Critical Thinking in Health Professions Education

by

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Abstract

Historically, health professions education has focused on content knowledge. However, there has been increasing recognition that there is a need to focus on the thinking processes required of future health professionals. To this end, educators in the health professions have looked to the concept of critical thinking. But what does it mean to "think critically"? Educators espouse radically different understandings of critical thinking, often with very different epistemological and theoretical roots.

Differences in educators' understandings of critical thinking are not just semantic, but result from the unique ways in which each educator makes sense of their contexts and experiences. This study asks, first, *how do educators in the health professions understand critical thinking?* Second, *how do an educator's unique personal and professional experiences inform their understanding of critical thinking?*

I engage with cultural historical activity theory (CHAT) as a theoretical perspective. Through CHAT I examine the contexts and experiences through which educators construct their understandings of critical thinking. As a methodology, I have taken a generic interpretive approach (Merriam, 2009), incorporating selected tools and techniques from constructivist grounded theory (Charmaz, 2006). I completed two semi-structured individual interviews with each of sixteen educators from four health professional programs: medicine, nursing, pharmacy, and social work. The first interview explored how each educator understands critical thinking, and how that understanding relates to their experiences. The second invited each educator to locate their understanding of critical thinking within the range of understandings generated from the first interview.

Not surprisingly, I found that educators understood critical thinking in many different ways. Primarily, they saw critical thinking as 1) a rational process based in reasoning or problem solving, 2) a humanistic approach to personal and interpersonal development, and 3) a process of examining individual and societal assumptions, with a goal of social justice. These understandings of critical thinking are constructed through educators' personal and professional experiences. Those experiences are embedded in the contexts in which they live and work, including: their profession, their practice context or discipline, their institutional contexts, and their personal world.

These contexts are not discreet; rather they overlap and compete for priority. As a result, educators' understandings of critical thinking are constantly shifting, and are often contradictory. Through CHAT, I see these contradictions as productive, particularly given that critical thinking is value-laden and ought to be contested if we are to produce a robust sense of what it means to be a "critical thinking" professional. Learning and change occur when meaning becomes unstable. Thus, I argue for a conceptual eclecticism that allows for multiple understandings of critical thinking, and invites a conversation about what "we" mean, and what "we" value.

Preface

This thesis is an original work by Renate M Kahlke. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "Critical Thinking in Health Science Education", No. 00040048, July 22, 2013.

Chapter 2 of this thesis has been published as: Kahlke, R. & White, J. (2013). Critical thinking in health sciences education: Considering "three waves." *Creative Education, 4*(12A), 21-29. I was responsible for primary data analysis, theoretical contributions, and manuscript composition. Dr. White assisted in manuscript composition and in contextualizing the literature review within health professions education.

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Table of Contents

List of Figures

CHAPTER 1: INTRODUCTION

Critical thinking is a loaded term. It is used frequently in educational contexts, but can mean many different things. In this study, I investigate the variety of understandings of critical thinking circulating in health professions education. As other scholars have suggested, what critical thinking means is dependent on the disciplinary or practice context in which it occurs (McPeck, 1994) and the values, beliefs and goals of the thinker (McLaren, 1994). As a result, understandings of critical thinking espoused by individual educators shift and conflict; in order to explore these shifts and conflicts, I have focussed this study on *how* educators construct their understandings of critical thinking.

Given the value judgment implicit in the term critical thinking – its association with "good thinking" (Pithers & Soden, 2000, p. 237) – what critical thinking means is contested in all fields. I am not a relativist, believing that all values are "good values," nor do I think that there is one "best" set of values and beliefs about critical thinking. Like Yanchar, Slife, and Warne (2008), I venture that "no approach [to critical thinking] is likely to be universally accepted or to provide sufficient resources for critical analysis across all fields and under all circumstances" (p. 269). I see the tensions between different understandings of critical thinking as productive, opening up possibilities for conversations about the values and beliefs that inform those understandings.

Context

Today, increasing demands are placed on health professionals (Hoffman, 2008; Jones-Devitt & Smith, 2007). According to a recent commission in *The Lancet*, the healthcare context is bleak:

> Glaring gaps and inequities in health persist both within and between countries, underscoring our collective failure to share the dramatic health advances equitably. At the same time, fresh health challenges loom. New infectious, environmental, and behavioural risks, at a time of rapid demographic and epidemiological transitions, threaten health security of all. Health systems worldwide are struggling to keep up, as they become more complex and costly, placing additional demands on health workers. (Frenk et al., 2010, p. 1923)

As Frenk et al. (2010) suggest, health professionals are faced with increased patient loads and more complex disease states related to aging populations and increased access to care. Healthcare workers are also recognizing the necessity of working collaboratively with other professionals and systems in order to manage this complexity and chronicity (Frenk et al., 2010; Grace & Orrock, 2015; Hammick, Freeth, Koppel, Reeves, & Barr, 2007). Finally, there is an increased demand that health professionals act as advocates for patients and for systemic change (Frenk et al., 2010; Grace & Orrock, 2015; M. M. Hubinette, Ajjawi, & Dharamsi, 2014). This call for healthcare professionals to expand their role as change agents is echoed in professional policy documents (e.g. Alberta College of Pharmacists, 2009; Association of Faculties of Medicine of Canada, n.d.;

Canadian Association of Social Workers, 2005; Canadian Nurses Association, 2008; Royal College of Phyicians and Surgeons of Canada, 2005).

In this context, there seems to be no disagreement on the importance of graduating health professionals who can "think critically" (Krupat et al., 2011); however, given that there are multiple competing understandings of critical thinking, it is difficult to create coherent, intentional change to enhance students' critical thinking in health professional programs. Frenk et al. (2010) identify "a narrow technical focus without broader contextual understanding" (p. 1923) as a systemic problem in health professions curricula, echoing concerns that overemphasis on content knowledge and technical skills leads to a lack of focus on the thinking processes required of future health professionals. Yanchar et al. (2008) also voice concern that critical thinking is often approached as a limited set of "method-centred tasks" or technical reasoning skills.

There is a need for a more robust and nuanced look at critical thinking in health professions education; educators in the health professions hold many different beliefs about what critical thinking means, sometimes simultaneously. The complexity of health professionals' work and the impact of health and health care on society warrant a thorough look at all aspects of critical thinking that might be required of the future health professionals. In this study, I have developed a broad picture of what critical thinking can mean, and the values, beliefs, and contexts that these meanings are drawn from; this approach is not intended to provide a universal definition or taxonomy, but to open up conversations about those competing values and beliefs.

Statement of Intent

Attempts have been made within health professions education (Krupat et al., 2011; Scheffer & Rubenfeld, 2000) and in other fields (Black, 2008; Brookfield, 2012; Ennis, 1989; P. A. Facione, 1990; Fisher, Spiker, & Riedel, 2009) to define critical thinking. Despite these efforts, critical thinking remains a "complex and controversial notion that is difficult to define and, consequently, difficult to study" (Abrami et al., 2008, p. 1103). Many related terms are conflated with, overlap, or contradict definitions of critical thinking available in the literature, including reflection, critical reflection, clinical decision making, or clinical judgment, to name just a few. Additionally, definitions of critical thinking – and its corollaries – have roots in a wide variety of theoretical and disciplinary traditions (Brookfield, 2012), and reflect a wide range of normative assumptions and values (McLaren, 1994). The various approaches to critical thinking in the literature is explored in my literature review in chapter two. In the remainder of this document, I explore the ways in which the complexity of the discourse on critical thinking in the health professions education literature is indicative of complex, overlapping, diverse, and often contradictory approaches to critical thinking in educators' professional and educational practice.

The issues outlined above will be addressed through a focus on two primary research questions. First, *how do educators in the health professions understand critical thinking*? Second, *how do an educator's unique personal and professional experiences inform their understanding of critical thinking*?

Significance

Such an exploration has both theoretical and practical implications. On a theoretical level, this study contributes to the literature on critical thinking through an examination of the range of understandings of critical thinking circulating in health professions education. As discussed in chapter two, the literature on critical thinking tends to focus on creating a universal definition of critical thinking or on defining critical thinking as a stable construct. In this study, I seek to build an appreciation of the multiple ways of understanding this term. In addition, I investigate the ways in which these understandings are constructed through the unique contexts and experiences of educators in the health professions. This approach shifts the focus away from a quest for universal definitions, emphasizing the personal and professional contexts and experiences through which critical thinking is understood.

This focus on educators' processes in constructing critical thinking illuminates the values and beliefs that they draw on in their educational practice. Although there have been debates in the social sciences and humanities about the epistemological assumptions behind various understandings of critical thinking (Brookfield, 2012; McLaren, 1994), researchers conducting empirical work on critical thinking often select a definition of critical thinking that "makes the most sense" to them, or fail to define it at all (e.g. Austin, Gregory, & Chiu, 2008; Cosby, 2011; Macpherson & Owen, 2010; Shinnick & Woo, 2013). As a result, the values and beliefs behind understandings of critical thinking are rarely made explicit. Making such assumptions explicit would invite productive challenges and discussion regarding the many competing values and beliefs guiding health professions education.

In medical education in particular, this "hidden curriculum" – the guiding assumptions and values that are taught implicitly (through socialization into a disciplinary culture) rather than explicitly (through formal curricula) – has come under scrutiny. The Association of Faculties of Medicine of Canada (n.d.) recently published a "vision for MD education," recommending that medical education should focus on:

> Engaging both learners and teachers in identifying and acknowledging the hidden curriculum. This recommendation is made in the spirit of improving the socialization of physicians and ensuring that students and teachers acknowledge the hidden curriculum and its impact. It will encourage a process of self-reflection and self-analysis and will ultimately afford the opportunity to continually renew and reinvigorate the culture and value system of medical education. (p. 23)

In other words, exploring educators' values and beliefs through the term critical thinking will contribute to work being done around professional socialization and the hidden curriculum.

When understandings of critical thinking are adopted without examination it becomes difficult to compare research results within the literature. As I have suggested, much of the theoretical literature on critical thinking calls for a single definition through which teaching and research outcomes can be understood (Fisher et al., 2009; Krupat et al., 2011; Ordera, 2010; Scheffer & Rubenfeld, 2000; Simpson & Courtney, 2002; Videbeck, 1997a). This quest for a single definition has been ineffective – educators and researchers still define critical thinking in diverse ways (Fisher et al., 2009). Moreover, I

see the diversity of understandings of critical thinking (and the contradictions that arise between them) as productive. Not only are aspects of critical thinking lost in a universal definition (Yanchar et al., 2008), but I believe that what is meant by "good thinking" should never be fully resolved. Educators bring different values and beliefs to their work, and the conversations arising from those differences are useful in ensuring an on going conversation about what health professions education, and the professionals it produces, should look like. Developing a single definition may result in solidifying the dominance of one worldview over others, marginalizing potentially valuable perspectives. Further, the domain and context-specificity of the critical thinking may be lost in the quest for universality (McPeck, 1994).

Thus, this study will contribute to the theoretical literature on critical thinking both in health professions education and in other disciplines by shifting the focus from a quest for one "right" or collectively agreed-upon definition, to an examination of how understandings of critical thinking are constructed, the values and beliefs that those understandings represent, and the ways in which those values and beliefs are constructed and contested. Examining how critical thinking is constructed requires a close look at the ways in which educators interpret their experiences and translate those experiences into beliefs and values. I focus on the multiple understandings of critical thinking that exist and, in examining the beliefs and values implicit in those understandings, I allow for a critical examination of *what* critical thinking means, *why* we construct critical thinking in particular ways, and *how* those understandings link to normative views on what healthcare and society should be.

These theoretical issues have practical implications for curriculum design, for educational policy, and for teaching practices. From a curriculum design perspective, the fact that critical thinking can mean different things between instructors and courses means that critical thinking teaching often lacks coherence within the curriculum (Davies & Barnett, 2015a). A robust appreciation of the many understandings of critical thinking that educators hold will allow for more intentional curriculum planning and targeted faculty development initiatives that ensure that instructional interventions link together, and that important aspects of critical thinking are not lost in the curriculum planning process. Although it is not desirable for educators to completely agree on what critical thinking means, clarification of potential meanings will help curriculum designers and coordinators in communicating the intent of programs and curricula to the educators who deliver it. Moreover, in clarifying their own understandings of critical thinking, curriculum planners, coordinators, and faculty development educators will also be better able to engage educators in discussing and critically evaluating their own understandings of critical thinking and, subsequently, making the "hidden curriculum" more transparent, especially for students. This conversation and contestation, therefore, is quite useful.

The current lack of clarity around critical thinking is particularly challenging in health professional programs because they are guided by accreditation policies dictating curriculum, teaching and assessment. These policies are set by external accrediting bodies in effort to ensure that professionals graduate with a consistent set of knowledge and skills. The ambiguity around what critical thinking means may result in confusion between the intentions of those creating accreditation policy and the interpretations made by those who implement written accreditation standards. Currently, such ambiguity

continues to cause misunderstanding in cases where the term *critical thinking* is used. For example, Videbeck (1997b) found that after the National League of Nursing (NLN) included critical thinking in accreditation standards for American nursing programs, these programs selected a wide variety of definitions on which to base outcome evaluation.

While the NLN and, for example, the Canadian Association of Schools of Nursing (2014), the Canadian Association for Social Work Education (2012), and the Canadian Council for Accreditation of Pharmacy Programs (2014), have adopted the term *critical thinking* in their standards despite its lack of clarity, others, such as the Liaison Committee for Medical Education (2015), have avoided the term altogether. Krupat et al. (2011) suggest that the term critical thinking may be left out of formal policy documents in medicine in favour of narrower and better-defined terms, such as clinical reasoning. However, this avoidance does not solve the problem. All such terms – standing in for "good thinking" – are value-laden; with either approach, conversations are required to clarify the values and assumptions behind such terms. A robust approach to the term *critical thinking* might offer a vehicle for stimulating such conversations.

The absence of a map of the multiple interpretations of critical thinking in circulation is also problematic for educators coming from different disciplines and paradigms or theoretical backgrounds. Educators often use the same terminology to talk about quite different things; in my literature review, I discuss the multiple meanings of critical thinking, ranging from practical problem solving to deconstructing culture. These diverse understandings of critical thinking, and assumptions about "the good" in health professional practice, can complicate collaboration both within and between disciplines. With increasing evidence to support the relationship between interprofessional education

– education involving students from two or more professional programs (Centre for the Advancement of Interprofessional Education, 2002) – and effective care (Reeves, Goldman, Burton, & Sawatzky-Girling, 2010), calls for interprofessional collaboration between health professional programs are on the rise (Hammick et al., 2007). As a result, a broad understanding of the ways in which critical thinking is understood within and across professions will be important for educators.

Delimitations

The boundaries of this study are delimited to focus on my research questions, the particular context of the study (each of the programs selected), and the study population (educators who have a working understanding of critical thinking). Research questions focus on how educators understand critical thinking, and how they construct that understanding within their unique contexts and based on their personal and professional experiences. Although participants discuss teaching artefacts that they associate with critical thinking, this strategy is used to illuminate how they think about critical thinking by exploring the practices that they associate with it, rather than to compare their beliefs and values to their practices.

This study is also specific to its context – the two institutions and four professional programs selected. Differences between these two institutional contexts are addressed in the limitations section below. Results are also grounded in the particular experience and context of each participant. Although results can be transferred to similar contexts, many of the institutions and policies that govern health professions education are particular to that setting.

Choices have also been made to include or exclude various professional programs. Programs were chosen for the diversity of their professional cultures and probable multiplicity of views on critical thinking, based on that profession's academic educational literature. As in most qualitative studies, I have not sought to develop generalizable results (a concept more relevant to quantitative approaches); instead, I agree that: "qualitative research engages in-depth studies that generally produce historically and culturally situated knowledge. As such, this knowledge can never seamlessly generalize to predict future practice" (Tracy, 2010, p. 285). Moreover, the uniqueness of context is an important part of the analysis itself; I explore these contexts that educators draw on in constructing their understandings of critical thinking in detail in chapter five.

Finally, this study looks at educators who have a working understanding of critical thinking. For future studies, it may be of benefit to explore how educators who have not constructed a working understanding of critical thinking begin to understand it.

Limitations

One limitation of this study is that it does not look directly at the practices and behaviours of educators. This is both a delimitation and a limitation. Such an emphasis would invite comparison of educators' beliefs to the reality of their teaching, which is not the focus of this study. Instead, data production focussed on educators' thoughts about practice – as opposed to their actual practices – to better understand their beliefs. In order to explore the practices that educators associate with critical thinking, I incorporated teaching artefacts selected by each educator as data and explored their meaning and relevance in interview one. However, this use of teaching artefacts provides only a

limited resource for capturing the ways in which participants translate their beliefs into practices and is a limitation and delimitation of this study.

A second related limitation is my heavy reliance on interviews in order to examine how educators understand critical thinking. In any study relying primarily on self-report, there is a risk that educators may not feel comfortable in fully disclosing their perspective, they may not be completely aware of their values, or they may seek affirmation by looking for a "right answer." I have attempted to limit the impact of these issues by ensuring, at the start of the interview, that educators are aware that my view is that there is no "right" definition of critical thinking and by using probing questions in effort to go beyond rote responses. I also focussed on building rapport with participants and ensuring that the phrasing of my questions indicated as little bias as possible.

Thirdly, the use of two different institutional contexts did raise questions about the extent to which these contexts are comparable. I believe, first, that the unique perspective on critical thinking offered by social work educators – a program not offered at the U of A – warrants this limitation. Second, these two institutions, both falling under the jurisdiction of the Province of Alberta and located in Edmonton, are similar enough to allow for relatively easy comparison. Moreover, I found that institutional context and profession/professional program were significant factors even within a single institution. As a result, institutional variation was more a source of data than a limitation. Rather than attempting to find institutional uniformity, I investigated the impact of variation in context on the ways in which educators construct critical thinking. I discuss this in depth in chapter five.

Thesis Overview

This document includes seven chapters. This chapter addresses the context of this study, its intent and rationale, and its significance. I have also defined the key research questions, parameters of the study, key terms, delimitations, and limitations.

Chapter two will expand the study context by looking at the existing literature. I begin by exploring higher education, then, more specifically, the context of health professions education. The bulk of chapter two deals with the critical thinking literature. I ground this exploration in the general critical thinking literature (across higher education), using a framework developed from Kerry Walters's (1994) book *Rethinking reason.* The framework explores technical, humanist and emancipatory approaches to critical thinking and the theoretical traditions from which they stem. Within this framework, I also discuss these approaches to critical thinking as they are taken up in the health professions education literature.

In chapter three, I describe how this study will contribute to the literature by outlining the study design, including the epistemological, theoretical and methodological approaches that will be employed in order to answer the research questions laid out in this chapter. I come from a constructivist epistemological position, and employ an interpretive approach guided by a generic qualitative methodology and constructivist grounded theory methods. As I engaged in data analysis, I found cultural historical activity theory a useful analytical tool through which to understand the data. Chapter three also explores the tensions and congruencies between aspects of this research framework.

