your gender..... .....

Please return this form to me after the seminar or send it to C. Bruce: CAESER, QUT, Kelvin Grove Campus, Locked Bag No.2, Red Hill, Q. 4059. Fax: 07 - 8643986.

Figure 5.3 Worksheet used for the collection of written data

gathering because the contexts suggested that it would not be unfamiliar. The request to 'tell a story' was intended to ensure that text book explanations of information literacy were not presented. Some of the participants found the writing task difficult, confirming the appropriateness of the decision to use interviews as a primary data-gathering strategy. Comments overheard during writing sessions, each of 20 minutes to half an hour, included:

- "I am finding it hard to write about this, I need to talk about this."
- "I can't write - I need to draw."
- "I am having trouble thinking of a specific occasion when I was information literate - I am always information literate.."

Phenomenographic interviews are a specialised form of qualitative research interview (Bruce 1994c, p.47). At the most general level their purpose is to 'gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomenon' (Kvale 1983, p.174). Phenomenographic interviews also share the characteristics of the qualitative interview outlined by Kvale. They:

- are centred in the interviewee's life-world;
- seek to understand the meaning of phenomenon in (the interviewee's) life-world;
- are qualitative, descriptive, specific and presuppositionless;
- are focussed on certain themes;
- are open to ambiguities and change;
- take place in an interpersonal interaction; and
- may be a positive experience. (Kvale 1983, p.174)

Phenomenographic interviews are distinctive from other qualitative research interviews in that their specific purpose is to seek variation in people's experience or understanding of the phenomenon in question. Furthermore their focus is on the relation between the person being interviewed and the theme of the interview, in this case information literacy. The interviewer's focus is neither on the person, nor on the theme, but rather on how the theme appears to, or is experienced by, the person being interviewed.

In my study, the aim of the interview was to uncover the structure of the experience of information literacy. Essentially, my goal was to try to see the phenomenon as it was seen or experienced by the interviewees. This was achieved through helping the interviewee to thematise the relevant aspects of their life-world and probing to identify the internal and external horizons of participants' experience using the questions previously described. The need to understand the nuances in the figural gradations of awareness meant that interviewees had to be encouraged to elaborate at length on their experience of information literacy. Such probing and encouragement was achieved through the use of further questions based on the participants' initial responses to the questions identified previously. The interviews may therefore be appropriately described as semi-structured.

Before the interviews were conducted, the intent of the study was explained twice to participants; Francis (1993, p.70) has raised the importance of interviewees understanding the focus of the study. The first time that they heard about the study was when I contacted them to find out if they were willing to be interviewed. At this stage I explained that I was interested in the different ways in which higher educators understood what it meant to be information literate. This was explained a second time as part of the interview using a handout (See Figure 5.4) which also included the questions we were going to discuss. I also explained, at this stage, my role in the interview, which I described as trying to see information literacy the way they did. For this reason, I said, I would probably ask them to explain their comments or to provide further examples to help me see better.

Higher Educators' Conceptions of Information Literacy

The intention of this interview is to discuss how you think about effective information use.
I will ask you to respond to the following questions:

1) How do you use information in your every day life and work?
2) Tell the story of a time when you used information effectively.
3) Describe your picture of an effective information user (or information literate person)?
4) Describe your experience of being (or trying to be) an information literate person

Figure 5.4 Handout given to interviewees

Important characteristics of a phenomenographic interview have been identified by Svensson and Theman (1983, pp.7-8). As the interviews progressed it was possible to see how the elements they stress emerged in the interviews I conducted.

Firstly, 'the interview represents a constant flow of changing opinion' (Svensson and Theman 1983, p.7). The following extracts from Interview Two show fluctuations in how the interviewee is thinking about information literacy. I have omitted much of the discourse to highlight his changes in thinking. In this part of the interview, the interviewee is talking about information literacy in relation to students he assists with study skills. He begins by explaining information literacy in two different ways, as external to the student, and as being about

information use. He swings between these interpretations for some time, and has difficulty explaining what he means when saying that information literacy is 'out there'. In the following extracts the interviewer's questions appear in bold.

