A meta-study of teaching practitioner's conceptions of their work

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ABSTRACT

It has been posited that meaning making around occupation both fuels pursuit, and guides vocational development as conceptions form. This dissertation investigates post-secondary teaching professionals conceptions of their vocation with the goal of highlighting possible occupational developmental pathways. Through a meta-study of several phenomenographys a holistic view of the profession emerged.

Utilizing existing findings from twelve contributing phenomenographic studies, sixty-one categories of description were gathered. These past findings provided the underpinning work conceptions of post secondary teaching professionals. These categories upon deconstruction into conceptions reveal different ways teaching practitioners could understand their vocation. Through an iterative process patterns of work meaning were sought by deconstructing, interpreting and synthesizing. A dynamic activity context of the vocation of post-secondary teaching emerged.

Patterns of interaction appear to link with the professional's teaching intention. This suggests that interactions can be a dynamic meditational tool utilized for promoting learning, yet flexible to support teaching practices in often changing circumstances.

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CHAPTER I

INTRODUCTION

Background

The goal of this study was to more deeply explore adult work development as a holistic construct. While work development has been examined from various perspectives, a call has been made to synthesize adult development threads, with the purpose of moving towards a holistic understanding of adult work development (Grenier & Kehrhahn, 2008; Herling & Provo, 2000; Kuchinke, 1997; Ollis, Macpherson, & Collins, 2006).

Kielhofner (2008) observes, "although a great deal of objective knowledge about performance capacity has been generated the subjective experience of performance has been largely neglected" (p. 74). As much of the research within work development disciplines is reductionistic, holistic first person ways of linking performance with individual development ought to be explicated. One such construct, emerging from doing, is individual constructed meaning.

Human development is the process of self-constructing, emerging out of experiences (Berieter & Scardamalia, 1993). What has been experienced underpins current interpretations that in turn set the stage for how the future is interpreted and experienced (Berieter & Scardamalia, 1993). Work development ought to be focused and informed by individual needs. To help adults perform as desired for work success, we ought to seek understanding of the emergent first person meanings that grow out of experiencing work and how these meanings relate to work performance. This understanding should point towards unexplored work development pathways.

Below is the rational for emergent meaning as a way to discover development pathways for adults at work. The interdisciplinary approach here links the following fields: psychology (cognitive psychology, educational psychology, information systems, decision-making, artificial intelligence, human factors); human resource development, and occupational therapy and occupational studies.

Significance of the Problem

Within human development, the significance of a research project is typically demonstrated by how it positively affects economic-based metrics such as organizational and individual effectiveness or efficiency. While these same contributions may be true here, this project reaches beyond the standard economic resource metrics. Instead, the focus is on how meaning-making positively affects well-being, resilience, and most significantly development pathways.

Well-being

Humans are by nature "occupational" (Kielhofner, 1983, p. 12), with an "essential unity of mind and body [dynamically] acting on and in the world" (Kielhofner 1983, p.12, Slagle, E. C., 1922). Furthermore, "People are motivated to make meaning of what happens in their environments" (Baumeister & Vohs, 2002; Frankl, 1963, van den Heuvel; 2013, p. 62). Not just activities outside of work, "but also on the job" (Cash & Gray, 2000; van den Heuvel, 2013, p. 62). Schultz and Miller (2004) note that during stressful economic times, our friends, family and co-workers seek "meaning in their daily efforts" (p. 143). Researchers have acknowledged the importance of being able to experience meaning for optimal human functioning (e.g., Frankl, 1963; Hobfoll, 2001; Jahoda, 1958; Maslow, 1968; Rogers, 1961; van den Heuvel, 2013). Human health and

well-being suffer without an occupational avenue for meaning to emerge (Christiansen,

1999; Kielhofner, 1983; Wilcock, 1993; Savickas, 2000, 2005).

Resilience

Meaning has proved to be an important factor in dealing with changing life

circumstances (Linley & Joseph, 2004; Reker, Peacock, & Wong, 1987; Tedeschi &

Calhoun, 1996; van den Heuvel, 2013). For many workers, job situations are in flux.

Today, more jobs are being mechanized and off-shored then ever before. Moreover, work

hours are frequently reduced and job durations limited. In addition, jobs themselves are

affected by technology change, environmental change, social change, and market shifts.

As a result, jobs tend to be less stable and more fluid, with legacy tasks evolving or

disappearing, replaced with new tasks requiring new skills. All of these factors contribute

to requiring on-going work development, re-development, retooling, skill maintenance,

and new skill formation. Such work development can be a daunting task that overwhelms

even the best prepared.

To counteract the disorientation and frustration of accommodating change, a

different way for individuals and organizations to manage stressors has been suggested.

The construct of meaning is relevant in work settings where people are expected to deal

with change, ambiguity, and uncertainty on an ongoing basis (van den Heuvel, 2013).

Developmental Pathways

With shortened job and industry life cycles, workers must move into new

situations and contexts more often across their lifespan. Shifting work focus, whether at

established businesses or start-ups, requires a flexible workforce. Work contexts are

growing in complexity both socially and functionally. No matter what the situation, doing requires interpretation of experiences from which meaning emerges.

Explicating this "new construct" (van den Heuvel, 2013, p. 62) of meaning gives another way to facilitate adult work development. Within this new construct "employees can regulate their own experience and well-being" (van den Heuvel, 2013, p. 64). If an individual's interpretation of work is highlighted, even traditional approaches of broadly filling skill gaps could be more effective. Deeper examination of this construct ought to identify new individual developmental pathways, particularly when interpretations are compared to others that are considered more developed. This is true for professional development whether it falls into performance-level maintenance, performance improvement, or new performance arenas.

Within the Academy

Even though much investigation has been done to examine and gauge performance, particularly around knowledge creation and transfer, it has been determined that while knowledge is necessary, it is not sufficient for higher quality performance (Herling, 2000). Therefore more than knowledge contributes to performance improvement. Further examination of the construct of meaning may contribute to our understanding as occupational meaning has not been well explicated as a way to facilitate development and therefore performance. Dall'Alba and Sandberg (2006) show emergent work meanings constructed by experts differ from those who are merely competent. Because an individual's interpretation of an experience affects what is learned from that experience, on-going development ought to be affected by what interpretations have been previously constructed.

Interdisciplinary research, weaving together human development, expert and expertise studies, along with occupational science, brings together similar concepts bridging language and constructs, broadening our worldview. Studies that already exist can then be examined from a new integrated perspective (Wittemore & Knafl, 2005). Within a naturalistic research paradigm, a meta-synthesis is considered a:

> discreet and distinct approach to new inquiry . . . It creates a mechanism by which the nature of interpretation is exposed and the meanings that extend well beyond those presented in the available body of knowledge can be generated. (Paterson, Thorne, Canam & Jillings,, 2001, p. 2)

Experiential descriptions of emergent work meaning, like those revealed through phenomenography have been recognized as being both "congenial and parsimonious" (Marton, 1992, p.262) enabling identification of both developmental goals and methods reasonably precisely and effectively. Results provide positive work related developmental pathways for individuals (Marton, 1981; Sandberg 2000). Bringing together many phenomenographies would provide data for a meta-interpretation and synthesis. However, to date a meta-synthesis of existing phenomenographic findings has not been explored.

Problem Statement

Performance maintenance and improvement is an imperative for individual success (Herling, 2000, Kucinich, 1997, Swanson, 1995). However, one recent study shows that performance within the adult population of the United States has fallen in basic areas (OECD, 2013). Human Resource Development (HRD) offers the model in Figure 1.1 relating development and performance. Situated between learning and

performance, expertise is indicated as an intervening state (Swanson, 1995).

Development of expertise has been highlighted as the best way to consistently improve

performance (Herling, 2000; Kucinich, 1997; Swanson, 1995).

However, expertise understood as an outcome of development, has not been well

explicated (Greiner & Kehrhahn, 2008). Built on knowledge from expert and expertise

study methods, HRD models are often reductionistic, abstracted, and "dehumanizing"

(Bruner, 1990, p. 1). These methods described as "suitable for understanding the physical

world [are] inadequate for understanding the living, feeling and thinking world [yet are

still] widely used for that purpose" (Kielhofner & Forsyth, 2004, p. 333).
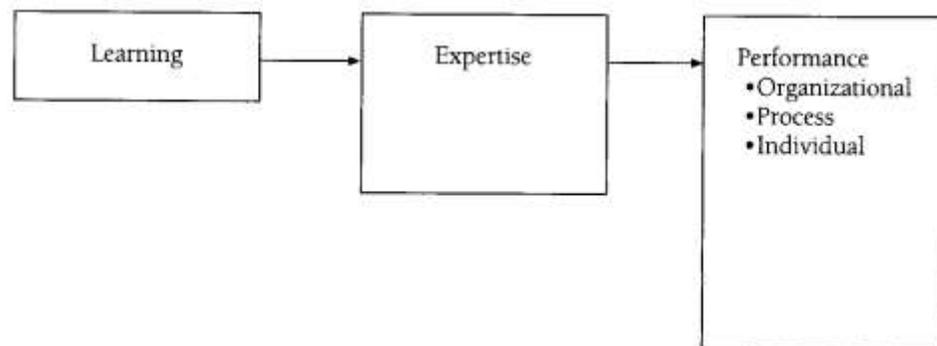
Figure 1 HRD model of vocational development (Swanson, 1995, p.209)

Dewey (as cited in Crutchin, 2004) posited that humans are "more a part of their

environments, and environments more a part of people" (p.304) pointing towards a

holistic system supporting of human development. Particularly within their job, "human

beings thrive and develop through their occupational endeavors" (Hasselkus, 2011, p.

93). It has been posited that meaning emerges out of the first-person holistic occupational

experiences, out of work performance (Kielhofner, 2008). Therefore, one avenue to

improve human performance is to seek understanding of the emergent meanings that

grow out of work.

Research Questions

    1) What are the practitioner work meanings' gathered from existing

phenomenographies?

        Do they relate to activity context?

        Are there variations or patterns?

    2) What are the synthesized work meanings?

        What are the critical similarities and critical differences?

        Are there variations or patterns?

Theoretical Rationale

    While research relating to experts and their expertise has been helpful to a point,

Grenier and Kehrhahn (2008) point out that these frameworks for gauging performance

have yet to provide clear processes for "developing or redeveloping workforce" (p. 201).

To date this work has not substantially contributed to individual work development.

Some believe this may be related to the research methodologies commonly used in expert

and expertise studies (Bruner, 1990). Others opine that expertise, as a developmental

construct, is not well explicated (Grenier & Kehrhahn, 2008). In any case, those striving

towards holistic models of work development suggest that interpretations emerging from

the experience of doing, positively contribute to formation, maintenance, and then

reformation of expertise (Bereiter & Scardamalia, 1993).

    An expert's constructed meaning is a critical aspect of expert performance

(Bereiter & Scardamalia, 1993). Even when domain or content knowledge is made

available many experienced non-experts do not perform like experts (Schraagen, 1993).

The non-expert appears to interpret their work differently from experts (Schraagen,

1993). And, personal interpretation and meaning-making is important for future

development as it affects what, if anything, is learned from an experience (Marton, 1988;

1996). Therefore, the non-expert's work meaning actually limits learning.

Individual constructed meaning emerges out of a ferment spurred by experiences

in a dynamic activity context. The experience of performing actively elicits interpretation

and meaning constructed in a dynamic cycle. What has been experienced, interpreted,

and constructed, underpins the next dynamic cycle of performance and interpretation

(Berieter & Scardamalia, 1993). These constructed meanings of phenomena are posited

to indicate one's level of development in relation to the phenomenon (Dall'Alba &

Sandberg, 2006). In other words, ones constructed meaning of work is a reflection of

one's development (Bowden, 1996)

Phenomenography makes it possible to uncover the constructed meanings of a

phenomenon within a given activity context (Marton, 1988; 1992; 1996: Dall'Alba &

Sandberg (2006). The assumption is that thoughtful selection of the phenomenon, the

questions, and the study participants, limits or bounds the activity context being explored.

'Fixing' the activity context allows the different aspects inherent in the experienced

phenomenon to be revealed. This is done via the phenomenographic methodology, where

conceptions of the personally experienced phenomenon are elicited, from each participant

(Sandberg, 2000). Once elicited all respondent conceptions are compared and then

grouped into discrete sets. These sets form in particular ways around the salient, variable,

aspects of the phenomenon (Pang, 2003). And, particular combinations of phenomenal

aspects ought to form patterns (Trigwell, K., Prosser, M. and Taylor, P., 1994; Prosser,

M., Trigwell, K. and Taylor, P., 1994).

Various adult development frameworks propose that activity context features are important to performance and therefore important to development. Analyzing existing phenomenographic studies for these patterns ought to reveal important features of the activity context. This meta-synthesis, of a specific phenomenon will review the holistic construct of emergent work meaning-making; relate meaning patterns of existing phenomenographys to the activity context; and both analyze and synthesis the discovered meaning-making patterns.

Assumptions

Interpretative research of a constructivist nature assumes that there is no single reality of the phenomena. The multi-realities that exist around a phenomenon are not required to be uniform or cohesive, and may be directly at odds with one another (Maxwell, 2012). Findings drawn from multiple interpretative research studies are considered to be *a* way to synthesis the results, not *the* way (Maxwell, 2012). This study assumes that:

- Meaning-making is a significant construct of adult development.
- Development, in a bounded context, can be understood as performance mediated by a meaning-making pattern.
- It is possible to gather information about meaning-making thought interviews, observations and from personal diaries (reference).
- Meaning-making can be identified and organized into meaningful patterns through the application of phenomenographic research methods (Marton, 1981; Sandberg 2000).
- Patterns of meaning-making, within and across work occupations, can be revealed via phenomenography.
- Systematic meta-synthesis can be applied to results across many phenomenographic studies.

- The process of phenomenography allows for emergence and identification of patterns.

Limitations

This study is interpretative in nature. It will not provide measurable associations, or causal factors. It will not predict, nor does it control. It relates existing results generated in phenomenographic studies with one another, comparing and contrasting, providing new connections between constructs supporting mid-level theory building (Maxwell, 2012; Patton, 2002; Zimmer 2006).

Findings from a meta-synthesis are formed from the outcomes of earlier investigations. These earlier outcomes become the raw materials for analysis, interpretation and meta-synthesis. Therefore, meta-synthesis is based upon the original participants perceived and explained the phenomenon, how these explanations where understood and written about by the original investigators, the framework around which the original research is formed, and the interpretations and understandings of the frameworks used (Paterson, Thorne, Canam & Jillings, 2001). The synthesis ought to be understood as knowledge constructed by this investigator, with a particular point of view, theoretical predispositions, academic context, set of beliefs, and grounded in a particular historical time (Paterson, Thorne, Canam & Jillings, 2001).

Definition of Terms

Interdisciplinary projects require listening to many voices. Similar or identical words are used, however the definitions occasionally vary. Philosophical assumptions implicit in definitions ought to be explicated for clarity (Boring, 1929). Towards this goal important terms are defined below.

Activity Context

The broadly conceived, bounded zone where human doing and its outcome occur. Activity context incorporates: ongoing social roles and groups: work, home, community; emergent relationships: political, economic: and grounded physical environment: people, other beings and objects

Construct

Construct, or hypothetical construct, is one way to label and discuss an unobservable phenomenon (Cronback & Meehl, 1955). For example, in this study a key construct is meaning-making.

Development

In alignment with the biological sciences, here development is a systemic change emerging from an interactive, dynamic system of environment and hereditary that happens over time (Bee & Bjorkland, 2004). Changes may occur in pre-established sequences that are biological in nature or from influences outside of the individual. Change can be considered as positive, neutral, or negative.

Expert, Expertise

Expert, as a noun, is a person recognized as having technique, ability, understanding, discernment or skills grounded in individual nature, related biological factors, and experience. An expert may judge, share their expertise, or give advice within some identified activity context.

Expert, as a title, may be given or earned, formally via organizations, peers, or groups; or informally via public, or even self-proclamation (Guest, Regehr & Tiberius, 2001; Reid et al., 2011; Van der Heijden, 2002).

Expertise, an attribute or descriptor, is a modifier of how much expert-ness one has constructed within a given dynamic activity context. One's expertise is commonly displayed through some form of performance (Farrington-Darby & Wilson, 2006). This performance may, or may not be visible to others.

Heterarchy

The emergent relationships of a family of phenomena where no over-riding processes predetermine relationships or outcomes. Contrast with predetermined, hierarchical relationships (Cutchin, 2004).

Hierarchy

The totality of interwoven and inter-related dimensions of a family of phenomena, often not visible or accessible, forms a coherent and recognizable whole (Cochran, 1990; Young, Valach & Collins, 2002).

Interpretation

The process of explaining to oneself something that already exists in the present (Young, Valach & Collins, 2002). Abilities, opportunities, and expectations are anchored in, and arise out of interpretation (Kielhofner, 2008). Interpretation is linked to development via the potential of the situated embodied context within which the experiences occur.

Meaning

An individual's personally constructed and held outcome of interpretation of first person experiences. Literature may also use sense-making or simply meaning depending on the area of study. Personally constructed meaning may be formed and re-formed, made and re-made. This process of forming meaning is here termed meaning-making.

While personal constructed meaning forms through some meaning-making processes,

these processes these are beyond the scope of this study.

Performance

Doing, or acting on the world towards a desired outcome, eliciting a particular

emergent first-person experience (Kielhofner, 2008). Performance is conceived of as a

naturalistic, holistic gauge that indicates level of expertise in a given milieu, or dynamic

activity context. An individual's performance ought to be closely related to that

individual's development within the performance activity context. Activity can be visible

to others or not, however, the performance outcome is considered as visible, even if the

work done is 'exclusively' mental.

System

The relationships of a particular family of inter-related phenomena, bounded

within an activity context, grounded in feedback loops and complex processes and their

hierarchical relationships played out over time (Vallacher & Nowak, 1994). Including

but not limited to the qualitatively different states and interactive emergent state changes

of these relationships (Vallacher & Nowak, 1994).

Work

Doing, over time, productive activities such as services or creating. Work could

be income producing or not (e.g. employee, student, volunteer, serious hobbyist). Work

also includes related and supporting learning activities, such as training or practice.

Summary

To help adults perform as desired for work success, we ought to seek

understanding of the emergent first person meanings that grow out of experiencing work

and how these meanings relate to work performance. This understanding should point

towards unexplored work development pathways. Chapter II will review an adult

development framework that underpins HRD, expertise studies. And will also review an

adult development framework that purports to seek holistic perspectives, grounded in

occupational studies.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Problem

While work development has been examined from various perspectives, a call has been made to synthesize adult development threads, with the purpose of moving towards a holistic understanding of adult work development (Grenier & Kehrhahn, 2008; Herling & Provo, 2000; Kuchinke, 1997; Ollis, Macpherson, & Collins, 2006). To more deeply explore a holistic construct of adult work development, this review's focus is on two broad adult work performance frameworks. These frameworks are grounded in either Expert and Expertise Studies (EES) or Occupational Studies (OS), each with a unique perspective and purpose.

Most often, EES is linked to psychology, particularly cognitive psychology. Psychology, in general, is the study of the human individual. Sub-areas that contribute to the extensive EES literature include cognitive studies, decision making science, artificial intelligence, and information science (Gass & Assad, 2005). EES essentially uses humans as models, and as inspiration, for the purpose of designing thinking systems and machines (Bransford, Brown and Cocking, 1999).

Much work has been done in the field of EES to quantify clear differences in behaviors between people doing near identical set of actions, extending knowledge around how human cognitive processes function. However, the commonly referenced EES models of human performance have not translated into useful work development models (Greiner & Kehrhahn, 2008). A call has been made to seek out developmentally

appropriate theory, rather than continuing to ground adult work development studies on

traditional EES models (Alexander 1992). One way to do this is by accessing first person

work experiences, interpretations, and emergent meanings.

Occupational Studies (OS) folds in occupational therapy and occupational

science, and acknowledges people as "sociocultural creatures who share common worlds

of action and meaning" (Kielhofner, 2008, p. 5). Meyer (1977; 1922), a founder of

modern occupational therapy, grounded his 'Philosophy of Occupational Theory' on the

notion that a human is not merely a "machine, with an abstract mind or soul added to it"

(1977/1922, p.303). By linking Deweyan developmental philosophy, with an individual's

health and well-being (Cutchin, 2004), Meyer (1977; 1922) aspires "to a holistic

worldview that is centered on activity" (p. 303).

OS views work occupation as organic, holistic, and constructed via development

processes (Kielhofner, 2008; Slagle & Robeson,1933). "To date, occupational science

research has focused primarily on people's experience of engaging in occupation, its

meanings and outcomes" (Riley, J. 2011, p.322); from a perspective specifically

promoting human health and well-being. It has been proposed that a "new" holistic

construct of emergent meaning may offer a way to discover development pathways for

adults at work (van den Heuvel, 2013). However, to date, meaning and meaning- making,

has not been well explicated as a construct of development.

