

CHAPTER 6**CREATING CATEGORIES OF DESCRIPTION USING
PHENOMENOGRAPHIC DATA: AN EXAMPLE OF ANALYTICAL
PROCESS**

Lois Irvin

Abstract

Phenomenography is a research specialisation used to map the qualitatively different ways people experience the same phenomenon. Highlighting the variation in the ways people experience their world can give fruitful insight into their thoughts and behaviours. While there are hundreds of published phenomenographic studies, few address theoretical and methodological issues in a concrete, explicit way. This gap in the literature has led to criticism of the phenomenographic approach.

This paper addresses this gap by reviewing key literature on phenomenographic theory and preferred methods of analysis. To produce quality results, phenomenographers must bracket preconceived ideas, deal with data holistically and contextually, and frequently challenge their understanding of the data to discover other ways of interpreting it. Data from a current study on engagement in learning is used to exemplify this process, demonstrating to the reader one way of producing valid and communicable categories of description.

INTRODUCTION

Phenomenography has been growing as a research specialisation since its origin in Goteborg, Sweden in the 1970s. This growth, however, has also prompted some criticism based on perceptions that it lacks solid theoretical and methodological foundations (Richardson, 1999; Saljo, 1997; Sandberg, 1997; Webb, 1997) and can be used naively, especially by novice researchers (Francis, 1993). While some have begun to make the theory and process of phenomenography more explicit and transparent (Marton, 1986; Svensson, 1997), more work needs to be done to elucidate phenomenographic theory and data analysis.

This paper will briefly review current literature to outline the theoretical assumptions underpinning phenomenography. Next, it will explicate the process of phenomenographic data analysis to create categories of description, the basic unit of phenomenographical analysis. It will then use data from a current study on engagement in learning to show the process of identifying qualitatively different conceptions and creating categories of description.

A BACKGROUND TO PHENOMENOGRAPHY

Phenomenography is defined as “...the empirical study of the limited number of qualitatively different ways in which various phenomena, and aspects of, the world around us are experienced, conceptualized, understood, perceived, and apprehended.” (Marton, 1994, p. 4424). In a phenomenographic context, a phenomenon is defined as “the thing as it appears to us,” (Marton, 2000, p. 105). Researchers working within this tradition are concerned with mapping people’s conceptions or ways of experiencing different phenomena. Similar conceptions are grouped together and are used to create categories of description, an abstraction of the collective meaning of similar conceptions. Each category of description represents a qualitatively different way of experiencing a phenomenon. These categories of description are hierarchically organized into the outcome space, the major forum for reporting phenomenographic results.

Phenomenography was developed out of research into learning conducted in the mid 1970’s in Goteborg, Sweden by Ference Marton, Roger Saljo, Lennart Svensson and Lars-Owe Dahlgren. They sought to answer the questions “(a) What does it mean to say that some people are better at learning than others? (b) Why are some people better at learning than others?” (Marton, 1994, p. 4424). To answer these questions, they looked to qualitative research, creating a method to capture data on how the participant experienced or conceptualised the phenomenon, in this case, learning. The term phenomenography was first used to describe the group’s new research method in 1981 (Marton, 1981). Since its inception, some notable phenomenographic contributions to knowledge about learning include:

- the concepts of deep and surface learning (Marton & Saljo, 1976)
- six conceptions of learning (Marton, Dall’Alba, & Beaty, 1993).
- the theory that learning is based on variation (J. Bowden & Marton, 1998; Marton & Booth, 1997)

Today, phenomenography has grown considerably in scope and scale. Hasselgren and Beach have identified five different context-types of

phenomenographic research that have grown out of the Goteborg group: experimental, discursive, naturalistic, hermeneutic and phenomenological (1997, p. 195). Besides different context types, three distinct 'lines' of phenomenography have been discerned:

- 1) investigations of general aspects of learning using specific content as a context
- 2) content oriented studies focusing on how learners understand the subject matter
- 3) 'pure phenomenography' focusing on how individuals conceive, "...various aspects of their reality" (Marton, 1988, p. 189-190).

While semi-structured interviews are the most commonly used data collection mechanism in phenomenographic studies, many other data collecting tools have also been used. These include written responses (Bruce, 1996; Cope, 2000), observation (Patrick, 2000), group interviews, drawings, artefacts and historical documents.

Phenomenographic studies have investigated a broad range of topics including: secondary teachers conceptions of teaching and learning (Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001), students' understandings of physics principles (Ramsden et al., 1993), organisational change (Dunkin, 2000), workplace learning (Gerber, Lankshear, Larsson, & Svensson, 1995), mental health (Jormfeldt, Svedberg, & Arvidsson, 2003; Svedberg, Jormfeldt, & Arvidsson, 2003), and the environment (Loughland, Reid, & Petocz, 2002).