> ... information literacy is out there. It's something that they have to contact and my role in the process is that of a facilitator.
> **So what is it you're actually trying to bring them into contact with?**
> Information using. I believe that our culture has a very very definite notion or construct of an information literate person...
> **So you said that information literacy has to do with.....You reinterpret that as information using. Could you explain then what you mean by information using?**
> Information using, I think, has to be linked to a task. There's no point, I think, in becoming... if I can just give some examples. I meet some Singaporean students and their level of information literacy is just incredible, it's admirable and yet the capacity to use that information is... limited. (Int. 2, p.1, Learning Adviser, Male)

By the end of this extract this learning adviser is no longer seeing information literacy as information use. The students he refers to are information literate but are not skilled at using information. A question confirms this change in interpretation:

> **So, to what extent then is the use of information actually linked to information literacy. Are they the same or different?**
> They're different. They're different.
> **Could you talk a bit more through that? I'm trying to see your view of information literacy.**
> ...Information literacy, in our culture, I think, would be used as a tool to challenge ideas, to develop ideas, to offer new modes of presentation and a little just speculative learning, I think, as distinct to reproductive learning.
> **O.K. As you talked then, what are you actually referring to when you use the word information literacy?**
> I think information literacy is again, something, outside the student. Information use is something within the student ...(Int. 2, p.2, Learning Adviser, Male)

When I encourage the interviewee to explain what he means by talking about information literacy as 'outside the student', he reverts to describing processes of information use and knowledge:

> **O.K. I still want to push this question of then what is information literacy? What is this thing that is beyond the student?**

Well, in terms of a definition of it?

A description of it.

A description of it. I think it's someone who's able to use information for a start. That's the first level and think it's a notion that needs considerable scaffolding 'cause I think the nature of information literacy is that it's developmental. It's constantly changing. It's just continuous so therefore I think our notion of the individual ought to be just continuous as well. I think it starts with someone who can use information. Secondly, someone who knows the information is useful, of its own accord. Someone who is able to distinguish between which information to use and which information not to use...(Int. 2, pp. 2-3, Learning Adviser, Male)

Secondly, the interviews reveal 'constant following up and penetrating interrogation (which) is naturally exhausting for both the respondent and the interviewer' (Svensson and Theman 1983, p.7). This following up is described more specifically by Svensson and Theman as involving asking questions based on comments made by the interviewee at an earlier stage. I have chosen extracts from Interview Five to demonstrate this, and include the interviewee's final comment as a testimony to the demanding nature of the process. In the section of the interview immediately preceding what is recorded below, the interviewee has stated that the ability to tackle previously unencountered problems is one aspect of effective information use:

You said before that the first one was one aspect. Did you have other aspects in mind?

Did I say that?

Yes, you're allowed to change your mind (laughter)

Well, it's all just general decision making. (Int.5,p.6, Academic, Male)

A little later in the interview I again suggest a return to something said by the interviewee at the commencement of the interview:

...I want to go back to this thing you said when we started talking.

I wish you wouldn't do that.

We were talking about what information was and you said that well, there were different definitions of information depending upon the application..

Maybe that was wrong, maybe it's just everything on which we make a decision. (Int.5,p.8, Academic, Male)

Although these extracts are short they capture the flavour of the interview. The demands of being required to defend his remarks are made clear by the interviewee when he is asked, on completion of the interview, if he has anything to add:

I've probably covered it, I can't think of anything else, you've drained me. (Int.5,p.11, Academic, Male)

Thirdly, 'the form of the interview puts a mental stress on the respondent and this sometimes results in an emotional reaction' (Svensson and Theman 1983, p.8). There were many occasions where the interviewees became confused, because they were confronted with what they perceived to be inadequacies or inconsistencies in their own thinking. Although this was useful in that it revealed that different ways of thinking were in fact being elicited, and that participants were being stretched to the limits of their experience, it was a stressful experience for them. As an interviewer, I was able to sustain the interviews through these stresses, probably because I had pre-existing professional relationships with the interviewees.