It has been posited that out of work performance emerges meaning, a first-person

holistic experience (Kielhofner, 2008). "Paying careful attention to subjective experience

in its own right can reveal a great deal about performance capacity and limitation of

performance" (Kielhofner, 2008, p. 69;). Because first-person work experience sheds

light on possible developmental pathways, it is critical to reflect on these emergent

experiences (Riley, 2011). Therefore, to aid adults seeking work success via performance

improvement, we ought to seek better understanding of the emergent first person

meanings that grow out of experiencing work (Nelson, 1988); and how these meanings

relate to work performance. This increased understanding ought to point towards

unexplored work development pathways.

Expert and Expertise Studies

Background

Appearing in the 1950s essentially borne from modern cognitive psychology,

expert systems studies are, "a body of stored knowledge and an inference engine to offer

advice on difficult problems" (Gass & Assad, 2005 p. 144). "Some mark the rebirth of

cognitive studies with the Hixon Symposium on Cerebral Mechanisms in Behavior,

which took place in September, 1948 at the California Institute of Technology"

(Benjamin Jr., 2007, p. 207). "One of the chief factors contributing to the rebirth of

cognitive psychology was the computer, and it did not take psychologists long to

recognize its worth for their field" (Benjamin Jr., 2007, p.208).

As a mathematics undergraduate, "Alan M. Turing in 1935 . . . formalized the

notion of computability and introduced the Turing machine as a model for a universal

computing machine" (Gass & Assad, 2005, p. 47). According to Pribram (1990) "Turing

(1937) pointed out, self-reflective programs endowed with recurrsiveness can locate any

item stored in them and can associate any group of items" (p. 86). "John von Neumann

(1903-1957) was one of the speakers at the Hixon Symposium in 1948 promoting a

computer metaphor for the operation of the brain" (Benjamin, Jr. p. 208), and was also

involved with the short-lived but influential Cybernetics movement (Gass & Assad,

2005). Cybernetics separated information from the system that transmitted the

information, decoupling the rules, the logic or inference, by which the system operates,

from the information (Gass & Assad, 2005). "By the late 1950's . . . the

conceptualization of humans as information processors was commonplace" (Benjamin,

Jr. p. 208).

The design and development of artificial intelligence (AI) by pioneers Allen

Newell and Herbert Simon "played a key role in the conceptual models of cognitive

psychology"(Benjamin Jr., 2007, p.18). One powerful model captures how humans

actually function, particularly those considered exceptional in a domain. Mylopoulos and

Regehr (2007) remember, "because the knowledge is implicit in the work that is being

performed, watching experts perform at particular time-points in our studies was thought

to reveal the knowledge they possessed" (p. 1163). The information gathered from

studying experts was then used to develop machine processes. This effort to reverse-

engineer human thinking, inextricably coupled and then defined human thinking as

machine-like processing. With AI and expert studies as a springboard, related avenues of

study of expert performance opened up (e.g. decision making, problem solving, and

knowledge management systems).

Methodology

Below is a streamlined outline of the salient points of the basic methodology used

to uncover thinking processes of humans performing exceptionally, found in Expert and

Expertise Studies (EES). Not intended to cover all possible or existing permutations of

EES research designs, this give a flavor, highlighting general features, assumptions, and

limitations of outcomes. The general intent of EES is to discover relationships between

pre-determined performance classifications and details of actual performances that might

mediate or effect performance outcomes. A minimalistic EES research design includes

these four points:

- Focus of the performance, usually called the domain, discipline, or subject
- Situation of performance, or the dynamic system often called context or activity context
- Subjects whose experimentally observed performance is elicited, and then usually classified by expected performance quality
- Researchers, eliciting and documenting performances

Domain

To explicate differences between performances, studies focus on a specific

domain (Chi, 2006; Farrington-Darby & Wilson, 2006; Grenier & Kehrhahn, 2008).

Experimental research methodology anchors, or fixes, the domain as a dependent

variable. As both the subject's expected-performance-classification and actual elicited

performance are in the same domain, variations in the elicited performances are

considered as being mediated by something else.

Dynamic System of Activity Context

All subject-elicited-performances are considered as emerging from an identical

bounded environment, system, dynamic activity context (Shanteau, 1992a, 1992b). To

help assure the environment is identical for all subjects, the activity context is often a

laboratory, or some other environment that can be tightly controlled, or bounded

(Alexander, 2004). This allows the researcher to assume the dynamic activity context is

perceived as similar for all participants. By so assuming, the activity context is

considered as being equal to, or as having the same affect on every participant. This

allows the researcher to uncouple the activity context from the performances.

Classification of Expected Performance within a Domain

Classification of expected domain performance of participants is done at the

outset of the project by pre-determined accepted methods (for a detailed discussion see

Shanteau, Weiss, Thomas & Pounds, 2002). Classification ranks a subject's expected

performance ability from none to a great deal and becomes an experimental 'given' (Chi,

2006; Shanteau, 1992a, 1992b). Classification is domain dependent, in that it relies on

norms of performance within the given domain.

EES pioneers used the terms of expert and novice dichotomously (Alexander,

2004). Over time, dependent on the specific area of research, differences between

performances were uncovered calling for further research refinements (Shanteau, 1992b).

Novice was parsed into more categories. (i.e., naïve, beginner, experienced, non-expert).

However, 'expert', as legacy terminology, most often denotes those with a great deal of

domain experience and highest level of expected domain performance.

Elicited Performances

Performance comparisons, made possible by fixing both performance domain and

activity context as described above, uncovers differences between subjects (i.e., beginner,

experienced non-expert, and expert). This deceptively simple method of comparison

provides a wealth of knowledge regarding what is similar and different between

individual performances in relationship to expertise classification (see both Chi (2006)

and Shadbolt, (2005) for an extensive discussion).

Significance of Domain

In typical EES research design the domain is assumed as being the same, or constant, for all participants. However, domains do not appear to necessarily be experienced similarly by each respondent (Lundberg, 1989). Because of the wide range of findings around domain, it has been suggested that domain may not be robust enough for theory building of adult work development (Grenier & Kehrhahn, 2008; Hjorland & Albrechtsen, 1995). Domains can be considered as systems with various dimensions, or aspects. To this end recent frameworks proposing various domain dimensions may help explain variations of performance (Alexander, 1992; Alexander, 2004; Grenier & Kehrhahn, 2008; Shanteau, Weiss, Thomas, & Pounds, 2002). In addition, Lundberg (1989) and Alexander (2004) state that expertness is intrinsically linked, or anchored, in a specific domain of practice, with each domain expert having "different knowledge structures" from one another (Lundberg (1989, p. 275). These individual first person knowledge structures emerge from an individual's development (Lajoie, 2003), where each expert has her own lived experiences and history encompassing and then transcending many domains, and domain dimensions. Therefore, the constructed first-person meaning of domain aspects effect not only performance, but also mediate development pathways (for a detailed discussion see Shanteau, Weiss, Thomas & Pounds, 2002).

Importance of Activity Context

Work performance is not random activity, but purposeful goal directed behavior (Tolman, 1932). Performance allows individuals to recall aspects of the situation, the activity context, in which the expertise was developed. Through experience, the work activity context and work performance are inextricably linked. In-depth, rich,

contextualized knowledge gained from experience has been posited as necessary for

"excellence in most fields" (Gleespen, 1996, p.502; Herling 2000). This excellence, or

expertise, emerges through performance (Shanteau, 1992a); performance that is grounded

in the individual's work development activity contexts (Sternberg, 1999). Or in other

words, the level of expertness of a performance in an activity context gauges

development within the activity context (Shanteau, 1992a; Sternberg 1999).

Summary

Over the last half century, much work has been done in EES to quantify clear

differences in performances between people charged with the same work. It has been

uncovered that experts draw on their first-person domain experiences, seeking a

"qualitative" (Chi & Feltovich, 1981, p. 149) fit between a new problem and already

known problem structures. However, application of EES models has been questioned for

use in knowledge building around adult work development, as they are interested in

process descriptions (Alexander, 2004).

EES's "inadequate mechanistic concepts have been used to understand"

(Kielhofner & Forsyth, 2004. p. 333) organic human development. However, EES

concepts and constructs, "suitable for understanding the physical world [are] inadequate

for understanding the living, feeling and thinking world" (Kielhofner & Forsyth, 2004, p.

333). In addition, an EES "orientation fails to illuminate the process by which one

progresses from true novice to documented expert" (Alexander, 2004, p. 279). The

methods and findings of this area of research were not intended, nor oriented towards,

discovering and understanding developmental processes. Even though EES models are

often leveraged to underpin adult work development models.

Occupational Studies

Background

The goal of Occupational Studies (OS) is to pursue wellness by healing "body, mind, and social position" (Meyer, p. 22). Central to wellness is the "importance of purposefully activity" (Kielhofner, 1983, p. 4). As "the key to personhood" (Bateson, 1996, p. 11), is doing, humans are naturally considered "occupational [purposefully] acting on and in the world" (Kielhofner, 1983, p. 12; Tolman, 1932).

Schultze & Miller (2004) note that humans seek "meaning in their daily efforts" (p. 143), particularly, "on the job" (van den Heuvel, 2013, p. 62). Researchers have acknowledged the importance of being able to experience meaning for optimal human development (e.g., Frankl, 1963; Hobfoll, 2001; Jahoda, 1958; Maslow, 1968; Rogers, 1961; van den Heuvel, 2013). Without occupation for meaning to emerge, well-being suffers (Christiansen, 1999; Kielhofner, 1983; Savickas, 2000, 2005, 2009; Wilcock, 1993).

History

Occupational therapy, a contributor to OS, is an outgrowth of a healing treatment approach for mental illness. This approach was formed professionally in 1917, with formal professional education programs, and academic publications following shortly thereafter (Reilly, 1971). Meyer (1977/1922), a founder of the modern era of occupational therapy, grounded his 'Philosophy of Occupational Theory' in the notion that humans are more than "machine, with an abstract mind or soul added to it" (p.10). Cutchin (2004) notes that Meyer, in linking Deweyan philosophy with occupational therapy, gives "a holistic worldview that is centered on activity" (p. 303).

Post World War II, OS became associated with allopathic medicine, a positivistic

medical environment. A renewed commitment to wellness in the 1970's set the

groundwork for re-establishing a wholistic, systemic, community-based treatment model

(Hasselkus, 2011; Kielhofner, 1983, 1988; Reilly, 1971). This re-evaluation of the

position of OS in health care, countered the "narrower scientific and medical based

concept of practice" (Burke, 1983, p. 126) that had become "dehumanizing" (Bruner,

1990, p. 1). However, reductionistic methods are still "widely used" (Kielhofner &

Forsyth, 2004, p. 333) to understand human work development.

OS is concerned with the wellness of individuals, as "sociocultural creatures who

share common worlds of action and meaning" (Kielhofner, 2008, p. 5); "Occupation

involves doing things among and with others" (Kielhofner, 2008, p. 5) expressing and

maintaining our common "social fabric [while making a place in the] world by what they

do" (Kielhofner, 2008, p. 5). "Occupation encompasses a wide range of doing that occurs

in the context of time, space, society, and culture. Temporal, physical, social, and cultural

contexts pose conditions that invite, shape, and inform human occupation" (Kielhofner,

2008, p 5). The milieu of development, the dynamic activity context across time, is the

space within which humans experience and are formed.

Occupation

"To speak of occupation is to describe goal-directed activity in the context of

living" (Christiansen, 1999. p. 553). "Occupation is purposeful, meaningful and goal-

directed doing that is socio-culturally, historically and temporally situated" (Clark,

Wood, & Larson, 1998; Gray, 1997; Polatajko, 2004; Wilcock, 1998). Riley (2011)

understands occupation as a platform, "a context for meaning and doing" (p. 322). While

Hasselkus (2011) positions the doing of work as fundamentally developmental, where

"human beings thrive and develop through their occupational endeavors" (p. 93).

Work

Within OS, work is considered a subset of occupation, "referring to activates

(both paid and unpaid) that provide services or commodities to others such as ideas,

knowledge, help, information-sharing, entertaining, utilitarian or artistic objects, and

protection" (Kielhofner, 2008, p.5). Work occupation also includes any specific

developmental activities (e.g. study, practice, apprenticeship).

Model of Work Meaning-Making

When an individual works, they experience in real time the performance and the

outcome of the performance (Nelson, 1988). From these work experiences humans "are

motivated to make meaning of what happens in their environments" (van den Heuvel;

2013, p. 62). This meaning making is "an active process on the part of the individual"

(Nelson, 1988, p. 635). "When we interpret events, we evaluate them for personal

meaning. If they are meaningful, they have significance to us, we respond emotionally to

them, and they shape our behavior and perceptions of life" (Christiansen, 1999, p. 550).

Work can be thought of "in the abstract" (Nelson, 1988, p. 633) or as specific

activities. Nelson (1988) proposes that work ought to be conceptualized as "the

relationship" (p. 633) of a work form and the work performance. The work form is an

abstract, culturally held notion, while work performance is the individual's active doing.

The pre-existing culturally delimited work form elicits, guides, and structures work

performing (Nelson, 1988). Work meaning emerges from an individual's ongoing

interpretations of the changing "relationship between . . . occupational form and

occupational performance" (Nelson, 1988, p. 633).

A work form guides work performance while the individual gives meaning and

purpose respectively. Work performance, usually observable, is the

… means to go through or carry out something, and occupational

performance means to go through or carry out the occupational form.

Performing is the doing, the action, the active behavior, or the active

responses exhibited within the context of an occupational form. (Nelson,

1988 p. 634)

The objective, culturally held work form can be studied separately from the

individual (Nelson & Jepson-Thomas, 2003). These "habitual practices, patterns and

processes . . . embedded in tradition" (Riley, 2011, p. 324) are readily explained and

transferred to others. Traditional rules, practices, processes, and procedures, while a

starting point for performing, once understood and assimilated become part of a

craftsperson's tacit knowledge or personal knowing (Dormer, 1997b; Polanyi, 1958;

Riley, 2011).

Humans initiate performing by manifesting the culturally-held (objective) form

(Nelson, 1988). Out of this experience a first person, internalized version of the form is

constructed (Nelson, 1988). Similar to Mead's (1934) notion of an 'adjustive

relationship' between the social and private self, the performer actively constructs a

private-form, based on the pre-existing objective cultural form and their experiences

within the dynamic activity context. The individual actively responds to the pre-existing

culturally-held form by experiencing and interpreting, from which meaning emerges

(Nelson, 1988). Experiencing is embedded within a situation, an activity context, where

the "larger sociocultural reality that structures possible relationships" underpin meaning

making (Cutchin, 2004, p.305; Alexander, 1987). Over time, the linking of activity

contexts with meaning making creates "transitions to and possibilities of later

experiences" (Dewey, 1929/1980, p. 236). "Potentially the individual's entire

developmental history can be brought to bear on that interpretation. The same occupation

may be interpreted differently by different individuals depending on all the factors that

have contributed to each individual's current state of development" (Nelson, 1988, p.

635; Cynkin, 1979). These contributing factors are found in the dynamic system of the

activity context. In a dynamic work activity system, even small changes in the system's

aspects affect an individual's constructed emergent meanings (Nelson, 1988).

Experience

    Experiences borne out of performing, interpreting, and adjusting relationships of a

work form, support rich work meaning-making. "The greater the breadth and depth of

experience" (Hasselkus, 2011, p. 4) the more likely the individual will have constructed

enriched personal meanings of their work forms. Those with less lived-experience are

more reliant on collective, socially defined, pre-made forms, and their culturally

determined meanings.

    A person who is inexperienced . . . relies heavily on social definitions of

    meaning in the situation (theoretical knowledge, norms, principles, socially

    expected roles); the person who is experienced relies more on his or her

    personal history to create meaning in the situation, to understand the whole,

    to become involved. (Hasselkus, 2011, p. 6)

Experience both fuels and provides material for construction of the first-person work form. Experiencing "is an active mode of existence in which evolving interactions and transactions—active relationships that are continuous—provide the ever-present background for meaning in the world" (Cutchin, 2004, p. 304). More than an outcome experience is an inclusive, "comprehensive activity" (Dewey, 1929/1989, p. 19); grounded in "multifarious forms of interrelationships" (Boisvert, 1998, p. 21).

> [Experience] cuts through dualisms of object and subject, positing a
> constant connection, indeed relational process, between person and
> environment . . . interconnectedness of person and her or his context
> where each penetrates into and becomes a part of the other [deepens the
> meanings emergent through experience]. (Cutchin, 2004, p. 304)

Meaning of Work

Meaning of work emerges from an individual's first-person interpretation of the work form (Nelson, 1988; Riley, 2011). "Emergence is the principle that complex actions, thoughts, and feelings spontaneously arise out of the interactions of several components" (Kielhofner, 2008, p. 25). "It is the continual transaction of the person–place whole, in times of stability, but particularly in times of change, that provide meaning through actions to re-integrate the whole" (Cutchin, 2004, p.309). With perception of differences, or variations of the meaning of phenomenal aspects, possibilities are revealed through these on-going transactions.

"What one does, thinks, and feels emerges out of the collective conditions" (Kielhofner, 2008, p. 25) present in the dynamic system. The same occupation may be interpreted differently by different individuals depending on which aspects have

contributed to each individual's current state of development" (Nelson, 1988, p. 635). As

different meanings emerge depending on "level of interest, importance, value, and so

forth that the subject held for the activity [the] degree of meaningfulness [along with]

types of meanings assigned" (Ferguson & Trombly, 1997, p. 513) also is expected to

vary.

Phenomenography

Phenomenography, a "research specialization" (Marton & Booth, 1997, p.110),

first used in formal education settings, quickly moved into research efforts towards

understanding work occupation development. Phenomenography focuses on the ways a

phenomenon is experienced (Marton & Booth, 1997), rather than on human behavior or

mental states (Marton and Booth, 1997). The aim of reconstructing work occupation

experiences is to understand the phenomenon from many practitioners' perspectives. In

these developmentally-oriented work-focused studies, practice is enmeshed within a

social context reflecting many of the aspects of the context. The practical implication is

that professional practice incorporates an understanding of the social and historical

dynamic activity contexts within which the profession is practiced. This practitioner

grounded holistic view of work meaning is what is sought.

Recent phenomenographic work has explored specialized modes of understanding

that are embedded in various professional practices and what these mean for human

development (Sandberg, 2000; Wright, Murray & Geale; 2007). Collin (2002, 2004,

2006) and Sandberg (2000) both analyzed the experiences of professional practice,

including characteristics of workplace development and understanding in situ. Their

projects both interviewed and observed participants. In contrast, Dall'Alba (2005) used a

formal learning environment to promote, simulate or induce desired characteristics of

professional practice. This was achieved by using individual and group reflection, action

learning projects and communities of practice. The characteristics of practice are the links

from experience to a professional's understand of their practice. Wright, Murray & Geale

(2007) induced the recollection of work experiences by interviewing faculty about a

specific aspect of their professional practice, the advising of PhD students. In these

studies, in situ or not, practice is enmeshed within a social context reflecting many of the

aspects of the context. The practical implication is that professional practice has

embedded within it an understanding of the social and historical contexts within which

the profession is practiced.

Summary

The research methodology, phenomenography, is designed to uncover the first

person constructed meanings of the phenomenon of study. Knowing these different ways

highlights significant dimensions of the phenomenon; dimensions that ought to represent

the embedded domain and related work activity context. In addition, it is also possible to

capture the reflection of how these dimensions qualitatively vary. Therefore, if the focus

of study is a particular work occupation, the phenomenographic findings ought to display

the significant holistic dimensions of the work for that group of respondents. To this end

it is proposed that by bringing together many phenomenographys of a single work

occupation, pooling the findings, and then synthesizing same, significant dimensions of

work ought to be revealed.

CHAPTER III

METHODOLOGY

Background

The goal of this study was to uncover patterns of work meaning. To do this

phenomenographys were purposefully selected and then mined for their findings. These

finding then became the primary data for interpretation (Sandelowski & Barroso, 2007).

By pooling the data sets from many work occupation-focused phenomenographys, it was

possible to create a synthesis of that work. As phenomenography was explicitly

developed to reveal conceptions that form during development, learning, and

performance (Creswell, 1998; Dall'Alba, 2005, Dall'Alba, & Sandberg, 2006; Marten,

1992; Sandberg, 2000; Sandberg & Targama, 2007); it is well suited to provide primary

data for this project.