CRITICISMS OF PHENOMENOGRAPHY

For many years, phenomenographic research escaped serious criticism. Webb suggests that this lack of criticism occurred because it was, "...as though the higher education research and development community had found a theory to support its deepest 'prejudices' and common sense opinions" (Webb, 1997, p. 199). These days, however, "Findings (from phenomenographic studies) will not be accepted just because they are interesting and plausible, which they are, but because they are seen to be well-grounded and weighed up against other possibilities" (Francis, 1993, p. 75).

Phenomenography has been accused of lacking a concrete theoretical platform for data analysis. Webb (1997, p. 200) notes, "What are the 'prejudices' of phenomenographers as they construct and interpret categories of understanding: what is the 'something theoretical' which informs their observations? What else can it be but their own historically and socially informed understanding?" Richardson (1999, p. 72) claims that

phenomenographic research, "...was felt to lack a clear conceptual basis. 'Phenomenography' represented the attempt to provide an ad hoc and post hoc underpinning for the methodology that Marton and his colleagues had employed with such apparent success."

Their concerns are understandable in light of current literature available on phenomenography. Most published phenomenographic studies make reference to few, if any, theoretical assumptions and present limited descriptions of analytical process, focusing instead on results. There is clearly a need for work that explicates more clearly the theoretical principles underpinning phenomenographic research and analysis, a gap which this paper will attempt to fill.

THEORETICAL UNDERPINNINGS OF PHENOMENOGRAPHY

While phenomenography is a flexible research tradition that can be adapted to suit different research questions and terrain, some key epistemological and ontological assumptions underpin all studies. Phenomenography drew initially from Gestalt-psychological theory, although it has been claimed that it draws on, "general assumptions and observations concerning the human mind.." rather than, "...any elaborated theoretical stance" (Uljens, 1996, p. 103). As the phenomenographic research tradition grew and developed, however, it incorporated theoretical elements from classical phenomenology (primarily Husserl's interpretation of it) and has also developed its own theoretical principles.

Ontologically, phenomenography operates differently from other paradigms. Phenomenography doesn't attempt to attribute an ontological status to objects; instead the object of research is, "...finding out how their ontological status is experienced" (Marton, 1996, p. 166). Therefore, "...metaphysical beliefs and ideas about the nature of reality and the nature of knowledge do not come first. What comes first are more specific assumptions and ideas directly related to the specific character of the empirical research" (Svensson, 1997, p. 164). Consequently, phenomenography is compatible with a range of metaphysical positions including materialism and idealism.

The most significant ontological assumption underpinning phenomenographic research is the belief in the existence of a non-dualist world. There is no differentiation between an objective 'real' world and a subjective experienced world. The subject and object (phenomenon) are linked, not separate, existing together in a space which is both subjective and objective. Therefore, "...experiences, conceptions, understandings, etc., (terms which I have used interchangeably) refer to subject-object relations of an internal nature. Our world is a world which is always understood in one

way or in another, it can not be defined without someone defining it.” (Marton, 2000, p. 115).

In line with this ontological stance, phenomenography adopts a second order perspective, orienting towards and reporting on “...people’s ideas about the world (or their experience of it).” (Marton, 1981, p. 178). This perspective contrasts with the traditional first order perspective where the researcher attempts to make statements about the world. The second order perspective is fruitful as a research orientation because it allows researchers to, “...find out the different ways in which people experience, interpret, understand, apprehend, perceive or conceptualize various aspects of reality” which are both interesting and pedagogically useful (Marton, 1981, p. 178). It also allows researchers to create descriptions that are, “autonomous in the sense that they cannot be derived from descriptions arrived at from the first order perspective” (Marton, 1981, p. 178).

Working from the second order perspective, people’s conceptions of phenomena become the central form of knowledge. A conception, now often referred to as a way of experiencing (Marton & Booth, 1997), refers “....to actual experiences, understandings, and conceptualizations that people have of various phenomenon” (Marton et al., 1993, p. 283). Ontologically, conceptions ‘...have an experienced reality.’ (Marton et al., 1993, p. 283).