One example of an occasion on which such stresses arose comes from Interview Four. The interviewee has previously described an information literate person as:

...anyone but me. It would be someone who could come in and switch onto the world over here and engage in wonderful trans-Atlantic conversations...used all sorts of modem things...(Int. 4, p.6, Female, Staff Developer)

Since then, she has produced a second, and completely different picture of an effective information user. My challenge was to confront the interviewee with the difference, move through the distress phase and encourage her to continue her description:

But that has got nothing to do with the picture of the (effective) information user which you gave me before.

No. But that's an information user that I can understand and relate to. (in some distress)

Now is that an effective information user?

He doesn't seem to be short of information, does he?

No. Now if he wasn't using electronic networks in any way, would he still be an effective information user?

That's a trick question because I've already said no before in relation to me now in relation to him, I have to say it wouldn't matter in the slightest.

O.K. So wouldn't it matter. What is it that actually makes a competent information user?

I suppose it's the level of scholarship, isn't it. You have to be... and mental ability and...

Can you tell me more about that. I know you're just starting to explore it. You're just thinking about it yourself right now but can you try to think it through a bit more for me. Nearly over.

> Well I suppose it's because here, using him again as an example, he has such a background of wide reading and deep reading and somehow he has the sort of brain that he can use as a filing cabinet which I can't do...(Int. 4, p.9, Female, Staff Developer)

A third example comes from an interviewee who has expressed considerable difficulty in communicating her ideas. Comments such as 'I'm not being inspired at the moment', 'I can't think of anything Christine', 'I want to know Christine, I can't tell you. You tell me', suggest the stress that she is under. Despite these difficulties, the interviewee was able to talk through some examples which conveyed different ways of thinking about information literacy. It was not until towards the end of the interview that she finally indicated the reason for her discomfort. She felt that she was being asked to describe information literate people in her environment, when, in her view, these were a rarity:

> Only that, I mean, we see the worst here and I suppose you're asking me...all the things you want me to say are the positive things and its hard for me to find them, I'm sorry. (Int. 7, p.9, Female, Librarian)

This new insight allowed me to invite her to think about the question I had asked differently:

> **Perhaps attack it this way, in terms of where you would like your people to be?** (Int. 7, p.9, Female, Librarian)

After the interviews had been completed all data were typed in preparation for analysis. Interview transcripts were checked against tapes, and then sent to interviewees for confirmation. A covering letter thanked each participant forhis or her involvement, invited them to make any additions or changes to the transcripts, and asked whether they would like to receive information about the outcomes. In January 1996, copies of a conference paper presenting preliminary outcomes were sent to all interviewees (see Appendix 1).

Analysis: finding and describing conceptions of information literacy

Data analysis in a phenomenographic study continues the process of exploring the subject-object relations begun when data gathering. It is directed towards uncovering the various conceptions and representing these in the form of categories of description. There are two main outcomes of my analysis: an outcome space representing the phenomenon of information

literacy as it is conceived by higher educators, and descriptions of the varying conceptions found in that outcome space. The main aim of the analysis was to discover participants' conceptions of information literacy and to devise categories and an outcome space which would communicate these to researchers and practitioners interested in information literacy. As I have already described the nature of categories of descriptions and outcome spaces I will now review the process through which they are constructed.