Meta Synthesis

Meta-synthesis, also termed meta-study, or qualitative meta-analysis

(Sandelowski & Barroso, 2007), is a relatively new method of inquiry offering "a means

of enhancing the contribution of qualitative findings" (Zimmer, 2004, p. 311). Linking

empirical findings from existing phenomenographys to one another first requires

gathering together potential studies (Maxwell, 2012; Patton, 2002; Sandelowski &

Barroso, 1997; Zimmer 2004) from which to discover patterns and related concepts, of

individual work meaning (Lincoln, 2005; Paterson, Thorne, Canam & Jillings, 2001;

Ruana, 2005; Zimmer, 2004).

It is understood that naturalistic research involves iterate emergent processes

(Creswell, 1998; Maxwell, 2012; Paterson 2001; Sandelowski & Barroso, 2007). As

such, it is likely that additional criteria, sources of results, and key words may evolve and

emerge. It was expected that this emergent process might reveal unanticipated yet

interesting and informative perspectives and outcomes. While the study process steps are

given, what actually occurred evolved (Paterson, Thorne, Canam & Jillings, 2001;

Sandelowski & Barroso, 2007). As this evolution could not be specifically anticipated,

any process adjustments were documented in Chapter 4. The investigator, as an integral

part of this research project, maintained a journal documenting methods and steps

documenting the actual process. The investigator's journal is discussed later in this

chapter under 'quality of evidence.'

Research Questions

1) What are the practitioner work meanings' gathered from existing

phenomenographys?

> Do they relate to activity context?

> Are there variations or patterns?

2) What are the synthesized work meanings?

> What are the critical similarities and critical differences?

> Are there variations or patterns?

Research Design

Paterson et al. (2001) outlines meta-study as having three discreet steps.

1. Setting the stage: purpose, questions, and framework

2. Seeking and screening: searching for and assessing fit of existing results

3. Interpretation:

    a. Systems for groupings, key terms, phenomena details, research details

    b. "Meta-method" (p. 71) compares and contrasts patterns and themes

    c. "Meta-theory" (p. 91) compares and contrasts underpinning theories

    d. "Meta-synthesis" (p. 109) deconstruction, synthesis, and transformation

These steps were followed with the modification of step 3 below:

1. Setting: purpose, questions, and framework

2. Searching and screening: finding studies, assessing inclusion fit, and
   methodological affirmation.

3. Interpretation:

   a. Methods generating patterns (groupings, terms, phenomena, and research
      details)

   b. Compares and contrasts patterns and themes

   c. Deconstruction, synthesis, and transformation of findings

Step One: Setting the Stage

    As the first two chapters set the stage, no further discussion is needed here; instead the focus forward is on steps two and three.

Step Two: Searching and Screening

    The focus of step two was to find potential studies for inclusion. To this end the search was broadly conceived. The basic criteria, from Chapter II for inclusion in the study was:

- Participants should be adults

- Activity context should be work

- Study ought to be published in a peer reviewed journal

- Study ought to be phenomenographically grounded

As mentioned above, for this meta-interpretation the underpinning theories for all contribution studies were affirmed as phenomenographys. This affirmation occurred when the pool of potential phenomenographic studies was gathered. However, prior to this final affirmation, preliminary inclusion around methodology was based upon either: an explicit statement that the methodology phenomenographic; or alignment with the phenomenographic methodology. In the second circumstance a final affirmation process would either eliminate or confirm methodological grounding (Sandelowski & Barroso, 2007).

Because phenomenographic studies cross academic discipline boundaries, and work domains, a wide variety of publication search engines were first scanned and searched. Search terms and key words included: phenomenography, meaning, meaning-making, and ways of understanding; vocation, profession, work, workplace, adult, and development. As the search progressed additional search terms emerged.

As it was expected that the majority of studies would come from this initial publication database effort, a significant period of time was set aside once started; continuing until reaching saturation (Patton, 2002).The investigator documented searches with all related and relevant information such as terms and dates of searches. Publication demonstrated the quality of the knowledge used for the meta-synthesis, and therefore supported the quality of the outcomes of the study. Specifics detailed below, under the heading of "quality of evidence" later in this chapter. However, adjustments were documented in the investigator's journal. While listed as discrete, the first and second inclusion criteria were linked as studies of work development generally involve adults;

however, this was confirmed.

While an earlier pilot-search indicated enough studies existed that ought to fit the criteria, the actual number of studies able to contribute primary data was unknown. Phenomenographic guidelines recommend about fifteen contributing data sets (Sandberg, 1996). The pool of findings ought to be large enough to contain enough findings for the meta-synthesis to be meaningful; and also display as much variation within the contributors as possible.

Only through a thorough search process would it be possible to confirm the number of phenomenographic studies relating to understanding of work occupations. This search process was grounded in the inclusion criteria stated in Chapter II. Initially four criteria for inclusion were considered (see discussion there), however it was recognized that respondents, in investigations of work, would likely be adults. This was confirmed, reducing the functional inclusion criteria from four to three:

- Methodology is phenomenographically grounded
- Phenomenon of interest is a work occupation
- Study was published in a peer reviewed journal, or in pre-publication

Once the potential study pool was gathered, the occupation of focus emerged. This emergence is based upon the number, quality, and variation displayed within the pooled studies of a given work occupation. If an abundance of quality phenomenographys closely related to the research questions and phenomena are discovered during the seeking and screening phase, the investigator ought to include the widest range of respondents to promote diversity of outcomes (Marten, 1992, 1996). This purposeful sample fosters "in-depth understanding" (Patton, 2002. p. 46) of the meaning

of a work occupation, by providing the widest set of experiences of the phenomenon as

possible.

Finally, the remaining potential studies methodological fit was affirmed. "Research of research . . . should meet the same standards as primary research in methodological rigor" (Wittemore & Knafl, 2005, p.548). While it is possible to synthesize evidence from various methodologies, additional up-front steps to identify, qualify, and transform outcomes are then required (Zimmer, 2006). Every step risks denaturing findings beyond the intent of the original research methodology, with the undesired result of reducing truthfulness and authenticity (Lincoln & Guba, 1985). Therefore, findings only from phenomenographic grounded studies will used, encouraging rigor, as the underlying ontological and epistemological perspective of all studies used were similar (Creswell, 1995).

Unlike searching and seeking where the orientation was broad inclusion, now the aim shifted to tighten the requirements with the explicit purpose of excluding, or screening out, studies that did not fit. While ideally an experienced phenomenographic researcher would confirm methodological fit, this advantage was not available. An experienced reviewer might improve the quality of the determination of the methodology. However, Sandelowski and Barroso (2007) emphasize that while important, the stated method of a study is not as critical as the actually findings "reveal the kind of analytic and interpretive work actually performed" (p. 141). Bridging this knowledge gap, touch points of phenomenographic methodology quality were formed to document the affirmation process.

Methodology affirmation process

Each study was closely examined to confirm its fit to phenomenographic methodology. This affirmed the similarity of the underlying ontological and epistemological perspective of all studies contributing primary data (Creswell, 1998). Methodological affirmation was the comparison of the remaining pooled studies to these fourteen touch points. Once, the contributing studies were affirmed, the data sets could be extracted and formatted, and then interpreted and synthesized. Table 1 illustrates 'Fourteen touch points of phenomenographic methodology quality', formed by integrating two perspectives of phenomenographic methodological quality, serving as a methodological affirmation tool for each study.

Table 1
Fourteen Touch Points of Phenomenographic Methodology Quality

Prepare
1. Research objectives:
2. Respondent group description:
3. Respondent selection process:
   Standard Variety
4. Number:
   Standard between 10 and 30
5. Means of collection of findings:
   Standard face-to-face interview
6. Sample of Questions:
   Standard are what and how of the phenomenon
7. Investigator interviewing skills comments:

Collect
8. Investigator's transcription accurately reflects respondent experiences:
9. Time for in-depth familiarization with the findings:

Analyze
10. Aware of investigator's presuppositions:
    Standard bracketing
11. Initial identification of emergent patterns:
    Standard iterative compare/contrast
12. Articulation of the essence of similarity within each category:
    Standard respondent quotes
13. Naming of categories of description:
    Standard useful
14. Outcome space
    Standard a useful, structured, comprehensive expression of the researched phenomenon

Ashworth & Lucas (2000, p 300) offers nine steps to producing a phenomenography with

Dahlgren and Fallsberg (1991) adding eight considerations of a quality

phenomenography. The inclusion of prose that reflects these 14 touch points

demonstrates a standard investigative quality of the phenomenographic process. The data

collected around affirmation relating to these 14 touch points is shown in Appendix 1

(p.110) Table A1 'Quality of Primary Studies'.

    Dahlgren and Fallsberg (1991) outlines eight steps in the phenomenographic

process; a process with the goal to faithfully describe the qualitatively different ways of

perceiving the phenomenon investigated, discovering categories of descriptions, and

forming an outcome space. However, in tandem with these steps, Ashworth & Lucas

(2000, p 300) identifies nine investigative practices to improve the quality of

phenomenography findings. These practices take into account the need to bracket

presuppositions and to develop an empathic understanding of the respondent's world.

Prior to beginning:

- Investigator should identify the broad objectives of the research study, the phenomenon under investigation, recognizing that each respondent's meaning may be quite different.

- Respondent selection should avoid presuppositions about the nature of the phenomenon or the nature of conceptions held by particular `types' of individual while observing common-sense precautions about maintaining `variety' of experience. Selection looks towards creating a rich phenomenographic outcome space, where different voices are heard and from which the investigator could discern and described a nuanced picture of relevant experiences within a cohort.

- Investigator ought to determine the most appropriate means of obtaining experiences, while allowing freedom for the respondent.

Finding collection:

- Investigator ought to allow for respondents to have maximum opportunity to react, and questions posed ought not be based on investigators presumptions but should emerge out of the interest to make clear the respondent's experience.

- Investigator interviewing skills should be subject to review and changes, minimizing closed description.

Finding analysis:

- Investigator's transcription of the interview should accurately reflect emphases of the participant.

- The analysis should continue to be aware of the importation of presuppositions, and be carried out with the maximum exercise of empathic understanding.

- Analysis should avoid premature closure for the sake of producing logically and hierarchically-related categories of description.

- The process of analysis should be sufficiently clearly described to allow the reader to evaluate the attempt to achieve bracketing and empathy and trace the process by which findings have emerged.

Usually between 10 and 30 interviews, each of 30–60 minutes, are conducted, recorded and transcribed in full. Trigwell (2000) acknowledges that the small number is as much a pragmatic consideration because of the sheer quantity of text data. However, Marton (1986) clearly indicates it is not the quantity of the interviews that is critical, but the diversity of respondents. Data collected is most often from face to face interviews with a goal of facilitate respondent's focus on specific parts of the interview expressing conceptions of objects or phenomena; exploring their limitations and experienced meaning of these objects. Audio recordings, transcribed verbatim are the most common form of data. While not often done, use of artifacts, documents and observation may

underpin thicker descriptions adding richness beyond interviewing. However, there is no

expectation that data will be gathered by more than open-ended and respondent friendly

face-to-face interviews.

Adding more investigative process oriented details, Dahlgren and Fallsberg (1991,

p.152) outlined eight steps of a quality phenomenography.

Familiarization
- With the data, the text of the interviews, via prolonged and repeated exposure to, and immersion in, the transcripts.

- We must adopt a perspective in which the responses appear not only comprehensible, but also logical. The investigator is trying to look with the respondent and see the world as they see it.

- Identification and initial grouping:
  The categories are not general characterizations of the conceptions but forms of expressing the conceptions.

Compare and contrast conceptions to determine differences or agreement
- Grouping into categories of description;
  Looking for emergent patterns from the findings. It does not try and fit the data to pre-determined patterns.

- Articulation of the essence of similarity within each category;
  Use of quotations is essential, allowing the voice of respondents to survive

- Labeling of groups or categories is appropriate labeled as one goal of phenomenography to discover the structural framework within which various categories of understanding exist. Such structures (a complex of categories of description) should prove useful in understanding other people's understanding.

Outcome space
- Developing a coherent visual mapping, of the minimum number of categories that include all the variations in the data, and also to demonstrate an internal consistency. The outcome space is a comprehensive expression of the researched phenomenon

- Pragmatic validity tests involve the extent to which the outcome space is seen to be useful or meaningful to the intended audience.

Step Three: Interpretation and Synthesis of Data

Next, intense reading, reflection and re-reading fostered a deeper relationship with the studies and their findings; as did drafting a detailed summary (Patton, 2002) and mapping data. A significant block of time was allocated when commencing the interpretative process to assure that once started it continued to a point of stability. Sandberg (2000) specifically outlines phenomenographic interpretation with an eye towards "seeing, seeing it as something, and then interpreting" (Lincoln 2005, p. 242). Up to this point the searching and screening process had involved reviewing each study a minimum of three times; however, a specific focus to minimize investigator interpretation until all studies were gathered. This was for two reasons; first, limiting the investigator's engagement until the primary data was gathered so that the process of interpretation could, more easily be captured as a discrete process. And second, preventing inclusion of findings, from non-contributing studies screened out earlier.

Now the engagement level with the studies changed. The raw primary data was in a pre-categorized form and needed to be understood within the context of their studies. Deep reading, reflection, and re-reading was done to try and form an understanding and appreciation of what was done along with the outcomes (Sandberg, 2000, Marten, 1996). To this end, the investigator read "systemically" (Sandberg, 2000, p. 13) looking for 'what' is the meaning of the phenomenon. Again, each study was looked at from two perspectives, first within study, and then between studies. Once all of the studies were reviewed the process starts anew. This time the investigator looks for 'how' the

phenomenon is understood. Again, each study was looked at from two perspectives, first within study, and then between studies. Finally, all studies are reviewed individually "simultaneously focusing" (Sandberg, 2000, p. 13) on both what and how studies understand the phenomenon. The investigator checks the interpretations of meaning by critical comparison until the "most faithful interpretation" (Sandberg, 2000, p. 13) emerges. This iterative process, a hallmark of phenomenography, has been favorably compared to both factor analysis found in quantitative research paradigms and data interpretation in grounded theory (Francis, 1996). Here, the investigator used this process to first understand and then interpret.

Categories of Description

A basic tenet of phenomenography is that findings shall be presented as a set of categories-of-description and finally an outcome space linking the categories to one another. The categories-of-description are constructed from respondent conceptions that emerged through a interview and text analysis process (Marton, 1988). Conceptions have been identified as the "unit of description" (Marton & Pong, 2005) for phenomenographys. The "most essential and distinctive" dimensions, revealed by the conceptions, are identified providing anchors for the forming categories (Marton, 1988, p.147). Categories are considered to emerge, representing and giving voice to all of studies' respondents (Ruona, 2005). In contrast, the outcome space is a hierarchical structure imposed by the investigator to frame the categories in some way (Marton 1988). As qualitative data interpretation is informed by the investigator's perspective (Ruona, 2005); here the less processed form of practitioner work experiences is manifested in categories of description. Therefore, the categories of description are the primary data.

Expected Outcomes

The outcomes for this project were of two levels; first, the primary data gathered from existing phenomenographies; second, the emergent interpretation and synthesis of the gathered primary data.

Primary Data

From existing phenomenographies the expected outcomes, arising from conceptions forming patterns of work meaning, were categories of descriptions. The formed patterns were usually described as a hierarchically related outcome space. Retaining the original voices of the collective respondents, the categories of description were described in prose from the sources (Paterson, Thorne, Canam, & Jillings, 2001; Sandelowski & Barroso, 2007). Other findings such as focus of study, respondent group details along with any other information that informs the interpretation will be considered findings.

Interpretation and Meta-Synthesis

It is assumed that humans make meaning of phenomena in a finite number of ways (Maxwell, 2012; Marton, 1996; Paterson, Thorne, Canam, & Jillings, 2001). Therefore this interpretation included a limited number of patterns, grounded in the dimensions of the phenomenon, which emerged from the primary data. As the study had figures that displayed the patterns of the findings, these inspire visual representations of the emergent patterns. Lincoln (2005) describes phenomenographies as "pattern theories" (p. 228) that draw us to particular elements in related systems. The goal here was to "prompt" a systemic view of work occupation that is "unified, interconnected and holistic" (Lincoln, 2005, p. 228) linking various phenomenon dimensions. Therefore, the

salient outcomes of this work were more likely to be descriptions and figures of the

system representing the salient, emergent features of the studied work occupation.

Instruments

Meta-study considers the investigator as the instrument for gathering, interpreting,

and synthesizing cases (Paterson, Thorne, Canam & Jillings, 2001). To assure the value

of knowledge created here, step-by-step descriptions of the methods used by the

investigator to discover and then check interpretations occurred throughout the study

(Sandberg, 1996). To reveal investigator bias reflexivity was built into the investigation

process by the active use of two tools (Paterson, Thorne, Canam & Jillings, 2001; Ruona;

2005; Sandelowski & Barroso, 2007); a personal statement of subjectivity, and an

investigator's journal.

The statement explains in detail the investigator's background and position on

knowledge creation. Its evolution over the time of this study was documented also, along

with the processes of transformation as best captured. The journal facilitated an active

reflection process through writing and reflecting. In this way the sources of investigator

bias affecting the research were identified. Both of these methods were intended to

improve the quality of the outcomes of this project.

Quality of Evidence

The intended outcome of this study was knowledge that was authentic and

trustworthy (Lincoln & Guba, 1985; Patton, 2002; Sandberg, 1996). Of critical

importance to knowledge claims is the quality of the evidence that supports such claims.

This project, as meta-synthesis of various cases, had two levels of quality to consider.

First, the initial studies used phenomenographic standards for evidence quality cases

(Creswell, 1998). While early phenomenographic literature focused on evidence quality

from a positivistic view, this has since evolved (Creswell 1998; Marton, 1992, 1996;

Patton, 2002; Sandberg, 1996, 2000). The evidence claim of each study was reviewed

and documented during the case selection process. Second, within a meta-study

framework, the results from the gathered cases are considered anew, fresh, and as a

unique data set (Paterson, Thorne, Canam, & Jillings, 2001; Sandelowski & Barroso,

2007). Following a naturalistic inquiry stance, processes fostering trustworthy and

authentic outcomes were followed (Lincoln & Guba, 1985; Patton, 2002).

Trustworthiness is considered to encompass credibility, transferability, dependability, and

confirmability (Lincoln & Guba, 1985).

Credibility and Transferability

The two concepts of credibility and transferability confirm the truthfulness of the

knowledge constructed by naturalistic inquiry and are sometimes compared to internal

and external validity (Patton, 2002). Similarly, Sandberg (2000) organizes his

phenomenographic approach to validity in phenomenography by using two criteria from

Kvale (1989): communicative validity and pragmatic validity. Sandberg (2000) notes that

communicative validity; while pragmatic validity

Polit and Beck (2004) state that credibility is the "soundness of evidence" (p. 36).

This soundness requires an anchored argument that is convincingly linked. Sandberg

(2000) believes that credibility comes out of a continuing conversation that critically

reviews and discusses knowledge claims as an integral part of ongoing investigations.

Related is the idea of how applicable, outside the cases, is the constructed knowledge.

Sandberg notes transferability "involves testing the knowledge produced in action" (p.

14) by an iterative process of constant checking, evaluation, and documentation.

Dependability and Confirmability

Dependability and confirmability are related to "accuracy and consistency" (Polit

& Beck, 2004, p. 35) of the outcome, how likely is it that others that experience this same

event have the same outcome (Zechmeister, Zechmeister, & Shaughnessy, 2006).

Dependability, as it relates to phenomenography, has been explicated as limited in

importance, as the very nature of the discovery process does not always lend itself to

replication (Marton, 1996). Sandberg (1996) posits that phenomenographic dependability

is directly linked to the ability of the researcher to be aware of their interpretive

processes. To aid this, the investigator ought to faithfully document the details of the

process. To this end, Patton (2002) suggests reporting in detail on what was done, why it

was done, and possible implications to the results by orderly following a set of

procedures and processes.

Authenticity

Authenticity involves revealing the investigator's "reflexive consciousness"

(Patton, 2002, p. 546) of their positions. One way to do this is for the investigator to be

transparent when other knowledge informs the processes, seeking to determine if and

how the outcome may be affected (Francis, 1996). Here, active reflection was encouraged

by journaling about the experiences of being the investigator, and then reflecting upon

what was written. This reflexive process exposed the investigator's preconceptions that

may have crept in (Sandberg, 1996). Using different means to perceive each case, or

study, opened up the investigator to new insight (Patton, 2002; Ruona, 2005; Sandberg, 1996).

Ethical Issues

Because this research study utilized existing results published in the public domain, it falls under "Research Exempt from IRB Committee Review Category 4" (University of Minnesota Institutional Review Board). Utilizing existing published results minimizes concerns around participant privacy and safety, while affording new and exciting possibilities of discovery.

Summary

This work, as a meta-synthesis, relied on findings from already existing published studies to explore adult work occupation development by interpreting and synthesizing data sets from gathered phenomenographies. These data sets were grounded in actual practitioners' experiences and beliefs, thereby giving a non-dualistic first person perspective of a particular work occupation. While this chapter describes the investigative steps, the following chapter will detail the actual discovery process for both the gathered data sets and the synthesized findings. These synthesized findings represent a holistic view of the vocationally salient dimensions, identified by practitioners.