The most important epistemological assumptions underpinning phenomenography are linked to its ontology. In Svensson’s (1997, p. 171) influential work on the theoretical framework of phenomenography, he lists six assumptions he considers to be fundamental to a phenomenographic understanding of conceptions. These assumptions are both epistemological and ontological:

1. Knowledge has a relational and holistic nature
2. Conceptions are the central form of knowledge
3. Scientific knowledge about conceptions... is not true, but uncertain and more or less fruitful
4. Descriptions are fundamental to scientific knowledge about conceptions
5. Scientific knowledge about conceptions is based on exploration of delimitations and holistic meanings of objects as conceptualized
6. Scientific knowledge about conceptions....is based on differentiation, abstraction, reduction and comparison of meaning.

The first of these goes against positivistic assumptions that knowledge is based on absolute truths or facts, positing instead that knowledge is created through human activity and thinking. As *phenomenography asserts that conceptions are the central way people express their understandings or knowledge about the world*, these become the fundamental way of knowing about and experiencing the world.

The last four deal with scientific knowledge. The first of this group highlights the assumption that scientific knowledge about conceptions (or anything else) can not be viewed as absolute truth. As phenomena are experienced in new ways and more variation is detected, what counts as scientific truth changes. For example, in Europe Aristotle's theory of the geocentric universe was scientifically accepted as true, until Copernicus (and other astronomers) using more detailed descriptions of the movements of celestial bodies, created a heliocentric model that has now replaced the geocentric model. What for centuries was accepted as truth was quickly abandoned in light of new scientific observations and descriptions of the solar system.

Therefore fruitfulness must be used instead of truth as the criterion for judging scientific knowledge. For centuries Aristotle's model proved fruitful as it gave an explanation for the movement of the sun and planets, allowing people to locate heavenly bodies in the sky and explain their planet's relationship within the universe. However, Copernicus' heliocentric model is now considered to be more fruitful because it is more closely related to modern descriptions of celestial orbits. To create fruitful conceptions, detailed descriptions must be used, making descriptions fundamental. Phenomena must be viewed holistically to explore their variation and delimitation. For scientific knowledge of these conceptions to be considered fruitful, it must be based on differentiation, abstraction, reduction and comparison of meaning. These four steps are fundamental to phenomenographic data analysis.

CONDUCTING PHENOMENOGRAPHIC DATA ANALYSIS

For data analysis to count as phenomenographic, it must be based on the assumptions outlined in the previous section. However, unlike many traditions, phenomenography doesn't have a 'template' of methodological procedures; instead it operates under a set of guidelines. Marton states that, "...we cannot specify exact techniques for phenomenographic research. It takes some discovery to find out the qualitatively different ways in which people experience or conceptualize specific phenomenon" (Marton, 1986, p. 42). Therefore, phenomenography is interested in, ".....creating methods adapted to the objects" (Svensson, 1997, p. 162).

Fundamental to phenomenographic analysis is Husserl's phenomenological concept of bracketing preconceived ideas (Richardson, 1999, p. 59). Bracketing means phenomenographers must suspend judgment and set aside preconceived ideas they hold about the phenomenon, allowing the data to 'speak' for itself, rather than attempting to manipulate it so it matches a predetermined set of criteria or expectations. Kate Patrick (2000, p. 133) states that bracketing preconceived ideas is the process of becoming open to the implications of the data by, "becoming conscious of one's expectations and actively challenging them!" Without bracketing preconceived ideas, researchers risk:

1. adding or adjusting categories where this is not supported by the data
2. imposing a logical framework on data where this is not justified
3. analyzing the data from the researcher's or content expert's framework, so that the interpretation of the data is skewed towards an accepted or expert view of the phenomenon (Walsh, 2000, p. 23).

While bracketing is a phenomenographic ideal, in reality, researchers will never be able to completely suspend judgment during data analysis. However, phenomenography has steps to minimise the risk of data manipulation. Before phenomenographers look at data, they must identify their own preconceived ideas about it. If the data seem to match their preconceived ideas, they must actively look for other possible explanations and interpretations to avoid forcing the data into any set of categories. Phenomenographers must also suspend their judgment on a response's accuracy, instead working to compare and contrast participant conceptions according to complexity.

After the phenomenographer has bracketed her ideas about the phenomenon, she must examine the data for each distinct way of viewing the phenomenon. To get a broad sense of the conception (or conceptions) underpinning a set of data, each text must be read or viewed multiple times. Throughout these readings, key passages or sections are marked and extensive notes are taken. However, once these initial readings are completed, phenomenographers disagree on how to proceed.