In chapters four and five, I discuss my findings related to research questions one and two, respectively. Like chapter two, chapter four engages with the framework developed from Kerry Walters's (1994c) work in order to explore the ways in which critical thinking was understood by educators in this study. In chapter four, I also discuss the roles of reflection and critical thinking dispositions or characteristics in participants' understandings of critical thinking. Chapter five builds on chapter four by exploring the professional, practice (or disciplinary), institutional, and personal contexts within which educators construct their understandings of critical thinking. Given that these contexts are continually shifting and overlapping, contextualising critical thinking offers a way of understanding how and why understandings of critical thinking likewise overlap and conflict, even within discussions with a single educator.

Chapter six uses cultural historical activity theory (CHAT) to address the tensions and contradictions inherent in educators' understandings of critical thinking. It provides a theoretical basis for understanding and maintaining (as opposed to resolving) those contradictions. In this chapter, I further explore the contexts through which critical thinking is understood by mapping them as interconnecting activity systems.

Finally, chapter seven addresses the theoretical and practical contributions made through this study. From a theoretical perspective, I discuss both contributions to the critical thinking literature and the ways in which CHAT might strengthen health professions educational theory more broadly. From a practical perspective, I consider contributions to policy, curriculum design, and educational practice. I also use chapter seven to reflect on the challenges and surprises encountered in this study, and to explore

directions for future research that will build on this study. I conclude this document with final thoughts on the implications of this work.

CHAPTER 2: LITERATURE REVIEW

In chapter one, I situated this study in the context of health professions education and in our social context more broadly. I also laid out the intent of this study, to explore: 1) how educators understand critical thinking, and 2) how educators construct those understandings. This chapter will situate this study within the academic literature related to critical thinking. I begin by surveying relevant literature in adult and higher education, linking to the movement toward engaged learning in the health professions. I then locate discourses on critical thinking within the context of adult and higher education – particularly health professions education. I survey three prevalent traditions from which academic discourse on critical thinking emerges, viewing critical thinking as 1) a set of technical reasoning skills, 2) as a humanistic mode of accessing creativity, relating to others, and exploring self, and 3) as a mode of ideology critique with a goal of emancipation. The goal of this literature review is to explore the various ways in which critical thinking is understood in the literature, how and from where those understandings emerge, and the debates that shape each understanding. I also review the literature specific to the health professional programs in this study – medicine, nursing, pharmacy and social work – in order to better understand the unique aspects of discourses on critical thinking in each discipline.

Briefly, I will also look at the teaching and learning strategies associated with critical thinking; this is a prominent part of the critical thinking literature in all disciplines. Given that there is no consensus on what critical thinking means and no universally accepted way of measuring it, this review will not focus on work that explores or evaluates the success of various instructional interventions in advancing

critical thinking in students. It will only explore teaching and learning strategies related to critical thinking to the extent that they might enhance an analysis of how educators and researchers understand critical thinking.

The Context of Adult and Higher Education

The health professional programs in this study are situated within the field of adult and higher education. While adult education is a broad term that encompasses many types of formal, semi-formal and informal learning, higher education occurs only in formal contexts. I also differentiate postsecondary and higher education, using *higher education* to refer to teaching within postsecondary institutions that is "primarily concerned with abstract and theoretical knowledge" (Toohey, 1999, p. 46) as opposed to primarily practical knowledge. That said, theoretical and practical knowledge should not be seen as opposites, and the distinction between the two is often difficult to make. I begin by detailing some of the canonical literature and theory that is common to adult and higher education. I also explore common "traditional" perspectives on adult learning. I then move to exploring literature particular to higher education.

Perspectives on Adult Learning

Malcolm Knowles (Knowles, 1973, 1980) is often credited with distinguishing adult education from the education of children and young adults. Though contested, Knowles's theory of andragogy – the science of educating adults – remains influential in framing adult and higher education as unique fields concerned with the particularities of educating adults (Merriam & Bierema, 2014). Several assumptions about adult learning emanating from Knowles's work continue to circulate, including assumptions that adult learning should: 1) be self-directed, 2) draw on the rich experiences of adult learners, 3)

be directly relevant to learners, 4) be problem centred, rather than focussed on content, and 5) acknowledge adults' internal motivations to learn (Spencer, 2006).

Knowles's assumptions about adult education have implications for contemporary curriculum in the postsecondary setting. Kuh, Kinzie, Schuh, Whitt, and Associates (2010) suggest that student success in this context – "broadly defined" (p. x) – is predicated on several institutional conditions that align closely with Knowles's assumptions about adult learning; specifically, they advocate for integration of prior learning and active learning, linked to problem based learning. They also emphasize "respect for diverse talents and cultural differences" (Kuh et al., 2010, p. xi), suggesting a need to attend to the past experiences of students and to respect the individuality of learners. Likewise, discourses on self-directed learning are omnipresent in higher education (Francis & Flanigan, 2012). These aspects of adult education represent a major shift from a teacher-centred approach to education to an approach that calls for engaged, learner-centred, and self-directed learning (Weimer, 2002).

The Field of Higher Education

From an organizational perspective, many authors have spoken to the ways in which the higher education has changed over the last century (e.g. Angus, 2009; F. Newman, Couturier, & Scurry, 2004; Readings, 1996; Turk, 2008). Authors point to, and often lament, a sense of the erosion of the old "liberal university," focussed on knowledge and questioning as ends in themselves (Angus, 2009; C. Newman, 1999), replaced by a new "marketized" (Barnett, 2000) and bureaucratic (Readings, 1996) university, where students are reconfigured as consumers and knowledge is reduced to

commoditised skills and credentials to be traded on the job market (F. Newman et al., 2004).

Kuh et al. (2010) advocate for "high impact" and "learner centred" teaching similar to Knowles's propositions about effective adult learning. However, many of the approaches to learning advocated by Kuh et al. (2010) mobilize the same discourses that are criticized by authors like Barnett (2000), Readings (1996), and Turk (2008). Kuh et al. (2010) draw on data from the National Survey on Student Engagement (NSSE), which compares university "performance" (with respect to student learning and engagement) on the international education market. Moreover, Kuh et al. (2010) appear to take for granted the role of student-as-consumer and the role of the university as providing students with the "skills and competencies demanded by the 21st century" (Kuh et al., 2010, p. ix). They emphasize the importance of accountability and measuring and reporting student learning, ideas tied very much to the bureaucratic university decried by Readings (1996).

In this sense, the contemporary university is marked by multiple competing discourses and by discourses that are mobilized for multiple purposes. While on the one hand, as Readings (1996) suggests, the accountability discourses of the university can be seen as eroding possibilities for curiosity and cultural critique, those same discourses can also be mobilized to invigorate conversations around student learning or the ways in which the "ivory tower" can be made accountable to the society in which it exists (Turk, 2008). Thus, ideas about the nature of knowledge and perspectives on adult learning are contested alongside (and are related to) conversations about the purpose and nature of the contemporary university. The contested nature of higher education and the competing

discourses around it are central to engaging with overlapping and competing understandings of critical thinking.

The Context of Health Professions Education

In the health professions, as in postsecondary education more broadly, there have been massive shifts over the past century. Health professions education can be defined through three major phases of educational reform, according to Frenk et al. (2010):

> The first generation, launched at the beginning of the 20th century, taught a science-based curriculum. Around the mid-century, the second generation introduced problem-based instructional innovations. A third generation is now needed that should be systems based to improve the performance of health systems by adapting core professional competencies to specific contexts, while drawing on global knowledge. (p. 1924)

The first generation brought a shift from an apprenticeship model, where education was conducted by clinicians in clinical contexts, to an academic, university-based, and basic science-driven educational model. The latter is made up of a combination of classroom-based education and education in the clinical settings.

The second generation brought about changes that have increasingly followed general adult education assumptions posited by Knowles. With the advent of William Barrows problem-based learning curricula (Barrows, 1985; Barrows & Tamblyn, 1980), which has been widely adopted across health professional programs (Taylor & Miflin, 2008), health professions education has increasingly emphasized active and problem-based instructional design with links to self-directed and individualized approaches to

learning (Frenk et al., 2010). The third generation of health professions education called for by Frenk et al. (2010) is based on a systems-level approach where healthcare is oriented around systems and populations, rather than at the micro-level of the practitioner. Practitioners in the systems-level approach understand the relationship between the macro and the micro. The movement toward a systems-based approach in healthcare demands that practitioners develop the knowledge, skills, and attitudes required to analyse the system and their role in it, and to act as agents for change (Frenk et al., 2010). This last "generation" has not yet come into being, but is expressed in tensions between emancipatory and technical approaches to critical thinking.

Policy makers and researchers in health professions education have increasingly called for competency-based – rather than subject-centred – curricula (Association of Faculties of Medicine of Canada, n.d.; Frenk et al., 2010). Unlike other university degree programs, where students pick and choose courses based on their own interests, most health professional programs are cohort-based, where groups of students begin the program at the same time, completing required courses and competencies, and most often completing their programs at the same time. The cohort and competency-based system assumes that the end result of the degree program is a global set of knowledge and skills that can be applied to various contexts (Association of Faculties of Medicine of Canada, n.d.), rather than a set number of university credits.

This movement echoes larger changes in higher education, where the function of health professions education is seen more as providing knowledge and skills for the job market than as a space where knowledge is pursued as an end in itself. That said, health professions education has historically been, by definition, linked to its particular practice

context; regardless of changing approaches to health professions education, it has long been assumed that health professional students are to be prepared with the knowledge and skills required for careers in their chosen profession. However, the rise of university marketization and focus on credentialization does raise questions about the ways in which longstanding links between education and practice in the health professions are understood. In fact, the implementation of "market modifiers" or "differential tuition" – where students training for lucrative professions pay more tuition than other students their institution – does place more emphasis on the role of student-as-consumer and credential-as-commodity, as opposed to a focus on public accountability required in professions to whom lives are entrusted.

Both higher education more broadly and health professions education specifically are marked by competing discourses; many see the role of the university and health professions education as increasingly contested in the twenty-first century (Frenk et al., 2010). Whether or not these roles are *more* contested at this moment in time than at others is less relevant here than the fact that they are contested. As stated earlier, I argue that critical thinking is a loaded term that often stands in for "good thinking." As a result, many of these epistemological and normative battles are waged through the term *critical thinking* – whether or not those who use this term see themselves as engaging in such a battle.

Critical Thinking

Over the years, many attempts have been made to create a general definition of critical thinking (e.g. Black, 2008; P. A. Facione, 1990). Given analytic philosophy's emphasis on reasoning and logic, many departments of philosophy have claimed

expertise over critical thinking (Brookfield, 2012, 2015). However, there are many different ways of understanding critical thinking, emanating from a wide variety of epistemological and theoretical positions (Brookfield, 2012). Many authors have lamented that critical thinking means many different things to many different people, and that there is a lack of consensus (e.g. Black, 2008; Fisher et al., 2009). However, the fragmentation that marks discourses of critical thinking can be viewed as representative of the requirements of different disciplinary and practice contexts in which the thinking takes place (Andrews, 2015). Moreover, it represents fundamental differences in epistemological and normative beliefs – that is, understandings of critical thinking vary depending on what people believe about how and why we engage in thought (Brookfield, 2000, 2012, 2015).

In introducing her edited book on critical thinking, *Re-thinking reason*, Walters (1994b) proposes a historical progression of critical thinking scholarship beginning with a "first wave" – where critical thinking is understood as a set of logical procedures "that are analytical, abstract, universal, and objective" (p. 1). The "first wave" focuses on improving reasoning processes and decision-making. Because this approach largely looks at critical thinking as a set of skills, techniques, or procedures, it has also been referred to as the technical or instrumental approach to critical thinking (Jones-Devitt & Smith, 2007); I will refer to it as the "technical approach" here.

Scholars who believe that technical approaches problematically reduce critical thinking to a set of procedures lead the "second wave" of critical thinking scholarship. Second wave theorists also take issue with the objectivity claims made by many scholars of the first wave. Instead, the second wave seeks to emphasize the creative, "affective,

theoretical, and normative presuppositions" (Walters, 1994b, p. 2) that they believe are fundamental to critical thinking. The second wave offers a constructivist critique of the idea that knowledge can be objectively accessed; it seeks to embrace the "liberal humanist assertion that critical thinking be understood contextually" (McLaren, 1994, p. xii). Critical thinking cannot be objective, but is inherently tied to the thinker within a particular social context (Walters, 1994b). Critical thinking in the second wave becomes a contextual and creative process. Because of this interest in reasserting the role of human uniqueness, self-exploration, and social interaction, like McLaren, I have called Walters' second wave the "humanist approach" to critical thinking.

McLaren suggests the addition of a "third wave" of critical thinking scholarship, which "speak[s] to critical pedagogy's concern with reasoning as a sociopolitical practice" (p. xii). Like Walters's second wave, McLaren's third wave understands knowledge as constructed; however, he uses the lens of critical theory and critical pedagogy. The normative dimension of the third wave is important, understanding thinking as always-already a political project (Brookfield, 2012). Since the third wave is linked to issues of social justice and emancipation, I have called it the "emancipatory approach" to critical thinking.

Because of its applicability across disciplinary contexts, Walters and McLaren's "waves" of critical thinking scholarship will be used in this chapter as a way of positioning various approaches to critical thinking according to their epistemological and normative assumptions; however, not all approaches will fit squarely within one "wave" or another. Many approaches – and educators – draw on more than one tradition in constructing their understanding of critical thinking, and understandings shift with

context. Moreover, these "waves" might be better thought of as overlapping *approaches* to critical thinking since they do not occur as a linear historical progression. For example, Walters's "first wave" is still the dominant understanding today (Brookfield, 2012). Similarly, McLaren's "third wave" does not necessarily follow on the heels of the second wave; it emanates from much earlier ideas about critical thinking linked to critical pedagogy, such as Paulo Freire's concept of critical consciousness developed in *Pedagogy of the oppressed* (Freire, 1996) and first published in 1970. Thus, I use the language of "approaches" to critical thinking rather than "waves." This language better appreciates the intersections and overlaps that occur historically and in current understanding of critical thinking. These intersections are illustrated in figure 2.1 through the Venn-style diagram, which demonstrates interplay between different approaches to critical thinking.

Although Walters' (1994c) book was published over twenty years ago, Walters and McLaren's "three approaches" remain relevant today. In his recent edited book on critical thinking (Davies & Barnett, 2015b), Barnett (2015) posits an approach to critical thinking that would bring together disparate domains of critical thinking: critical reason, critical self-reflection, and critical action. He suggests a more comprehensive approach to critical thinking as "criticality"; he sees this new approach bringing together each of the three traditions through an attention to linking theory and practice. Although not a perfect fit, these "domains" map well onto the approaches proposed in 1994 by Walters and McLaren (Walters, 1994c). Barnett (2015) connects the first domain, critical reason, to knowledge, knowledge critique, and discipline-specific critical thinking skills. He connects critical self-reflection to the development and reconstruction of self. Lastly, he

connects critical action with "critique-in-action (collective reconstruction of world)" (Barnett, 2015, p. 64). I see these three domains mapping onto Walters and McLaren's technical, humanist, and emancipatory traditions, respectively.

Figure 2.1. Approaches to Critical Thinking

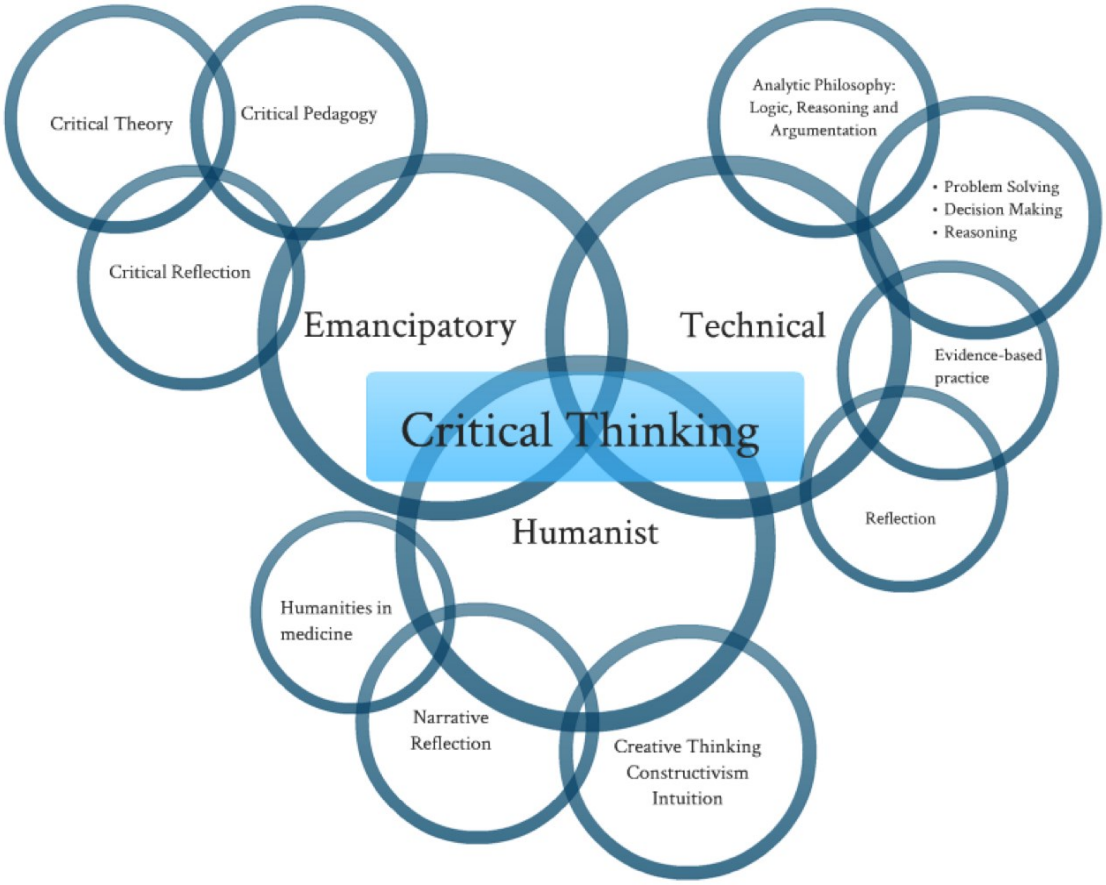

Figure 2.1. Approaches to critical thinking. This figure demonstrates the overlap and intersections between these approaches, and related concepts, in the literature on critical thinking. These approaches do not operate as discreet categories but significantly intersect both in theory and in practice.

Not surprisingly, the epistemological and theoretical assumptions behind critical thinking in higher education also resonate in the literature on critical thinking specific to the health professions. Although professional programs are, in many ways, structured

differently than other university programs, they do not exist in isolation. While they have their own unique rules and norms, they are also part of the discourses prevalent in the rest of the academy. In the health professions education literature, as in other disciplines, I see the critical thinking literature through technical, humanist, and emancipatory approaches.

I treat critical thinking as an array of "kinds of thinking and styles of reasoning" (Mason, 2009, p. 13), each emanating from different epistemological, theoretical, and normative positions. Each critical thinking approach, with its attendant assumptions, will have strengths and weaknesses for educational theory; thus, like Yanchar et al. (2008), I hold that "no approach [to critical thinking] is likely to be universally accepted or to provide sufficient resources for critical analysis across all fields and under all circumstances" (p. 269). Rather, it is important to understand the assumptions behind these various perspectives. In the remainder of this chapter I use Walters and McLaren's three approaches to critical thinking as a framework for understanding various competing and overlapping understandings of critical thinking in the literature, attending to how these discourses have been taken up in the health professional programs in this study.