CHAPTER IV

FINDINGS

Background

  The aim of this study was to explore work development through interpreting, and meta-synthesizing findings from several phenomenographic studies: creating a holistic mosaic of the collective work-experience meanings, practitioner's make. These collective meanings form the categories of descriptions. These categories capture practitioners' voices, representing ways to understand the work occupation. This meta-synthesis relied on existing phenomenographys results for its primary data (Sandelowski & Barroso, 2007).

Gathering Primary Data

Search and Screen

  The first goal was to gather as large a pool of potential contributing studies as possible. This was done across several steps:

  1) Searching for potential studies using particular terms, with limited screening; forming the initial pool of potential studies.

  2) Screening studies for basic criteria; removing those studies that did not fit.

  3) Sorting studies by work occupations: removing studies of other occupations.

  4) Affirming studies: excluding studies that do not fit.

While appearing above in linear order, the emergent nature of qualitative research resulted in some fluidity of sequencing and iteration. Early on, studies remained in the pool if they generally fit the criteria, particularly for methodology. This was purposeful to allow a broad inclusion initially, as both systematic sorting and affirmation would

provide repeated opportunities for later screening. An additional series of searches (e.g.

citations, citing studies, and author's other investigations) were also completed. These

additional searches occurred both as studies were gathered and also after the work

occupation of focus was determined.

Only through a thorough search process would it be possible to confirm the

number of existing phenomenographic studies relating to work occupations. This search

process was grounded in the inclusion criteria outlined in Chapters 2 and 3.

- Methodology is phenomenographically grounded
- Phenomenon of interest is some work occupation
- Study published in a peer reviewed journal

Search terms and databases searched were chosen based upon these criteria. Table

2 'Studies Found by Database Search' displays the actually databases searched. Search

terms were: phenomenography, meaning, meaning making, sense making, ways of

understanding, vocation, profession, occupation, work, workplace, adult, and

development, in various search combinations.

A significant period of time was allocated once screening started, as it was

expected that the majority of studies would come from this initial publication database

search effort (Sandberg, 2000). This intense period of searching allowed emersion in the

work development literature, aiding discovery that continued until reaching saturation

(Patton, 2002). Table 2 'Studies Found by Database Search' illustrates searched

databases along with a count of studies found in each. Because of data overlaps between

some databases, a few show no contributions to the potential pool. This is because any

studies discovered were not new. This overlap serendipitously provided an additional

opportunity to search, helping to gather as many potential studies as possible. Sixty-six

potential contributing studies emerged.

Table 2
Studies found by Database Search

Name of Database	New studies
Academic Search Premier	24
Business Search Premier	9
LexisNexis	0
Anthropology Plus	0
PsycINFO	0
PsycARTICLES	0
EdResearch Online	4
Education Source (EBSCOhost)	11
ERIC (access via CSA)	0
Sage Full Text Collection for Education	0
Science Direct	4
Sage Journal Package	13
Sociological Abstracts	0
Web of Science	0
Gale Professional Collection	1
Total	**66**

A significant search effort challenge was aligning with two different criteria, one

the topic of research, the other methodological. A purposeful balance was struck between

a broad gathering and screening. Initially methodological grounding remained broadly

conceived, allowing work occupation development to foreground. Methodological fit

would be affirmed later, allowing additional screening opportunities then; rather than

fixate on one criterion at the expense of the other at this point in the process. One result

was the accumulation of a body of supporting literature very closely relating to the topic.

Following the initial database search, eighteen more potential studies were discovered

through citation and author reviews. These boosted the potential studies to eighty-four.

Sort by Occupation

Next, the eighty-four studies were sorted into occupational sets. While the next

goal was to determine the work occupation of focus, the potential studies were also

screened for methodological fit. While not initially noted as a screening step, screening

occurred as the sorting was done. This was a firm reminder of the need to be flexible in

this iterative process. Once completed, twenty-nine potential studies were eliminated.

Then, eleven potential studies were placed under 'miscellaneous' as only one or two

studies were found per representing occupation. These miscellaneous occupations related

to finance, management, library science, and childcare. The remaining forty-four sorted

handily into five occupations summarized in Table 3 'Work Occupations Studied'. These

five were teacher, practitioner-teacher, designer, researcher, and a variety of healthcare

occupations.

Table 3
Work Occupations Studied

Work Occupation	Potential Study
Teaching	15
Practitioner - Teacher	2
Design	9
Researcher	8
Healthcare	10
Miscellaneous	11
Totals	**74**

It was quickly evident the most represented occupation was teaching, particularly post-

secondary teaching. Further review of teaching showed a wide range of investigative

views as displayed in Table 4 'Teaching Occupation Studies: Title and Aim'. Looking

over these perspectives helped ground the interpretations of practitioner conceptions as

the original data was gathered from a certain point of view of teaching. A significant

body of studies was anchored in healthcare, but across several work occupations (e.g.

physical therapy, nursing, anesthetists, and veterinary medicine). In the case of

anesthetists the same research team contributed three investigations, developing a closely

related body of work around this profession as each study took a different perspective.

Screening by teaching brought the potential study pool to fifteen.

Once the work occupation of teaching was identified, additional iterations of

citation and authors' work searches were completed. Six additional studies were found,

however, only one was realized from a new author. The five others, from existing

authors, were rather quickly found to lack publication quality, or were duplications of

findings. The study added is Lameras, Levy, Paraskakis, and Webber (2012). Once the

possible contributing studies were selected, as much time as needed was taken to fully

understand each case separately (Paterson, Thorne, Canam & Jillings, 2001; Patton,

2002; Sandelowski & Barroso, 2007). Intense reading, reflection, summarizing, and re-

reading fostered a deeper relationship with the studies and their data (Patton, 2001). This

deep reading not only realized better understanding of the research processes followed,

but also facilitated a better grasp of each study's specific findings.

As phenomenography is grounded in discovering the various ways that a

phenomenon is interpreted, duplications of identical ways is a redundancy. Unlike some

methodologies, result duplications do not improve the quality of phenomenographic

findings. Instead, the broadest variety of perspectives is sought. Therefore, screening for

duplication of findings was completed prior to interpretation.

Table 4

Teaching Occupation Studies: Title and Purpose

Authors	Study Title	Stated Aim
Pratt	Conceptions of Teaching	"Adult educators" understanding of what it means to 'teach'; "how the teaching of adults is broadly understood across several societies"
Dall'Alba	The role of teaching in higher education: Enabling students to enter a field of study and practice	To 'elicit the teachers' own ways of experiencing teaching in its many aspects"; "qualitatively different ways in which teachers experienced their teaching role": occupational development
Prosser et al.	A phenomenographic study of academics' conceptions of science learning and teaching	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Trigwell et al.	Qualitative differences in approaches to teaching first year	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Koballa et al.	Prospective gymnasium teachers' conceptions of chemistry learning and teaching	When entering the occupation, "gymnasium teachers' conceptions of learning and teaching"
Åkerlind	A new dimension to understanding university teaching	Ways that academics understand university teaching
Prosser et al.	Academics' experiences of understanding of their subject matter and the relationship of this to their experiences of teaching	How experienced University academic staff experience the understanding of their subject matter', and how that links to their teaching
Parpala & Lindblom-Ylanne	University teachers' conceptions of good teaching in the units of high-quality education	To better understand how experienced faculty in higher education design and develop the courses they teach
Ziegenfuss	A phenomenographic analysis of course design in the academy	To better understand how experienced faculty in higher education design and develop the courses they teach
Gonzalez	What do university teachers think eLearning is good for in their teaching?	University teachers experiences with eLearning across a variety of disciplines
Lameras et al.	Blended university teaching using virtual learning environments: conceptions and approaches	Conceptions of teaching, from university computer science teachers, using VLE (Virtual learning environments)
Goh	Conceptions of competency: A phenomenographic investigation of beginning teachers in Malaysia	What do beginning (1 to 3 years experience) K-12 teachers conceive and understand as occupational competence

One particular situation arose with a group of contributing studies that shared author(s). This group of studies was looked at closely assuring each study contributed something new. Four studies, Prosser, Trigwell and Taylor (1994); Trigwell, Prosser and Taylor (1994); Prosser, Martin, Trigwell, Ramsden and Lueckenhause (2005); and Trigwell, Prosser, Martin and Ramsden (2005); represented a closely related body of work. Until deeper engagement, each study appeared to contribute; when better-understood Trigwell et al., (2005) was eliminated because of its' duplication of data.

In addition, two other studies, Boulton-Lewis et al. (2001) and Roberts (2003) were closely reviewed because of their methodology. In the case of both of these studies, mixed methodologies of research were used, with phenomenography appearing as some part of larger projects. In the case of Boulton-Lewis et al., categories of description matched word for word those of others' work (Trigwell et al 1994; Prosser et al. 1994). Therefore, it was assumed these findings were not emergent in nature. As their original data was applied to the "category that was most typical" from other work, the findings offered nothing new and so were excluded. Similarly, Roberts (2003) used existing frameworks (Kember & Kwan, 2000) for data from a small respondent group (7), with an intention to link data to 'Networked learning' theory. Once again, this structuring of the limited findings offered nothing new so they were also screened out. Twelve studies remained contributing primary data illustrated in Table 4 'Teaching Occupation Studies: Title and Aim'. With this final screening completed, affirmation of methodological fit proceeded.

Affirm Quality of Primary Data

Each study was closely examined to confirm its fit to phenomenographic methodology. This affirmed the similarity of the underlying ontological and epistemological perspective of all studies contributing primary data (Creswell, 1998). For this purpose the fourteen touch points of phenomenographic methodology quality were used (see Chapter 3 for discussion). Each study's fit to these 14 touch points are provided in Appendix 1 (p.110), Table A1 'Qualities of Primary Studies'.

In addition to the methodological affirmation the basic unit of analysis, for each study was reviewed. The basic unit of analysis in phenomenography is the conception (Marton & Pong, 2005); emerging, these represent and give voice to all respondents (Ruona, 2005). The "most essential and distinctive" aspects of the phenomenon are revealed by the conceptions, framing categories (Marton, 1988, p. 147). A compilation of each study's definition of conception, the unit of analysis, is displayed in Table 5 'Investigator's Definitions of Conception'. This is particularly interesting as verification that the definition is similar across most studies. And, provides synonyms used and a richer explanation of conceptions as we move through the interpretation. With the completion of searching and screening, summarizing the primary data proceeded.

Table 5

Investigators' Definitions of Conception

Definition of conception, the unit of phenomenographic analysis	Authors	Year
"Conceptions are specific meanings attached to phenomena, which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world" p. 204	Pratt	1992
Not mentioned	Dall'Alba	1993
"The phenomenographic procedure involves the "discovery" of a range of qualitatively different categories of descriptions or conceptualizations. These conceptualizations are depicted as being relational. That is, "a person's experience is strongly influenced by their intentions and that the context in which the phenomena are embedded, in turn, influence the experience." P.76	Trigwell, Prosser, Taylor	1994
Quoting Marton (1988) as "a research specialization to study the different understandings or conceptions of phenomena in the world around us" These conceptions are depicted as being relational." P.218	Prosser, Trigwell, Taylor	1994
"In this work, conception was defined as 'a qualitatively distinct manner in which the subjects were found to voice the ways they thought about learning [and teaching], whether in respect to themselves, their reflections over their progress, or any other expression' (Marton and Booth 1997: 36). Conception was used to describe categories of description that highlight the salient features of a group of individuals. Variation was expected to be found among the prospective teachers' conceptions of learning and teaching chemistry and in the relationships between conceptions of learning and teaching." P.211	Kobolla, Et al	2000
Conceptions are specific meanings attached to phenomena, which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (Pratt, 1992, p. 204).	Roberts	2003
"As is common with phenomenographic research, I use terms such as experience, awareness, meanings, conceptions, understandings, perceptions, views, etc., interchangeably." P.374	Åkerlind	2004
Teachers experience and understanding of their specialization; discipline, subject matter, knowledge	Prosser, Martin, Trigwell, Ramsden, Gillian	2005
While not specifically defined, usage indicates – conception: a way of thinking	Ziegenfuss	2007
While not specifically defined, usage indicates -"their world views or conceptions of the phenomena" p.365	Parpala & Lindblom-Ylanne	2007
Not defined: But used repeatedly	Gonzalez	2010
Not defined: But used repeatedly	Lameras	2012
While not specifically defined, usage indicates – understanding of the phenomenon: But used repeatedly	Goh	2013

The final data sets from contributing studies have the following attributes: All of the study respondents teach post-secondary university except for Pratt (1992), Koballa et al (2000) and Goh (2013). Respondents of these three studies have a learner population of adults, gymnasium students, or K-12, respectively. All of the study respondents were situated within a traditional classroom setting except for Pratt (1992), Gonzalez (2010), and Lameras (2012). Gonzalez and Lameras in particular focused on a teaching context blended or fully online, while Pratt's work with adults occurred across a variety of settings.

Primary Data Summary

The primary data from twelve contributing studies, summarized in sixty-one categories of description, capture different ways that teaching practitioners understand their work. Along with the categories of description, two other data sets directly informed the interpretation and synthesis. These were a) study's stated aim and b) respondent information. These are displayed in Table 4 'Teaching Occupation Studies: Title and Aim', and Table 6 'Practitioner Demographics'. A study's purpose illustrates the aim of the research project. For example, here every contributing study's published aim included at least one of the terms: *conception, conceive, understand, experience, way*. While the respondent information enriches the voices represented. For example, the respondent population selected by Pratt (1992), purposefully crosses several societies because one project goal was to compare and contrast ideas of teaching between social groups. Interestingly, very little difference was actually found. Additional information like this contextualized the data allowing for a richer interpretation.

The most important primary data, the categories of description, were

streamlined, compiled and are presented by study, in Table 7 'Complied Categories of

Description'. These categories of description, taken as a whole, are the findings from the

contributing phenomenographic studies. These, along with supporting text were used as

the primary data here. An additional version of this data maintains the original format

and flavor of each study can be found in Appendix 2 (p.122), Table A2 'Categories of

Description: Original Formatting', and includes the study's outcome space if constructed

and provided. This overview of the raw data shows the different approaches used to

describe the findings for each study, along with additional points of interest depending on

the study. For example, Pratt's (1992) raw data includes figures of systemic-models for

each category of description.

Table 6

Practitioner Demographics

Description of Practitioners	Learner Level	Discipline	Country	Authors	Year
Teachers of adults; 5 cultures, PRC, CA, HK Singapore, USA	Adults	Not specified	Canada China	Pratt	1992
Higher education at the first or second year undergraduate level, also most taught higher levels	University	Chemistry Physics	Australia	Dall'Alba	1993
First year university course	University	Chemistry Physics	Australia	Trigwell et al.	1994
First year university course	University	Chemistry Physics	Australia	Prosser et al.	1994
Recent graduates from a "university's chemistry teaching education program" not yet with professional positions	Gymnasium	Chemistry	Germany	Koballa, et al	2000
Modern Scottish university staff	University	Economics, HRM, marketing, management	UK	Roberts	2003
Traditional research based academics with both teaching and research appointments	University	Social, Information and Natural Sciences Languages	Australia	Åkerlind	2004
Academics from four broad fields of study; several years teaching, first year topic	University	Social Sciences Humanities, Business,, Law, Life & Health	Australia	Prosser et al.	2005
23 discipline diverse faculty from Widener University that vary by experiences	University	Diverse; otherwise not given	USA	Ziegenfuss	2007
Teachers from one of four quality units (disciplines)	University	Theology, medicine, language, political science	Finland	Parpala & Lindblom-Ylanne	2007
University teachers research intensive schools; "variation in experience was sought"; used eLearning within the last year	University	Law, Science, counseling, social science, business	Chile'	Gonzalez	2010
Computer science teachers from 6 different institutions; undergrad and grad	University	Computer Science	Greece	Lameras	2012
18 of a cohort of 35 graduate teachers; worked three years or less	K-12	General	Malaysia	Goh	2013

Table 7

Complied Categories of Description

Authors	Categories of Description
Pratt	Engineering Apprenticeship Developmental Nurturing Social reform
Dall'Alba	Body of Knowledge and Skills Concepts and Principles to Which Knowledge and Skills are Linked Experiences of a Field of Study and Practice (p.307)
Trigwell et al.	Interaction strategy: intention of transmitting information to students Interaction strategy: intention that students acquire the concepts of the discipline Interaction strategy: teacher and student interaction with the intention that students acquire concepts of discipline Interaction strategy: student-focused aimed at students developing their conceptions Interaction strategy: student-focused aimed at students changing their conceptions
Prosser et al.	Learning as Accumulating More Information to Satisfy External Demands Learning as Acquiring Concepts to Satisfy External Demands Learning as Acquiring Concepts to Satisfy Internal Demands Learning as Conceptual Development to Satisfy Internal Demands Learning as Conceptual Change to Satisfy Internal Demands
Koballa et al.	Learning Chemistry is gaining chemical knowledge from credible sources Learning Chemistry is solving chemical problems Learning Chemistry is constructing personal understanding Chemistry is best taught by transferring chemical knowledge from teacher to pupils Chemistry is best taught by posing chemical problems for pupils to solve Chemistry is best taught by interacting with pupils
Åkerlind	Teacher transmission focused experience Teacher–student relations focused experience Student engagement focused experience Student learning focused experience

Prosser et al.	Teachers' experiences of their understanding of the subject matter taught in the topic
	Teachers' experiences of teaching and learning in the topic
	Teachers' experiences of the object of study constituted in the topic
Ziegenfuss	Course design as a roadmap for teaching
	Experiential-based course design
	Process-based course design
	Course design as a sequence or progression
	Audience focused course design
	Outcomes based design
	Curriculum based course design
	Topics based course design
	Content focused course design
	Textbook framed course design
Parpala et al.	Teaching practice: interaction (in a small group)
	Teaching practice: putting teaching into a larger context
	Teaching practice: variety in teaching methods
	Teaching Context
	Teacher's role 1: Inspiring
	Teacher's role 2: Expert
	Student's role 1: Motivated
	Student's role 2: Processing knowledge
	The atmosphere
	The physical environment
Gonzalez	to provide information to students; eLearning as a medium to provide information to students
	for 'occasional' online communication; eLearning as a medium for 'occasional' online communication
	for engaging students in online discussions; eLearning as a medium for engaging students in online discussions
	to support knowledge-building tasks. eLearning as a medium to support knowledge-building tasks
Lameras et al.	information transfer
	application and clarification of concepts
	exchange and development of ideas, and resource exploration and sharing
	collaborative knowledge-creation, and development of process awareness and skills.

Goh	Classroom and Behavior Management (p.4)
	Knowing Subject Matter (p.5)
	Understanding Students (p.6)
	Reaching out for Assistance and Support (p.7)
	Possessing Values of Professionalism (p.8)

Interpretation and Synthesis

The text data, in the form of categories, were reviewed re-read and reflected upon in conjunction with the contributing study. Categories are meaningful groupings of practitioners' conceptions of the phenomenon of their work, teaching. The categories represent "dimensions of experience" (Biesta & Burbules, 2003, p. 43) and are composites highlighting a particular set of salient aspects that collectively form the category. Altman and Rogoff (1987) note, "aspects of a whole are not conceived of as involving mutual influences or antecedents-consequence causation. Instead, the different aspects of wholes coexist as intrinsic and inseparable qualities of the whole" (p.25). Identifying and describing the aspects of a phenomenon, contributes directly to describing the whole phenomenon. Therefore, particular sustained effort was made to realize the aspects reflected in each category.

Each category is believed to reflect a minimum of two aspects with some reflecting several, depending on the complexity of the category (Marton, 1986; 1992). To identify the embedded aspects, each category was unpacked. Significantly, patterns of views of aspects are illustrated when different aspect-views are yoked together. Each pattern represents a way teaching practitioners understand their work (Sandberg, 2000; Sandberg & Targama, 2007). To clarify, a practitioner might hold more than one competing view (Pratt, 1992; Marton & Saljo, 1984). The primary text data summarized in sixty-one categories of description (see Table 6 'Compiled Categories of Description', p. 59) were separated so that each category was deconstructed into aspect-views. While earlier the categories were perceived as sets from studies, now the categories were decoupled from one another. This separation, allowed linking of similar aspect-views

across studies. Categories were physically represented on paper, and interpreted as

separate data snips. This encouraged flexibility in relating categories, ease of

manipulation, opening up possible data formations. Initially done by physically forming

groupings, this iterative process, reviewed, reflected upon and then reformed different

groupings until stabilization.