In his seminal 1986 paper describing phenomenography, Marton explicated a process for conducting phenomenographic analysis. Marton (1986, p. 42) stated that after several readings, "Utterances found to be of interest for the question being investigated are selected and marked." These quotes are then analysed and interpreted within their contexts before being removed to create

a data pool. From this data pool, the researcher focuses on the meanings of the quotations and passages, rather than on the individuals themselves. Similar meanings are grouped together into pools of meaning so an individual utterance then has two contexts: its original interview and its grouping (Marton, 1986, p. 42-43).

The data in each pool of meaning is then analysed multiples times, often leading to considerable movement of data between groups. Next, "...borderline cases are examined, and eventually criterion attributes for each group are made explicit" (Marton, 1986, p. 43). The criterion attributes are generated from the data to describe each category's critical features. These categories are known as categories of description, a term that will be further explained later in this paper. Throughout this process, however, the original interview context is to remain foregrounded in the process to avoid decontextualising and misinterpreting data. While Marton's descriptions of the process of analysing data becomes less explicit in later papers, showing perhaps a trend towards greater flexibility, even some recent texts use terminology like 'pools of meaning' (Marton & Booth, 1997), indicating that this procedure is still preferred.

Bowden (2000), however, proposes that utterances must remain within their contexts; pulling quotations out of context risks losing the statement's intended meaning. In his phenomenographic studies, he has chosen to only deal with transcripts as wholes, stating that he finds the process of keeping utterances contextualised difficult, "...to do if a cut-and-paste construction of the pool of meaning is undertaken" (Bowden, 2000, p. 12) and warns that using Marton's approach can allow researchers, especially novice ones, to unwittingly misinterpret data.

While Bowden's point is relevant, practicality must also be a consideration when conducting analysis. Depending on the scope and size of the study, working only with the complete transcripts may hinder high quality analysis by limiting a researcher's ability to efficiently compare and contrast meanings. Bowden's method is also problematic when multiple conceptions arise within one participant's data set, an issue in many studies (Bruce, 1996; Cope, 2000; Marton et al., 1993). When a participant's conceptions shifts, Marton's technique allows both conceptions to be identified and placed into different pools of meaning for further analysis, while Bowden's strategy makes the separation of these qualitatively different conceptions difficult if the researcher insists on dealing with a transcript as a whole.

Marton's method, however, must be exercised with caution. Identical utterances can take on distinctly different meanings in different contexts (Svensson and Theman 1983, cited in Marton, 1986, p. 42). While

quotations may be removed to form the pools of meaning, all judgments on their meaning must occur and be recorded while they are within their context (Marton, 1986, p. 43); their original interview context should be revisited frequently during the analytical process.

Once the data have been analysed for meaning, these different meanings or conceptions of the phenomenon must be scrutinised to detect the critical attributes and distinguishing features between groups of conceptions. These critical attributes are used to create a set of criteria to separate the category from other categories. The category of description becomes the abstraction of the group of similar conceptions (Marton, 1981). Categories of description must fulfill the following criteria in order to be considered high quality:

- 1) Individual categories must stand in clear relation to the phenomenon so that the category tells something distinct about a particular way of experiencing the phenomenon.
- 2) Categories must have a logical relationship with each other; this relationship is frequently hierarchical
- 3) The system must be parsimonious, meaning that the researcher must condense the data to create the lowest number possible of reasonable categories (Marton & Booth, 1997, p. 125).

Once each category of description has been established, they are then hierarchically ordered to form the outcome space, where categories of description are ordered by levels of complexity (Marton, 1994, p. 4428). This outcome space is then synonymous with the phenomenon; according to Marton, they should be interchangeable. Once the outcome space is constructed, the phenomenographic part of the study is completed and the rest of the data organisation and explanation is dictated by the rules of the particular field. The categories should be able to be applied to similar situations, but the entire process is not necessarily replicable.

APPLYING PHENOMENOGRAPHIC ANALYSIS TO DATA

Criticism of phenomenography has stemmed in part from a lack of explication of process in published work. Therefore, more published examples of the application of phenomenographic theory and analytical tools are needed. Few articles have explicated the process of creating categories of description, possibly out of concern that the article could become a 'template' and potentially limit researchers from exploring fruitful avenues of research. Using data from a current study, I will be showing one way of creating categories of descriptions which follows phenomenographic guidelines. This

example should not be used as a template for future research, but rather as an example of one possible way of creating valid and communicable results.