Technical Critical Thinking

The technical approach to critical thinking is still the dominant approach today (Brookfield, 2012; Jones-Devitt & Smith, 2007; Yanchar, Jackson, Hansen, & Hansen, 2012). This approach is derived from the tradition of analytic philosophy (Brookfield, 2012, 2015) and – though some definitions of critical thinking within this category also see dispositions or attitudes as part of critical thinking (P. A. Facione, 2011; Fisher et al., 2009; Halpern, 2003) – primarily looks at critical thinking as a set of techniques or general skills that can be taught. Brookfield (2012) also proposes that there is another

critical thinking tradition based in the scientific method, or the hypothetico-deductive approach to thinking and problem solving. Brookfield's scientific method-based critical thinking aligns, for me, with other reasoning techniques and falls under the technical approach.

Technical understandings of critical thinking are connected to specific techniques such as "recognizing logical fallacies, distinguishing between bias and fact, opinion and evidence, judgement and valid inference, and becoming skilled at using different forms of reasoning (inductive, deductive, formal, informal, analogical, and so on)" (Brookfield, 2012, pp. 32-33). It is linked to – sometimes overlapping or encompassing – other terms, such as reasoning (Black, 2008; Bowell & Kemp, 2001; P. A. Facione, 2011; Lipman, 1988; Mason, 2009; Missimer, 1994; Nosich, 2005; Thompson, 2001) and reflection (Abu-dabat, 2011; Black, 2008; Garrison, 1992; Halpern, 2003; Nosich, 2005). This approach is present in the majority of critical thinking "self-help" resources, offering solutions for teaching and learning critical thinking skills (e.g. Bowell & Kemp, 2001; Epstein, 2003; Halpern, 2003; Nosich, 2005; Thompson, 2001).

The Delphi Consensus

The technical understanding of critical thinking is far from conceptually coherent. Definitions of critical thinking within analytic philosophy abound (e.g. Black, 2008; Ennis, 1962; P. A. Facione, 1990; Lipman, 1988); recent reviews of the literature have "revealed many different conceptions of CT [critical thinking] with only a modest degree of overlap" (Fisher et al., 2009, p. 5). P. A. Facione (1990) published the American Philosophical Association's Delphi Report, to which many major critical thinking theorists contributed (including Robert Ennis, Mathew Lipman, Stephen Norris, Richard

Paul, and Mark Weinstein). Although the Delphi Report has not served to provide a single definition for critical thinking (Fisher et al., 2009), it is likely the most widely recognized definition of critical thinking in circulation; moreover, it covers many concepts that consistently reappear in debates about critical thinking in the technical approach. The report defines critical thinking broadly, as:

> Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. CT [critical thinking] is essential as a tool of inquiry. (P. A. Facione, 1990, p. 2)

This definition focuses on critical thinking as reasoning, evaluation and judgment. The Delphi Report also indicates a set of six critical thinking skills required to make such judgments, including interpretation, analysis, evaluation, inference, explanation and self-regulation. The majority of these skills are understood as part of "the" reasoning process: in order to think through a problem or issue, the thinker goes through a more or less linear process of gathering, interpreting, analysing and evaluating information, making inferences and generating an explanation or decision based on that information.

The critical thinking literature also emphasizes self-regulation or reflection (e.g. Black, 2008; P. A. Facione, 1990; Halpern, 2003). In technical approaches to critical thinking, reflection is often viewed as a technique incorporated within the reasoning process. It involves a final stage of reasoning where the thinker looks back at the reasoning process itself and evaluates it; according to Mezirow (1990):

> We engage in task-oriented problem solving – how to do something or how to perform …; reflection is significantly involved when we look back on content or procedural assumptions guiding the problem-solving process to reassess the efficacy of the strategies and tactics used. (p. 7)

Although some scholars seek to separate reflection from critical thinking, the two are intimately connected; reflection is most often seen as either a closely related concept or a sub-skill subsumed under *critical thinking*.

The Delphi Report also lists a series of affective dispositions, supporting critical thinking. These include: inquisitiveness, concern to become well-informed, alertness, trust in the inquiry process, self-confidence in one's reasoning skill, open-mindedness, flexibility in considering alternatives and opinions, understanding of others' opinions, fair-mindedness, honesty in evaluating one's own biases and prejudices, prudence in judgement, willingness to reconsider or re-evaluate judgments, clarity, orderliness, diligence, reasonableness, care, persistence, and precision (P. A. Facione, 1990). The inclusion of disposition in a definition of critical thinking was not universally agreed upon and will be taken up again in the section below, on debates within the technical approach to critical thinking.

The Delphi consensus has spawned the production of a number of assessment instruments (N. C. Facione, Facione, & Sanchez, 1994; P. A. Facione, 1991). However, because critical thinking has no single stable meaning, validity (whether these instruments measure the "right" behaviours and attributes) is often questioned, as is their reliability (Carter, Creedy, & Sidebotham, 2015; Hitchcock, 2015).

Debates about Technical Critical Thinking

Several major debates exist within this critical thinking tradition. First, as opposed to including only reasoning skills, scholars in the technical tradition question the extent to which critical thinking requires affective dispositions or attitudes. Although the Delphi report defined critical thinking as encompassing both skills and dispositions, the contributors were divided on this issue – only a two-thirds majority agreed that dispositions could be included in a definition of critical thinking (P. A. Facione, 1990). Perhaps the reason that this issue is so contentious is that a focus on affective dispositions to some extent takes critical thinking away from the domain of abstract reasoning procedures. Thus the debate persists in the current literature (Mason, 2009), particularly with respect to the teaching of critical thinking. It is also reflected in the data collected for this study, and is addressed again in chapter four. While technical reasoning skills might be teachable, the educational processes involved in changing dispositions – if, in fact, dispositions can be changed – continues to be murky ground (Tishman, Jay, & Perkins, 1993).

Second, there are debates around the extent to which critical thinking skills are domain specific – as opposed to a set of general skills and abilities. Many early critical thinking scholars argue that critical thinking is comprised of a general set of skills that, once learned, can be applied to any subject. Ennis (1989, 1990) is credited with championing this approach. McPeck (1990, 1994), on the other hand, argues that critical thinking skills are particular to a subject and discipline; a certain amount of disciplinary fluency is required in order to engage in critical thinking in any subject, and critical thinking in one domain does not necessarily transfer to others.

However, more recent scholars dealing with these debates generally conclude that critical thinking is both a set of skills and dispositions (Davies & Barnett, 2015a; Halpern, 2003; Simpson & Courtney, 2002), and that it is to an extent domain specific, but that there are also critical thinking skills and dispositions that cross disciplinary boundaries (Andrews, 2015; Brookfield, 2012; Gambrill, 2012; Halpern, 2003; A. Jones; Nosich, 2005). Results from this study intervene particularly in the latter debate, linking critical thinking to multiple domains – beyond academic discipline. I see critical thinking as actively constructed through multiple "domains," or practice contexts simultaneously.

Technical understandings of critical thinking have also often come under fire from the quarters of feminism and cultural studies (Norris, 1995; Thayer-Bacon, 2000). According to critics, a technical approach to critical thinking is inherently tied to western logocentric conceptions of rationality that exclude feminist ways of knowing (Thayer-Bacon, 2000; Walters, 1994a; K. J. Warren, 1994) and knowledges of non-Western cultures (Norris, 1995; Thayer-Bacon, 2000). Others suggest that the technical approach to critical thinking fails to provide an adequate normative dimension, a sense of the inherently political goals of critical thinking (Giroux, 1994; Kaplan, 1994; McLaren, 1994; T. H. Warren, 1994). These critiques have spawned the humanist and emancipatory approaches to critical thinking, respectively.

However, as Brookfield (2012) suggests, scholars within the technical approach have at times articulated political goals. Many critical thinking scholars in this domain see critical thinking as necessary to democracy – individuals must be able to think critically about arguments made in the public sphere in order to make informed choices that are not compelled by propaganda (Brookfield, 2012; P. A. Facione, 2011; Thayer-

Bacon, 2000). The Delphi Consensus (P. A. Facione, 1990) states that the goal of all education is aimed at creating citizens who will demonstrate the critical thinking skills and dispositions "which consistently yield useful insights and which are the basis of a rational and democratic society" (p. 2).

Technical Approaches to Critical Thinking in the Health Professions

As in the broader literature, technical approaches to critical thinking dominate the literature on critical thinking in the health professions (Morrall & Goodman, 2013; Walthew, 2004; Yanchar et al., 2008). This model of critical thinking takes as its premise that critical thinking is based in a rational and systematic approach to reasoning (Yanchar et al., 2008). In the health professions, technical critical thinking takes on characteristics related to the particular thought processes engaged by health professionals. Most often, it is connected to clinical and diagnostic thinking processes, evidence-based medicine and reflection. Critical thinking as clinical or diagnostic thinking is directly linked to terms such as clinical reasoning (Alfaro-LeFevre, 2013; Cosby, 2011; Gambrill, 2012; Grace & Orrock, 2015; A. Jones, 2015; Jones-Devitt & Smith, 2007; Kreiter & Bergus, 2009; Krupat et al., 2011), clinical judgement (Alfaro-LeFevre, 2013; Brunt, 2005; Gambrill, 2012), clinical decision-making (Aberegg, O'Brien, Lucarelli, & Terry, 2008; Gambrill, 2012; Macpherson & Owen, 2010; Simpson & Courtney, 2002; Worrell & Profetto-McGrath, 2007), diagnostic reasoning (Krupat et al., 2011), problem solving (Gambrill, 2012; Heron, 2006; Jones-Devitt & Smith, 2007; Krupat et al., 2011; Simpson & Courtney, 2002; Worrell & Profetto-McGrath, 2007) and, in the discipline of Nursing, nursing process (Gordon, 2000; Staib, 2003; Worrell & Profetto-McGrath, 2007). All of these terms relate to the process of taking in and evaluating complex clinical information

from a variety of sources, but differ slightly depending on what is being "thought" in critical thinking – whether or not critical thinking requires a "problem," for example (Simpson & Courtney, 2002) – or the outcome of critical thinking – whether or not critical thinking requires a decision (Martin, 2002). Sometimes these terms are synonymous with critical thinking, at other times distinctions are made.

Alfaro-LeFevre (2013) suggests that clinical reasoning is a type of critical thinking particular to the clinical context. Others, particularly in medical education (Grace & Orrock, 2015), discuss critical thinking and clinical reasoning through the "two systems" model (Kahneman, 2013). The two systems model is premised on an idea that reasoning occurs through two distinct cognitive systems: system 1 – a "fast" or heuristic based process – and system 2 – a "slow" hypothetico-deductive approach to reasoning. In the critical thinking literature, it is not entirely clear whether both systems are included in *critical thinking*, a point that will be taken up again in my data analysis in chapter four.

Simpson and Courtney (2002) posit that problem solving is a decision-focussed process that is not synonymous with critical thinking, but requires critical thinking in order to be done effectively. Although scholars and researchers disagree on the relationship between these terms and critical thinking, there is significant overlap in the literature to the extent that the above terms often appear as synonymous with critical thinking (Grace & Orrock, 2015; Simpson & Courtney, 2002; Victor-Chmil, 2013).

Critical thinking has also been linked and sometimes equated with the concept of evidence-based practice (Gambrill, 2012; A. Jones), also called critical appraisal of evidence (Maudsley & Strivens, 2000b; Pitkälä et al., 2000), evidence-based medicine (Lieberman, Trumble, & Smith, 2000; Pitkälä et al., 2000), or information literacy

(Weiner, 2011). According to Pitkälä et al. (2000): “the evidence-based method provides a systematic approach to obtain information and appraise it critically at the point when it is needed” (p. 22), a process involving researching, appraising and applying evidence from the literature in practice settings. Evidence based medicine is sometimes synonymous with critical thinking (Grace & Orrock, 2015; Yanchar et al., 2008); there is also overlap in the language used to articulate the skills required for evidence appraisal and critical thinking, including analysis, evaluation, and judgment of premises – or assumptions – and arguments (Weiner, 2011).

The technical tradition within the critical thinking literature also coincides with a technical understanding of reflection (Alfaro-LeFevre, 2013; Gambrill, 2012; A. Jones) and self-assessment (Gambrill, 2012). According to Mann, Gordon, and MacLeod (2009), “reflection shares similarities with our understanding of critical thinking” (p. 597). As with understandings of critical thinking in other disciplines, the term reflection does not exclusively fall under technical critical thinking, but can appear in all three traditions. In the technical tradition, concepts of reflection in action and reflection on action (Mezirow, 1990; Ryan, 2010; Schön, 1983) are most frequently linked to critical thinking. Reflection in action is said to occur when professionals pause to analyse an event as it is occurring and make judgments about how to proceed. Reflection on action is said to occur when professionals analyse an event after it has occurred in order to re-evaluate their interpretation of the event and their actions. Often these two processes are viewed as completely separate modes of thinking; however, in practice thinking and action are rarely distinct.

Despite the regularity with which these terms are connected to critical thinking in the health professions, the distinctions and conflations made between critical thinking and related concepts such as clinical reasoning, clinical problem solving, evidence-based medicine, and reflection are far from consistent. Moreover, the way in which critical thinking is approached varies both within and between disciplines. Given that this study seeks to build a more robust picture of what critical thinking means to educators in the health professions, for this literature review will view critical thinking as an overarching concept that envelops many different terms and ideas.

Humanist Critical Thinking

McLaren (1994) distinguishes the humanist approach to critical thinking through its "liberal humanist assertion that critical thinking be understood contextually" (p. xii). This understanding of critical thinking reacts to "first wave" or technical approaches to critical thinking as a set of universal and abstract skills or procedures (Walters, 1994b). The technical approach, humanist thinkers argue, is inherently linked to dominant western, patriarchal, and logocentric ways of knowing (Phelan & Garrison, 1994; Thayer-Bacon, 2000; Walters, 1994a; K. J. Warren, 1994). Instead, humanist critical thinking theorists seek to humanise technical understandings of critical thinking, replacing claims to objectivity with subjectivity, abstraction with contextualization, and positivist notions of Truth with socially constructed truths.

Critical thinking is subjective in the sense that "the thinker is always present in the act of thinking, and it is precisely her active participation, with its attendant affective, theoretical, and normative presuppositions, from which any analysis of fair-mindedness must proceed" (Walters, 1994b, p. 2). This understanding of critical thinking stems from

a feminist position that seeks to understand critical thinking through "nonanalytic modes of thinking, such as imagination and empathic intuition, as well as the straightforwardly logical ones defended by conventional critical thinking" (Walters, 1994b, p. 11). In general, scholars in this tradition seek either to overturn or modify dominant discourses about critical thinking by emphasizing subjectivity, including a reclamation of individual creativity (Walters, 1994b) and an understanding that there are multiple ways of thinking and knowing (Thayer-Bacon, 2000).

This claim to subjectivity also means that critical thinking is not an abstract process that can claim an objective Truth, but is highly contextual: "just as subjects cannot be separated from the process of thinking, so thinking itself cannot be separated from the context in which it arises" (Walters, 1994b, p. 16). Critical thinking is always a biased activity, predicated on a particular worldview and drawing on particular normative assumptions and values (Paul, 1995; T. H. Warren, 1994). That is, people, who hold and act on their beliefs, are the makers of knowledge. As much as humanist critical thinking theorists emphasize the subjectivity and individual creativity of thinking, humanist critical thinking is also often linked to a constructivist understanding of the world. The context within which the individual thinks and constructs his or her ways of knowing is a social one. Thus, construction of knowledge cannot be disconnected from the social context within which it is embedded (K. J. Warren, 1994). Thayer-Bacon (2000) seeks to replace the image of the contemplative, solitary thinker with the image of critical thinking as a quilting bee, where construction of knowledge – or quilts – occurs in a community and where the contributions of individual thinkers – or quilters – contributes to

knowledge production. In this understanding of thought and knowledge, there is no objective Truth "out there," but multiple socially produced truths.

Humanist Approaches to Critical Thinking in the Health Professions

Likewise, in the health professions, there are significant calls for reclamation of subjective (Walthew, 2004), interpersonal (Grace & Orrock, 2015), constructivist, and creative (Scheffer & Rubenfeld, 2000) approaches to critical thinking. Humanist approaches to critical thinking also relate to movements toward narrative reflection, especially in Social Work (Harrison, 2009), Nursing (Walthew, 2004), and in initiatives calling for integration of the humanities in medicine and medical education (Cave & Clandinin, 2007; Charon, 2004; R. Charon, 2010; Charon et al., 1995; Clandinin & Cave, 2008; Doukas, McCullough, & Wear, 2012).

Echoing humanist appeals, in general critical thinking literature, for an attendance to critical thinking as a creative process, critical thinking theorists in the health professions also call for an understanding of critical thinking in the clinical context as creative (Chan, 2012; R. Charon, 2010; Doukas et al., 2012; Kamin, O'Sullivan, Deterding, & Younger, 2003; Maudsley & Strivens, 2000a). Creativity has long been emphasized as a crucial component of critical thinking in the disciplines of Nursing (Brunt, 2005; Chan, 2012; May, Edell, Butell, Doughty, & Langford, 1999; Popil, 2011; Scheffer & Rubenfeld, 2000; Sorensen & Yankech, 2008; Staib, 2003; Walthew, 2004; Worrell & Profetto-McGrath, 2007) and Social Work (Gibbons & Gray, 2004; Johnston, 2009; Jones-Devitt & Smith, 2007; Miller, Harnek Hall, & Tice, 2009). At times, this means adding an emphasis on creativity to otherwise technical understandings of critical thinking. When Scheffer and Rubenfeld (2000) replicated Facione's (1990) Delphi

Consensus, replacing Facione's philosophy-experts with experts in nursing education, they found that "nursing experts believe that CT [critical thinking] in nursing includes two more affective components, 'creativity' and 'intuition'" (Scheffer & Rubenfeld, 2000, p. 357). The addition of these subjective and affective components to the largely technical understanding of critical thinking from the original Delphi study represents a challenge to that dominant technical understanding of critical thinking, even if the approach, overall, is far from radical. Creativity and intuition, with their attendant ambiguity, pose a challenge to the concepts of objectivity and technical procedures. According to Walthew (2004),

> Nurse educators consider critical thinking a complex process that included rational, logical thinking, reflective of traditional theories of critical thinking, and areas of the affective domain more commonly associated with female ways of thinking and knowing. They particularly emphasized listening to other people's points of view, empathizing, and sensing. (p. 411)

In the health professions, humanist critical thinking has also been linked to social constructivist understandings of the world (Gibbons & Gray, 2004; S. Jones, 2006; Miller et al., 2009; Yanchar et al., 2012). As King and Kitchener (1990) have suggested in their Reflective Judgment Model, these perspectives view the development of critical thinking (or reflective judgement, in their terms) as intrinsically connected to understanding knowledge as abstract and constructed rather than concrete and certain (Mezirow, 1998). Gibbons and Gray (2004), in particular, advocate for a constructivist understanding of critical thinking in social work education. In their view,

> Critical thinking, rather than claiming objectivity, is value-laden thinking – much more than common sense. We engage with the world and with others and our judgments, conclusions, ideas, and opinions flow from these interactions – never from a standpoint of detached objectivity. The importance is, therefore, to make the values, judgments and decision-making explicit, rather than to claim that they are not there and to see critical thinking as crucial to the process of constructing knowledge, meaning and understanding. (Gibbons & Gray, 2004, p. 37)

In other words, for critical thinking scholars in this tradition, critical thinking means understanding that thought and knowledge are an active process tied to belief and, hence, bias. The key to critical thinking is in articulating, analysing and altering the assumptions on which ideas and decisions are based.