Framing the data

These emergent, free form groupings, while insightful, pointed out the need to

frame the data for explanatory power. Fortuitously, a contributing study's general

systemic model of the occupation of teaching was suitable for this purpose. Figure 2

'General Model of Teaching', Pratt (1992; p. 205), illustrates the system's significant

aspects: context, aim, teacher, learner, interactions and content.

Figure 2
Pratt (1992) General Model of Teaching
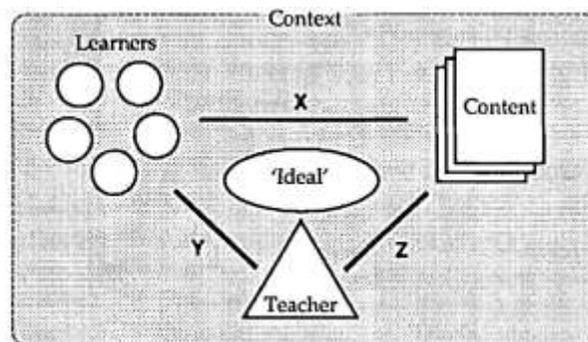
This general teaching model identifies six aspects of the phenomenon. These six

aspects grounded the deconstruction of categories. While straightforward for the majority

of categories, some required more intense review and reflection. Each category's

identified aspects are displayed in Table 8 'Categories Deconstructed by Aspect'.

Table 8 shows the categories of description for each contributing study along the

side. These categories are then shown deconstructed by occupation aspects, which are

illustrated across the top. Quotes of salient notes and quotes are used to display what

aspects are represented along with how each is expressed. It is worth pointing out that the

learner aspect reflected from the categories is not what learners actually do, think or

believe. Instead these are teaching practitioners conceptions of learners.

Table 8

Categories Deconstructed by Aspect

Authors	Categories	Interaction	Teacher/Teaching Practice	Learner/Learning Process	Aim	What is to be Learned	Context
Pratt	Engineering		Delivery (p. 210)*	Learning is observable and predictable	Education efficiency	Stable and external-to-learner (p. 210)	
	Apprenticeship		Modeling doing and being (p. 211)			Embodied in teacher (p. 212)	Practice
	Developmental	Mentioned briefly	Promote forms of thought and inquiry	Intellect development		Developmental processes	
	Nurturing	Regard (p. 214)	Caring yet challenging, helpful yet directive (p. 214)	Self conception			
	Social reform				A better society		
Dall'Alba	Body of Knowledge and Skills		Presents (p. 303)	Learner has previous knowledge		Body of "selected" knowledge and skills (p. 299)	
	Concepts and Principles linking Knowledge and Skills		What to teach How to teach What is relevant (p. 304)			"Linking framework" for K/S. "Patterns" (p. 306-7)	
	Experiences of a Field of Study and Practice (p. 307)				Vocational Development (p. 300)	Competent practitioner (p. 299)	
Trigwell et al.	Teacher focused: intention of transmitting information to students	Teacher only Student has "no responsibility" (p. 80)	Transmits atomized facts and skills Teacher "hopes" information is received (p. 80)	Assumes student-learning ability (p. 80). Passive or active (p. 79). No expectation of prior knowledge (p. 79)			
	Teacher focused: intention that students acquire the concepts of the discipline	Teacher only Learner absorbs (p. 80)	Helping (p. 79) acquisition. Telling, showing. Facilitates linking to previous learning (p. 80)	Has previous learning with which to link (p. 80) Passive or active	Learner to recall facts, solve problems, relate concepts, apply concepts to new situations (p. 79)		
	Teacher and student interaction: intention that students acquire concept of discipline	Learner acquire (p. 80)	"Situation" structured by teacher for learner inter-action	Participant in learning. Active engagement and construction with teacher support	Learner to acquire concepts (p. 80)		
	Student-focused: aimed at students developing their conceptions		Help student actively interact (p. 80)	What student does determines what the student learns	Learner development (p. 81)		
	Student-focused: aimed at students changing their conceptions		Help learner processes (p. 82)	Engaged fully in personal growth	Learner to confront and change their world view (p. 81)		
Prosser et al.	Accumulating More Information to Satisfy External Demands			No linking expected "Rote" (p. 220).	Inculcation of "correct way" (p. 221)		
	Acquiring Concepts to Satisfy External Demands			Linking to prior knowledge (p. 221)	Culture Form Developing		

	Demands				221)	Developing culture's significant meaning (p. 221)		
	Acquiring Concepts to Satisfy Internal Demands			Personal meaning making	Acquiring meaning for learner within existing form		
	Conceptual Development to Satisfy Internal Demands			Extending personal meaning making (p. 221)	Developing, restructuring meaning for learner within existing form		
	Conceptual Change to Satisfy Internal Demands			Engaged fully in self construction	"New world view" (p. 222)		
Koballa et al.	Gaining chemical knowledge from credible sources.	Teacher tells	Credible source (p. 215)	Gaining knowledge (passive or active)			
	Solving chemical problems.		Challenge and motivate (p. 216)	Cognitively engaged (p. 217)			
	Constructing personal understanding.			Learner's self construction (p. 217)			
	Transferring chemical knowledge from teacher to pupils.	Teacher tells (p. 217)	Credible source	Correct and accurate knowledge			
	Posing chemical problems for pupils to solve.		Problem posers Model	Students wrestle with problems to solve (p. 217)			
	Interacting with pupils		Forms opportunities (p. 218)	Experimenting Doing			
Åkerlind	Teacher transmission focused experience	Teacher	Transmits, Presents (p. 367)	Absorbing (p. 367)	Imparting information (p. 367)		
	Teacher–student relations focused experience	Teacher	Outcome: development, job satisfaction (p. 368)	Participant	Promoting relationship (p. 368)		
	Student engagement focused experience	Teacher Learner	Creating active learning opportunities (p. 379)	Engagement	Promoting self-motivation of learner		
	Student learning focused experience	Learner Teacher	Support learners, professional development, teaching practice development	Engaged fully in personal growth	Critical and original thinking, questioning, exploring (p.369)		Classroom as "place to untangle" (p. 369)
Prosser et al.	Understanding subject matter: Facts and techniques		Atomistically portrayed (p. 144)			Facts and techniques	
	Understanding subject matter: Concepts, problems, procedures		Atomistically portrayed (p. 144)			Concepts, issues and procedures	
	Understanding subject matter: Individual elements linked to form a whole		Linked relational internal structure			Concepts, issues and procedures	

	Understanding subject matter: indivisible aspects of a whole		Integral relational internal structure			Concepts, issues and procedures	
	Understanding subject matter: indivisible aspects of a whole		Extended abstract structure			Under-pinning theories and conceptions	
Ziegenfuss	Course design as a roadmap				Program competency (p. 73)		Program Institution Profession
	Process driven course design		Modeling (p. 76)	Participant in learning			
	Learner preparedness course design		Verification of learner preparedness	Scaffolding learners (p. 76)			
	Learner outcome course design			Participant gained outcome			
	Course design within a structure						School, Gov't Agency Profession
Parpala et al.	Interaction (in a small group)		Discussion				
	Putting teaching into a larger context		Situate		Enhance student learning		
	Variety in teaching methods		Variety of methods engage learner				
	Teaching Context (aim)				Student learning (p. 363).		
	Teacher's role 1: Inspiring		Inspiring (p. 363)				
	Teacher's role 2: Expert		Discipline expert (p. 363)				
	Student's role 1: Motivated			Motivated			
	Student's role 2: Processing knowledge			Responsible for an active learning process (p. 364)			
	The atmosphere	Safe, respectful	Encouraging (p. 365)				
	The physical environment						Supportive of learning
Gonzalez	To provide information to students	Teacher	Transmits information (p .66)		Course Management		
	For medium for 'occasional' online communication	Teacher			Communicate (p. 67)		
	For engaging students in online discussions	Discussion (p. 67)			Engagement		
	To support knowledge-building	Collaboration (p. 68)			Develop certain forms of inquiry		
Lameras et al.	Information transfer and recall		Organizes and transmits information or skills	Recall	Access (p. 145)		
	Application and clarification of concepts	Questioning, practicing (p. 149)	Task Design	Engaged (p.147)	Feedback (p. 147)		Tasks
	Exchange and development of ideas, and resource exploration and sharing	"Open-ended" (p. 147)	Task Design	Negotiate, develop, change (p. 147)	Students explore and express (p. 147)		Tasks
	Collaborative	"Exchange" (p.	Task Design	Collaborating	Professiona		Tasks

				(p.148) Reflecting (p. 149)	1 developme nt		
	knowledge-creation and development of process awareness and skills	149)					
Goh	Classroom and Behavior Management		Management skills to control learners (p. 4)		Benefit learners outcomes (p. 4)		
	Subject Matter & Practice		Discipline and teaching practice knowledge (p. 5)		Teacher Competenc e		
	Understanding Students		Evaluation of learner preparedness and temperament (p. 6)		Benefit learners outcomes (p. 6)		
	Reaching out for Assistance and Support		Active participation (p. 7)		Teaching support		
	Possessing Values of Professionalism		Various actions (p. 8)		Professiona l behaviors (p. 8)		

Findings

We are able to critically examine each aspect examining the data found under each aspect's heading. Of particular interest are the possible modes for each aspect. Findings are organized below following the framing model. However, displaying and discussing the findings for this project poses two challenges. First, how to discuss these findings without imposing a separation between aspects of the whole phenomenon; and second, the multi-modal nature of the aspects emerging from the primary data.

The goal here is to represent the phenomenon as a whole, various practitioner views' of the occupation of teaching. Even though aspects are presented and discussed separately below, aspects are indivisible from the phenomenon. As the aspects coexist we will look at each aspect through foregrounding it within the system, acknowledging the intrinsic wholeness of the phenomenon. With these challenges in mind, interpretation starts with the aim of the phenomenon, then moves to the most complex aspect, interaction, and proceeds through the other aspects in an orderly fashion.

Aim

Various intended aims are revealed by this data within the phenomenon of the work of

teaching. Aims are part and parcel of purposive actions (Tolman, 1932). Aim's here over-

arch the whole phenomenon. In addition to distal Aims, the data revealed proximal aims,

or intentions, reviewed again within interaction. Interestingly, the only place the aim of

learning is expressed within the categories is as part of interactions, a local intention

rather than an umbrella aim. Pratt (1992) notes both a distal and a proximal view of aim;

distal, improving society; proximal, streamlining teaching processes towards efficiency

(p. 210). In addition, Ziegenfuss (2007) contributes the aim of "program competency" by

the learner (p.73). While Åkerlind (2004) states that two teacher grounded outcomes,

professional development and job satisfaction. In summary the modes of aim:

- o Distal
  - ▪ Societal 'ideal'
- o Proximal
  - ▪ Educational efficiency   processes
  - ▪ Program competency   learner
  - ▪ Gain specific outcome   learner
  - ▪ Practitioner development   teacher
  - ▪ Work practice satisfaction   teacher

Interaction

Several studies contributed data of teacher interactions (Pratt, 1992; Trigwell et al., 1994;

Prosser et al., 1994, Koballa et al., 2000, Åkerlind, 2004; Ziegenfuss, 2007; Lameras et

al., 2012). As more than half the studies contributed to this aspect, interactions appear to

form a significant focus within a teacher's occupation. The impetus and intention of

interactions are the teachers' purvey, with the teacher expecting an outcome. The driving

proximal aim of the interaction, the intention, intertwines the learner and teacher in

iterative processes. While iterative, each cycle of the interaction process varies due to the

dynamic nature of the activity context.

The desired, or intended, outcome is (mostly) grounded in the learner and

projected by the teacher. However, it is possible for learners, or participants (Ziegenfuss,

2007) to specify the intended outcome. One study (Åkerlind, 2004) mentioned two

teacher grounded outcomes, professional development and job satisfaction. Not directly

intended by the teacher these outcomes emerge out of the experiencing of the

phenomenon.

Interactions, the space where intentions and outcomes of teacher and learner are

woven together, form patterns. In an effort to reveal these patterns, aspects are interpreted

as a whole. Table 9 'Teaching Practice Interaction Patterns' displays the range of

intentions within teaching practice interactions, the teacher yoked actions and the

teacher's expected learner outcome. The teacher purposefully generates an interaction

mode that yokes intention with action towards a desired learner outcome. Interaction is

explained as having both an underpinning proximal aim, or intent, and an expected

outcome. Both the intention and outcome are directed (mostly) outside of the teacher

(Trigwell et al., 1994; Prosser et al., 1994; Pratt 1992). For example, a learning

opportunity (task design) can be intended to facilitate various intentions such as:

- Forming a learning feedback loop determining learner preparedness
- Powering student actions
- Exploring and then expressing learner's findings
- Developing within discipline, or profession

Table 9

Teaching Practice Interaction Patterns

Teacher's intentions	Actions	Expected learner outcomes
Access to whatever (Lameras et al.p.145)	Organizes and transmits information or skills (Lameras et al.)	Recalling Lameras et al.
Imparting information (Åkerlind p.367)	Transmits (Åkerlind p.367)	Absorbing (Åkerlind p.367)
Gaining correct and accurate knowledge	Credible source (Koballa et al.p.215)	Learner maybe passive or active (Koballa et al.)
Inculcation of "correct way" (Prosser et al.1994 p.221)		No linking expected "Rote" (Prosser et al.1994, p.220).
Developing culture's significant meaning (Prosser et al., 1994, p.221)		Linking to prior knowledge (Prosser et al.1994, p.221)
Promoting relationship (Åkerlind p.368)	Outcome: development, job satisfaction (Åkerlind p.368)	Participating (Åkerlind)
Verification of learner preparedness (Ziegenfuss)	Scaffolding learners (Ziegenfuss p.76)	
Feedback (Lameras et al.p.147)	Task Design (Lameras et al.)	Engaged (Lameras et al.p.147) Questioning, practicing (p.149)
Promoting self-motivation of learner (Åkerlind)	Creating active learning opportunities (Åkerlind p. 379)	Engaging Åkerlind
Learner development (Trigwell et al. p.81)	Help student actively interact (Trigwell et al.	What student does determines what student learns (Trigwell et al.)
Promoting learning related developmental processes	Teacher interacts promoting forms of thought and inquiry (Pratt)	Intellect development (Pratt)
Challenge and motivate (Koballa et al.p.216)		Cognitively engaged (Koballa et al.p.217)
	Modeling (Ziegenfuss p.79)	Participant in learning (Ziegenfuss)
Students explore and express (Lameras et al.p.147)	Task Design (Lameras et al.)	Negotiate, develop, change, "Open-ended" (Lameras et al. p.147)
	Problem posers, model (Koballa et al.)	Students wrestle with problems to solve (Koballa et al., p. 217)
	Forms opportunities (Koballa et al.p.218)	Experimenting; Doing (Koballa et al.)
	Caring yet challenging, helpful yet directive (Pratt, p.214)	Self conception (Pratt)
Professional development - embodied in teacher (Pratt p.212)	Modeling doing and being (Pratt, p.211)	
Professional development (Lameras et al.)	Task Design (Lameras et al.)	Collaborating (Lameras et al.p.148) Reflecting, exchanging (p.149)
"New world view" (Prosser et al. 1994,p.222)		Engaged fully in self construction (Prosser et al.1994)
	Caring yet challenging, helpful yet directive (Pratt, p.214)	Self conception (Pratt)

The modes of this aspect, while presenting linearly, are not steps, stages or sequences

leading to some choreographed conclusion. Instead they are the expressed combinations

of teacher actions and learner outcomes occurring in teaching-learning interactions.

Teacher

While interaction process described above appear foundational to the doing of

teaching, being a teacher and all that entails also contributes to the work of teaching. Four

distinct modes of the aspect teacher also emerged. These four modes together anchor the

practitioner's self, grounding their work:

- A teaching practice
- Teaching practice development
- Current discipline knowledge
- Disciplines' point of view

The ideas of having a teaching practice and continuing to develop it were

mentioned but neither was well developed (Goh, 2013; Parpala & Lindbloom-Ylanne

2007; Prosser, et al., 2005). An appreciation for systemic influences limiting in situ

teaching processes and desired outcomes were acknowledged (Parpala & Lindbloom-

Ylanne, 2007; Pratt, 1992; Ziegenfuss, 2007); in conjunction with acquiring and

maintaining discipline expertise (Parpala & Lindbloom-Ylanne, 2007; Pratt 1992). The

importance and value of modeling a discipline's viewpoint was brought forward (Parpala

& Lindbloom-Ylanne, 2007; Pratt 1992). These four modes of the teacher aspect were

described as if contained within the teacher.

Learner

To revisit the point, this data is from the perspective of the teaching practitioner.

Prosser et al (1994), Roberts (2003) and Parpala (2007) note the purpose of learning is

often to change existing knowledge internal to the learner. Åkerlind (2004) and Pratt

(1992) both comment about learner self-formation as an outcome of the learning process.

Pratt (1992) adds that learners ought to be able to address "unpredictable and complex

situations [with the goal of] greater autonomy" (p.214) with the goal of improving their

individual learning outcomes.

In addition an aim of affecting the learner is the focus of several studies. For

example Prosser et al, (1994) illustrated two competing learner grounded aims; learning

to satisfy an external demand or learning to satisfy an internal demand. External demands

relate to learning "objective knowledge" (Prosser et al., 1994, p.221), cultural pressure to

accommodate, and an inculcation process. Internal demands are within the learner, self-

pressure to form "meaning" (Prosser et al., 1994, p.221), a self-construction process. The

first aligns with "generally accepted public knowledge" (Prosser et al., 1994, p.221) or a

cultural occupational 'Form'. While internal demand proceeds the "elaboration" required

for the individual's occupational 'form', "producing a new world view" (p.222).

Learner aspect is expected to do, via interactions, what is required to produce the

desired outcomes, and also contains the mode of being a learner, and formulating best

practices around this:

- Learning: Correct and accurate information, knowledge, concepts, and processes
- Inculcating within a discipline or profession
- Constructing personal discipline knowledge
- Self-constructing: learning autonomy and identity

Content, or what is to be learned
Pratt's (1992) general teaching model illustrates content, or "what is to be

learned" (p.205), as external pre-prepared, static, and contained (e.g. stack of books

icon). The data here expands this aspect beyond that view, in two qualitatively different

ways. The first expansion is beyond the fixed, static and containerized view of what is to

be learned. And the other expansion is the notion of self-construction processes as what is

to be learned. The first, what is to be learned (within the teacher-learner interaction) is

described as forming three modes; a) information, knowledge, and skills; and b)

concepts, principles and processes; and c) revising, updating or changing. The second are

processes of self-construction, the ability to shape behaviors facilitating self-learning.

Finally, Dall'alba (1995) outlines the "intentional" (p.301) development of

professional meaning as what ought to be learned, gained, or improved by teacher,

learner, or both. For example (Prosser et al 2005), illustrates the possibility that what is

learned can be viewed as teacher development around both teaching practice and

discipline knowledge.

Summarized together these seven views of what is to be learned are:

o Learner
    ▪ Adding information, knowledge, skills
    ▪ Adding concepts, principles and processes
    ▪ Changing existing information, knowledge, skills, concepts, principles and processes
    ▪ How to learn; processes, strategies, techniques
    ▪ Forming a point-of-view grounded within a discipline or practice
o Teacher:
    ▪ Improving teaching practice
    ▪ Enriching discipline knowledge

Four studies specifically mention the aspect of context, Pratt (1992), Åkerlind (2004),

Ziegenfuss (2007), and Lameras (2012). Pratt notes that apprenticeships occur within the

context of professional practice, social contexts of discipline practice and professional

communities; not physical place, instead where ever practice occurs.

Context

Åkerlind talks about the work of untangling ideas and concepts in the "classroom", clearly a physical context. Ziegenfuss (2007) points out that the teaching-learning transaction is situated (e.g. a classroom located within a school, a school within a campus, a campus within an institution, and all within some governance system) both physically and socially. Lameras (2013) finds that tasks are the context, albeit a micro-context, for most learning. Summarized context modes:

- Education setting
- Social governance
- Discipline or profession practice setting
- Discipline or professional communities

Summary

Through an extensive process the work occupation of teaching emerged for interpretation and meta-synthesis. The primary data were the categories of descriptions from twelve phenomenographic studies. Phenomenography reveals the perspective of the person experiencing the phenomenon first hand within an outcome of the collective experiences of the respondents, teaching practitioners. Following the lead of Pratt (1992), a systems representation modeling the practice of teaching was used to frame the aspects of these categories. Systems images allow us to view various aspects and their relationships to other aspects. Taking all of the aspects views and bringing them together Table 10 'Summary of Aspect Modes' displays these interpreted and synthesized findings.