CONTEXT OF THE STUDY

In a current study, I am addressing the question: What are the qualitatively different conceptions of student engagement in learning held by Education Queensland secondary school English teachers? Twenty secondary English teachers from Central Queensland state schools participated in hour long phenomenographic semi-structured interviews aimed at identifying their conceptions of student engagement in learning. All English teachers at three Central Queensland high schools were invited to participate and the volunteers were interviewed for the project. These teachers came from a range of age groups and levels of experience (see Tables 1-3). Each teacher was asked six core questions and numerous follow up questions designed to identify their conceptions of student engagement in learning:

- Tell the story of a time when students were engaged in your classroom.
- Why do you think these students were engaged?
- What specific strategies did you use to foster engagement?
- Are there students who seem to be more or less likely to engage in the classroom? Explain.
- Describe your picture of an engaged student.
- What does engagement mean in a school context?

Age	20-24	25-29	30-35	35-39	40-44	45-49	50-54	55-59	60-64
Number of participants	2	2	2	5	1	3	3	1	1

Table 1

Gender	Male	Female
Number of participants	7	13

Table 2

Years taught	1-5	6-10	11-15	16-20	21-25	26-30	30+
Number of participants	6	6	1	2	2	1	2

Table 3

ORGANISING THE DATA

Once the semi-structured interview data had been collected, the first step was to transcribe the interviews verbatim. In this process, changes in intonation, pitch, and stress were not recorded. After transcription, all utterances were numbered so they could easily be located within the data using a system recommended by Lankshear and Knobel (2004, p. 268). An example of this system is present below:

Ch1.003 Interviewer: Oh, and so why do you think they were engaged in that? What do you think?

Ch1.004 Christine: Because it was something they wanted to do and they had a choice as to um what they did. So basically they were interested in it; they had a choice.

The Ch refers to Christine, the participant's pseudonym. Next is a number, 1, which specifies that this data came from her first interview. The three decimal places are used to count each individual utterance within the interview. They refer to where the utterance falls within the series of utterances forming the interview. Three decimal places are used because there were between 100 and 1000 turns in most interviews.

CREATING POOLS OF MEANING

Once the data has been systematically organised and read multiple times for meaning, the process of analysis begins. According to Marton(1986), data analysis begins with the identification of key passages that show a particular way of experiencing the phenomenon being investigated. These can be labeled or coded to make trends within the data sets visible. However, unlike coding in experimental research, no codes or categories can exist prior to examining the data. The researcher must 'bracket' any preconceived ideas about what categories might be present to avoid manipulating the data.

When approaching my set of transcripts, I began by reading each thoroughly, looking for key ideas about engagement in learning. In three transcripts I began to see similarities in participant descriptions. While at this point in the analysis it is not appropriate to remove data from their context, to explicate the process more clearly, I will present some passages that were highlighted and will give information on their contexts as well.

Once participant, Betty, told of a time where she had five disruptive boys 'engaged' in making card board and pipe cleaner jewellery (referred to as 'bling, bling') while the rest of the class completed academic work. When reflecting on the situation, she stated:

BT1.002 Betty: So in the next lesson that I had with them, they created their bling bling from cardboard, glitter and pipe cleaners. Once I have those five boys engaged, I can then actually teach the rest of the class, but if those five boys aren't engaged, there is no learning happening in my lesson. So in that particular lesson where my boys... designed their bling bling and created it, I was actually able to do two sheets of work with the rest of the class, whereas normally, I would have to chase those boys around the classroom, telling them not to throw things, sit down. So that's basically my story of engagement. I have others with my higher-level classes, but this particular class has been really hard for me. It's been quite stressful... even though it's a tiny step and they only made you know, jewellery, to me it was good because they sat down in a group, they didn't move, they didn't say anything nasty to any other people in the group and they created their jewellery and they were totally engaged in that activity the whole time. And then afterwards, I asked politely, guys, could you stay back and help me clean up and they did. Normally they wouldn't do that; they'd tell me to f-off and run away.

For Betty, engagement meant that those boys were participating in the activity and following basic classroom norms (not throwing things, sitting down, not telling her to f-off). This way of experiencing student engagement in learning appeared consistently in the text, culminating with her final definition of engagement:

BT1.159 Interviewer: What would you say engagement means in a school context? If you had to define engagement, what would you say it is?

BT1.160 Betty: Less students up in the office getting in trouble. Less students on period report, which is a behaviour management mechanism at our school. Less truanting. Um I'd say that.

Again, she links engagement to following school norms, in this case, attending class and behaving appropriately. This theme also appeared in Beth's transcript. As her story of engagement, she tells of a time when all of her class, described as disruptive, was engaged in silent reading. When reflecting on the event, she makes similar statements to Betty:

BH 1.004: Beth:... I just asked them to take their books out and to get started and before long, I knew that they were all at it and they all stayed (pause) interested in what they were reading. So I was really quite amazed because you don't often find that all kids in the class are totally occupied when you are reading. Some of them get disrupted very easily

and distracted and it was just so nice to have a very quiet room for at least $\frac{3}{4}$ of the lesson at least, so that was good.