Walsh (1994) argues that there are two views of the analysis process amongst phenomenographers. In the first view, analysis is seen as a process of construction, and in the second it is seen as a process of discovery. She also points to a range of possible consequences of each view. The most serious of these are that if the former view is held, researchers are in danger of imposing a logical framework which is not justified; and if the latter view is held, they are in danger of bypassing the analytical process (Walsh 1994, pp. 22-23). I have interpreted the 'analytical process' to mean the identification of the structural components of the conceptions and how they are connected in the broader framework which is the outcome space. The two points of view are captured in the idea that 'conceptions are discovered, categories of descriptions are devised' (Johansson, Marton and Svensson 1985, p.250). The analysis process involves both of these activities, which, although we can conceive of them separately, in practice usually occur simultaneously.

The dilemma which Walsh presents may be resolved by viewing the analysis process as *both* a process of construction and a process of discovery. In the same way that we see conceptions as being constituted in the relation between perceiving individual and appearing object (both are active in constituting the conception), so we may see the categories of description as being constituted in the relation between the researcher and the data (both are active in constituting the categories). It is a process of discovery because the conceptions reveal themselves through the data and it is a process of construction because the researcher must identify and describe these conceptions in terms of referential and structural elements. Constant and demonstrable iteration between the construction of the categories and the data (Svensson and Theman 1983), together with an appreciation of the character of conceptions and categories of description, was the approach used in my study to achieve the required balance. Evidence of reference to the data is provided in the categories in the form of illustrative quotes.

Detailed procedures for engaging in the analysis process are not available. Those writing about the phenomenographic analysis usually emphasise that it is a 'discovery process' (Saljo

1988, p.45), a 'non-algorithmic discovery procedure' (Marton and Saljo 1984), or that it is not possible, or indeed desirable to prescribe techniques for use in a phenomenographic study (Prosser 1994a, p.32). Rather, the analysis process is guided by the researcher's understanding of what is being sought, the variations in conception that are captured in terms of structural and referential components. What happens in any one study is therefore an interplay between the researcher's understanding, the nature of the phenomenon being studied and the style of the available data. Procedures used are intended to facilitate 'catching the essence of people's world of thoughts' (Dahlgren and Fallsberg 1991, p.152). During the analysis the procedures remain subservient to this intention; they are not rigidly adhered to.

Various ways of proceeding, however, have been suggested, together with indications of what the researcher should be looking for throughout the process. The latter are fundamentally related to directing the reader towards the structural and referential components of the subject-object relation which lie at the heart of the conception. The way of proceeding which I followed draws on descriptions of the analysis process provided by Marton and Saljo (1984), Saljo (1988), Marton (1986a), Marton (1988a,b), Bowden (1994), Dahlgren and Fallsberg (1991) and Sandberg (1994). Although it is portrayed in a linear fashion, the actual implementation was recursive, and often drew simultaneously on more than one phase of the analysis. The procedure is framed within Sandberg's (1994, p.86) five phases of phenomenographic analysis:

- becoming familiar with the transcripts;
- the noematic level of the intentional analysis;
- the noetic level of the analysis;
- the intentional constitution of the conception; and
- establishing the outcome space of the conceptions (Sandberg 1994, p.86).

Becoming familiar with the transcripts The first step in the analysis process was to become familiar with the transcripts of the interviews and other data gathered. The purpose of reading the material was to identify the conceptions of information literacy 'that seem to underlie the statements made by the respondents'(Saljo 1988, p.41). This is an active process on the part of the reader which is helped by asking questions such as How does the respondent construe the phenomenon?, What concepts does he or she use to explain it? and What types of similarities with other phenomena are introduced? (Saljo 1988, p.41). During this phase it became possible to identify sections of the discourse which demonstrated significant

differences in conception. (I have already provided examples of how changes in thinking were evident in interview transcripts in the previous section). Dahlgren and Fallsberg (1991, p.152) refer to this process as 'condensation', Marton and Saljo (1984) refer to it as identifying 'pools of meaning' which then need to be grouped and classified according to their similarities and differences. The sections of discourse were marked within the transcripts to ensure that it was always possible to refer to the context within which particular statements were made.