More radical understandings of critical thinking in the humanist tradition, such as those connected to feminist perspectives or constructivist epistemological stances, often overlap with emancipatory understandings of critical thinking. As I have suggested, the three critical thinking traditions that provide the framework for this literature review are not completely separate, but often overlap and intersect. Thus, some understandings of critical thinking may fall under multiple categories. Scheffer and Rubenfeld's (2000) articulation of critical thinking as a creativity and intuition-enhanced version of the technical understanding of critical thinking found in Facione's (1990) Delphi study falls simultaneously under technical and humanist approaches to critical thinking. Likewise, Gibbons and Gray's (2004) work on critical thinking in social work education contains

elements of both humanist and emancipatory understandings of critical thinking. They see critical thinking as creative and constructivist, from a humanist perspective, and as an overtly political project, from an emancipatory perspective.

Humanist critical thinking and narrative reflection. Humanist critical thinking is also linked to concepts of narrative reflection and the integration of the humanities in health professions education. Unlike technical approaches to reflection, narrative reflection is rooted in a humanist perspective that is held in opposition to dominant empirical and biomedical discourses occurring in the health professions education. While Ryan (2010) characterizes his technical approach to reflection as a "pushing aside" of emotion, a narrative understanding of reflection is related to humanist approaches to critical thinking that appreciate the role of affect in the work of health professional students and practitioners. In exploring definitions of reflection, Sandars (2009) and Mann et al. (2009) note the explicit attention to emotion in Boud's early definition of reflection as "a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to a new understanding and appreciation'' (Boud, Keogh, & Walker, 1985, p. 19).

Likewise, scholars in narrative medicine (Cave & Clandinin, 2007; Charon, 2004; R. Charon, 2010; Charon et al., 1995; Clandinin & Cave, 2008; S DasGupta & Charon, 2004; Harrison, 2009; Mezirow, 1998) suggest that narrative reflection supports students and practitioners in exploring their experiences and emotions, offers a forum for working through the affective aspects of clinical practice (Cave & Clandinin, 2007), and builds positive practitioner identity (Clandinin & Cave, 2008). In turn, this exploration of the

affective dimensions of clinical practice can allow for an identification with and empathy for the patient:

> When doctors or medical trainees reflect on their own lives in medicine and when they inspect the memories and associations triggered by their care of the sick, they become all the more available and useful to their patients. Their explicit awareness of their own feelings and experiences deepens their capacity to respond empathically to patients. (S DasGupta & Charon, 2004, p. 352)

Analytical tools from the humanities, such as literature, poetry, drama, film (R. Charon, 2010; Charon et al., 1995; Miller et al., 2009) and writing (Cave & Clandinin, 2007; Charon, 2004; Clandinin & Cave, 2008), are often cited as vehicles for enhancing narrative reflection. According to Doukas et al. (2012), “the study and creation of creative literature (short stories, novels, poetry, drama) encourage humanism and critical thinking and serve as a vehicle to improve care, commitment, and self-care" (p. 337).

Emancipatory Critical Thinking

Like humanist approaches to critical thinking, McLaren’s (1994) emancipatory approach is often positioned as a reaction to dominant technical discourses about critical thinking. However, this view of critical thinking has a long history that has evolved somewhat separately from technical understandings of critical thinking stemming from analytic philosophy. Instead, emancipatory critical thinking is informed by the tradition of critical pedagogy, which stems from critical theory.

Critical thinking and critical pedagogy. The founders of critical theory – including Max Horkheimer, Theodor Adorno and Herbert Marcuse (Wiggerhaus, 1986) –

were interested in how people can learn to engage in social critique (Adorno, 1990; Horkheimer, 1995; Marcuse, 1986). The purpose of such critique is to illuminate the unjust ideological structures inherent in late capitalism in order to pave the way for a more just society. In other words, "critical theory's diagnosis of the social world is inherently a normative enterprise, since it involves judgments that the world ought not to be as it is, or about what is wrong with it" (Finlayson, 2005, p. 12).

Stemming from critical theory, critical thinking in the tradition of critical pedagogy is linked to Paulo Freire's work on critical consciousness. Critical consciousness occurs when people become aware of their own conditions of oppression (Freire, 1996, 2008). In other words, following the project of critical theory, critical consciousness – a term that Freire often interchanges with "critical thought" or "critical thinking" – is about coming to see the oppressive social hierarchies and the "systems of class, race, and gender oppression" (McLaren, 1994, p. xi) that support those hierarchies. In terms of teaching, Freire emphasises: 1) participatory, dialogic learning that illuminates social structures currently masked by ideology, and 2) *praxis*, or the need for critical thinkers to meld thought and action to fight oppressive social structures and create change.

Building on Freire's work, critical pedagogues like Brookfield (2012, 2015), Giroux (1994, 2006), hooks (2010), and McLaren (1994) have entered mainstream critical thinking debates in education. The emancipatory understanding of critical thinking is marked by two main distinctions. First, these theorists, like those in the humanist tradition, insist that knowledge is constructed; second, they insist that all

thought is both political and normative, and that critical thinking involves analysing and articulating the thinker's assumptions and goals (Brookfield, 2015; McLaren, 1994).

Like humanist critical thinking, critical thinking scholars in the emancipatory tradition have objected to the positivist undercurrent in technical critical thinking; they argue that knowledge is socially constructed and, thus, that critical thinking is always contextual rather than universal (McLaren, 1994). According to Giroux (1994):

> At the core of what we call critical thinking [in the technical tradition], there are two major assumptions that are missing. First, there is a relationship between theory and facts; second, knowledge cannot be separated from human interests, values and norms. (p. 201).

Put another way, Giroux is arguing that facts – often thought of as objective knowledge – are not objective, but always stem from theory, a tentative set of ideas within a particular frame of reference; in his thinking, the theoretical is intimately connected with human assumptions, values and norms.

As McLaren (1994) argues, emancipatory critical thinking scholars are critical of the lack of a clearly articulated normative dimension in both technical and humanist traditions. Although some scholars in technical critical thinking traditions do articulate a purpose – that critical thought is a vital aspect of democratic participation (P. A. Facione, 1990, 2011) – the technical tradition largely leaves the normative dimension of critical thinking unarticulated. According to emancipatory critical thinking scholars, this failure to articulate the values and social goals behind critical thinking in the technical tradition often means that critical thinking in this tradition falls into the service of dominant

ideologies (Jones-Devitt & Smith, 2007). According to Aronowitz (1998), "the idea of the educator as a disinterested purveyor of 'objective' knowledge, the incontrovertible 'facts' that form the foundation of dominant values, is itself a form of ideological discourse" (p. 14).

Likewise, McLaren (1994) argues that humanist critical thinking does not sufficiently articulate its political project, or its role in current social relations. In his words:

> There is a difference between the second wave liberal humanist assertion that critical thinking be understood contextually (a position that does not sufficiently situate critical thinkers in relationship to their own complicity in relations of domination and oppression) and the criticalist [emancipatory] assertion that one's intellectual labor must be understood ethicopolitically in the context of a particular political project. (p. xiii).

Because they believe that knowledge is not objective and that bias is inescapable, critical thinking theorists in this tradition see critical thinking as the ideology critique of critical theory. Critical thinking is then the process of analysing assumptions that are held at a broad societal level – the assumptions on which ideology is based – and on an individual level – the assumptions on the basis of which individuals make decisions (Brookfield, 2012). Understanding and unpacking these assumptions opens up possibilities for shifting paradigms or worldviews, rather than accepting assumptions as truths.

Emancipatory critical thinking and critical reflection. Emancipatory critical thinking is linked to critical reflection and transformative learning. Critical reflection has

been described variously as focussing on: 1) "broader historical, social and/or political contexts" (Hatton & Smith, 1995, p. 41), 2) power dynamics, inequalities and hegemonic assumptions (Brookfield, 2010), and 3) "moral issues and normative backgrounds underlying ethical decision making" (Verkerk, de Bree, & Mourits, 2007, p. 665). This way of thinking about reflection is grounded in critical pedagogy and takes as a premise that current social relations are unjust and can be addressed through critical analysis.

According to Brookfield (2010), there is a distinction to be made between technical reflection, linked to the technical tradition of critical thinking, and critical reflection, stemming from the emancipatory tradition:

> Reflection is not, by definition, critical. It is quite possible to practice reflectively while focusing solely on the nuts and bolts of process and leaving unquestioned the criteria, power dynamics, and wider structures that frame a field of practice. To me, critical reflection always has a normative basis; that is, it is grounded in a set of values concerning what kind of learning and education is inherently most valuable. (p. 216)

This understanding of critical reflection has explicit links to critical theory, including its emphasis on illuminating unjust social structures currently masked by ideology.

Brookfield's understanding of critical thinking and critical reflection are nearly identical – both are about an intentional analytic process of questioning the hegemonic assumptions that appear natural, but are ideological. Two minor distinctions might be made: 1) compared to critical thinking, critical reflection is slightly more focussed on "looking back" on experience and 2) that the concept of critical reflection reacts to the

distinct – though overlapping – body of work on technical reflection as opposed to technical critical thinking.

Likewise, Mezirow's (1998) critical reflection, or "critical reflection on assumptions" (CRA), is a political tool that engages the thinker in identifying and analysing assumptions. Brookfield (2010) and Mezirow (1998) both suggest that critical reflection often occurs when the reflector looks back on an event or "disorienting dilemma," linking critical reflection – in Brookfield's terms – and CRA – in Mezirow's terms – to Mezirow's (1990) transformative learning theory. In transformative learning theory, the disorienting dilemma is an experience that does not fit the thinker's frame of reference, with its attendant assumptions. This experience prompts the thinker to look critically at their assumptions and potentially shift their worldview.

Emancipatory Approaches to Critical Thinking in the Health Professions

The call for emancipatory critical thinking is also present in the health professions (Brunt, 2005; Ford & Profetto-McGrath, 1994; Getzlaf & Osborne, 2010; Gibbons & Gray, 2004; S. Jones, 2006; Jones-Devitt & Smith, 2007; Kumagai & Lypson, 2009; Teo, 2011). According to Morrall and Goodman (2013):

> By 'critical thinking' we mean going beyond accepting pre-existing social, professional or economic orders to challenge the very basis of our practices and thinking processes and to engage in critical thinking as exemplified in the works of the Frankfurt School. (p. 937)

Likewise, Yanchar et al. (2008) propose that critical thinking should involve "identification and evaluation of ideas, particularly implicit assumptions and values, that

guide the thinking, decisions, and practices of oneself and others" (p. 270). This understanding of critical thinking is particularly evident in social work (Gibbons & Gray, 2004; S. Jones, 2006; Miller et al., 2009; Morley, 2008). As in the broader critical thinking literature, concepts of critical reflection are heavily tied to health professionals' critical thinking in this tradition (Brunt, 2005; Getzlaf & Osborne, 2010; Morley, 2008; Teo, 2011).

Frenk et al.'s (2010) emphasis on the role of health professionals as change agents in healthcare systems suggests that this understanding of critical thinking might be on the rise. Published in *The Lancet*, a major journal with a broad focus and audience, this report has had a broad impact. As discussed above, Frenk et al. (2010) call for an expanded role for health professionals as advocates for systemic change is also echoed in many major health professional policy documents. Publications by Getzlaf and Osborne (2010), Gibbons and Gray (2004), Jones-Devitt and Smith (2007), Miller et al. (2009), and Morrall and Goodman (2013) all show the connection between the call for health professionals as advocates for change and the ways in which critical thinking skills can be used to uncover hegemonic assumptions that perpetuate the system as it is.

Disciplinary Trends

The educational literature for each of the health professional programs in this study is distinct, and unique trends can be seen in each. As in the general critical thinking literature, critical thinking in each program's educational literature can be divided into three main paradigms, which I identify as the technical, humanist, and emancipatory approaches. In medical, nursing, and pharmacy education literature, technical understandings of critical thinking are dominant, and other considerations crop up to

challenge that dominant understanding. In social work education, emancipatory approaches to critical thinking are most prominent, though technical approaches are not absent. The extent to which technical understandings of critical thinking are dominant and the strength, frequency and character of challenges to dominant approaches vary from discipline to discipline.

Critical thinking is overwhelmingly understood through a technical lens –as clinical reasoning and its corollaries – in the medical and pharmacy education literature. Nursing education, although still technically dominated, sees frequent challenges to that dominant technical paradigm, calling for an attendance to humanist critical thinking through an emphasis on the creative and intuitive (Scheffer & Rubenfeld, 2000); the nursing education literature is influenced by a feminist "alternative view in which subjectivity is valued alongside rationality as a means of knowledge acquisition" (Walthew, 2004, p. 408). Medical education also offers humanist counter-discourses on critical thinking emanating from groups of scholars interested in bringing the humanities and narrative reflective practices to medical education (Charon, 2004; R. Charon, 2010; S DasGupta & Charon, 2004). These groups seek to support future physicians in exploring their own identities and affective dimensions of their experiences as well as those of their patients. This humanist perspective also emerges in the social work education literature (Gibbons & Gray, 2004; Harrison, 2009), often overlapping with an emphasis on the social justice and emancipatory dimensions of critical thinking.

These emancipatory dimensions of critical thinking emerge as the dominant approach in the literature on social work education. In the social work education literature, references to critical theory (Miller, Tice, & Harnek Hall, 2011) and the need

for students to deconstruct society (Gibbons & Gray, 2004; S. Jones, 2006; Morey) are often interlinked with the concept of critical thinking. Emancipatory understandings of critical thinking are also relatively frequent in nursing (Ford & Profetto-McGrath, 1994; Morrall & Goodman, 2013; Nokes, Nickitas, Keida, & Neville, 2005), though the critical thinking literature in nursing education is more robust in general.

Although the literature on critical thinking in medical education is rarely explicitly linked to emancipatory goals, links can be made between critical thinking and a growing literature on physicians' advocacy roles. There is a relationship between critical thinking, advocacy, and social justice in the emancipatory approach. The advocacy literature in medical education focuses on defining the Royal College of Physicians and Surgeons of Canada's (2005) role of the physician as advocate (Carlisle, 2000; S. Dharamsi, Ho, Spadafora, & Woollard, 2011; Dobson, Voyer, Hubinette, & Regehr, 2015; Earnest, Wong, & Frederico, 2010; Flynn & Verma, 2008; Gruen, Pearson, & Berennan, 2004; M. Hubinette, Dobson, Towle, & Whitehead, 2014; M. M. Hubinette et al., 2014; Huddle, 2011; Leveridge, Beiko, Wilson, & Siemens, 2007; Oandasan, 2005; Verma, Flynn, & Seguin, 2005), and discussing implications for curricula in medical schools (S. Dharamsi et al., 2011; Shafik Dharamsi et al., 2010; Earnest et al., 2010; Flynn & Verma, 2008; M. M. Hubinette et al., 2014; Oandasan, 2005; Verma et al., 2005). Several authors have argued that this role ought to take on a sense of advocacy for systemic change and a sense of social justice (Carlisle, 2000; S. DasGupta et al., 2006; S. Dharamsi et al., 2011; Dobson et al., 2015).

These trends are by no means stable – the educational literature of each discipline is rife with counter-examples and variations of that discipline's dominant and marginal

understandings of critical thinking. Through this study, I investigate the extent to which trends in each discipline's literature hold true for practicing educators in these professional programs at the University of Alberta and University of Calgary.

Instructional Techniques and Critical Thinking

Many academic papers have attempted to link particular instructional techniques to the development of critical thinking in health professional students (Harasym, Tsai, & Hemmati, 2008; Hoffman, 2008; Huang, Newman, & Schwartzstein, 2014; Kowalczyk, 2011; Mok, Whitehill, & Dodd, 2008; Ordera, 2010; Yuan, Williams, & Fan, 2008) and students in other disciplines (Behar-Horenstein & Niu, 2011; Pithers & Soden, 2000). Taken as a whole, these studies are inconclusive, but critical thinking skills are often linked to experiential learning methods, and, in the health professions in particular, problem-based learning (Abrami et al., 2014; Abrami et al., 2008; Chan, 2012; Harasym et al., 2008; Hoffman, 2008; Hung, Tang, & Ko, 2015; Kamin et al., 2003; e.g. Khoiriyah, Roberts, Jorm, & Van der Vleuten, 2015; Kowalczyk, 2011; Macpherson & Owen, 2010; Maudsley & Strivens, 2000a, 2000b; Simpson & Courtney, 2002; Tiwari, Lai, So, & Yuen, 2006; Worrell & Profetto-McGrath, 2007; Yuan et al., 2008). Several authors in Davies and Barnett's (2015a) recent edited book link critical thinking to instructional techniques such as debate (Llano, 2015) and argument mapping (van Gelder, 2015).

Several literature reviews and systematic reviews address the topic. In their much-quoted literature review, Simpson and Courtney (2002) connect critical thinking to strategies including "questioning, small-group activities, role-playing, and journals" (p. 96). Chan's (2013) systematic review adds "reflective writing, simulation, concept maps,

and case studies" (p. 240) as instructional strategies connected to critical thinking in the literature. A recent meta-analysis by Abrami et al. (2014) is likewise inconclusive, but similarly suggests a connection between critical thinking and 1) student discussion or dialogue, 2) engagement with authentic or "real world" problems, and 3) coaching or mentoring approaches.

These instructional strategies can take a variety of forms and meanings depending on how, when, and to what purpose they are employed. Perhaps because critical thinking is not well defined, neither are the instructional techniques associated with it (Barnett, 2015). Thus, critical thinking has not been tied to any particular instructional strategy, though it is loosely associated with a variety of active-learning methods. This association with active learning and the teaching strategies employed do not appear to differ greatly between critical thinking traditions.

Conceptual Framework

Several studies (Gibbons & Gray, 2004; Gordon, 2000; Krupat et al., 2011; Scheffer & Rubenfeld, 2000; Videbeck, 1997b; Walthew, 2004) have sought to explore what critical thinking means to educators in the field. However, these studies have rested on assumptions that there can be a "correct" definition of critical thinking. Developing a single definition is not the intent of this study. Scholarship on critical thinking in health professions education will benefit from an articulation of the range of understandings of critical thinking currently in circulation and the interplay between them. Moreover, likely because of the assumption that there might be a "correct" definition of critical thinking, researchers have not yet attended to how educators' understandings of critical thinking are constructed.

This study offers an epistemological shift, from seeing critical thinking in a post-positivist light – where a true or right definition is possible – to a constructivist approach – where understandings of critical thinking are constructed and reconstructed relative to the social, historical, material, and political contexts in which they are embedded. I examine how educators draw on their overlapping professional and personal contexts, with attendant values and beliefs, when they construct critical thinking. In the following chapters, I examine how educators draw on experiences from these various spheres as they construct their understandings of critical thinking.