Table 10

Summary of Aspect Modes

Aim

Educative 'ideal'	society
Educational efficiency	processes
Program competency	learner
Gain outcome	learner
Practitioner development	teacher
Work practice satisfaction	teacher

Interaction

Reference Table 9 'Teaching Practice Interaction Patterns'

Teacher

A teaching practice

Teaching practice development

Current discipline knowledge

Disciplines' point of view

Learner

Learning: Correct and accurate information, knowledge, concepts, and processes

Inculcating within a discipline or profession

Constructing personal discipline knowledge

Self-constructing: learning autonomy and identity

What

Learner

Adding information, knowledge, skills

Adding concepts, principles and processes

Revising/Changing existing information, knowledge, skills, concepts, principles, processes

How to learn; processes, strategies, techniques

Self-Construct Identity

Forming a point-of-view grounded within a discipline or practice

Teacher:

Improving teaching practice

Enriching discipline knowledge

Context

Education setting

Social governance

Discipline or profession practice setting

Discipline or professional communities

CHAPTER V

DISCUSSION OF FINDINGS

Introduction

Sandberg & Targama (2007) posit that meaning making around occupation fuels

pursuit and guides development. Furthermore, once knowledge is acquired, constructed,

or created, it is one's meaning-making that points to how this knowledge ought to be

construed. In contrast, much Human Resource Development (HRD) theory is rooted in

EES research anchored within psychology. A key difference in theoretical views is that,

rather than assuming the domain's dynamic activity context (DAC) is perceived similarly

by participants, here individuals experience the domain's DAC in various ways.

While seeking to answer the research questions an additional layer of complexity

emerged that was not addressed initially. The questions ought to have been limited to a

particular occupation, and the form conceptions would take was not well explicated. The

occupation of focus, emerging from the research process, is (mostly) post-secondary

teaching. Because answering the questions required uncovering the conceptions

embedded in the categories of descriptions, the categories were deconstructed, unraveled,

into salient aspects and aspect-modes that form the DAC of the domain of teaching.

Therefore, reference to categories, aspects, and aspect-modalities, are required to explain

these findings.

Research Questions and Discussion of Findings

What are the teaching practitioner's categories of description of work gathered from existing phenomenographys?

The categories of descriptions, the primary data, gathered from the contributing

studies have been displayed in two forms; original formatting and summarized,

respectively illustrated in Appendix 2 Table A2 'Categories of description: Original

Formatting' (p.122), and Table 6 'Complied Categories of Description' (p. 59). Both are

provided to display the transition from the raw data to that used here. The raw data often

includes formatting and categorizing that is streamlined in the compilation. In addition,

the illustrations are provided with some of the raw data.

Do practitioner conceptions relate to activity context?

Yes, conceptions embed aspects of the activity context of the work of teaching.

Table 10 'Summary of Aspect Modes' p. 75, illustrates the relationship between

conceptions and the activity context aspects. This was done by identifying the salient

aspects of the domain, teaching; and teasing apart the various modalities of each aspect of

interest. By so doing it is possible to then illustrate the various ways practitioners

understood the salient aspects of the dynamic activity context. This graphic displays how

categories of description were deconstructed, along with underpinning text. This table

can be used to determine the categories representing particular aspects. And also show

the formation of an aspect as represented by the respondents through text.

Are there variations of practitioner's conceptions gathered from existing
phenomenographys?

Yes, the findings revealed that the DAC could be conceived of differently. These

perceived differences occur in two different ways. First, different aspects sets may be

perceived as salient. For example, Table 8 'Categories of Description Deconstructed by

Aspect' (p. 65) gives a comparison between aspects uncovered, by study. Showing that

each study has a different set of aspects, and aspect modes. These revealed aspect modes

were embedded within the categories of descriptions formed from the responses of study

participants. Second, even if the same set of aspects are perceived as salient, the

aspectual modes can be different from practitioner to practitioner. In addition, there is

every indication that practitioners ought to hold more than one meaning-mode for each

aspect. The relationship of dynamic activity context to aspects, and therefore conceptions,

is shown in Table 8 'Categories of description deconstructed by aspect' (p. 65).

What are the synthesized work conceptions for teaching practitioners?
           Work conceptions, by aspect, are synthesized and illustrated in Table 10

'Summary of Aspect Modes' (p. 75) of conceptions from the categories of description.

This table shows each of the aspects along with its modes, or variations of possible ways

to understand the aspect.

What are the similarities and differences within the synthesized conceptions?

           Teaching practitioners conceive of their work in various different ways. Possible

different ways are displayed by aspect-modes. An ability to perceive and understand

more aspect-modes would support greater expertise. It is posited that practitioners

holding all or most of the aspect-modes understand the occupation in more ways than

those that do not.

           These findings also display ways in which DAC can affect variations of

performance, even among experts. One explanation is that different experts have different

combinations of aspectual perception and understanding. These differences within the

expert-group are believed to arise from each individual having their own personal

understandings, or form of the occupation. This personal understanding emerges out of

experience.

Occupational Science and Theory explicates a process by which each practitioner

acquires, constructs, and creates their personal understanding of the profession. OTOS

offers a view of development that reconciles the held inculcated cultural 'Form', via

transformation to the individually constructed 'form'. Tension between the cultural

'Form' and an individual's 'form' underlays occupational development. While the notion

of moving from the cultural 'Form' to the constructed personal 'form' of an occupation

underpins this OTOS theory of development, specific processes are not explicated

(Hasselkus, 2011).

However, EES findings reminds us that for some domains DAC aspects may be

fundamentally more or less knowable; reflected by domain-inherent reduced-

performance-expectations of even the very best performers (e.g. weather predictors).

Level of expertise links to how many aspects, and aspect-modes, are sensed and

understood. Therefore, knowing the occupation's aspects and aspect-modes ought to be

significant information to foster development.

Are there variations or patterns within the synthesized conceptions?

Yes, a pattern of variation emerged and is illustrated in Table 9 'Teaching practice

interaction patterns' (p. 70). Each pattern represents a way teaching practitioners

understand their work (Sandberg, 2000; Sandberg & Targama, 2007). These interaction

patterns reinforce the notion of teaching is inherently social. The interaction between

teacher and learner is at its core. And that depending on the teacher's intention, the

interaction takes on a different mode. As our knowledge around learning advances, a

move from the 'acquisition' metaphor to an interactive, engaged 'participation' metaphor

is called for (Sfard, 1998). This occupational interaction is participatory in nature, where

the learner is individually evaluated and aided, in moment-by-moment experiences

between the learner and teacher. The teacher actively seeks understanding of where the

learner is on a development trajectory (within the DAC and domain) and then facilitates

the learner's further development. To be able to do this requires both in the moment

evaluative abilities, along with knowledge of the domain's developmental trajectory. The

findings here support that notion that expert teachers ought to have the ability to inter-

actively seek out learner understanding and then bridge the learners current position;

while the learner builds links and connections are required to claim.

Practitioner intention activates, or points to, the interaction pattern required to

achieve the intended outcome or goal. While hierarchical relationships have been

postulated as fundamental to organizing the data generated phenomenographically

(Merton, 1998; Prosser et al, 1994); here the findings suggest that for the aspect of

interaction, interaction patterns are heterarchical. Unlike "structural-development"

theories that imply "value judgments" (Kretternauer, 2011. p.75), no set of interaction

aspect-modes are inherently privileged. Instead, each interaction aspect-mode has a

different aim and outcome, and is called upon by the practitioner, depending on their

professional intention.

Shifting between interaction modes supports Ellström (2006) who notes two types

of learning, reproductive and development. "Adaptive or reproductive learning has a

focus on a subject's adjustment to and mastery of certain specific tasks or situations . . .

developmental learning, [is] where the focus is on transforming" (p.34), supporting

creativity and innovation. Depending on what type of learning is intended, the

appropriate interaction pattern would be called upon to facilitate.

Summary

The responses to the research questions confirm that the construct of domain highlights salient aspects of the occupations dynamic activity context. In addition, development is seen as emerging out of experiences within the occupation's dynamic activity context. And finally, social interaction facilitates development.

The findings here reveal that variations in understandings of aspects and aspect modes, forming the DAC, may explain differences in development between practitioners. A teaching practitioner, to be considered an expert, ought to understand all of the aspect-modes that form the domain's dynamic activity context. And finally practitioner intention underpins interaction modes, supporting student learning.

The findings here suggest that limiting a domain's dynamic activity context reduces the number of aspects, or aspect modes, simplifying, reducing what needs to be understood for expertise. This bounding of the DAC facilitates understanding, as less is needed to gain understanding. And this bounding also limits understanding by potentially blocking experience of an aspect, or aspect-mode. Remember, understanding of aspects, and their various aspect-modes, only occurs through experiencing aspectual variations.

In addition to answering the research questions, the two key findings are, first, the detailed explication of the different ways that teaching practitioners can conceive of their work as displayed in Table 10 'summary of aspect modes' (p.75); And second, a practitioner's intended outcome can facilitate selection of the teaching-learning interaction processes that best-fit the goal.

Limitations

Because this study uses data produced by other investigators, it is only possible to uncover the conceptions embedded within the category of descriptions as formed by these researchers. However, because of the broad range of studies contributing primary data, if a conception was not included, overlooked, or misinterpreted, it is anticipated that another study fills the gap. No claim is made here that all levels of professional expertise were included in the respondent pools; therefore it is possible that additional aspects, or aspect modes might exist but were not included here. Also, it is likely that additional conceptions of teaching will emerge over time as an occupation advances and society evolves.

The conceptions elicited by the primary study investigators depend on the developmental status of the respondents. None of the contributing studies claimed to compare responses based upon their quality of professional performance. However, we would expect that competent teachers hold a broader range of aspects, and aspect modes. Level of expertise could be determined by what DAC aspects are highlighting. Perhaps what aspects one 'sees' actually limit the practitioner's view of other aspects; or have labeled some aspects incorrectly as not viable or significant.

Investigators of the primary data framed their findings by forming categories of descriptions. Because categories of descriptions are built from the conceptions expressed by the respondents, the investigators would have to be able to identify the aspects, and aspectual modes, expressed by each respondent. If an investigator did not know an aspect mode existed, then it is possible that it would not be correctly identified. Therefore, the investigator's expertise as a teaching practitioner could affect their ability to identify

conceptions. Similarly, this investigator's expertise in teaching would have the same

affect on the findings here.

Challenges

The cross-disciplinary nature of this project required linking notions, terms and

constructs. While the meta-synthesis aspect allowed for new findings to emerge from

previously discovered results. To do this and stay within the boundaries of

phenomenography required back tracking, confirming and re-reviews of material through

out this project. Determining the important points, and figuring out how to foreground

these while working towards a holistic view of development seemed often contradictory.

The process followed allowed the data to ground itself so that tensions shifted, evolved

and then resolved themselves as the teaching DAC was captured.

In addition, methodological evolution was visible within the contributing studies.

Interestingly, the contributing studies form a longitudinal cohort spanning more than 20

years of research; Reference Table 5 'Investigators Definitions of Conception' (p. 56).

Looking at the definitions of conceptions across time shows that earlier studies offered a

broader description, which has been reduced to a single word in later studies. While this

might reflect consolidation of beliefs within the research methodology, what might

constitute meanings seems to have been reduced also.

Implications for the Future

The current 'challenge' is how to connect what we know about individuals, within

the "social view of learning" (Hodkinson & Hodkinson, 2004, P. 2). Hodkinson &

Hodkinson go on to ask, what are the different micro factors, the "particular, localized

patterns of social interaction" (p.5) the micro-systems within DAC's that affect learning

outcomes? Supporting this micro sub-systemic view of interaction, the interesting

findings here are both teaching-learning patterns of interaction, along with the possibility

of strategic application of interaction patterns as a way to further teaching practice.

Daniels (2009) proposes:

> Different social structures give rise to different modalities of language that
> have specialized mediational properties. They have arisen, have been shaped
> by, the social, cultural and historical circumstances in which interpersonal
> exchanges arise and they in turn shape the thoughts and feelings, the identities
> and aspirations for action of those engaged in interpersonal exchange in those
> contexts (p.37).

The special meditational properties of teaching-learning interaction patterns suggests that

these patterns are dynamic meditational tools utilized for promoting learning, fluctuating

between modes, as required, for best mediation practice.

Interaction modes reflected in 'learning relationships' have been a focus of work

place learning (Rainbird et al, 2004) where organizational levels play a role, (e.g. distal:

state, community, organization; and proximal: group, class, dyad). However, there is a

difference between social interactions and relationships. Here, the emphasis is on

interactions applicable to the practice of the occupation of teaching. Because of the

occupational development orientation of this project, recommendations for both practice

and research are made below.

Recommendations for Practice

Recommendations for practice are directed towards the individual practitioner,

not the collective profession as a whole. The findings here could be used to frame the

breathe of the profession, parsing out what occupational aspects are salient in a given

teaching specialty, learner population, or other ways to limit the occupational DAC.

Utilizing occupational studies as a guide, a practitioner could reflect on their practice and how it relates to the aspects and aspect-modes presented in Table 10 'Summary of Aspect Modes' (p.75). Identification of both first-person experientially constructed meanings (forms), along with identification of culturally held Forms (Nelson, 1988) of these aspects and aspect modes of the occupation ought to be possible. This identification would point to aspects that have been less developed indicating where development is needed to move the practitioner towards greater expertise.

Here, the findings suggested teacher-learner interactions as a direct way to affect learner outcomes. Depending on the teacher's pre-determined aim, or purpose, different interaction patterns can be utilized as a dynamic tool mediating desired outcomes in the learners. Therefore, understanding the power of different teacher-learner interaction patterns is critical. By verifying one's interaction processes, and confirming an ability to access the pattern that supports the intended outcome, it may be possible to improve the use of these patterns.

Teaching-learning interaction patterns clearly formed a separate space where the different patterns were revealed as the data was processed. At that point purposeful intention emerged guiding interaction strategies. No single respondent was considered to have constructed their own meaning, or form, of all of the revealed aspects. This was particularly evident in the limited responses acknowledging the use of interaction patterns to facilitate teaching outcomes. This would suggest that teaching practitioners in the respondent pool have limited conceptions of interaction patterns and processes to support practice. Therefore, particular development ought to be directed towards skill-building around strategic usage of interaction patterns to support learner outcomes.

Recommendations for Research

Possibilities for future research focus on teaching-learning interaction patterns, however, one other area will be mentioned briefly first. The findings here included teacher's conceptions of learners and their learning processes. Because of the number of phenomenographic studies that focus on learner's conceptions of learning, it ought to be possible to juxtapose teacher's conceptions of the learner, with learner conceptions of being a learner. This would confirm similarities, but more importantly point out critical differences in how learner and learning are interpreted depending on one's position in the learning-teaching transaction.

While social interaction has been considered important for learning (Vygotski, 1978; Lave and Wenger, 1991; Daniels, 2009); the notion that intention guides a competent teacher to access and utilize specific interaction patterns as a tool to achieve learning outcomes is not well explicate (Roth, 2009). Three areas of closely related work could be applied to further theory building extending these findings: discourse studies: analysis and genres, and pedagogical interactions.

Discourse Studies

Analysis

Discourse studies include both discourse analysis and discourse genres. Schifrin (2001) posits that discourse is an "interactive process" (p.54) of communication requiring abilities to express, to socialize, and to represent concepts and ideas via language. Discourse analysis in the form of multimodal discourse analysis (MDA) "extends the study of language per se to the study of language in combination with other resources, such as images, scientific symbolism, gesture, action, music and sound" (O'Halloran,

2011, p.1). MDA represents a broadening to systemic themes. One particular principle is

the notion of interaction meta-functions (Iedema, 2003). Three are identified, with one of

particular interest, "interpersonal meaning: enactment of social relations" (O'Halloran,

p.5). The ideas of incorporating various forms of interaction are appealing here as the

teaching-learning DAC has been shown to be richer than simply spoken word or text.

Genres

Discourse genres, "historically specific elements of social practice, whose

defining features link them to situated communicative acts" (Hanks, 1987, p. 668) also

provides an interesting perspective. An emphasis on social practices and history could

address the tension between different teaching interactions, such as 'transmission' or

'construction'. Rather than categorizing one or the other as better, both genres likely

fulfill different teaching intentions (Miller, 1984). This is supported by the findings here.

"Without abandoning earlier conceptions of genres as 'types' or 'kinds' of discourse,

characterized by similarities in content and form, recent analyses focus on tying these

linguistic and substantive similarities to regularities in human spheres of activity"

(Freedman & Medway, 2003, p.2). The regularities, or patterns, discovered here would

each need to be conceived of as a genre. Tying these interactive regularities to the sphere

of teaching and learning would fit, however, how genre is conceived appears to be more

structured, and less fluid, then these interaction patterns currently appear.

Pedagogical Interactions

Pedagogical interactions theory is another field of study that is similar to

multimodal discourse analysis (MDA), but is specific to the social milieu of teaching. In

addition it works to determine interaction patterns that promote student learning.

Cardoso, Ferreira, Abrantes, Seabra & Costa, notes that "interaction dynamics" (p. 1587)

is an essential aspect of student learning, and looked to discover and then analyze

pedagogical interactions. This view reminds that interaction is an ongoing dynamic

process. We have seen here that each interaction pattern has a different outcome, or

purpose. The interactions change depending on the needs of the students. Cox, McIntosh,

Terenzini, Reason & Lutovsky Quaye (2010), suggest that faculty found to interact more

with learners believe interaction is important for learner success. Their conceptual model

differentiates between two forms of interaction, casual and substantive, with movement

between these two forms. The findings here appear to extend or refine these ideas,

including intention of the interaction, along with different forms of interaction.

Network Analysis

In addition to theory building around interaction patterns, network analysis offers

a way to display interaction patterns, showing how they might fluctuate across the span

of an event. "Sociograms", a form of interaction diagraming (Knoke & Yang, 2008, p.46)

use different designators to indicate social details of interest. General socio-gram notation

includes both nodes and lines. Each actor is a node, or circle. These circles can vary in

size and density to denote additional information, such as social role, or individual

identity. A solid or broken line, linking the nodes, or individuals, illustrates every

interaction. Arrowheads of various sizes and styles may be used denoting the direction,

intensity, and instigation of interactions. If the interaction is directed from one actor to

another, the notation is a directed tie; a single headed arrow points from the actor to the

other. If the interaction is dyadic, where both actors choose a close mutual, or reciprocal

interaction, the representation could be a single arrow with two heads pointing to both

actors, or two arrows side by side with opposite pointing heads. For example a socio-

gram of teaching-learning interactions for a moment in time is shown in Figure 3

'Example of teaching-learning interaction socio-gram' (Marcos, J. A., Martinez, A.,

Dimitriadis, Y., & Anguita, R., 2006, p.3). The round nodes represent students with the

square node as the teacher. The arrows, and directional arrowheads note directions of

communication.

Figure 3
Example of teaching-learning interaction socio-gram
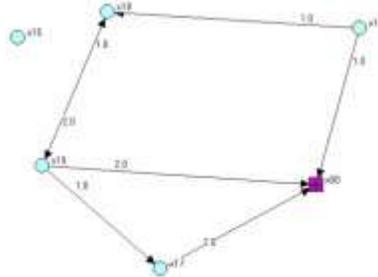
While helpful in revealing details of interactions, sociograms are often interpreted as a

fixed way of interacting, as they do not allow for fluctuation over time. Using several

socio-grams to display a time series of the different modes of interaction during a

teaching session could reveal details of interaction patterns.

It has been noted that interaction patterns over time incorporate multiple forms of

interactions involving several micro systems, and various forms of connectivity. And to

accommodate, traditional network theory has been expanded to multilayer networks.

Applying this work to teaching-learning interaction patterns; "insights about dynamic

networks, the dominant paradigm is to study discrete snapshots, or timeslices, as the

interactions evolve" (Grindrod & Higham, 2014, p.1). Figure 4 'Example of a Time

Series of Interaction Patterns' (https://amath.unc.edu, accessed August 26, 2014)

illustrates an example of what this might look like. In Figure 4, the '1' through '4'

designate four contiguous periods of time. Each period has a detailed socio-gram,

showing the pattern of interaction for that period. This form of illustration could be used

to show both how the interaction-patterns might change, across a period of time. Or it

could be used to illustrate to a teaching professional the patterns they use.

Figure 4
Example of a Time Series of Fluxing Interaction Patterns
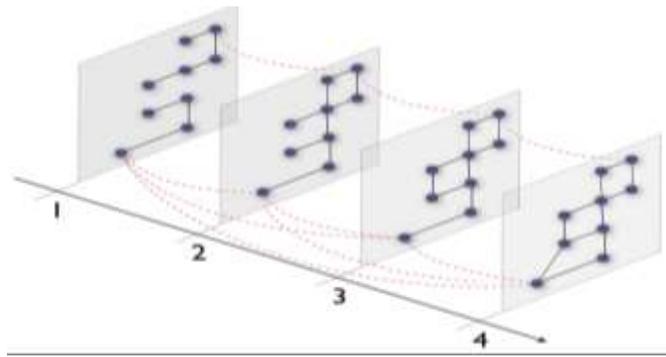
Conclusions

The findings here have confirmed and illustrated the multi-aspectual, multi-

modal, socially layered dynamic mosaic of the occupation of teaching as understood by

the respondent population for the contributing primary studies. Moving

phenomenography into new territory as a "theory of variation" (Pang, 2003, p. 150)

incorporated concepts from activity theory. These conceptions offered additional ways to

think about DAC's. To develop within a given DAC and domain, within a given

vocation, people must be aware of variation in ways of understanding knowledge in that

domain and its related dynamic activity contexts (Bowden & Marton, 1998; Marton &

Booth, 1997; Marton, Runesson, & Tsui, 2004; Marton & Pong, 2005).