The noematic level of the intentional analysis In this second phase, the referential, or noematic element of the conception was the focus of attention. During this phase extracts from the interviews were coded with coloured flags according to the significantly different meanings being ascribed to information literacy. It was essential in this phase to realise that it was the meanings underlying participants' statements rather than the statements themselves which were being grouped:

> The content is...not primarily considered in terms of meanings of linguistic units, but from the point of view of expressing a relation to parts of the world. Furthermore, fundamental characteristics of the relation are focussed on.... This makes the specific form of language used, although the basis for analysis, subordinate to their expressed content. What counts as the same conception may be expressed in many linguistically very different ways and what counts as different conceptions may be expressed in similar language. (Svensson 1994, p.19)

The major questions applied to the data during this phase were: 'In what ways is this person experiencing information literacy? What would be the most appropriate ways, on the basis of this data, to complete the phrase: Information literacy is seen/experienced as.....'. Thus this level of analysis became the first step towards devising categories of description.

The noetic level of the analysis In the third phase the structural, or noetic, element became the focus of attention. In this phase I compared the statements from which the conceptions of information literacy were identified, 'to find sources of variation or agreement' (Dahlgren and Fallsberg 1991, p.152). I was' looking for the essential, the most distinctive, the most crucial structural aspect of the relation between the individual and the phenomenon' (Marton 1988a, p.182). The primary question applied to the data was: 'What does the participant focus on, in order to experience information literacy in this particular way?' In relation to theory of awareness, this may be rephrased: 'What is figural to the participants in

their differing experiences of information literacy?' Another way of asking the question was 'What is the meaning structure underlying the conception?'. As a result both meaning structures and awareness structures were available in formulating the outcome space. This third phase of the analysis often happens in parallel with the second phase; Marton links the two in his description of the search for the structural component of the conceptions:

> When reading and classifying descriptions of a phenomenon, we are not merely sorting data, we are looking for the most distinctive characteristics that appear in those data....structurally significant differences that clarify how people define some specific portion of the world. (Marton 1986a, p.34)

During this phase of the analysis, 'information' was identified as the object in the 'subject-object' relation. Therefore, various ways in which the object appeared in the different categories were examined also.

The intentional constitution of the conception This fourth phase involved drawing together the referential, or neomatic elements, and the structural or noetic elements of the conceptions, to describe the subject-object (intentional) relations which comprise the different conceptions. The description of the relation, that is a meaning structure and an awareness structure, together with the label naming the conception, forms the 'category of description' which was devised to denote each one. In this way the fundamental differences between each category were made clear. This process was similar to Dahlgren and Fallsberg's (1991, p.152) phases of labelling and contrasting the categories, in which finally, 'the obtained categories are compared with regard to similarities and differences'. Due to the recursive nature of the analysis, draft categories of description were actually constructed early in the process; these were progressively revised as the noetic and noematic elements of each conception were clarified through regular consultation with the transcripts.

Establishing the outcome space of the conceptions The final step involved identifying the ways in which the categories were related to each other. This was done through examining the internal structure of the conceptions as expressed in the meaning structure and the awareness structure for each one. The relations between the categories were 'examined from the point of view of logic' (Marton 1981b, p.167), making the ordering of the categories 'purely a logical question' (p.167). Constructing the outcome space was highly dependent

upon an adequate analysis of the two types of structure. In fact it was necessary to revisit the earlier stages of the analysis several times to confirm or adjust the descriptions in the process of constructing the outcomes space. In constructing the outcome space a three tier approach was taken using the meaning structures, the awareness structure and the varying ways in which information was perceived. All three contributed to the structural framework within which meaning was attributed to information literacy. The meaning structure and the awareness structure, however, were the key elements in positioning the categories within the framework.