It is clear from this literature review that there are multiple traditions and approaches through which critical thinking has been understood. Although the three approaches to critical thinking developed from Walters (1994b) and McLaren (1994) offers one way of delineating these traditions, it is far from stable or exclusive; thus, I treat critical thinking as an array of "kinds of thinking and styles of reasoning" (Mason, 2009, p. 13). In entering into this study, I worked to focus on the data, rather than using this conceptual framework to drive my analysis, an approach consistent with this study's methodology, as discussed in chapter three. That said, on analysis I found that this framework was helpful in understanding some of the data produced for this study.

Summary

In the health professions, there has been a shift from content-driven curricula to curricula that attend to the process of thinking, emphasising problem-based learning. Alongside this shift, critical thinking has become an increasingly popular concept. However, there is no consensus on what defines critical thinking, and, as Yanchar et al. (2008) suggest "no approach [to critical thinking] is likely to be universally accepted or

to provide sufficient resources for critical analysis across all fields and under all circumstances" (p. 269). There is a need to step back and look at the broad range of understandings of critical thinking in circulation; moreover, I see a need to examine how these meanings are constructed and contested.

In this chapter, I began by surveying relevant discourses in adult learning theory and higher education. I discuss the work of Malcolm Knowles in differentiating adult learning from the learning of children and adolescents. I also examine the contradictory discourses surrounding the purpose of higher education set the stage for contradictions and discontinuities in discourse surrounding critical thinking in that setting. I also outline the behaviourist, humanist, cognitivist, social cognitive, and constructivist "traditional" perspectives on adult learning; though they do not map directly these perspectives link to the three approaches to critical thinking, drawn from Walters (1994b) and McLaren (1994) – the technical, humanist, and emancipatory approaches. Humanist perspectives on learning and humanist critical thinking have an obvious connection. I also see connections between technical critical thinking and cognitivist perspectives on learning – a focus on reasoning processes. Likewise, I discuss the overlap between contructivist epistemologies and perspectives on learning and humanist and emancipatory critical thinking.

Finally, I have explored the foundations and assumptions of each of Walters and McLaren's approaches and discussed the ways in which each is engaged the health professions education literature. I also look at the differences in how critical thinking is understood in the educational literature of each profession in this study, and conclude by

discussing the teaching strategies commonly associated with critical thinking in the literature.

CHAPTER 3: RESEARCH DESIGN

As I discuss in chapter one, in this study I explore the range of understandings of critical thinking that health science educators hold. I also examine the ways in which these understandings of critical thinking are constructed. To that end, I focus on two key research questions: first, how do educators in the health professions understand critical thinking? Second, how do an educator's unique personal and professional experiences inform their understanding of critical thinking?

This study offers an exploration of relatively new territory: I look at critical thinking across health professional programs and I examine how it is constructed by participants. As a result, I sought to build a methodological approach that could balance flexibility – the ability to take up and explore new and emerging themes – and a coherent structure through which to organize and direct that exploration. This chapter clarifies the research design choices made in this study, linking social constructivist epistemology, interpretivism, my theoretical framework, a generic qualitative methodological approach, and research tools and techniques adapted from constructivist grounded theory.

Researcher Positioning

This dissertation is inspired by the idea that multiple interpretations of a single term can be valuable; critical thinking is constructed through various contexts, including multiple academic disciplines as well as individual values and beliefs. I come from a varied and interdisciplinary educational background. My undergraduate degree focussed on literature and literary theory, specifically postcolonial and feminist theory. I was interested in issues of oppression in a Western patriarchal society. In my Master's degree, I expanded this interest to look at ideology through the lens of Marxism and critical

theory; I explored the implications of critical theory for education through critical pedagogy. With this critical theory-heavy background, the word critical and, more specifically, the term *critical thinking*, became synonymous with ideology critique, or "the ways in which people learn to recognize how uncritically accepted and unjust dominant ideologies are embedded in everyday situations and practices" (Brookfield, 2000, p. 1).

After completing my MA, I began working as a curriculum designer in health professions education. I was caught off guard by the radical differences between my understanding of critical thinking and the diverse ways in which it was understood by educators in the health professions. I found that in health professions education, critical thinking is often equated with procedural reasoning skills, and is closely related to concepts of "analytic reasoning, clinical and diagnostic reasoning, problem solving, metacognition and adaptive expertise" (Krupat et al., 2011, p. 626) – a major departure from how I understood critical thinking.

In designing this study, I chose analytical tools to support an interpretive approach that would, in turn, support and sustain multiple valid perspectives. Rather than developing any one "right" understanding of critical thinking, my aim was to examine the ways in which multiple and variant understandings are constructed. This is not to say that this work avoids any sense of critique – I do look at how dominant understandings and discourses tend to subsume or compete with other discourses, values and beliefs. However, in this approach I have worked to avoid assuming that there is a right answer, while still acknowledging and critiquing the dominance of some understandings of critical thinking over others.

Research Design

Michael Crotty's (1998) *The foundations of social research* offers a framework and language for structuring research design. He breaks down research design around four key elements and states that effective design demonstrates congruence between all four elements. The four elements are: a) epistemology, or broad assumptions about the nature of knowledge, b) theoretical framework, or philosophical stance, c) methodology, or the broad research strategy, and d) methods, or the particular "techniques or procedures used to gather and analyse data" (Crotty, 1998, p. 3). Methodology is not simply a set of generic strategies used to gather information; rather, methodological tools and techniques are chosen for their fit within a methodology and with the research questions that are asked through that methodology. Methodological choices exist within a larger research design, reflecting the researcher's epistemological and theoretical assumptions, whether or not these assumptions are openly acknowledged and articulated (Guba & Lincoln, 2005). Crotty's (1998) framework offers a tool for articulating how these elements interlock within the research design, from the abstract to the concrete, and provides a consistent language and structure for this study.

Epistemology

Through my social constructivist epistemology, I understand that knowledge, broadly, and understandings of critical thinking, in particular, are actively constructed by individuals within their social contexts. Social constructivism sees "bodies of knowledge developed over human history as social constructs … [that] do not reflect an objective external world. Everything we know has been determined by the intersection of politics,

values, ideologies, religious beliefs, language, and so on" ("Social Constructivism," 2008, p. 118). Meanings are not there to be "discovered," but are actively constructed by people, including the researcher. Knowledge is grounded in its socio-historical context, such as the theoretical traditions informing teaching and learning in the postsecondary context, the history and culture of health professions, and the lived experiences of individual participants.

Crotty (1998) makes a distinction between social constructionism and social constructivism. He writes:

> It would seem important to distinguish accounts of constructionism where this social dimension of meaning is at centre stage from those where it is not. Using "constructionism" for the former and "constructivism" for the latter has echoes in the literature, even if the terminology is far from consistent. (p. 57)

Further, he suggests that "we reserve the term constructivism for epistemological considerations focussing exclusively on 'the meaning-making activity of the individual mind' and to use constructionism where the focus includes 'the collective generation [and transmission] of meaning'" (p. 59). In essence, Crotty creates opposing concepts of "the social construction of knowledge." On the one hand, he sees constructivism as focussed on how individuals make sense of their social context; on the other, he sees constructionism as emphasizing shared meaning-making activities. In the latter term, the individual is a less significant unit of meaning than in the former, which leans more toward a cognitivist understanding of knowledge, as discussed in the previous chapter, situated in a social context.

In this study, I look at how educators, as unique individuals, construct their understandings of critical thinking; in this sense, my understanding of constructivism aligns with Crotty's definition of constructivism. However, individual educators' constructions of critical thinking are not exclusively "meaning-making activit[ies] of the individual mind" (Crotty, 1998, p. 57) and thus align imperfectly with Crotty's definition of constructivism. Instead, the ways in which educators understand critical thinking, and the process through which they construct that understanding, are both individual – in the sense that educators interpret their own unique experiences – and social – in the sense that those experiences are embedded in and "determined by the intersection of politics, values, ideologies, religious beliefs, language, and so on" ("Social Constructivism," 2008, p. 118). Ideas are shaped and re-shaped constantly in interactions with others and within the larger social and ideological constructs.

As a result, I am using the definition of social constructivism from *The SAGE encyclopaedia of qualitative research methods* (2008). This definition emphasizes the social aspects of the production of knowledge – knowledge is produced within a socio-historical and material context – in order to mediate the relativism and subjectivism that can come out of seeing reality as solely produced within the human mind. This definition avoids Crotty's "individual mind" versus "social construction" binary, and allows for an examination of the ways in which educators construct their understanding of critical thinking as both an individual activity – stemming from unique personal and professional experiences – and a social activity – where those experiences are inseparable from the social contexts of the educator.

The role of the researcher in social constructivist research is an active one. Data do not simply exist "out there" with a stable meaning (Charmaz, 2014); rather, participants in the research process, including the researcher, funding agencies, supervisors and administrators, make active choices that direct research topics, questions and methods. Data are actively shaped through the questions the researcher asks, how those questions are asked, the relationship between researcher and participant, and the physical environment, to name a few. Thus the contributions of both participants and the researcher are informed by our social contexts and experiences. I expect that participants' ideas about critical thinking – and my own –will change during the research process. This approach to knowledge as co-constructed also informs my theoretical perspective and methodological choices.

Theoretical Framework

From my educational background in English and Cultural studies, I came to this study because of my belief in the importance of critical theory and ideology critique in critical thinking; however, like Yanchar et al. (2008) I think that "no approach is likely to be universally accepted or to provide sufficient resources for critical analysis across all fields and under all circumstances" (p. 269). Thus, in this study I focus on: 1) developing a more robust picture of critical thinking in health professions education by appreciating the wide range of understandings of critical thinking that health professions educators hold, and 2) illuminating how those understandings are constructed by educators within their overlapping social contexts and through their unique personal and professional experiences. Such an investigation has built my appreciation of how and why critical thinking is understood in particular ways.

Interpretivism. Given that value can be found in many different understandings of critical thinking, I have developed a theoretical framework that will support an exploration of how those understandings are constructed. I take an interpretive theoretical perspective, which "looks for culturally derived and historically situated interpretations of the life-world" (Crotty, 1998, p. 67). Interpretivism, in this sense, is distinct from positivism; however, the current drive in interpretivism – to understand and interpret (Crotty, 1998) – is also distinct from the critical theory tradition, where the primary drive is to critique. While these two paradigms are not opposites, they do have distinctive central drives: to interpret versus to critique. I do not think that an uncritical interpretivism is possible (or desirable). However, in this study I have striven to take an interpretive stance first, momentarily putting aside my critical theory background, in order to authentically engage with participants and to explore their understandings of critical thinking before taking a critical stance.

Symbolic Interactionism. In proposing this study, I set out to use symbolic interactionism as a theoretical framework. However, for reasons outlined below, symbolic interactionism was a slightly uncomfortable fit for this study and, during data production, I engaged with cultural historical activity theory (CHAT) to remedy some of those tensions and to theorize some of the patterns in the data that symbolic interactionism was not able to capture.

Symbolic interactionism is an interpretive theory (Charmaz, 2014; Crotty, 1998) developed out of the pragmatist interpretive traditions of the Chicago School (Musolf, 2003). It is generally traced to the teachings of University of Chicago Professor George Herbert Mead (J. M. Charon, 2010). Although pragmatism is not the philosophy guiding

this study, it does inform the development of symbolic interactionism. Because pragmatism and constructivism sometimes come into conflict, the pragmatic roots of symbolic interactionism were in tension with my epistemology.

Pragmatism is "a perspective that emphasized human agency, consciousness, meaning, and process" (Musolf, 2003, p. 96). Pragmatism seeks to understand individuals through the actions that they choose and the meanings that they attribute to those actions (Reynolds, 2003). Early pragmatists were interested in exploring the nature of truth, although pragmatists had various interpretations of what truth meant. Pierce and Dewey conceived of truth as that which is accepted by the collectivity, while James interpreted truth as that which is of use to the individual (Reynolds, 2003). James's version of pragmatism and social constructivism come into conflict; for social constructivists, meaning – and truth – cannot exist solely at the level of the individual, since meaning is socially produced.

In developing this study, I had initially planned to deal with the problematic relationship between pragmatism and constructivism by seeing pragmatism through Dewey's more complex approach to truth, as that which is collectively understood as truth. Social constructivists reject the notion that human beings can access truth or any external reality (Bryant & Charmaz, 2007). I see Dewey's "truth" as a more contingent one: "Dewey never saw truth as immutable; truth does not exist separate from or prior to the process of inquiry" (Reynolds, 2003, p. 51). Thus, as in constructivism, there is no meaning separate from human thought and interaction, and, understood in this way, the pragmatist roots of symbolic interactionism are compatible with a social constructivist epistemology: "John Dewey's (1859–1952) lifelong investigation of the nature of

experience and humans' interaction with their environment may be considered constructivist in his recognition that knowledge is constructed in social contexts." ("Social Constructivism," 2008, p. 117).

When Charmaz (2006) incorporates symbolic interactionism in constructivist grounded theory, from which many methodological tools for this study are drawn, she draws heavily on Dewey and James's interpretation of pragmatism. She defines pragmatism as "a theoretical perspective that assumes society, reality and self are constructed through interaction and thus rely on communication. This perspective assumes that interaction is inherently dynamic and *interpretive* and addresses how people create, enact, and change meanings and actions" (Charmaz, 2006, p. 7). However, there are elements of the pragmatist origins of symbolic interactionism that contradict a constructivist epistemological stance. Despite the possibility of reconciling pragmatism with constructivism, I found that it was an uncomfortable fit for this study.

Symbolic interactionism – like pragmatism – is sometimes criticized as "essentially an uncritical exploration of cultural ideas and values in terms of their practical outcomes" (Crotty, 1998, p. 73). It is seen as overly relativist and too pragmatic. Any over-celebratory approach to human action and culture minimizes or ignores the ways in which power is wielded and maintained. Though this issue is not an inherent trait of symbolic interactionism, it is a limitation that is resolved through engaging with CHAT. CHAT has an explicitly Marxist origin and offers both a theoretical perspective and analytical tools for understanding power.

Symbolic interactionism did offer a useful way interpreting educators' meaning-making processes, based on the assumption that meaning is produced and constantly

modified through social interaction and that those meanings are the basis on which human beings think and behave (J. M. Charon, 2010). However, in collecting and analysing the data for this study, I found that symbolic interactionism had limited analytic tools through which to understand the contradictions within and between educators' understandings of critical thinking. This gap in analytical tools makes sense given that "symbolic interactionism is a perspective, not an explanatory theory that specifies variables and predicts outcomes" (Charmaz, 2014, p. 262). Moreover, constructivist grounded theory encourages researchers to avail themselves of theoretical tools that help to explain the data that they are seeing. I have shifted my theoretical framework to use CHAT as my "perspective," instead of symbolic interactionism, and I use CHAT as a source of analytical tools.

Crotty (1998) would caution against shifting a theoretical perspective after the initial research design. He would likely argue that contradictions in the research program might result from the implantation of a theory incompatible with the research framework developed. However, I believe that shifting my theoretical framework to engage with CHAT solves many of the problems with using symbolic interactionism in this study. Moreover, Engeström and Miettinen (1999) discuss the parallel development of symbolic interactionism and CHAT, though the former emanates from pragmatist schools of thought and the latter from Marxism. Engeström and Miettinen (1999) discuss how CHAT's activity systems are similar to the "social worlds" of symbolic interactionism. CHAT has built on symbolic interactionism's concept of boundary crossing between activity systems – or social worlds – to theorize activity system contradictions. Because of this parallel development, I feel that engaging with CHAT resolves many of the

tensions, discussed earlier, without creating new contradictions. I see CHAT as very compatible with my existing study design and personal epistemological beliefs; it also provides analytical tools required to make sense of my data. Moreover, using CHAT at both levels will help me to avoid the inherent contradictions involved in using a pragmatist theoretical framework and tools and techniques grounded in CHAT. The foundations of CHAT and the way in which it was employed in this study are discussed in detail below.

Cultural Historical Activity Theory. In this study, CHAT offers a learning theory, a research framework, and a set of explanatory tools (Engeström, 1987). According to Fenwick, Edwards, and Sawchuk (2011):

> The concept of activity is premised on an understanding of learning, human development and education, as a matter of what, why and how people do things together, either cooperatively or conflictually, over time; mind as a thoroughly *social* and *material* as well as historical phenomenon. Simply put, CHAT persistently and forcefully directs attention to the importance of the form through which people's social creation and use of tools/artefacts (culturally) successively over time (historically) explains learning and development. (p. 56)

In other words, CHAT looks at how people develop meanings over time; those meaning are grounded in cultural tools – including language – and are historically embedded. In this study, I use CHAT to interpret the ways in which educators actively construct and negotiate their understandings of critical thinking. Using CHAT, I assume that meaning is

produced and constantly modified in and through participants' personal and professional experiences, embedded in their social context.

CHAT is commonly understood as having three "generations" (Engeström, 1987). Although I agree with Fenwick, Edwards, and Sawchuck's (2011) critique of the three generation model as teleological, this common language is useful in examining the various perspectives and analytical tools falling under the umbrella of CHAT. Fenwick et al. (2011) suggest viewing these "generations" as a series of paradigmatic tensions where various elements of CHAT are brought into focus. In this section I briefly define key terminology used in CHAT, I then give a brief overview of its historical development using the three generation model – I draw on concepts from all three generations in my analyses in chapter six. Finally, I discuss how I have used CHAT in this study.

Key terms.

Object. Objects (or motives) are the conscious or unconscious purposes toward which activity is directed. Objects can be both individual and collective: "the object/motive generates and focuses individual and collective attention, efforts, meaning-making and of course interaction. A CHAT perspective suggests that where we find patterned human practice, we find people adapting to and transforming the object/motives of activity" (Fenwick et al., 2011, p. 65). The term object is translated from Russian, so offers a bit of an odd word choice; it suggests both individual and collective action, as well as both "self-conscious and un-self-conscious purpose. … [And it] relates to a broader social purpose" (Fenwick et al., 2011, p. 65). Objects are differentiated from goals in CHAT: the latter focus more on the individual and suggest intentionality (Fenwick et al., 2011). Leontiev, uses the now classic example of the hunt to describe the

distinction between objects and goals. In the hunt, the bush-beaters have a goal of scaring the game out of the brush, but the larger object is oriented toward a successful hunt and providing for families and communities (Fenwick et al., 2011).

Activity/collective activity. In CHAT, activity is not understood simply as human action; rather, it is "the minimal unit of analysis for the understanding of cognitive development, human participation and change. It inherently contextualizes practice in cultural and historical terms" (Sawchuk, Duarte, & Elhammoumi, 2006, p. 2). CHAT theorists understand activity as the ways in which humans act in a cultural context toward particular objects. Activity is differentiated from action. Action is oriented goals, whereas activity is oriented toward objects (the action is bush beating, whereas the activity is the hunt). In this study, participants engage in educational action when they teach students to take a medical history; however the activity is directed at a larger object. Educational activity is bound up in values such as preserving professionals' power, empowering patients, or changing the healthcare system.