Deeper understanding of work development requires knowing the different ways

practitioners can conceive of the aspects that make up the DAC of their work. Listening

to and interpreting the voices of (mostly) post-secondary teaching staff describing their

conceptions of doing 'teacher-ing' revealed that meaning appears to reflect some aspect,

or combination of aspects, of the dynamic activity context of the occupation of teaching.

Aspects interact, influencing each other, and yet function as a whole. Dynamic activity

context as a broadly conceived, bounded zone where doing and its outcome occur,

incorporates:

- On going social roles and groups: work, home, community
- Emergent relationships: political, economic
- Grounded physical environment; people, other beings and objects

When taken as a whole, the potential scope of a teaching practice is daunting, explaining

the inherent complexity of this profession. Without experience in the variations of each

aspect, development of ability to perform, or practice, will be limited. Those with more

experience and knowledge of the DAC aspects, and aspect-modes, perform more

expertly. Therefore, expert teaching-practitioners would be expected to perceive and

understand all salient aspects and all of their modes within the DAC's of their

occupation.

REFERENCES

Åkerlind, G (2004). A new dimension to understanding university teaching. *Teaching in*

    Higher Education, 9, 363-376.

Alexander, P. A. (1992). Domain knowledge: Evolving themes and emerging

    concerns. *Educational Psychologist*, 27(1), 33-51.

Alexander, P. A. (2003). The development of expertise: The journey from acclimation to

    proficiency. *Educational Researcher*, 32(8), 10-14.

Alexander, P. A. (2004). A Model of Domain Learning: Reinterpreting Expertise as a

    Multidimensional, Multistage Process. In D. Y. Dai & R. J. Sternberg (Eds.),

    Motivation, emotion, and cognition: Integrative perspectives on intellectual

    functioning and development. (pp. 273-298). Location: Routledge.

Alexander, T. (1987). *John Dewey's theory of art, experience and nature: The horizons*

    of feeling. Albany, NY: State University of New York Press.

Altman, I. & Rogoff, B. (1987). World views in psychology: Trait, interactional,

    organismic, and transactional perspectives. In D. Stokols & I. Altman (Eds.),

    Handbook of environmental psychology, Vol. 1. (pp.7-40). New York: Wiley.

Ashworth, P., & Lucas, U. (2000). Achieving empathy and engagement: A practical

    approach to the design, conduct and reporting of phenomenographic research.

    Studies in higher Education, 25(3), 295-308.

Bateson, M. C. (1996). Enfolded activity and the concept of occupation. In R. Zemke &

    F. Clark (Eds.), *Occupational science: The evolving discipline* (pp. 5–12).

    Philadelphia: F. A. Davis.

Baumeister, R. F., & Vohs, K. D. (2002). The pursuit of meaningfulness in life. In C. R.

Snyder & S. J. Lopez (Eds.). *Handbook of positive psychology* (pp. 608–618).

Oxford New York: University Press.

Bee, H. L. & Bjorkland, B. R. (2004). Journey of Adulthood. Sixth Edition. New York:

Pearson.

Benjamin, L. T., Jr. (2007). A brief history of modern psychology. Malden, MA:

Blackwell Publishing.

Bereiter, C, & Scardamalia, M. (1993). *Surpassing ourselves: An inquiry into the nature

and implications of expertise.* Chicago: Open Court.

Biesta, G. J. J. & Burbules, N. C. (2003). *Pragmatism and educational research.* Oxford:

Rowman & Littlefield.

Boisvert, R. (1998). *John Dewey: Rethinking our time.* Albany, NY: State University of

New York Press.

Bowden, J. (1996). Phenomenographic research – some methodological issues. In G.

Dall'Alba & B. Hasselgre, (Eds.), *Reflections on phenomenography: toward a

methodology?* (pp. 49-66) Acta Universitatis Götenborg, Sweden.

Gothoburgensis.

Boring, E. G.(1929). A history of experimental psychology. Genesis Publishing Pvt Ltd.

Boyatzis, R. E. (1998*). Transforming qualitative data: Thematic analysis and code

development.* Thousand Oaks: Sage.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (1999). *How people learn: Brain, mind,

experience, and school.* Washington, DC: National Academy Press.

Bruner, J. (1990). *Acts of meaning*. Cambridge: Harvard University Press.

Burke, J. P. (1983). Defining occupation: Importing and organizing interdisciplinary

knowledge. *Health through occupation: Theory and practice in occupational*

therapy, 125-138.

Cash, K. C., & Gray, G. R. (2000). A framework for accommodating religion and

spirituality in the workplace. *The Academy of Management Executive*, *14*, 124-

133.

Chi, M. T. H. & Feltovich, P. J. (1981). Categorization and representation of physics

problems by experts and novices. *Cognitive science*, 5, 121-152.

Chi, M. T. H. (2006). Laboratory methods for assessing experts' and novices' knowledge.

In A. Ericsson, N. Charness, P. Feltovich, & R. Hoffman (Eds.), *The Cambridge*

handbook of expertise and expert performance (pp. 167-184). New York:

Cambridge University Press.

Christiansen, C. H. (1999). Defining lives: Occupation as identity: An essay on

competence, coherence, and the creation of meaning, 1999 Eleanor Clarke Slagle

lecture. *American Journal of Occupational Therapy*, 53, 547 – 558.

Clark, F. A., Wood, W., & Larson, E. (1998). Occupational science: Occupational

therapy's legacy for the 21st century. In M. Neistadt & E. Crepeau (Eds.), *Willard*

and Spackman's occupational therapy (9th ed., pp. 13-22). Philadelphia:

Lippincott.

Collin, K. (2002). Developing engineers' conceptions of learning at work. *Studies in*

continuing education, 24(2), 133-152.

Collin, K. (2004). The role of experience in work and learning among developing

engineers, *International Journal of Training and Development*, 8(2), 111-112.

Collin, K. (2006) Connecting work and learning: design engineers' learning at work.

Journal of Workplace Learning, 18 (7/8), 403-413.

Cochran L. (1990). *The sense of vocation: A study of career and life development.*

Albany: State University of New York Press.

Cronback, L. J. & Meehl, P. E. (1955). Construct validity in psychological tests.

Psychological Bulletin, 52(4), 281-302

Creswell J. W. (1998), *Qualitative Inquiry and research design: choosing among five*

traditions. Thousand Oaks: Sage.

Cutchin, M. P. (2004). Using Deweyan philosophy to rename and reframe adaptation-to-

environment. *The American Journal of Occupational Therapy, 58(3)*, 303-312.

Cynkin, S. (1979). *Occupational therapy: Toward health through activities.* Boston:

Little, Brown.

Dall'Alba, G. (1993). The role of teaching in higher education: Enabling students to enter

a field of study and practice. *Learning and Instruction, 3,* 299-313.

Dall'Alba, G. (2005). Improving teaching; Enhancing ways of being university teachers.

Higher Education Research & Development, 24(4), 361-372.

Dall'Alba, G. & Sandberg, J. (2006). Unveiling professional development: A critical

review of stage models. *Review of educational research*, 76(3), 383-412.

Dahlgren, L. O., & Fallsberg, M. (1991). Phenomenography as a qualitative approach in

social pharmacy research. *Journal of Social and Administrative Pharmacy, 8*(4),

150-156.

Daniels, H. (2009). Situating pedagogy: moving beyond an interactional account.

Pedagogies: An International Journal, *5*(1), 27-36.

Dewey, J. (1980). *The quest for certainty: A study of the relation of knowledge and*

    action. New York: Perigee Books. (Original work published in 1929)

Dewey, J. (1989). *Experience and nature* (2nd ed.). LaSalle, IL: Open Court. (Original

    work published in 1929)

Dormer, P. (1997). The language and practical philosophy of craft. In P. Dormer (Ed.),

    The culture of craft (pp. 219-231). Manchester: Manchester University Press.

Ellström, P. E. (2006). Two logics of learning. In E. Antonacopoulou, P. Jarvis, V.

    Andersen, B. Elkjaer, & S. H. Pedersen (Eds.), *Learning, working and living.*

    *Mapping the terrain of working life learning (*pp. 33-49). London: Palgrave

    Macmillan.

Ferguson, J. M. & Trombly, C. A. (1997). The effect of added-purpose and meaningful

    occupation on motor learning. *American Journal of Occupational Therapy,* 51(7)

    508-515.

Francis, H. (1996). Advancing Phenomenography – Questions of method. In G.

    Dall'Alba & B. Hasselgre, (Eds.), *Reflections on phenomenography: Toward a*

    methodology? (pp.35-47). Acta Universitatis Götenborg, Sweden:

    Gothoburgensis.

Farrington-Darby, T & Wilson, J. R. (2006). The nature of expertise: A review. *Applied*

    Ergonomics, 37, 17-32.

Frankl, V. E., (1963), *Man's search for meaning*. New York: First Washington Square

    Press.

Gass S. I. & Assad A. A. (2005). *An annotated timeline of operations research — An*

    informal history. New York: Kluwer Academic Publishers.

Gleespen, A. V. (1996). How individual expertise may be socially constructed: A

literature review. In E. F. Holton (Ed.), *1996 AHRD Conference Proceedings* (pp.

497-504). Austin, TX: Academy of Human Resources Development.

Gray, M. J. (1997). Application of the phenomenological method to the concept of

occupation. Journal of Occupational Science, 4(1), 5-17.

Grenier, R. S. & Kehrhahn, M. (2008). Toward an integrated model of expertise

redevelopment and its implications for HRD. *Human Resource Development*

Review, 7(2) p.198-217.

Goh, P. S. C. (2013). Conceptions of competency: A phenomenographic investigation of

beginning teachers in Malaysia. *The Qualitative Report, 18(Art.* 40), 1-16.

Retrieved from http://www.nova.edu/ssss/QR/QR18/goh40.pdf

Gonzalez, C. (2010). What do university teachers think eLearning is good for in their

teaching? *Studies in Higher Education,* 35(1), 61-78.

Guest, C. B., Regehr, G. & Tiberius, R. G. (2001). The life long challenge of expertise.

Medical Education, 35, 78-81.

Hasselkus, B. R. (2011). *The meaning of everyday occupation*, second edition. Thorofare,

New Jersey: Slack.

Herling, R. W. (2000). Operational definitions of expertise and competence. Strategic

perspectives on knowledge, competence and expertise. In R. Herling & J. Provo.

(Eds.) *Advances in Developing Human Resources*, 5. (pp. 8-21).

Herling, R. W. & Provo, J. (2000) Knowledge, competence and expertise in

organizations. Strategic perspectives on knowledge, competence and expertise. In

R. Herling & J. Provo. (Eds.). *Advances in Developing Human Resources*, 5. (pp.

1-7).

Hjørland, B., & Albrechtsen, H. (1995). Toward a new horizon in information science:

Domain-analysis. *Journal of the American Society for Information Science, 46(6),*

400-425.

Hobfoll, S. E. (2001). The influence of culture, community, and the nested self in the

stress process: Advancing conservation of resources theory. *Applied Psychology:*

An International Review, 50, 337–370.

Hocking, C. (2009). The challenge of occupation: Describing the things people do.

Journal of Occupational Science, 16(3), 140-150.

Hodkinson, P. & Hodkinson, H. (2004), *A constructive critique of communities of*

practice: moving beyond Lave and Wenger, Integrating Work and Learning:

Contemporary Issues Seminar. Australian Centre for Organisational, Vocational

and Adult Learning, OVAL Research Working Paper 04-02. University of

Technology, Sydney

Iedema, R. (2003). 'Multimodality, Resemioticization: Extending the Analysis of

Discourse as a Multisemiotic Practice', *Visual Communication,* 2(1), 29-57.

Jahoda, M. (1958). *Current concepts of positive mental health*. New York: Basic Books

Kielhofner, G. (1983). *Health through occupation: theory and practice in occupational*

therapy. Philadelphia: FA Davis Co.

Kielhofner, G. (2008). *A model of human occupation: Theory and application*.

Philadelphia, Pennsylvania: Wolters Kluwer Health.

Kielhofner, G., & Forsyth, K. (2004). Commentary on Cutchin's using Deweyan

   philosophy to rename and reframe adaptation-to-environment. *The American*

   Journal of Occupational Therapy, 58(3), 313-314.

Knoke, D. & Yang, S. (2008). *Social Network Analysis*. second edition. Los Angeles:

   Sage.

Koballa, T., Gräber, W., Coleman, D. C., & Kemo, A. C. (2000). Prospective gymnasium

   teachers´ conceptions of chemistry learning and teaching. *International Journal of*

   Science Education, 22, 209-224.

Krettenauer, T. (2011). The issue of highest stages in structural-developmental theories.

   In Pfaffenberger, A. H., Marko, P. W., & Combs, A. (Eds.), *The Postconventional*

   Personality: Assessing, Researching, and Theorizing Higher Development, (pp.

   75-86). Albany, NY: SUNY.

Kuchinke, K. P. (1997). Employee expertise: The status of theory and the literature.

   Performance improvement quarterly, 2(1), 72-86.

Kvale, S. (1989). To validate is to question. In S, Kvale (Ed.), *Issues of validity in*

   qualitative research. (pp. 73-92). Lund. Sweden: Studentlitteratur.

Lajoie, S. P. (2003). Transitions and trajectories for studies of expertise. *Educational*

   Researcher, 32(8), 21-25.

Lameras, P., Levy, P., Paraskakis, I., & Webber, S. (2012). Blended university teaching

   using virtual learning environments: Conceptions and approaches. *Instructional*

   Science, 40, 141–157.

Lincoln, Y. S. (2005). Context, lived experience and qualitative research. In R. A.

    Swanson & E. F. F. Holton III. (Eds.), *Research in organizations: Foundations*

    and methods of inquiry, (pp.221-232). San Francisco: Berrette Kohler.

Lincoln Y.S. & Guba E.G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage.

Linley, P. A. & Joseph S. (2004). Positive change following trauma and adversity: A

    review. *Journal of Trauma Stress, 17,* 11-21.

Lundberg, C. G. (1989). Knowledge acquisition and expertise evaluation. *Professional*

    Geographer, 41(3), 272-283.

Marcos, J. A., Martinez, A., Dimitriadis, Y., & Anguita, R. (2006). Adapting interaction

    analysis to support evaluation and regulation: a case study. In *Advanced Learning*

    Technologies, 2006. Sixth International Conference on (pp. 125-129). IEEE.

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*, 28-49.

Marton, F. (1988). Phenomenography: A research approach to investigating different

    understandings of reality. In R. R. Sherman & R. B. Webb, (Eds.), *Qualitative*

    research in education: focus on methods. (pp. 141-161). London: The Falmer

    Press.

Marton, F. (1992). Phenomenography and "the art of teaching all things to all men."

    International Journal of Qualitative Studies in Education, 5(3), 253-267.

Marton, F. (1996). Cognosco ergo sum – Reflections on reflections. In G. Dall'Alba & B.

Hasselgre, (Eds.), *Reflections on phenomenography: toward a methodology?*

(pp.163 -87). Acta Universitatis Götenborg, Sweden: Gothoburgensis..

Marton, F. & Booth, S. (1997). *Learning and awareness*. Mahwah, NJ: Lawrence

Erlbaum Associates, Publishers.

Marton, F. & Pong, W. Y. (2005). On the unit of description in phenomenography.

Higher Education Research and development, 24(4), 335-348.

Maslow, A. H., (1968), *Toward a psychology of being*, Princeton, NJ : Van Nostrand.

Maxwell, J. A. (2012). *A realist approach for qualitative research*. Thousand Oaks, CA:

Sage.

Mead, G. H. (1934). *Mind, self, and society from the perspective of a social behaviorist.*

Chicago: University of Chicago.

Meyer, A. (1977). The philosophy of occupation therapy. Reprinted from the Archives of

Occupational Therapy, Volume 1, pp. 1-10, 1922. *The American journal of*

occupational therapy, 31(10), 639-649.

Miller, C. R. (1984). Genre as social action. *Quarterly journal of speech*, *70*(2), 151-167.

Mylopoulos, M. & Regehr, G. (2007). Cognitive metaphors of expertise and knowledge:

prospects and limitations for medical education *Medical Education, 41(12),*

1159–1165.

Nelson, D. L. (1988). Occupation: Form and performance. *The American Journal of*

Occupational Therapy, 42(10), 633-641.

Nelson, D. & Jepson-Thomas, J. (2003). Occupational form, occupational performance

and a conceptual framework for therapeutic occupation. In P. Kramer, J. Hinojsa,

& C. B. Royeen (Eds.), *Perspectives in human occupation, participation in life,*

(pp. 87-155). Philadelphia, PA: Lippincott Williams & Wilkins.

O'Halloran, K. L. (2011). Multimodal discourse analysis. In K. Hyland and B. Paltridge

(Eds.), *Companion to Discourse*. London and New York: Continuum.

Ollis, S., Macpherson, A. & Collins, D. (2006). Expertise and talent development in

rugby refereeing: An ethnographic enquiry. *Journal of Sports Sciences, 24(3),*

309-322.

Pang, M. F. (2003). Two faces of variation: on continuity in the phenomenographic

movement. *Scandinavian Journal of Educational Research.* 47(2), 145-156.

Parpala, A. & Lindblom-Ylänne, S., (2007). University teachers' conceptions of good

teaching in the units of high-quality education. *Studies in Educational Evaluation,*

33, 355–370

Paterson B.L., Thorne S.E., Canam C. & Jillings C. (2001) *Meta-Study of qualitative*

health research: A practical guide to meta-analysis and meta-synthesis. Thousand

Oaks, CA: Sage.

Patton, M., Q. (2002). *Qualitative research & evaluation methods*. third edition.

Thousand Oaks, CA: Sage.

Polanyi, M. (1958). *Personal Knowledge: Towards a post-critical philosophy.* Chicago:

Chicago Press.

Polatajko, H. J. (2004). The study of occupation. In C. Christiansen & E. Townsend

(Eds.), *Introduction to occupation: The art and science of living* (pp. 29-46).

Upper Saddle River, NJ: Prentice Hall.

Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods.* Seventh

    edition. Philadelphia: Lippincott Williams & Wilkins.

Pratt, D. (1992). Conceptions of teaching, *Adult Education Quarterly,* 42(4), 203–220.

Pribram, K. H. (1990) From Metaphors to models: the use of analogy in

    neuropsychology. In D. E. Leary (Ed.), *Metaphors in the history of psychology*

    (pp.79-103). Cambridge: Cambridge University Press.

Prosser, M., Trigwell, K. & Taylor, P. (1994). A phenomenographic study of academics'

    conceptions of science learning and teaching, *Learning and Instruction,* 4, 217–

    231.

Prosser, M., Martin, E., Trigwell, K., Ramsden, P., & Lueckenhausen, G. (2005).

    Academics' experiences of understanding of their subject matter and the

    relationship to their experiences of teaching and learning. *Instructional Science,*

    33, 137-157.

Reker, G. T., Peacock, E. J. & Wong, P. T. P. (1987). Meaning and purpose in life and

    well-being: A life-span perspective. *The Journal of Gerontology*, 42(1), 44-49.

Reid, A., Dahlgren, M. A., Dahlgren, L. O., Petocz, P. (2011). *From Expert Student to*

    Novice Professional. New York: Springer.

Riley, J. (2011) Shaping textile-making: Its occupational forms and domain. *Journal of*

    Occupational Science, 18(4), 322-338.

Reilly, M. (1971). The modernization of occupational therapy. *The American Journal of*

    Occupational Therapy, 25(5), 243.

Rogers, C. R. (1961). The process equation of psychotherapy. *American Journal of*

    Psychotherapy, 15, 27–45.

Roth, W. M. (2009). Vygotsky's dynamic conception of the thinking–speaking

relationship. *Pedagogies: An International Journal*, *5*(1), 49-60.

Ruona, W. E. A. (2005). Analyzing qualitative data. In R. A Swanson & E. F. F. Holton

III (Eds.), *Research in organizations: Foundations and methods of inquiry*.

(pp.233-264). San Francisco: Berrette Kohler,

Sandberg, J. (1996). Are phenomenographic results reliable? In G. Dall'Alba & B.