Trustworthiness of the outcomes

Lincoln and Guba (1985) suggest that the trustworthiness of studies with naturalistic underpinnings should be established through addressing their credibility, transferability, dependability and confirmability. Phenomenographic research is usually described as interpretative, rather than naturalistic. Nevertheless phenomenographers also need to establish trustworthiness within a phenomenological, rather than a positivist framework. Criticisms of phenomenographic research on the basis of lack of validity, lack of predictive power, researcher bias and denial of the voice of the individual through categorisation (Bowden 1995, p.145), have led to increased attention being paid to the need to establish the trustworthiness of the outcomes (Bruce 1994c; Bowden 1995; Gerber 1993; Sandberg 1994, 1995a, 1995b).

The trustworthiness of the outcomes of this study, the descriptions of variation in the conceptions of information literacy, is based on approaches established by Saljo (1988), Gerber (1993) and Sandberg (1994, 1995a). The thinking of each of these researchers contributes to an understanding of what is required to ensure sound outcomes of a phenomenographic study. Outcomes of a phenomenographic study could be said to be sound where:

- there is a demonstrable orientation towards the phenomenon of information literacy through the process of discovery and description;
- they conform to the knowledge interest of the research approach; and
- they are communicable.

The trustworthiness of this study was established through meeting the above criteria.

Demonstrable orientation towards the phenomenon of information literacy through the process of discovery and description.

In a study designed to interpret and understand people's conceptions of some phenomenon, such as information literacy, strategies need to be put in place which will safeguard against unfaithful representation during the course of the whole study:

> ...the strength of good qualitative studies (is) that they maintain a consistent level of truthfulness across the stages of the study, rather than using (reliability or validity measures) as a checking mechanism towards the end of the study (Gerber 1993, p.49).

Gerber (1993) and (Sandberg 1994) rely heavily on the application of phenomenological theory throughout the research process to ensure faithful, or truthful, representation. This strategy I have also adopted. Its application to my study is described below.

The main criterion for the acceptability of the outcomes of this study is that the different conceptions of information literacy have been described faithfully; this was achieved through the adoption of the phenomenological principle *'to the things themselves'* in order to make the descriptions possible (Sandberg 1994, p.62). The 'thing itself', or people's lived experience of information literacy, was uncovered during the interview process through the application of the phenomenological reduction in the design of the data-gathering tools and the implementation of the strategies. The phenomenological reduction, in this context was used both during data-gathering and analysis, to ensure, as far as possible, that I came to see the phenomenon through the eyes of the participants. I applied the following features of the reduction as described by Ihde, which have already been successfully adopted for phenomenographic studies. This involved:

- an orientation towards the appearance of the phenomenon;
- a describing orientation;
- a horizontalisation of all phenomena;
- looking for structural features of the phenomenon; and
- using intentionality as a correlational rule. (Sandberg 1994, p.67-9, Ihde 1986)

As the application of the phenomenological reduction is applicable throughout the research process I could check its application in four stages of the study:

- The research question itself was demonstrably oriented towards the phenomenon; in this study I was seeking the different ways in which information literacy appears to higher educators. I was also able to ensure that the phenomenon was allowed to unfold through the data gathering process without undue interference on my part. I had to ensure that data gathering questions did not direct respondents towards particular appearances of the phenomenon.
- The pilot study was used to test whether or not the data-gathering tools tapped the lived experience of the phenomenon, that is they were tested to check that the respondents adopted a describing orientation.
- During the interviews I attempted to put aside my own views of the phenomenon, and treat all responses equally, thus abiding by the rule of horizontalisation.
- During the analysis it was necessary to strive for a describing orientation, and to seek the structural components of the conceptions. (adapted from Gerber 1993, p.45)

Essentially all elements of the study - the pilot, data-gathering and analysis - were guided by its aim, and the interview questions were carefully crafted to ensure that participants' constructions of the phenomenon were elicited (Bowden 1994, p.7). Further, participants all understood the contribution they were making and indicated a willingness to cooperate. Adults, and even children are able to grasp easily the idea that people see things in different ways, and that my intention as an interviewer is to understand how they see 'x' (Bruce 1994c, p.54).