Tools/Tool Mediation. Tools are the material or symbolic artefacts that mediate human activity, simultaneously constraining and enabling that activity. The uses and meanings of tools are historically, socially, and culturally constructed and are always subject to change (Lompscher, 2006, p. 36). According to Fenwick et al. (2011), tools:

> Include virtually everything: from physical tools and technologies to spatial or temporal properties of the environment; from language, narrative and non-narrative aspects of discourse or ideology to organizational rules, divisions of labour, social norms, specific cognitive or affective schema, desires, fears or other elements

> commonly associated with personality, subjectivity or identity.
>
> (Fenwick et al., 2011, p. 62)

Sawchuk et al. (2006) add that "ideas should he treated as artefacts: tools that mediate activity but which can also be re-made by people to allow us to change ourselves and our world" (p. 6). In the context of this study, tools primarily include ideas and language, such as social justice, critical thinking, and clinical reasoning. However, the regulations, roles, and physical structures of educational and healthcare systems have close relationships with the language and ideas used in those settings.

First generation activity theory. First generation activity theory is often said to begin with Lev Vygotsky, a Marxist psychologist interested in examining how human beliefs and behaviour are produced and reproduced within a cultural context (Yamagata-Lynch, 2010). According to Fenwick et al. (2011),

> Development, in his approach, can be conceptualized as the transformation of socially shared and fully contextualized activities into internalized processes without positing any ontological breaks between internal and external, social and individual, and continuity and change (or transmission and transformation). (p. 60)

Human learning is about engaging with the external (social, historical, and material) world, and internalizing those processes.

Early CHAT also introduced the concept of mediated action, which is further developed in second generation theory. As discussed, mediated action means that individuals actively engage in meaning-making, through which "they modify and create activities that trigger transformations of artefacts, tools, and people in their environment"

(Yamagata-Lynch, 2010, p. 16); conversely, their activity is also circumscribed by the interaction they have with artefacts, tools and people.

Second generation activity theory. Second generation activity theory is often seen as led by Leontiev, who focused activity theory around object-oriented activity. That is, human activity is framed around objects. In keeping with earlier activity theory, second generation activity theory balances a sense of human agency and ability to change the object through activity with a sense of the power of cultural formations and tools that mediate that activity (Yamagata-Lynch, 2010). Likely the most important contribution of second generation theory is a concept of collective activity and collective objects – individual activity, to a great extent, is not individual, but forms a component of collective activity.

Third generation activity theory – cultural historical activity theory. Yrjö Engeström is credited with having coined the term cultural historical activity theory and, significantly, complicating the notion of activity systems. Activity systems are systems in which subjects are oriented toward a particular object and activity is mediated by particular tools or artefacts (Engeström & Miettinen, 1999). For example, an activity system oriented around educating nurses could be seen as a bounded activity system, mediated by the language and pedagogical and social practices of nursing education. However, systems are very difficult to isolate given that one activity (nursing education) might have multiple meanings for that same object, the "good nurse"; likewise, the object of educating patient-centred professionals might overlap the activity systems of multiple professional programs (called a boundary object). As a result, activity systems always overlap and must be defined through data analysis. In Engeström's words: "it is no longer

sufficient to focus on singular, relatively isolated activity systems. Activity theory needs to develop tools for analyzing transforming networks of culturally heterogeneous activities" (Engeström & Miettinen, 1999, p. 7).

Engeström's approach to activity theory maintains that "a crucial Marxist insight was that the changes [to human subjectivity and society] are driven by contradictions within and between activity systems" (Fenwick et al., 2011). Human activity within systems means that objects and tools are constantly changing and systems are constantly overlapping, which produces contradictions that are then the basis for further learning and change.

Application of CHAT. For the purposes of this study, I use activity theory to examine how educators actively construct their object – educating future health professionals who are "critical thinkers" (however they understand it) in practice. Through the lens of activity theory, this object is seen as constantly shifting, as educators individually and collectively construct and reconstruct that object. Understandings of critical thinking are far from stable.

I understand health professions education through a series of shifting activity systems, all oriented around educating "good" or "effective" professionals, an object which takes on different meanings both within and between professional programs. Many of the tools in health professions education – particularly language, instructional strategies, and institutional structures – are common. That said, I see multiple overlapping activity systems in the data, structured around particular meanings for the object, critical thinking. This produces contradictions both within systems, as objects are constructed and reconstructed, and between systems, through boundary objects. I have

chosen to view each professional program as a unique activity system. These systems are historically constituted and, though they overlap, have unique discourses, norms, funding structures, and (often) physical spaces. I look at these differentiated but overlapping activity systems in greater detail in chapter six.

Critical thinking is not a term unique to health professions education, nor to any one profession or discipline. In choosing the frame of health professions education (as opposed to any one profession), I hope to open up analytical possibilities that are less tied to profession, examining the ways in which various activity systems overlap and conflict. Each professional program's activity system overlaps other programs. Moreover, participants participate in overlapping activity systems oriented around, for example, their practice context, such as geriatrics. These interconnected contexts are discussed further in chapter five.

As Engeström (1987, 2005, 2008) suggests, these overlapping systems create contradictions that are the source of learning and change. In chapter six, I take a closer look at the contradictions that I see in this study. The language of critical thinking is not a tool isolated to health professions, or health professions education. I see critical thinking as constructed through other systems embedded in educators' extended social contexts, including, for example, religious or family contexts.

Overall, I see CHAT as a productive avenue to understand how critical thinking becomes such a heterogeneous concept, invested with so much and so little meaning. I ask: how are educators constructing the object of their activity – the critical thinking student and, by extension, the critical thinking professional? What tools are they using in constructing critical thinking, and how do those tools shape the object? How is that object

constructed through the activity systems that they engage with? What are the contradictions that make critical thinking a contested term?

Methodology

Currently, there is little work done to explore the range of understandings of critical thinking constructed by educators working in health professions education (Krupat et al., 2011), and even less has been done to explore the experiences and contexts through which these understandings are constructed. In effort to allow for some methodological flexibility, I employed a generic qualitative approach, also called a basic qualitative study (Merriam, 2009). Studies of this type are generally identified by what they are not: they are studies that are not "guided by an explicit or established set of philosophical assumptions in the form of one of the known [or more established] qualitative methodologies" (Caelli, Ray, & Mill, 2003, p. 4), such phenomenology, grounded theory, or ethnography (Richards & Morse, 2007). However, when Merriam (2009) describes what generic qualitative studies are, she articulates that they are social constructivist, interpretive studies that focus on: "(1) how people interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences" (Merriam, 2009, p. 45). This basic definition of generic qualitative methodologies dovetails nicely with CHAT, which also emphasizes how individuals construct meaning from their experiences and social contexts.

In this study, a generic methodology will offer flexibility that will allow for an early and broad exploration of the topic. It will also allow me to avoid the common methodological pitfall of attempting to squeeze my study into a more prescriptive methodological framework that does not quite fit (Hunt, 2009). Thorne, Kirkham, and

MacDonald-Emes (1997) caution against taking up a “hollow allegiance” to an established methodology, just for the sake of choosing one. Such studies often “depart from these methodological frameworks in important ways” (Hunt, 2009, p. 1284) leading to incongruence between various parts of the study.

Several accusations have been levelled against generic methodologies, including charges that they are “atheoretical” (Neergaard, Olesen, Andersen, & Sondergaard, 2009), that they lack a robust literature to draw on when making methodological choices (Caelli et al., 2003; Hunt, 2009; Neergaard et al., 2009), and that the lack of existing structure leads to inappropriate combinations of methods – method slurring (Baker, Wuest, & Stern, 1992; Caelli et al., 2003; Holloway & Todres, 2003; Johnson, Long, & White, 2001; Morse, 1991). These charges can be mediated through careful attention to congruence at all levels; I am using Crotty’s (1998) research framework to ensure that the study is epistemologically and theoretically grounded, and that those perspectives are reflected in the methodological choices made at all levels.

Given the absence of a strict methodological “recipe” for generic qualitative approaches, these studies often borrow “textures” or “overtones” at epistemological and theoretical levels (Neergaard et al., 2009), or techniques and procedures at the method-level (Hunt, 2009; Thorne, Kirkham, & O'Flynn-Magee, 2004) in order to develop a robust methodology that is well grounded in the qualitative literature. Generic studies are often said to walk a line between borrowing and making (Thorne et al., 2004), “prescriptiveness and flexibility” (Hunt, 2009, p. 8). This study uses selected tools and techniques based in constructivist grounded theory (Charmaz, 2014).

Constructivist grounded theory. Given grounded theory's emphasis on social processes, a constructivist grounded theory approach in this study focuses analysis on how educators construct their understandings of critical thinking. While this study does not emphasize process – or meaning-making over time – in the same way that traditional grounded theory studies do, it does look at the social nature of the ways in which educators construct critical thinking through their experiences. It also focuses on how that construction takes place.

Constructivist grounded theory is a major departure from earlier – though still existing – versions of grounded theory in that it rests on a social constructivist epistemology, rather than the post-positivist approaches of grounded theory's founders (Johnson et al., 2001), Glaser and Strauss (1967) and, later, Strauss and Corbin (1990). Unlike Crotty, Charmaz does not make a distinction between constructionism and constructivism, but uses both terms at various points in her writing (Bryant & Charmaz, 2007; Charmaz, 2014). Making the distinction between traditional grounded theory and constructivist grounded theory, Charmaz (2014) writes:

> Unlike their [Glaser and Strauss's] position, I assume that neither data nor theories are discovered either as given in the data or the analysis. Rather, we are part of the world that we study, the data we collect, and the analyses we produce. We construct our grounded theories through our past and present involvements and interactions with people, perspectives, and research practices (p. 17).

Charmaz (2014) emphasizes the constructed nature of knowledge – including theory – and that that construction is inherently social.

Constructivist grounded theory offered heuristics and tools to support me in stepping back from what I "already know" about critical thinking, instead approaching the data from the position of a curious researcher. Charmaz uses symbolic interactionism – a parallel theory to CHAT (Engeström & Miettinen, 1999) – to guide an understanding of how people make meaning, rather than as a prescription for reading the data.

As data analysis proceeds Charmaz (2014) suggests seeking out and incorporating additional theories that will help in analysing and understanding the concepts and themes gleaned from the data. For me, CHAT was a good fit for the data produced through this study. As I noted earlier, it framed my understanding of the cognitive tools or ideas that participants used to explain critical thinking, and supported analysis of the activity systems and contradictions that I discuss further in chapter six. CHAT also has similar epistemological and theoretical roots as symbolic interactionism and thus fit well with constructivist grounded theory.

I see this study taking a constructivist grounded theory "flavour" rather than fully adopting constructivist grounded theory for several reasons. First, I do not explicitly look at the process of constructing an understanding of critical thinking over time, a hallmark of grounded theory (Charmaz, 2014). I believe that focussing on process in that way would detract from a much-needed emphasis on these unique understandings themselves and the ways in which they are constructed at a particular moment in time, drawing on previous experiences. Second, the theoretical sampling techniques of grounded theory are beyond my scope; as opposed to developing a robust theory about any one group of educators' construction of critical thinking, I chose to build an interdisciplinary picture of what critical thinking can mean and how those meanings are constructed. As a result, I

have not sought to build a substantive theory in the strictest grounded theory sense (Charmaz, 2014); instead, I have built a rich description of the range of ways in which educators construct their meanings. As I note in my conclusions, future avenues for research may take on the constructivist grounded theory project.

Methods

Building on my generic qualitative methodology, this section details the specific methods or tools that were used in my study. These tools draw on constructivist grounded theory, particularly in sampling and data analysis procedures. I also describe the ways in which my methods departed from constructivist grounded theory. I also describe several key ways in which this study departs from constructivist grounded theory, which is why I have selected a generic qualitative methodology instead of a more traditional constructivist grounded theory approach.

Setting. The University of Alberta (U of A) offers multiple independent health professional programs. Nursing, Pharmacy and Medicine each admit a large body of 155-400 undergraduate students per year. The University of Calgary (U of C) School of Social Work, Central and Northern Alberta Campus, is located within a block of the University of Alberta's North campus. Although the institutional context is different, U of C educators work in the same health service contexts – Edmonton and Northern Alberta – and the institutional context is similar in that it also falls under the jurisdiction of the Province of Alberta. One distinction is that the faculty and student body of U of C, Edmonton campus, is much smaller, with a smaller number of educators; I had initially planned to use Calgary campus social work educators if necessary, but I had full recruitment from the Edmonton campus and this proved not to be necessary. However,

differences between programs at the U of A alone were quite significant and, as a result, the differences between U of A and U of C did not appear significant, despite my initial concern.

All four programs selected are similar in that they are located in the province of Alberta, are well-established independent faculties. They offer accredited professional programs, leading to a regulated health professional designation. Accredited professional programs include diploma programs, such as those leading to Licensed Professional Nurse (LPN) or Paramedic designations. However, this study focuses on degree programs at research-intensive higher education institutions. Professional programs participating in this study include Medicine, Nursing, Pharmacy, and Social Work, which are accredited preparatory programs for the MD (Medical Doctor), RN (Registered Nurse), RPh (Registered Pharmacist) and RSW (Registered Social Worker) designations.

In terms of location, participants decided between meeting in their offices or meeting in a private meeting room in ECHA, the health professions education building on U of A's North Campus. This choice allowed participants to make their own decisions about the level of confidentiality and convenience that they preferred. Most participants selected their own offices for convenience, though a few chose the latter option. All meeting settings were private, in order to ensure confidentiality, and quiet, in order to ensure ease of conversation and adequate audio recording. Thirty of the thirty-one interviews took place in person. One took place through Skype because of an emergency that took me out of town, but was audio recorded on a recorder, rather than online through a Skype extension.

Sample. I used a combined sampling approach in this study, including purposeful sampling which "is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (Merriam, 2009, p. 77). Sampling was purposeful in the sense that sites were selected based on some commonalities (that they are both research-intensive universities offering the particular health professional programs of interest). However, the sample was also, to some extent, a convenience sample. I had existing contacts in all of the programs included that were very helpful in recruitment.

I recruited sixteen educators total, four from each professional program. Participants from medicine, nursing, and pharmacy were employed by the U of A. Participants from social work were from the U of C, Central and Northern Alberta Campus. All but one participant completed two interviews; that participant completed only the first interview. Participants were selected for diversity (in order to capture a broad range of understandings of critical thinking); however, they were also similar in that they were all active educators at the time of interviews and had an interest in and some understanding of critical thinking, however they defined it.

Demographically, the sample captured a range of professional programs (medicine, nursing, pharmacy, and social work), practice contexts, genders, and years of practice. This list is arranged from primary considerations, to criteria emphasized less. As a primary consideration, I balanced participation from each professional program, including four participants from each program. In quoting participant data, I have coded interviews by professional program, given that this was a primary consideration in sampling, participant numbers – 1-4 for each program – were assigned at random. The

abbreviation "MD" refers to the four participants in in medical education, "NURS" to nursing education, "PHARM" to pharmacy education, and "SW" to social work education. For example, the code NURS3 will refer to the same participant throughout this document. Data referring to interview one is referred to as INT1, interview two as INT2. Thus, data from participant NURS3, interview two is referred to as NURS2 INT2.

A range of practice contexts or specialties was also included. Physician educators came from practice contexts including internal medicine, geriatrics, and pediatrics. Pharmacy educators came from acute care, management roles, geriatrics, and community pharmacy contexts. Three of the four nursing educators were generalists, having practiced and taught a wide variety content areas; one participant specialised in mental health. Only one participant from the nursing faculty was currently practicing; this person's practice was in a family medicine context. Finally, social work educators, representatively, focussed on various aspects of mental health. None were currently practicing and they had often practiced in more than one context, including hospital and community-based contexts.

Participants were both male and female, though more participants were female. I felt that representation from both sexes was desirable given that some understandings of critical thinking are gendered in the literature. For example, humanist understandings of critical thinking are often associated with feminism and "women's ways of thinking and knowing" (Thayer-Bacon, 2000). For social work and nursing, the gender ratio[1] was more or less representative, given that the majority of educators are female in those

[1] For medicine, nursing and social work, there were three women and one man. For pharmacy, there were two men and two women.

programs. However, medicine and pharmacy tend to have a more balanced gender ratio, indicating a selection bias for these interviews. Years of practice, as a criteria, was less easy to select for given that this was not a primary criteria; given the number of volunteers, I could not afford to be too selective in my recruitment. Participants had been working in education between two and twenty four years, though most had been educators for eight to ten years. That said, it was not easy to determine this, as many participants recounted personal histories where they were involved in education on and off throughout their careers as practitioners. The numbers presented were thus somewhat subjective but attempted to capture the number of years that education was a primary focus for participants.

As noted, sampling also focussed on ensuring that participants had enough background understanding of critical thinking in order to make a meaningful contribution. According to Morse (2007), "participants must therefore be experts in the experience or phenomena under investigation ... and they must be reflective, willing and able to speak articulately about their experience" (p. 1). Participants volunteered for this study knowing that they would be discussing critical thinking in health professions education; though to varying degrees, all participants had some sense of what they meant by critical thinking and how they thought of this term in their educational and professional practice. I also recruited exclusively educators currently and directly involved in the education of students in their profession to ensure that they would have a sense of how they understand critical thinking in professional education and not exclusively clinical practice, thought these two settings are intertwined.

As mentioned, one of the hallmarks of constructivist grounded theory studies is a theoretical sampling approach (Morse, 2007). In this approach, grounded theorists often start with a purposeful sample; as they concurrently analyse the data, they recruit additional participants or re-interview current participants in order to confirm their hunches about developing themes and categories, or to explore "negative cases," where participants' views appear not to fit with the views of others within a category. In the second interview, I added questions to follow up on relevant areas from concurrent analysis of the initial interview. These questions were based on educators' interpretations of their professional culture and their family backgrounds (see Appendix B). This approach to probing current participants in order to improve depth on particular topics is congruent with theoretical sampling approaches (Charmaz, 2014).

Inclusion/exclusion criteria. Participants were all faculty members at the University of Alberta or University of Calgary who were actively involved in teaching activities in an undergraduate professional program at the time of interviews. They were also identified – self-identified or identified by administrators – as having an interest in critical thinking. These criteria ensured that participants were actively involved in conversations about teaching and learning and able to comment on both their conceptual understandings and pedagogical practices related to critical thinking. As discussed, where possible demographic variation in gender and years of practice were considered.

Sample size. The sample was comprised of four representatives from each program (medicine, nursing, pharmacy and social work), a total of sixteen participants.

Access and recruitment. Permission to work with faculty members in each program was obtained through the Associate Dean Academic for each faculty involved. I

contacted each Associate Dean individually via email with a brief explanation of the study. I met with Associate Deans from medicine, pharmacy, and nursing programs because they were interested in discussing the study and will to assist me with recruitment. I corresponded with the Associate Dean Academic for Social Work via email. As the Associate Deans felt it was appropriate, other administrators were advised of the study. Associate Deans were helpful in participant recruitment. In Medicine, the Associate Dean sent participation requests to participants he thought might be interested, asking them to contact me if they were interested. For all other programs, Associate Deans (and the Department Chair in Pharmacy) offered access to faculty listservs. Administrators were not advised as to whether faculty members contacted decided to participate, or which faculty members participated in the study.