She also describes the engaged students as following basic classroom norms (not distracted, quiet). The fact that they are following these norms 'amazed' her. Later, she went on to explain why she believed they were engaged:

BH 1.028 Beth: Well, they are fresh in the morning and they haven't been any classrooms where there, you know. If it's a morning class, it is their first or second lesson for the day so there is not too much that could have gone wrong unless it was at home or outside the classroom before they get into the classroom and that has got to be a plus for teachers controlling the class.

Here she introduces 'controlling the class' as one of a teacher's main roles. This priority is consistent with her descriptions of the class in BH 1.004; she talks about their physical behaviour (quiet, occupied) rather than aspects of their learning. In a latter utterance, she divides her pupils up into students (engaged) and non-students (disengaged). She outlines the differences below:

BH 1.036 Beth: I do think that some students, there are some students who will work whether the work is interesting or not. They are just probably in the way they have been motivated in the past or they are just, for some reason or another, they are just students. I think there are students and there are non students. And sometimes you just can't do very much to make a non-student a student. It is in their make up I believe, so that there are students who can sit down and can focus their attention well, probably in their make up and the way they have been brought up in their younger years I think.

BH 1.037 Interviewer: So the students, what kind of makeup?

BH 1.038 Beth: Well, a lot of them are very, well, you could call them sort of sedate I suppose. They are co-operative; they don't argue with you; they don't. They just go with the flow and even if they don't like the work, they will do it without making a fuss. There are students who are disruptive, well who knows what makes them tick, I have no idea.

This passage reinforces the conception that engagement is following classroom rules and norms. She talks about the students 'not arguing' and 'going with the flow.' They are, sedate, focused and 'can sit down.' Engagement is positive in that it helps teachers with, '...controlling the class.'

Lily also mentions this way of experiencing engagement. When asked how engagement is defined in a school context, she responded:

L 1.068 Lily: In a school context I would probably have to say that what I believe engagement is, is students completing their work, students doing the assessment to some degree, um so coming to class, participating, following the rules, behaviour all of those sort of things. So I believe in a school context, that is what engagement is. It is, you know, fitting in to the norm of what is expected at school so and unfortunately if they are not engaged in that system of, you know, like doing their work, participating in class to some degree um, doing assessment, then you know they are..., not so much classed as being unsuccessful, but they are not classed as being successful students.

L 1.069 Interviewer: Okay, so you'd say it's complying to the school rules and processes and stuff like that?

L 1.070 Lily: Yeah.

In this passage, Lily states that engagement is compliance to the rules of school. This includes students behaving and 'following rules,' participating and completing assessment, and 'fitting into the norm of what is expected at school.' However, Lily doesn't carry this conception of engagement throughout the whole interview as Beth and Betty did. Instead, the description above is what she believes schools are looking for from an administrative point of view, as she clarifies with the statement:

L1.074 Lily: But that is in a school sense, like my personal opinion is a lot different to probably what the school's is.

While it may not be her personal way of experiencing student engagement in learning, she acknowledges the existence of this conception and its widespread acceptance.

While these representative passages do seem to possess similar conceptions of engagement, before they can be pulled from their contexts to form a pool of meaning, two steps must occur:

1. Data must be analysed in context to ensure that the participant's meaning is accurately represented
2. Data excerpts must be proved to be representative of a larger section of data

To fulfill step one, I wrote several paragraphs about each utterance or set of utterances, including:

- A detailed description of the interview context

- A summary of what had been said directly before and after the utterance/s
- An analysis of the possible meaning/s of the utterances

These paragraphs are kept with the extracted utterances once they have been removed from the original text.

For step two, I coded the interviews to identify all passages which supported this conception. I used the code 'follows rules' as the temporary marker of these passages. While coding, the researcher must be mindful that conceptions are seldom expressed by participants in a complete, holistic way. Describing the 'whole' that the fragments describe and belong to is one of the goals of phenomenographic analysis. (Marton et al., 1993, p. 285). When deciding if a fragment should be coded under a certain conception, I devised the following questions to guide my analysis:

- Would applying this code be consistent with data found elsewhere in this person's data set?
- Are there other possible conceptions that are better described by this data?

When evaluating the answers to these questions, researchers must be aware that similarly phrased utterances can have very different conceptual meanings. Also, the way words are used must be analysed. For example, within this data set, many teachers use the phrase 'switched on' to describe engaged students, however each defines the term differently; not all the uses of 'switched on' are conceptually the same. Once a conception is found to exist in the data set, representative passages that have been coded to that conception can be removed to form a pool of meaning.