Hasselgre (Eds.), *Reflections on phenomenography: toward a methodology?*

(pp.129-140). Acta Universitatis Götenborg, Sweden. Gothoburgensis.

Sandberg, J. (2000). Understanding human competence at work: An interpretative

approach. *Academy of management journal, 43(1),* 9-25.

Sandberg, J. & Targama, A. (2007) *Managing understanding in organizations*. London.

Sage

Sandelowski, M. & Barroso, J. (2007). *Handbook for synthesizing qualitative research.*

New York, Springer.

Savickas, M. L. (2000). Assessing career decision making. In E. Watkins & V. Campbell

(Eds.), *Testing and assessment in counselling practice,* second edition (pp. 429-

477). Hillsdale, NJ: Erlbaum.

Savickas, M. L. (2005). The theory and practice of career construction. In S. D. Brown &

R. W. Lent (Eds.), *Career development and counseling: Putting theory and

research to work* (pp. 42–70). Hoboken, NJ: Wiley.

Schiffrin, D. (2001). Discourse markers: Language, meaning, and context. In D.

Schiffrin, D. Tannen & H.E. Hamilton (Eds.), *The handbook of discourse

analysis.* (pp.54-75). Oxford: Blackwell Publishers

Schraagen, J. M. (1993). How experts solve a novel problem in experimental design.

Cognitive science, 17, 285-309.

Schultze, G. & Miller, C. (2004). The search for meaning and career

development. *Career Development International, 9(2),* 142-152.

Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one.

Educational Researcher, 27 (2), 4-13.

Shadbolt, N. (2005). Eliciting expertise. In: J.R. Wilson & E. N. Corlett (Eds.),

Evaluation of Human Work: A Practical Ergonomics Methodology, third edition

(pp.185–218). Boca Raton: CRC Press.

Shanteau, J. (1992a). The psychology of experts an alternative view. In G. Wright & F.

Bolger (Eds.), *Expertise and decision support* (pp. 11-23). NY: Plenum Press.

Shanteau, J. (1992b). How much information does an expert use? Is it relevant?. *Acta*

Psychologica, 81(1), 75-86.

Shanteau, J., Weiss, D. J., Thomas, R. P., & Pounds, J. C. (2002). Performance-based

assessment of expertise: How to decide if someone is an expert or not. *European*

Journal of Operational Research, 136(2), 253-263.

Slagle, E. C. (1922). Training aides for mental patients. *American Journal of Physical*

Medicine & Rehabilitation, 1(1), 11-18.

Slagle, E. C., & Robeson, H. A. (1933). *Syllabus for training of nurses in occupational*

therapy. Utica, NY: State Hospitals Press.

Sternberg, R. J. (1999). Intelligence as developing expertise. *Contemporary Educational*

Psychology, 24, 359-375.

Swanson, R. A. (1995). Human resource development: Performance is the key. *Human Resource Development Quarterly, 62(2),* 207–213.

Tedeschi, R. G. & Calhoun, L.G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic* Stress, 9, 455-471.

Tolman, E. C. (1932). Purposive Behavior in Animals and Men. New York: The Century Co.

Trigwell, K., Prosser, M. and Taylor, P. (1994). Qualitative differences in approaches to teaching first year university science, *Higher Education, 27,* 85–93.

Turing, A. M. (1937). Proceedings of the London Mathematical Society, 42, (2), 230-265

University of Minnesota Internal Review Board website accessed April 3, 2014 (http://cflegacy.research.umn.edu/irb/download/exempt.cfm.)

Vallacher, R. R. & Nowak, A. (1994). *Dynamical systems in social psychology*. San Diego: Academic Press.

van den Heuvel, M. (2013). *Adaptation to organizational change: The role of meaning-making and other psychological resources.* Utrecht: Ipskamp Drukkers.

van der Heijden, B. I. J. M. (2002). Individual career initiatives and their influence upon professional expertise development throughout the career. *International Journal of Training and Development, 6(2),* 54-79.

Vygotski, L. S. (1978) *Mind in society the development of higher psychological processes.* M. Cole, V. John-Steiner, S. Scribner, and E. Souberman (Eds.), Cambridge, MA: Harvard University Press.

Wittemore, R. & Knafl, K. (2005). The integrative review: Update methodology. *Journal of advanced nursing*, *52(5),* 546-553.

Wilcox, A. (1993). A theory of the human need for occupation. *Journal of Occupational*

   Science, 1(1), 17-24.

Wilcock, A. A. (1998). *An occupational perspective of health.* Thorofare, NJ: Slack.

Wright, A., Murray, J. P., Geale, P. (2007). A phenomenographic study of what it means

   to supervise doctoral students. *Academy of Management Learning &* Education,

   6(4), 458–474.

Young, R. A., Valach, L., and Collin, A. (2002). A contextual explanation of career. In

   D. Brown (Ed.), *Career choice and development.* (pp. 477- 512). San Francisco:

   John Wiley & Sons

Zechmeister, E. B., Zechmeister, J. S., & Shaughnessy, J. J. (2006). *Research methods in*

   psychology. New York: McGraw-Hill Higher Education.

Ziegenfuss, D. H. (2007). A Phenomenographic Analysis of course design in the

   academy. *Journal of Ethnographic & Qualitative Research, 2,* 70-79.

Zimmer, L. (2006). Qualitative meta-synthesis: A question of dialoging with texts.

   Journal of Advanced Nursing, 53(3), 311-318.

APPENDICES

1.   Table A1: Quality of Primary Data Studies

2.   Table A2: Categories of Description: Original Formatting

Table A1

Qualities of Primary Data Studies

Study Title	Conceptions of Teaching
Authors	**Pratt**
Date	(1988, 1990) 1992
Research objectives	"Adult educators' understanding of what it means to 'teach'"; "how the teaching of adults is broadly understood across several societies"
Respondent group description	Teachers of adults; 5 different cultures, PRC, CA, HK Singapore, USA
Respondent selection process	Not described
Number of Respondents	253
Means of collection	"Conversation" rather than a strict interview
Questions: samples	"How do you know when you are successful in your teaching? "What are you trying to accomplish in your teaching?
Interviewing skills	"Trial runs" "double checking"
Findings accurate	Transcriptions, assistance,
Familiarization	Iterative readings each with a different focus
Bracketing	"Researcher's task to 'discover and describe'; "remaining true"; "cautious not to violate or distort"
Patterns	Pre-set model of 5 elements: content, learner, teacher, purpose, context
Essence of Categories	"Perhaps shaped to fit"
Naming Categories	Already done
Outcome space	Yes
Publication	Adult Education Quarterly
Country	Canada, China
Notes	None
Trustworthiness	"Test for trustworthiness of the findings was that a random selection of the original units of meaning had to be recognizable as belonging to one or more of the final" categories of description
Discipline(s)	Not specified

Table A1 continued
Qualities of Primary Data Studies

Study Title	The role of teaching in higher education: Enabling students to enter a field of study and practice
Authors	**Dall'Alba**
Date	(1991, 1993) 1993
Research objectives	To 'elicit the teachers' own ways of experiencing teaching in its many aspects"; "qualitatively different ways in which teachers experienced their teaching role": teacher vocational development
Respondent group description	Higher education at the first or second year undergraduate level, also most taught higher levels
Respondent selection process	Not described
Number of Respondents	35
Means of collection	Interview and discussion
Questions: samples	Questions around teaching practice: nature of interactions, what the teacher did
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Iterative phenomenographic analysis
Bracketing	Not discussed
Patterns	Three views of course content
Essence of Categories	Around content
Naming Categories	Yes
Outcome space	No
Publication	Learning and Instruction
Country	Australia
Notes	Used 'content' as a global term; development of practitioners; Associated intentions or motives of teacher, rather than just strategies and methods
Trustworthiness	Not mentioned specifically
Discipline(s)	Economics, English literature, medicine, physics

Table A1 continued
Qualities of Primary Data Studies

Study Title	A phenomenographic study of academics' conceptions of science learning and teaching
Authors	**Prosser, Trigwell and Taylor**
Date	1994
Research objectives	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Respondent group description	First year university course
Respondent selection process	Not described
Number of Respondents	24
Means of collection	Interview
Questions: samples	"What do you mean by teaching in this subject?
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Research team worked together initially
Bracketing	Investigator discussions
Patterns	Classified
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Learning and Instruction
Country	Australia
Notes	More of a focus in the findings on the "conceptions of learning than on the conceptions of teaching"
Trustworthiness	On going reconstruction of categories until stability
Discipline(s)	Chemistry; Physics

Table A1 continued
Qualities of Primary Data Studies

Study Title	Qualitative differences in approaches to teaching first year
Authors	**Trigwell, Prosser and Taylor**
Date	1994
Research objectives	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Respondent group description	First year university course
Respondent selection process	Not described
Number of Respondents	24
Means of collection	interview
Questions: samples	"Could you describe how you go about your teaching?"
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Research team worked together initially
Bracketing	Investigator discussions
Patterns	"Logical relations"
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Higher Education
Country	Australia
Notes	Discussion on EdPsy focus of "improvement of strategies" (methods like group discussions, demonstrations, etc.)
Trustworthiness	"Inter-rater reliability" 71% first go and the 92 at the end
Discipline(s)	Chemistry; Physics

Table A1 continued
Qualities of Primary Data Studies

Study Title	Prospective gymnasium teachers' conceptions of chemistry learning and teaching
Authors	**Koballa, Greaber, Coleman & Kemp**
Date	2000
Research objectives	"Describe prospective gymnasium teachers' conceptions of learning and teaching"
Respondent group description	Recent graduates from a "university's chemistry teaching education program" not yet with professional positions
Respondent selection process	Volunteers from one German University graduating class of 11 total, so 9/11participated
Number of Respondents	9
Means of collection	Semi-structured interviews; a single interviewer/investigator
Questions: samples	"How do prospective chemistry teachers conceptualize chemistry learning and chemistry teaching?"
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Interviews done by the lead investigator,
Bracketing	Acknowledgement of "interpretative process" with investigator's "evidence in the choice of theoretical frameworks"
Patterns	"Clustering"
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	International Journal of Science Education
Country	Germany
Notes	Gymnasium teachers development "consists of two phases" discipline specific (up to 7 years) + 1.5 to 2 years of apprenticeship teacher training
Trustworthiness	"Constraints affecting trustworthiness" language, few participants, limited ability to collect new data or confirm existing data
Discipline(s)	Chemistry

Table A1 continued
Qualities of Primary Data Studies

Study Title	A new dimension to understanding university teaching
Authors	**Åkerlind**
Date	2004
Research objectives	Ways that an academic understands university teaching
Respondent group description	Traditional research based academics with both teaching and research appointments
Respondent selection process	Variation
Number of Respondents	28
Means of collection	Semi-structured
Questions: samples	"What being a teacher meant to them: how they went about teaching;
Interviewing skills	Not mentioned
Findings accurate	Recorded and transcribed verbatim
Familiarization	Iterative
Bracketing	Not mentioned
Patterns	Emergent and logical
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes: plus description
Publication	Teaching in Higher Education
Country	Australia
Notes	Great writer: good descriptions of phenomenography
Trustworthiness	Not mentioned specifically
Discipline(s)	

Qualities of Primary Data Studies

Study Title	Academics' experiences of understanding of their subject matter and the relationship of this to their experiences of teaching
Authors	**Prosser, Martin, Trigwell, Ramsden and Lueckenhause**
Date	2005
Research objectives	"How academic staff experience the understanding of their subject matter', and how that links to their teaching
Respondent group description	Academics from four broad fields of study; several years teaching, first year topic
Respondent selection process	Not described
Number of Respondents	31
Means of collection	In-depth, semi structured interviews
Questions: samples	"How do you understand (subject area)? How do you see it connect to broader areas?
Interviewing skills	not mentioned
Findings accurate	"Interview data"
Familiarization	Individual investigators and then as a group
Bracketing	Not mentioned
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Instructional Science
Country	Australia & UK
Notes	
Trustworthiness	
Discipline(s)	1) Social Science and humanities, 2) business and law, 3) science and technology, 4) healthcare

Qualities of Primary Data Studies

Study Title	University teachers' conceptions of good teaching in the units of high-quality education
Authors	**Parpala & Lindblom-Ylanne**
Date	2007
Research objectives	Teachers conceptions of quality teaching
Respondent group description	Teachers from one of four quality units (disciplines)
Respondent selection process	Selected by faculty; or because of their "additional pedagogical training" and teaching; also active development of their teaching
Number of Respondents	20
Means of collection	Semi-structured
Questions: samples	Focus on teaching: planning, assessment of learning, what it is like in their department
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Iterative reading for broad dimensions
Bracketing	Not mentioned
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Studies in Educational Evaluation
Country	Finland
Notes	The interesting part is the ideal teaching and good teaching vs what I do for teaching; this all links to the role of the teacher which they do a good job of explicating
Trustworthiness	Iterative method
Discipline(s)	Theology, medicine, language, political science

Table A1 continued
Qualities of Primary Data Studies

Study Title	A phenomenographic analysis of course design in the academy
Authors	**Ziegenfuss**
Date	2007
Research objectives	To better understand how faculty in higher education design and develop the courses they teach
Respondent group description	23 discipline diverse faculty from Weidener University that vary by experiences
Respondent selection process	Pool of 45 reduced to 23 via a process of variation along with inclusion of particular disciplines
Number of Respondents	23
Means of collection	Semi-structured interviews
Questions: samples	Not given in study; instead "interviewed about their approaches to course design"
Interviewing skills	Pilot-interviews
Findings accurate	Tape recorded and transcribed
Familiarization	Individual investigator
Bracketing	Discussed
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	YES
Outcome space	Y
Publication	Journal of ethnographic & Qualitative Researcher
Country	USA Pennsylvania
Notes	Used Biglan (1973) academic classification cluster category; TGI inventory done by each respondent too
Trustworthiness	Triangulation by having other researchers cross check; content was all verified by the use of course documents
Discipline(s)	

Qualities of Primary Data Studies

Study Title	What do university teachers think eLearning is good for in their teaching?
Authors	**Gonzalez**
Date	2010
Research objectives	
Respondent group description	University teachers research intensive schools; "variation in experience was sought"; used eLearning within the last year
Respondent selection process	Invited
Number of Respondents	18
Means of collection	Flexible interviews
Questions: samples	What is eLearning good for in your teaching?
Interviewing skills	Not mentioned
Findings accurate	Not mentioned
Familiarization	Individual investigator
Bracketing	"Open attitude"
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Studies in Higher Education
Country	Chile
Notes	
Trustworthiness	Iterative method outlined
Discipline(s)	Law, Science, counseling, social science, business

Table A1 continued
Qualities of Primary Data Studies

Study Title	Blended university teaching using virtual learning environments: conceptions and approaches
Authors	**Lameras, Levy, Paraskakis, Webber**
Date	2012
Research objectives	Conceptions of teaching, from computer science teachers, using VLE (Virtual learning environments)
Respondent group description	Computer science teachers from 6 different institutions; both undergrad and grad
Respondent selection process	Not described
Number of Respondents	25
Means of collection	One-to-one interviews
Questions: samples	How do you use VLE? What do you see as the value to VLE?
Interviewing skills	
Findings accurate	Tape-recorded and transcribed verbatim
Familiarization	
Bracketing	"Aim was to avoid imposing a pre-determined set of categories"
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Instructional Science
Country	Greece
Notes	Use of Atlas-ti qualitative data analysis software
Trustworthiness	
Discipline(s)	

Qualities of Primary Data Studies

Study Title	Conceptions of competency: A phenomenographic investigation of beginning teachers in Malaysia
Authors	**Goh**
Date	2013
Research objectives	What do beginning teachers conceive and understand as vocational competence
Respondent group description	18 of a cohort of 35 graduate teachers; worked three years or less
Respondent selection process	Volunteers from a cohort
Number of Respondents	18
Means of collection	"In-depth one-to-one interview"
Questions: samples	"How much they understood what constituted competency in teaching"
Interviewing skills	Pilot-interviews
Findings accurate	Voice recordings was transcribed verbatim
Familiarization	Individual investigator
Bracketing	Discussed
Patterns	Emergent, "not pre-determined"
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	The Qualitative Report
Country	Malaysia
Notes	Questions adjusted after pilot interview - only one that talked about this
Trustworthiness	
Discipline(s)	

Table A2

Categories of Description: Original Formatting

Authors	Categories of Descriptions
Pratt	
Dall'Alba	Course Content as Body of Knowledge and Skills Course Content as Concepts and Principles to Which Knowledge and Skills are Linked Course Content as Experiences of a Field of Study and Practice p.307
Trigwell, Prosser, Taylor	**Approach A: A teacher-focused strategy with the intention of transmitting information to students.** **Approach B: A teacher-focused strategy with the intention that students acquire the concepts of the discipline.** **Approach C: A teacher/student interaction strategy with the intention that students acquire the concepts of the discipline.** **Approach D: A student-focused strategy aimed at students developing their conception. Approach E: A student-focused strategy aimed at students changing their conceptions.**
Prosser, Trigwell, Taylor	*Conception A: Learning as Accumulating More Information to Satisfy External Demands* *Conception B: Learning as Acquiring Concepts to Satisfy External Demands* *Conception C: Learning as Acquiring Concepts to Satisfy Internal Demands* *Conception D: Learning as Conceptual Development to Satisfy Internal Demands* *Conception E: Learning as Conceptual Change to Satisfy Internal Demands*
Koballa, Greaber, Coleman & Kemp	**Table 1. Prospective teachers' conceptions of learning and teaching chemistry.** *Conceptions of Learning Chemistry* LC1. Learning chemistry is gaining of chemical knowledge from credible sources. LC2. Learning in chemistry is solving chemical problems. LC3. Learning chemistry is constructing personal understanding. *Conceptions of Teaching Chemistry* TC1. Chemistry is best taught by transferring chemical knowledge from teacher to pupils. TC2. Chemistry is best taught by posing chemical problems for pupils to solve. TC3. Chemistry is best taught by interacting with pupils.

Åkerlind	• a teacher transmission focused experience; • a teacher–student relations focused experience; • a student engagement focused experience; • a student learning focused experience
Prosser, Martin, Trigwell, Ramsden, Gillian	1. Teachers' experiences of their understanding of the subject matter taught in the topic. 2. Teachers' experiences of teaching and learning in the topic. 3. Teachers' experiences of the object of study constituted in the topic.
Parpala & Lindblom-Ylanne	Table 1: The Dimensions in Teaching and in Ideal or Good Teaching **table below**

Table 1: The Dimensions in Teaching and in Ideal or Good Teaching

Dimension	Number of teachers who mentioned the dimension when describing what is important in their teaching	Number of teachers who mentioned the dimension when describing ideal and good teaching
1.1 Teaching practice: interaction (in a small group)	19	20
1.2 Teaching practice: Putting teaching into a larger context	10	7
1.3 Teaching practice: Variety in teaching methods	4	6
2. Teaching context	10	7
3.1 Teacher's role 1: Inspiring	9	9
3.2 Teacher's role 2: Expert	5	8
4.1 Student's role 1: Motivated	0	7
4.2 Student's role 2: Processing knowledge	3	4
5. The atmosphere	2	9
6. The physical environment	0	4

Ziegenfuss	1. Course design as a road map for teaching → 1. Course design as a part of a bigger picture 2. Experiential-based course design 3. Process-based course design 4. Course design as a sequence or progression } → 2. Process or sequence-driven course design 5. Audience-focused course design → 3. Needs-focused course design 6. Outcomes-based course design → 4. Outcomes-based course design 7. Curriculum-based course design 8. Topics-based course design 9. Content-focused course design 10. Textbook-framed course design } → 5. Course design within a structure or framework
Gonzalez	(A) to provide information to students; *eLearning as a medium to provide information to students* (B) for 'occasional' online communication; *eLearning as a medium for 'occasional' online communication* (C) for engaging students in online discussions; *eLearning as a medium for engaging students in online discussions* (D) to support knowledge-building tasks. *eLearning as a medium to support knowledge-building tasks*
Lameras, Levy, Paraskakis, Webber	(A) information transfer; VLE as a means of supporting information transfer and recall (B) application and clarification of concepts; VLE as a means of supporting application and clarification of concepts (C) exchange and development of ideas, and resource exploration and sharing; VLE as a means of supporting development and exchange of ideas, and resource exploration and sharing (D) collaborative knowledge-creation, and development of process awareness and skills. VLE as a means of supporting collaborative knowledge-creation and development of process awareness and skills

Goh	*Focus on control*
	    Category 1: Classroom and Behavior Management p.4
	Focus on the practice of teaching
	    Category 2: Knowing Subject Matter p.5
	    Category 3: Understanding Studentsp.6
	Focus on positive communication
	    Category 4: Reaching out for Assistance and Support p.7
	Focus on becoming a professional teacher
	    Category 5: Possessing Values of Professionalism p.8