This study had two central recruitment mechanisms. First, as noted above, administrators sent direct emails to participants. I also spoke to key informants interested in education, who provided nominations. Senior administrators and key informants had a general sense of the teaching interests of educators in their program. However, this nomination-based recruitment strategy led to a participant group that reflected the nominators own interpretations of what critical thinking means. Thus, I also recruited educators who self-identified as having an interest in critical thinking through departmental listservs. An email was sent out via the appropriate faculty listservs inviting participation from educators with an interest in critical thinking. Most participants were recruited through nomination, but a few replied to the listserv. I had a few extra participants (particularly in the Faculty of Nursing) who were added to a "wait list" in case participants dropped out, though no one dropped out of the study.

Data generation. I used interviews, participants' teaching artefacts, concept maps, researcher journaling, and researcher memos as data sources. According to Merriam (2009), "interviewing is necessary when we cannot observe behaviour, feelings, or how people interpret the world around them. It is also necessary to interview when we are interested in past events that are impossible to replicate" (p. 88). This study focused on how educators think about critical thinking, an internal mental process, and how they construct their understanding of critical thinking out of their contexts and experiences; thus, interviewing was natural choice as a primary source of data. Interview guides are provided in Appendices A and B.

Many grounded theory studies incorporate participant observation in order to identify participants' thoughts through their behaviour (Charmaz, 2014). Incorporating participant observation allows researchers to contextualize information provided in interviews, and to ground interview discussions in the behaviour that he or she has observed (Charmaz, 2014). It also captures distinctions between what educators say they believe and what they actually do in practice. In this study, the rationale for not observing educators working and employing their ideas about critical thinking in their teaching contexts is twofold. First, the instructional practices of educators in professional programs are significantly constrained – more so than educators in nonprofessional programs. Curricula in health professional programs are often pre-set by curriculum committees, limiting the flexibility of educators who would otherwise integrate their own strategies for teaching critical thinking.

Second, the opportunities that educators have to put their beliefs about critical thinking into practice are often limited by time constraints or a perceived lack

administrative support, which act as barriers to development of new teaching practices. This does not mean that structural barriers entirely prevent educators from practicing based on their beliefs, but it does make an evaluation and comparison of their stated beliefs and their actual practices unrealistic. Such an approach would likely make participants unnecessarily uncomfortable and act as a barrier to full participation. Despite this rationale for not observing participants in the field, this study's limited resources for capturing the ways in which participants translate their beliefs into practice is a limitation of this study.

Initial interview. Initial interviews explored two main topics related to this study's research questions. These interviews explored how each educator understands critical thinking, and, second, how that understanding is constructed through their personal and professional experiences. The interview guide (Appendix A) for this interview was designed to balance providing enough guidance for participants, while avoiding directing their responses. The guide asks participants to talk about critical thinking generally, and more specifically in different settings and with reference to their students and other people that they know. The aim was to ask participants to discuss critical thinking in multiple contexts without applying an existing theoretical or conceptual framework at this point in data generation.

Participant preparation. Participants were prepared for this interview through an information letter, provided in Appendix C, outlining the topic of the study. The letter clarified that the researcher is seeking to create a picture of all understandings of critical thinking, and that there is value in many different understandings. Participants were asked to bring a teaching artefact from their practice that exemplified how they

understand critical thinking. I met informally in advance of the first interview with participants who were willing in order to build rapport and to discuss the purpose of the study and nature of their participation. Other participants preferred to limit the time required for participation and we corresponded by email in advance of the first interview. Both approaches seemed to offer enough information to participants; they seemed comfortable and, for the most part, prepared for participation.

Interview procedure. The initial interview took between one and a half and two hours. The semi-structured, in-depth interview format was useful in that it allowed for a more fluid conversation than in a more structured interview. Interviews moved between more and less structured moments, an approach consistent with constructivist grounded theory (Charmaz, 2014). Using this format, I loosely defined four main topics for discussion, outlined in the interview guide provided in Appendix A. The first part of the interview was structured to open a conversation and explore the participant's beliefs about teaching and education. This approach was successful in opening a loosely structured conversation, and centred the interview on values and beliefs. The second section moved toward defining critical thinking as each educator views it. Where possible, participants were asked to provide examples in order to ground their thinking in concrete experiences. Third, the interview focused on exploring the personal and professional experiences that inform each educator's understanding of critical thinking. This included reflections on experiences tied to their profession (where critical thinking relates to their work and identity as a Nurse, Physician, Social Worker or Pharmacist), to their institutional context (their program or academic institution), and to their personal world (their experiences as children, as patients, or as family members, for example).

Educators did not distinguish between these categories, since they are always interlocking; however, probing questions were used to illuminate how experiences in these various spheres impact each educator's understanding of critical thinking.

The fourth part of the interview concentrated on the participant's teaching artefact. Participants brought in a wide range of artefacts, including lesson plans (most frequently), classroom activities, historical medical instruments, and a ripped up patient interview guide (discussed in chapter five). This conversation helped participants to translate an abstract conversation into concrete teaching practices.

Reflections on teaching artefacts. Teaching artefacts were very useful as a way of directing the conversation in the initial interview, confirming ideas discussed in the first part of the interview, and preparing participants for participation. With respect to the latter, participants had to think through their ideas in order to decide on an artefact, so were better prepared for the interview.

Teaching artefacts were varied and did not offer an easy point of departure through which to analyse participants' understandings of critical thinking. Many participants brought in lesson plans that they had developed or were in the process of developing; participants felt that their lesson plans demonstrated how critical thinking is taught and learned. Others brought various items such as a ripped up communications algorithm, diagnostic medical equipment from the early twentieth century (demonstrating changes in practice over time), and a professional practice framework. Because these artefacts were so diverse, they were more useful as a tool to stimulate conversation and confirm my understanding of participants' views than they were a source of independent data.

Concept map development. Concept maps are visual tools for depicting both hierarchical and non-hierarchical relationships between concepts (Wheeldon & Faubert, 2009). Some experts differentiate between concept maps and mind maps, specifying that mind maps are a more fluid and less structured approach to visualizing concepts (Wheeldon & Åhlberg, 2012). Although there are many definitions of concept maps in education and in research, Wheeldon and Faubert (2009) argue that concept maps should remain broadly defined for the purposes of qualitative research. A broad definition of the term *concept map* allows for the researcher and participants to engage freely with a visual representation of the data, without being handcuffed to any particular concept map structure. I also chose the term "concept map" for this study because many participants were familiar with this term through common use of concept maps in teaching.

In qualitative research, participant-generated concept maps are often used as a data source (Wheeldon & Faubert, 2009). However, concept maps generated by the researcher have recently been used in several ways in qualitative studies: 1) as a form of member checking (Whiting & Sines, 2012), where participants are asked to verify the researcher's interpretation of their stories, 2) in focus groups, as a way of capturing and focussing discussion (Burgess-Allen & Owen-Smith, 2010), 3) as a data analysis tool (Kinchin, Streatfield, & Hay, 2010; Wheeldon & Faubert, 2009), and 4) as a way of presenting findings (Kinchin et al., 2010; Meier, 2007). Kinchin et al. (2010) have used concept maps as a data analysis tool; for them, concept maps support researcher reflection, making implicit assumptions explicit. The visual nature of concept maps makes them an appealing choice for depicting the range of educators' understandings of critical thinking and the relationships between those understandings.

I used a unique approach to concept map use, where researcher-generated concept maps are developed based on categories emerging from initial interviews. According to Kinchin et al. (2010):

> Where a significant part of a research interview is concerned with the respondent's conceptualization of a problem or issue [as in this study], … concept maps could be used as a way of representing information gathered during research interviews to the interview respondents to stimulate further (or deeper) responses and to correct any areas of misunderstanding. (p. 64)

Thus, concept maps offered an analytical tool, through which I framed my analysis of the data for participants, a reflective tool, through which participants re-framed their own understandings of critical thinking, and a social tool, where participants were able to react to the values and ideas of others in a safe space. Maps were not static objects or final product of analysis, but were redesigned during concurrent data production and analysis. Concept maps used in interview two are provided in Appendices D and E.

Second interview. Like the first round of interviews, the second round used a semi-structured in-depth format, but were shorter – one to one and a half hours. In the second interview the concept map offered a way for participants to reengage with their understanding of critical thinking, and to further define, frame and locate their understanding of critical thinking within the context of a community of educators. The interview guide for this interview was designed to invite participants to "talk through" the concept map. Two additional questions were added in order to probe areas that were

significant in the first interview. These questions aimed to generate additional data on participants' interpretations of their professional and family cultures.

Given that educators were asked to situate their understanding of critical thinking within the context of others' understandings, I worked to assure them that there was no one "right" understanding of critical thinking on the map. I delivered a preamble to each interview addressing the fact that there are many different understandings of critical thinking that are appropriate within different contexts, and that there is no correct understanding. That said, there were many moments where participants seemed unsure if their definition was right, or seemed to feel that they had missed the "right answer." I reminded them that there is no one right definition, though this issue continued to require reflection and care on my part. I encouraged participants to build on, shift, or rearticulate their understandings of critical thinking as they engaged with the concept maps. I also encouraged them to reject elements of the concept map that they did not see fitting within their own understanding of critical thinking.

Participants were asked to use permanent marker to locate themselves within the concept map, to emphasize any ideas that resonate for them, to add new ideas, and to cross out or query any ideas that did not fit their understanding of critical thinking. They were asked to talk through this process. Probing questions were used to further explore the choices that participants made when engaging with the concept maps and to explore areas that they left unmarked. Questions are outlined in the interview guide in Appendix B. Both the marked concept map and the transcript provided insight into how participants alter or solidify their understanding of critical thinking as they engage with interpretations offered by others.

This approach offered many advantages. It generated new data through new sources. The visual and tactile nature of interpreting and marking the concept map offered a different way of engaging with the participant's understanding of critical thinking, building on initial interviews. Whiting and Sines (2012) asked participants to use coloured flags to confirm or disconfirm categories on a concept map; this study experimented with permanent markers as a way of inviting participants to commit to ideas by creating a sense of permanence in the object that they create – the marked concept map. This approach was successful for some participants; others were reluctant either to commit or to mark the map. I decided not to push the marking too heavily, in case they felt uncomfortable with its permanence.

The concept map was also useful as a form of member check. The practice of asking participants for direct confirmation of a study's findings has been widely critiqued. According to Morse (1998), qualitative research – and grounded theory in particular – necessarily makes up an amalgamation of many different and diverse participant perspectives; thus, asking any single participant to confirm or disconfirm findings that are an abstract synthesis of many perspectives is, in her words, "nonsense" (Morse, 1998, p. 444). However, having participants locate themselves within the concept maps allowed for a form of member checking without falling into the trap of investing the "truth" of findings with each individual participant. Instead, this form of member reflection (Tracy, 2010) was used to expand researcher interpretations and to generate new data, rather than correcting findings. Tracy (2010) writes that: "member reflections are less a test of research findings as they are an opportunity for collaboration and reflexive elaboration" (Tracy, 2010, p. 844). Unlike Whiting and Sines (2012) study, the

process of marking the concept map is not a way of finding the "correct" parameters of critical thinking, but of further exploring how each educator situates him or herself within a range of possible understandings of the term. It also offered a mechanism for bringing forward interesting moments where participants appeared to change their minds from one interview to the next. I explore some of these contradictions using CHAT in chapter six.

Reflections on concept mapping. Through journaling, I noted several interesting issues regarding concept map use that had not been discussed in the literature I surveyed. Perhaps not surprisingly, how people approached the map had an impact on the data generated. There were a variety of reactions to the maps I have termed inclusive and exclusive approaches. These approaches were not binary; participants engaged with them on a spectrum, generally leaning more toward one approach than the other. In an inclusive approach, participants tended to include as much of the concept map as possible as possible within their own understanding of critical thinking. They often said things that indicated their hesitance, but were ultimately inclusive, such as: "I would not necessarily think of those as being specific to critical thinking, personally. When I look at them, I go "yeah, I could see how somebody would think that" (MD3 INT2). Participants taking this approach often questioned me on what others might have meant. Given that most ideas were represented in one to three words only, this is perhaps not surprising (see Appendices D and E for the concept map). I chose to let participants react first, and then offered my interpretation of what other participants had said; in this sense and many others, I acted as a mediator between participants and much of the data includes my interpretations.

On the other hand, some participants took an exclusive approach, interacting with the map by excluding categories that they might later include. For example, one participant reflects near the beginning of the interview:

> Social justice, that's amazing. I'm really surprised. I would have deleted the other stuff on the sheet and obviously I'm totally wrong but social justice has nothing to do with critical thinking, advocacy has nothing to do with critical thinking. (MD4 INT2)

As a result, it was necessary to consider the approach participants tended to take when analysing data – it would be easy to give too much weight to strong early stances or to see inclusive stances too broadly. Often these early stances were modified as the participant interacted further with the map. Participants' initial reactions were very useful, but I also tried to weigh them against other statements in the interview as a whole.

Participants had various levels of fluency with concept maps. Some were very comfortable with this approach, while others expressed feelings of being unsure of how to interact with the map. This changed how they approached the map – some attempted to read it from left to right like a written document, others read it more from the central concept expanding outward. This affected the areas that they tended to emphasize first. I mediated this through probing questions and repeating the questions asked at the beginning near the end of the interview for confirmation. I also considered this issue in data analysis.

Journaling. Given the constructivist epistemological stance in this study, I also treated my personal journal and memos as data. Mruck and Mey (2007) caution against social constructivist research "solely trying to lean on the (transcribed) 'responses' of

interviewees without acknowledging the process which has resulted in this research 'input' being available for analysis" (p. 524). They suggest keeping a personal journal including post-interview comments – a set of notes detailing reflections on each interview – as a way of enhancing researcher reflexivity. I kept a personal journal through data production and analysis, including general impressions of the data and notes on how the interview went. Post-interview comments included general observations, my initial reactions to participants' thoughts or body language and observations on the mechanics of the interview, such as potential changes to the interview guide. I also kept notes when editing transcription, tracking my initial impressions. Some of the entries were analytical and provided a starting point for later analyses, others were more descriptive and helped to interpret the data by jogging my memory regarding what a participant might have meant or relevant details not captured on audio recording.

Memo Writing. While journaling was used to capture context and biases, memo writing, a practice widely used in grounded theory (Lempert, 2007), was used to capture the analytic processes during data analysis. According to Charmaz (2006), "memos catch your thoughts, capture the comparisons and connections you make, and crystallize questions and directions for you to pursue" (Charmaz, 2006, p. 72). Memos were used both to track and support the analytic process; memos also provided an important component of the audit trail, used by the researcher or a reviewer to track and evaluate decisions and conclusions made during analysis (Whittemore, Chase, & Mandle, 2001). They also supported the analytic process by capturing ideas and connections in writing and providing a space to flesh those ideas out, support them with data, and make connections to other analytic insights.

Data analysis. Data were analysed concurrently, "using constant comparison analysis; that is, to collect and analyse data simultaneously" (Draucker, Martsolf, Ross, & Rusk, 2007, p. 1141). Drawn from grounded theory, this technique involves a continual comparison of coded data against each other in order to examine similarities and differences, to articulate the properties and boundaries that define each code (Holton, 2007; Kelle, 2007), to build categories out of similar codes (Kelle, 2007), and to build themes from those categories (Richards & Morse, 2007). Constant comparison is an iterative process where data are reanalysed as analysis proceeds.

Coding. I began coding with the application of descriptive codes, such as profession, sex, age, year of practice, and type of teaching (clinical vs. classroom) (Richards & Morse, 2007). From there, I followed a classic grounded theory approach. I first used initial or open coding (Holton, 2007) to analyse the data for units of meaning (Charmaz, 2014); I used an incident by incident approach, which breaks the text up into chunks of meaning for comparison.

The most significant or frequent initial codes were compared, re-evaluated and elaborated to develop focused codes. Focused coding using constant comparison involved going back to the data as new insights emerged and recoding sections. According to (Charmaz, 2006) "focused coding checks your preconceptions about the topic" (Charmaz, 2006, p. 143). Focused codes were then gathered and developed into categories of like codes (Charmaz, 2014). Theoretical coding was used to articulate the relationships between categories. Although this study does not seek to develop a substantive theory, some theoretical coding was used in order to explore relationships between categories. Naturally, this coding process was not as linear as it appears in this description; the three

types of coding were not as distinct as they appear. That said, I did bear in mind this coding approach in order to ensure a systematic approach to the data. I used NVivo software to manage data, codes and memos.

Unlike other methodologies, coding in constructivist grounded theory only derives codes from the data – often in the participant's own words – and seeks to avoid forcing the data into intentionally or unintentionally pre-constructed codes. I used this initial approach. Charmaz's (2014) approach does allow for the use of codes and concepts derived from the literature in focussed coding and memoing. As a constructivist, she acknowledges that it is impossible – and even undesirable – for the researcher to try to act as a "blank slate" in analysing data. In initial coding, I avoided relying on categories used in my initial literature review; however, in focussed coding I resolved that those categories did mirror what I was seeing in the data, and are now a significant part of the findings in chapter four.

Generating themes. Through concurrent analysis during interview one, I began to see relationships between codes. For example, codes such as "clinical reasoning," "decision making," "system one thinking," and "intuition" were often talked about together by participants. Words and phrases that were discussed together formed "clusters" of language that were developed into branches of the concept maps developed for use in the second interview (See Appendices D and E). In the second interview, which offered an opportunity for member reflection, participants reacted to these clusters of language; these clusters were further refined into the themes discussed in chapter four. The concept map suggested both dependent and lateral relationships that participants agreed and disagreed with in the second interview; like the initial understandings of

critical thinking described in the concept map, participants reactions to these clusters were far form consistent, but did help to refine clusters into themes.

Saturation. Saturation in qualitative studies means that gathering new data, or re-examining the data yields no meaningful new results. In constructivist grounded theory, Charmaz (2014) suggests that saturation is about analysing and collecting data until categories developed become stable, and new properties of those categories do not emerge when new data are gathered. This study does not claim to develop "a theory," but to explore and describe how understandings of critical thinking are constructed. I did not attempt to find every possible mode of constructing critical thinking; rather, saturation was reached when I felt that each educator's understanding of critical thinking, and the ways in which they construct that understanding through their experiences, was fully explored and no new features emerged.

Transcription and data management. Interviews and field notes were transcribed by a professional transcriptionist, who signed a confidentiality waver. Richards and Morse (2007) argue that transcription allows the researcher a mechanism through which to familiarize herself with the data early in the process. I chose to have the interviews professionally transcribed for efficiency and accuracy, but completed the interviews and cleaned the transcripts myself. I developed early codes and memos during this process.

Multiple sources of data, including interview transcripts, teaching artefacts, concept maps, and journal entries were be managed using NVivo software. NVivo was also useful in creating and managing coding trees, code definitions, and memos.

Rigour

There is significant debate in the qualitative literature regarding how to ensure rigour when the standards translated from quantitative research, such as validity and reliability, do not fit the qualitative paradigm. Further, generic qualitative studies lack the methodological rules for quality that are present in more established methodologies (Caelli et al., 2003). With this in mind, Tracy (2010) provides a set of "big tent" criteria for rigour in qualitative research, which will be used in this study. These criteria include: worthiness of topic, rich rigor, sincerity, credibility, resonance, significance of contribution, meaningful coherence, and ethics.