CREATING CATEGORIES OF DESCRIPTION

Categories of description are 'abstract tools used to characterize conceptions' (Marton et al., 1993, p. 283). Each category of description represents a qualitatively different way of experiencing the phenomenon. Once the data have been sorted into pools of meaning, the next step is to create criteria to separate one pool from another. Each pool initially represents a different conception; however, under scrutiny some pools of meaning may combine in light of more common than different criteria. Conversely, a pool may divide when internal conceptual differences are discovered.

To create a set of criteria that delineates a conception as being 'qualitatively different' from another, first the researcher must identify the critical features

that the data in the pool share. Within the 'following rules' pool, several critical features seem to describe this conception of student engagement in learning:

- Engaged students follow classroom rules and norms
- Engaged students participate and are occupied with classroom activities and assessment set by the teacher
- Behaviour outcomes are valued over learning outcomes
- Teachers and administration are seen as being in control of learning and behaviour

This initial set of criteria does put this pool of meaning apart from other pools of meaning such as the pool coded as 'student owned learning.' George's description of engagement in learning below is typical of the utterances in this pool:

G1.062 George: Engagement would be where students are actively learning, as in they

may also be directing their learning. And teachers are not simply teaching and the student are rote learning... the teachers are more learning facilitators....they assist the students in their learning.

Data in this pool have different critical features:

- Students are in control of learning
- Learning is the focus
- Engaged students actively participate in and create learning

These pools can be seen as qualitatively different. The data in pool 'following rules' indicate that engagement exists when students follow classroom and school norms and rules. The data in pool 'student owned learning' suggest that engagement occurs when students are directing and creating their own learning. While a discussion of the implications of these categories is outside the scope of this paper, these two categories highlight the variation in teacher understandings of student engagement in learning.

Throughout the process of creating categories, data is continually sorted and re-sorted, their definitions, "...tested against the data, adjusted, retested, and adjusted again" (Marton, 1986, p. 43). Pools are compared and contrasted with each other to highlight the variation between conceptions. Marton

describes this process as, "...tedious, time-consuming, labor intensive and interactive' (1986, p. 43).

Once the pools of meaning have each been established as containing a qualitatively unique conception, each pool's conception will be given a name and will become a category of description. This category of description will represent one way of experiencing a phenomenon. After these categories have been established, they are hierarchically ordered by complexity to form the outcome space.

This section has show one approach to creating categories of description in a rigorous and analytic way. Researchers must bracket preconceived ideas, deal with data holistically, refer back to the data's context constantly and frequently challenge their understanding of the data to discover other ways of interpreting it. Following these processes creates credible and useful results, preventing researchers from manipulating results or making naïve interpretations of the data.

CONCLUSION

Over the last three decades, phenomenography has been used in studies around the world, spreading far from its birthplace in Sweden. However, in order to protect its integrity as a research specialisation, the process of phenomenographic data analysis must be explained clearly to avoid naïve use. While a wide range of methods can be used in phenomenographic studies, phenomenographic assumptions and analytical processes must be followed if researchers wish to contribute to knowledge using this specialisation.

This paper has summarised key theoretical assumptions underpinning phenomenographic data analysis and has demonstrated the analytical process of creating categories of description using data from a current study on engagement in learning. This example, however, is not to be used a template. Instead it should be viewed an example of one possible pathway to fruitful phenomenographic results, demonstrating the rigorous analysis that valid and communicable phenomenographic studies should have.

REFERENCES

- Boulton-Lewis, G. M., Smith, D. J. H., McCrindle, A. R., Burnett, P. C., & Campbell, K. J. (2001). Secondary teachers' conceptions of teaching and learning. *Learning and Instruction*, 11, 35-51.
- Bowden, J., & Marton, F. (1998). *The university of learning: Beyond quality and competence*. London: Kogan Page.