Conformity to the knowledge interest

Although the above strategies served to ensure faithful descriptions of the conceptions, it was also necessary to demonstrate that the structural features of the conceptions were identified. As the construction of the outcome space depends upon the identification of the structural features of the conceptions, the very availability of an outcome space serves to affirm the descriptions devised:

> Another source of verification of the appropriateness of a set of categories is the internal logic of the categories themselves. (Saljo 1988, p.46)

Another indication that the structural features of the conceptions have been identified is the possibility of describing learning about information literacy in terms of changes in conception:

> A further aspect of the internal structure of categories that depict different conceptions of a phenomenon is that learning can be described as the change from one conception within this structure to a different one. (Saljo 1988, p.46)

The increasing complexity of the conceptions in the outcome space and the possibility of using them to influence and describe learning in information literacy education are analysed in detail in the following chapters.

Communicability

Sandberg (1995a, pp.7-8) identifies three phases in which communicative validity is relevant to interpretative research: during the interview, in conducting the analysis, and in testing reaction to the results. The last phase which establishes that the categories of description themselves are communicable is stressed by both Saljo (1988, p.45) and Sandberg (1994, p.62).

During data-gathering communicative validity is established by generating data through dialogue (Theman 1983, cited in Sandberg 1995a, p.7). The core data for this study were collected through interviews, a context which allowed me to check, where possible, that the interviewee was being correctly interpreted. Clarification of meaning was also possible when obtaining responses via e-mail, but less easy where written data were collected in seminars or workshops. The problem with written data was minimised by asking questions that asked for experiential responses, in the form of a story, and by making the written data 'supplementary' in status. The categories of description were constructed initially using the interview transcripts, after which the data pool was broadened to include the written data.

In the analysis phase the quality of the research outcomes is dependent upon how the researcher interacts with the data (Sandberg 1995a, p.8). To ensure that the descriptions were faithful to the text meant retaining the context of all sections of data that were selected for consideration throughout the analysis. The transcripts and typed versions of written data were not physically dissected at any stage. Specific sections of discourse were only physically extracted from the data in the final stages of preparing the full versions of the categories of description. The heavy reliance on quotes from the data to provide evidence in support of the descriptions was another strategy used to ensure that the analysis was faithful to the text. This strategy had the further benefit of allowing participants' 'voices' to be heard in the categories.

Finally, the categories must be understood and interpretable by other researchers and the educators for whom they are intended. I have verified the communicability of the categories through workshops and seminars. On the first occasion the outcomes were used by a group of postgraduate students studying a subject called *Information User Instruction*. Part of the subject introduced theories that would influence teaching and learning in information and information technology contexts, and the idea of information literacy was one of these. Students were invited to examine the various categories of description in relation to how they conceived of information literacy, and in relation to how they would wish their clients to conceive of information literacy. The possibility of adapting the research outcomes to a practical application partially establishes communicability. Further practical applications which have not been trialled are suggested in chapter seven.

On the second and third occasions I presented preliminary outcomes of this research, including the categories of description and the outcome space, to colleagues interested in information literacy and the broader field of information needs and uses research. One seminar was conducted at a local, one-day event focussed on library research. The other was conducted at the Second Australian National Conference on Information Literacy held in Adelaide, in December 1995. The interest in, and general endorsement of the outcomes by researchers and practitioners suggests there is a movement towards acceptance by a group of significant others of the quality of the work. Sandberg (1995a, p.8) points out that this acceptance is part of an ongoing negotiation of meaning and relies on intersubjective judgement at various stages of dissemination.

In the final chapters of my thesis I present the outcomes of the study, the descriptions which will serve as an initial core for a relational model of information literacy. I also examine the new pictures in relation to those previously available, and implications for information literacy education and further research.