- Bowden, J. A. (2000). The nature of phenomenographic research. In J. A. Bowden & E. Walsh (Eds.), *Phenomenography* (pp. 1-18). Melbourne: RMIT Publishing.
- Bruce, C. (1996). Information literacy: A phenomenography. Unpublished PhD, University of Queensland, Brisbane.
- Cope, C. (2000). Educationally critical aspects of the experience of learning about the concept of an information system. Unpublished Doctoral, La Trobe University, Bundoora.
- Dunkin, R. (2000). Using phenomenography to study organisational change. In J. A. Bowden & E. Walsh (Eds.), *Phenomenography* (pp. 137-152). Melbourne: RMIT Publishing.
- Francis, H. (1993). Advancing phenomenography. *Nordisk Pedagogik*, 2, 68-75.
- Gerber, R., Lankshear, C., Larsson, S., & Svensson, L. (1995). Self-directed learning in a work context. *Education and Training*, 37(8), 26-32.
- Hasselgren, B., & Beach, D. (1997). Phenomenography- a 'good-for-nothing brother' of phenomenology? Outline of an analysis. *Higher Education Research and Development*, 16(2), 191-202.
- Jormfeldt, H., Svedberg, P., & Arvidsson, B. (2003). Nurses' conceptions of how health processes are promoted in mental health nursing. *Journal of Psychiatric and Mental Health Nursing*, 10, 608-615.
- Lankshear, C., & Knobel, M. (2004). *A handbook for teacher research*. Berkshire: Open University Press.
- Loughland, T., Reid, A., & Petocz, P. (2002). Young people's conceptions of environment: A phenomenographic analysis. *Environmental Education Research*, 8(2), 187-197.
- Marton, F. (1981). Phenomenography- Describing conceptions of the world around us. *Instructional Science*, 10, 177-200.
- Marton, F. (1986). Phenomenography- A research approach to investigating different understandings of reality. *Journal of Thought*, 21(3), 28-49.
- Marton, F. (1988). Phenomenography: Exploring different conceptions of reality. In D. Fetterman (Ed.), *Qualitative approaches to evaluation in education: The silent revolution* (pp. 176-205). New York: Praeger.

- Marton, F. (1994). Phenomenography. In T. Husen & T. N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (Vol. 8, pp. 4424-4429). New York: Pergamon.
- Marton, F. (1996). *Cognosco ergo sum- Reflections on reflections*. In G. Dall'Alba & B. Hasselgren (Eds.), *Reflections on phenomenography: Toward a methodology* (pp. 163-187). Goteborg: Acta Universitatis Gothoburgensis.
- Marton, F. (2000). The structure of awareness. In J. A. Bowden & E. Walsh (Eds.), *Phenomenography* (pp. 102-116). Melbourne: RMIT Publishing.
- Marton, F., & Booth, S. (1997). *Learning and awareness*. Mahwah: Lawrence Erlbaum Associates.
- Marton, F., Dall'Alba, G., & Beaty, E. (1993). Conceptions of learning. *International Journal of Educational Research*, 19, 277-300.
- Marton, F., & Saljo, R. (1976). On qualitative differences in learning: 1- Outcome and process. *British Journal of Educational Psychology*, 46(1), 4-11.
- Patrick, K. (2000). Exploring conceptions: Phenomenography and the object of study. In J. A. Bowden & E. Walsh (Eds.), *Phenomenography* (pp. 117-136). Melbourne: RMIT Publishing.
- Ramsden, P., Masters, G., Stephanou, A., Walsh, E., Martin, E., Laurillard, D., et al. (1993). Phenomenographic research and the measuring of understanding: An investigation of students' conceptions of speed, distance and time. *International Journal of Educational Research*, 19(3), 301-316.
- Richardson, J. T. E. (1999). The concept and methods of phenomenographic research. *Review of Educational Research*, 69(1), 53-82.
- Saljo, R. (1997). Talk as data and practice- A critical look at phenomenographic inquiry and the appeal to experience. *Higher Education Research and Development*, 16(2), 173-190.
- Sandberg, J. (1997). Are phenomenographic results reliable? *Higher Education Research and Development*, 16(2), 203-212.
- Svedberg, P., Jormfeldt, H., & Arvidsson, B. (2003). Patients' conceptions of how health processes are promoted in mental health nursing. A

-
- qualitative study. *Journal of Psychiatric and Mental Health Nursing*, 10, 448-456.
- Svensson, L. (1997). Theoretical foundations of phenomenography. *Higher Education Research and Development*, 16(2), 159-171.
- Uljens, M. (1996). On the philosophical foundations of phenomenography. In G. Dall'Alba & B. Hasselgren (Eds.), *Reflections on phenomenography: Toward a methodology?* (pp. 103-128). Goteborg: Acta Universitatis Gothoburgensis.
- Walsh, E. (2000). Phenomenographic analysis of interview transcripts. In J. A. Bowden & E. Walsh (Eds.), *Phenomenography* (pp. 19-33). Melbourne: RMIT Publishing.
- Webb, G. (1997). Deconstructing deep and surface: Towards a critique of phenomenography. *Higher Education*, 33, 195-212.