Worthy topic. As addressed in chapters one and two of this proposal, this study seeks to intervene where there are major gaps in knowledge about what critical thinking means and how that meaning is constructed in health professions education. I see worthiness as related to ensuring that the study has practical implications. On a practical level, filling this gap in the literature will impact the education of health professionals by informing how educators conceptualize and implement critical thinking in their pedagogy. It may also illuminate epistemological and theoretical beliefs that educators hold through an exploration of how their understanding of critical thinking is constructed. Because health professionals are tasked as stewards of health in terms healthcare and health promotion, a more robust understanding of what critical thinking means in health professions education – and the values and beliefs that inform that meaning – could have an impact on the health and wellbeing of our larger society.

Rich rigour. Rich rigour involves methodological coherence and theoretical complexity. I have used Crotty's (1998) research framework to ensure congruence

throughout the project. Tracy (2010) adds that rich rigour involves using "sufficient, abundant, appropriate, and complex theoretical constructs, data and time in field, sample(s), context(s), and data production and analysis procedures. Using CHAT has also helped enhance the theoretical strength of my analyses and focussed attention on context; use of the constructivist grounded theory and generic methodological literature supported rigorous sampling, data production and analysis procedures.

Sincerity: reflexivity and transparency. Transparency of methods is supported by an audit trail. The audit trail includes a record of activities and decisions made throughout the research process, including journals, memos, and code descriptions. This record is useful for personal reflection and to ground responses to questions about my research process. Use of NVivo software supported tracking of codes and memos.

I maintained a journal in order to reflect on biases that may be present. Mruck and Mey (2007) also suggest that collaboration and discussion enhances reflexivity. Regular meetings with my supervisor allowed for the inclusion of another perspective; I also started a thesis-writing group that allowed for mutual support and discussion around theoretical and ethical issues that arose during our research processes.

Particular to this study, I have worked to ensure that my critical theory background and pre-existing understanding of critical thinking as ideology critique did not result in leading lines of questioning in the interviews, or premature conclusions in data analysis that favour this understanding over others. Through personal reflection and discussions I have worked to maintain a curious stance when approaching all perspectives. I have tried to concentrate on how and from where meanings are constructed and avoid evaluating or suggesting a "right" definition.

Credibility. Crystallization, or the "opening up" of complex data is sought by returning to participants to clarify their thinking; I used individual interviews, teaching artefacts, and concept mapping to do this. The study also uses multiple interviews and the integration of researcher-generated concept maps as a form of participant reflection on analysed data. As mentioned above, the strategy of "member-checking" has come under fire for resting on the assumption that there is a "true" meaning that participants can either confirm or deny – an assumption which conflicts with social constructivism, where meaning is not tied to a stable reality, but is generated in context (Morse, 1998).

Resonance. Although each understanding of critical thinking will be unique to the individual and a particular context, those meanings do appear to resonate. I have presented some of my data at various conferences and through faculty workshops. There is also some interest in the health professions education research community around the application of CHAT to understand participant values and beliefs as well as the analysis of those values and beliefs across disciplinary and practice contexts. Additionally, transferability is enabled through a rich description of the context, so that readers of future publications will have enough information to assess the applicability of results to their own context (Tracy, 2010).

Significant contribution. At the most basic level, this study will contribute to a theoretical understanding of critical thinking in health professions education by illuminating the multiple ways in which critical thinking is understood. It will also explore the ways in which educators construct their understandings, illuminating the beliefs and values that they hold with respect to healthcare and healthcare education. I provide more detail on the contributions made in chapter seven.

Meaningful coherence. Using Crotty's framework I worked to ensure consistency between epistemology, theoretical framework, methodologies, and methods.

Ethics. Assessing ethics involves both procedural ethics processes and a sense of ethics as an ongoing, negotiated process. Procedural ethics were addressed through submission to the University of Alberta's Research Ethics Board (REB) 1, which deals with ethics for studies involving interviews. In maintaining ethical conduct, I adhere to the Tri-Council policy statement on ethical conduct for research involving humans (2010), holding to the principle that "respect for human dignity requires that research involving humans be conducted in a manner that is sensitive to the inherent worth of all human beings and the respect and consideration that they are due" (p. 8). Applying the Tri-Council policy involves a reflexive process of negotiating ethical issues as they arise, and of maintaining informed consent as an ongoing, negotiated process.

I have been particularly careful to ensure that my previous understanding of critical thinking through the lens of critical theory does not constrain the interview process, or the analysis of data. With respect to ethics, there were moments where I am sure I unintentionally communicated emancipatory approaches to critical thinking as the "right answer," preventing participants from articulating their own thoughts and beliefs or causing feelings of inadequacy or judgment in participants. However, I did maintain a genuinely curious stance and worked to mediate any anxiety or to address moments where I implied a preferred understanding.

Summary

Research design for this study addresses two key research questions: first, how do educators in the health professions understand critical thinking? Second, how do an

educator's unique personal and professional experiences inform their understanding of critical thinking? I take a social constructivist epistemological stance and focus on exploring the social nature of participants' constructions of critical thinking. I use interpretivism and CHAT as a theoretical framework, highlighting the ways in which educators construct their understandings of critical thinking within overlapping contexts or activity systems. I use a generic qualitative methodological approach, drawing on constructivist grounded theory heuristics, tools, and techniques in order to support an exploration of a relatively underexplored area.

CHAPTER 4: UNDERSTANDINGS OF CRITICAL THINKING

In this chapter I address findings related to my first research question: how do health science educators understand critical thinking? Not surprisingly, results indicate that participants understand critical thinking in a variety of ways that are both idiosyncratic and shared by other participants. In other words, while a particular understanding of critical thinking is unique to the participant, each participants' understanding of critical thinking also maps onto clusters of meaning that are echoed in the understandings generated by other participants. How individual participants are positioned relative to these clusters reflects activity spheres that are connected to their profession, discipline, practice context, institutional context, and personal world. Individual participants often understood critical thinking in more than one way over the course of an interview, or between one interview and another. Thus, these clusters of meaning do not represent discreet views, but are constantly shifting, overlapping and contradicting. The way in which participants construct their understandings of critical thinking in and through these contexts will be explored in subsequent chapters.

This chapter will explore major clusters of meaning, including: 1) critical thinking as reasoning or problem solving, 2) critical thinking as "examining assumptions", 3) critical thinking as personal and interpersonal understanding, 4) critical thinking as reflection, and 5) critical thinking as dispositions or characteristics of the thinker.

Although I began data analysis working to avoid transposing the approaches to critical thinking discussed into my literature review onto the data, I found through analysis that these categories were very similar to what I was seeing in the data. As a result, the first three clusters echo the technical, emancipatory, and humanist dimensions

of critical thinking discussed in my literature review. They map onto the 1) "reasoning or problem solving," 2) "examining assumptions," and 3) "personal and interpersonal" approaches, respectively. These first three sections of this chapter focus on critical thinking as a process.

The final two sections engage with 4) the relationship between critical thinking and reflection and 5) characteristics of the thinker, respectively. These aspects of critical thinking are also addressed in the literature on critical thinking. Reflection and critical thinking are tightly connected in all critical thinking "approaches" in my literature review, and in the data generated for this study. Likewise, I have discussed contentions in Facione's (1990) Delphi Consensus around the relationship between critical thinking dispositions and the technical process of critical thinking. As I will explore further, these tensions arose again at various points in my data.

Critical Thinking as Reasoning or Problem Solving

The first cluster, associated with reasoning or problem solving, focuses on a more or less systematic process of analysing information. These understandings of critical thinking were grounded in the clinical context, specifically relating to terms such as clinical problem solving, clinical decision-making, or clinical reasoning; they were related to the analysis of patient data (e.g. lab results, drug history, physical findings, patient history, etc.) in the clinical context. Figure 4.1 describes relationships between key terms within this "cluster" of meanings. Not all of the ideas in this graphic were related for all participants; many were contested or unclear. However, participants did generally agree that reasoning was based on foundation of disciplinary knowledge, and

that it involved a process of data gathering, data analysis, and decision-making. There were also conversations about the relationship between the two-systems reasoning model and critical thinking.

Figure 4.1. Critical Thinking as Reasoning

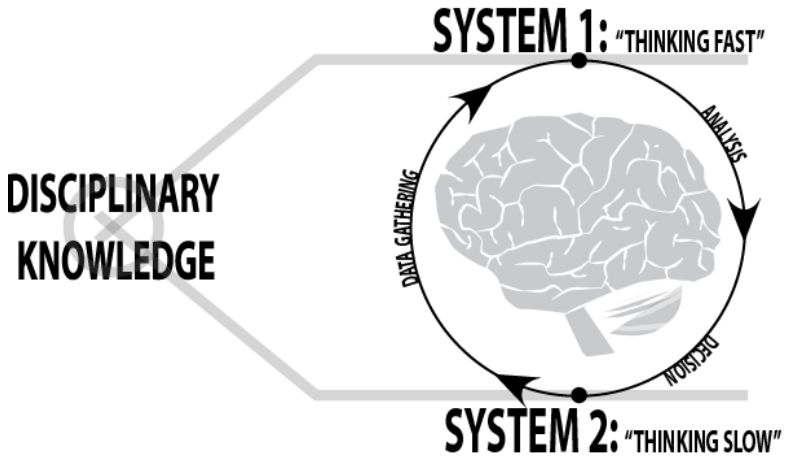

Figure 4. Visual depiction of terms that participants associate with critical thinking as reasoning. Participants saw reasoning as built on a foundation of "disciplinary knowledge" and involving processes of data or information gathering, analysis and, for many, decision making. Several participants discussed whether these processes could be understood through a system one/system two clinical reasoning model and whether both systems could be understood as critical thinking.

Participants discussed this approach to critical thinking most frequently of the five outlined above, across disciplines and contexts. However, this approach was more common among participants from medical, nursing, and pharmacy education than from social work. Social work educators tended to align with the second cluster of understandings of critical thinking, centred on analysing paradigms; as a result, the bulk of the data from this group appears in the next section.

Often, participants saw critical thinking and clinical reasoning as synonymous, for example: “I think they're the same. … I think clinical reasoning is basically taking the data you have on a patient and interpreting it, and offering a treatment plan and sort of a course of treatment” (MD1 INT1). Similarly: “it’s [critical thinking has] got everything to do with reasoning, which makes sense” (MD4 INT2). Others saw the two concepts as overlapping, but not synonymous: “critical thinking and clinical reasoning kind of overlap a little bit. So I think of clinical reasoning as kind of a specific, context-specific, example of critical thinking” (MD2 INT1).

Clinical reasoning was also seen as a clinical application of critical thinking: “clinical reasoning seems so much more concrete and with a definite foci or focus than – critical thinking seems so much broader. So maybe it is an aspect of critical thinking when you are ‘feet on the ground’” (NURS4 INT2). Similarly, reasoning was sometimes structured as a subcategory of critical thinking: “I think it [reasoning] is part of critical thinking but not the whole picture. I think critical thinking enters into it” (NURS3 INT2). Figure 4.1 illustrates the process of critical thinking within the “clinical reasoning” cluster of meanings. Overall, this cluster of meanings rested on a conception of critical thinking as a logical or rational process. One participant relates that she sees “critical thinking as a cognitive process. … I see it as being able to analyse, … to be able to reason logically” (NURS4 INT1).

Given that understandings of critical thinking are not stable, but (re)constructed and negotiated, not all participants understood clinical reasoning in the same way. In this section, I begin by discussing the role of content knowledge in clinical reasoning. This is then followed by an examination of the processes participants describe as aligned with

"system two" thinking, discussed in my literature review, including aspects of data gathering, data interpretation, and decision making. I then discuss the ways that participants have challenged what they view as the limitations of "traditional" approaches to system two thinking. Finally, I examine participant discussions on the relationship between system one thinking and critical thinking.

The Role of Disciplinary Knowledge

In most cases, clinical reasoning was seen as dependant on the thinker having some level of content knowledge. This perspective is reflected in debates in the critical thinking literature regarding the degree to which critical thinking is domain-specific – or the degree to which critical thinking ability in one discipline is transferable to another. Although there were exceptions, most participants felt that "you need to have information and knowledge. It may not just simply be disciplinary knowledge, but you need the knowledge for any problem, to be able to assess and deal with it" (PHARM3 INT2). One participant disagreed, seeing critical thinking as a process that is not domain specific, and thus not linked to disciplinary knowledge:

> To do pharmacy-related activities you do need that background, but that's more tied to the profession to me rather than the natural concept of critical thinking because if I had a different job right now, I would still be able to critically think and a lot of that comes from some of these other things we talked about like reflecting, slowing down, you know the whole idea of processes. (PHARM4 INT2)

Gathering and Interpreting Data

Important aspects of clinical reasoning included gathering data, interpreting data, and making decisions. One participant describes this process thus:

> There's imaging data … that informs us regarding how patients are doing with regard to therapy or how they're presenting. … You take the collection of information you get from the patient and the data you gather. … It is diagnostic. So you have to be able to think critically about the whole picture that you're getting, and then go back and reinterpret that or ask for reinterpretation. (MD1 INT1)

Similarly, another participant relates that in critical thinking:

> You have to kind of pull together data that's relevant to the subject you're dealing with. You have to interpret it, you have to analyse it, and you have to come up with some type of conclusions at the end as to how you deal with it. … [You have to] take the time to assemble all the evidence you can or the things that are relevant towards it and analyse it and interpret it and then eventually figure out how you're going to apply it or use it. (PHARM3 INT1)

Likewise, "a lot of it has to do with problem solving and I think that's what they mean by critical thinking where you have to look at all your options and actually weigh everything" (PHARM4 INT1). Finally, another participant relates that critical thinking is "the process that I use to identify, accept, interpret, synthesize phenomena [and] how I apply it" (SW3 INT1). These quotes have in common a sense of logical steps to approaching and interpreting data.

The Role of Decision-Making

As suggested in several of the above quotes, decision-making was also seen as an important part of the reasoning process. In the words of one participant, medical students who are thinking critically:

> Will be able to present it [patient information] in an organized, articulate fashion so it makes sense. … Strong ones [students] will be able to take that information and start to formulate a plan or an impression or start to interpret that information into a clinical diagnosis with a management plan. (MD2 INT1)

Likewise, another emphasizes that: "you have to make a decision. I think it's a really important part of that [critical thinking]" (MD2 INT2). Finally, a participant from pharmacy notes that critical thinking for him is: "applying a process by which you can at least come to the point of making a decision or coming to a resolution of a problem that you can defend" (PHARM3 INT2).

Clinical Reasoning as an Iterative Process

As much as this approach to reasoning was common in the data, participants also challenged what they perceived as an overly linear understanding of critical thinking, leading from data gathering to decision making. Instead, participants described reasoning in the clinical context as non-linear– where information gathering, analysis and decision-making were intertwined – and iterative – where decisions were revisited and revised throughout the course of treatment:

> It happens a little bit simultaneously and then sometimes – I mean you can just be in the reflection phase or you can just be in the

> information-gathering phase but while that's going on, well, you're prioritizing. You are still factoring and the team is talking or you are gathering more information from other sources. (PHARM1 INT2)

Similarly, in Nursing, "it's a ripple of knowledge, I think, that always has that connection, but it can't be linear" (NURS1 INT1).

In addition to seeing the process of clinical reasoning as non-linear, participants also described the process of iterative or cyclical, a process of constantly returning to and revisiting decisions based on patient responses to treatment. Patient care does not end with the initial diagnosis and management plan (the initial decision), rather:

> I think [of] the fluidity of it, as well. I think that's one of the things with clinical reasoning, is that it's not that you see a patient and that's it – here we go that's what I've decided. You see a patient and you're dealing with them and things change and you respond to that. And that's part of it. Each piece of information that comes in continues to inform your thought processes. So it's very dynamic. It's on-going. (MD3 INT1)

Challenges to Dominant Understandings of Clinical Reasoning

Participants also challenged dominant understandings of reasoning or problem solving in other ways. They challenged what they saw as limited views on what constitutes "data" to be used in reasoning, asserting the importance of including the patient perspective as data. Relatedly, participants discussed the role of affect in reasoning.

Challenging "hard" data. Several participants challenged a perceived idea that critical thinking means exclusively analysing "hard" sources of data such as lab tests or medical imaging. Instead, they saw listening to the patient's illness story and perspective as crucial pieces of data for critical thinking as reasoning. For example:

> When you're with a patient, the goal should be spend the time gathering the information you can from the patient or if you have to give them information back. And I think there are people who don't do that. I have colleagues who'll say [to their patients]: 'just say yes or no.' … And it's not very good and they're missing stuff. So, critical thinking is – I guess it's sort of dynamic in that you have to have time and you also have to have an interaction, if it's patient-centred. (MD1 INT1)

Similarly, another participant wants to push the boundaries of critical thinking beyond the strictly "clinical," requiring attention to patients' stories in order understand their psychosocial and economic needs:

> If it's always about clinical reasoning you end up with a clinical solution when the solution might actually be older people are poor and they don't have very much money and they can't afford their car or something. So the issue actually isn't clinical but if we just call it clinical reasoning, you always end up just with clinical solutions whereas to me it's [critical thinking is] something really, really big picture like what are older people's needs? (PHARM1 INT2)

The Role of Discourse. For many participants, interpersonal communication took on an important role in critical thinking. In the above section, listening to patients and understanding their perspective, listening to the information that they provide, and, conversely, giving information to patients is significant. Participants also talked about discussion with colleagues and peers as enhancing critical thinking. Colleagues could offer an alternative perspective: "the people I know who I consider good clinicians or good at critical thinking, do reflect; … particularly, they sort of talk about the cases they've seen, they talk about what they were thinking" (MD2 INT1). Another adds: "obviously you'd run things by colleagues as well because you want that outside view which is hugely important [to critical thinking in a clinical setting]" (MD4 INT1). Most often, discussion was seen as a way of obtaining information from colleagues to support the reasoning process, particularly from colleagues from other disciplines or specialties; it could also assist in providing an alternative perspective on existing information.

Several participants also discussed using discussion as a tool to help students develop critical thinking:

> I think discourse actually really helps clinical or critical thinking develop because without having to think through why you think a certain thing and actually defend it and discuss it, it's easy to assume and not understand, as you develop those processes. I think it's actually really important to developing it. (MD2 INT2)

Participants discussed the role of questioning students, asking students to explain their reasoning, inviting students to engage in group discussion, and asking students to challenge their peers as instructional strategies for the development of critical thinking.

The Role of Emotion. Finally, participants had various reactions to the role of emotion in clinical reasoning. Terms like emotion, emotional intelligence, and empathy came up in discussions about critical thinking in the first round of interviews. Reactions were explored further through the concept map in the second round. Many participants saw their own emotions as getting in the way of a rational thinking process. For example:

> Well I don't say that emotion or empathy belongs in critical thinking. There's no link for me there at all …Those are in fact the enemies of critical thinking. … I always talk about "leave your emotions at the door. This is not about the person. This is about analysing the facts." And that's critical thinking. As soon as you bring your emotions into the room, you're no longer applying what I think is critical thinking. (MD4 INT2)

Another relates that:

> The problem solving and the clinical reasoning are so prevalent in what I do. It's sort of like that's what critical thinking is at and where this other side [the left hand side of the concept map] seemed, at least initially, much more sort of emotional or the soft side of things and I don't really see critical thinking as being that. (NURS4 INT2)

Participants particularly saw negative emotions as getting in the way of critical thinking as reasoning: "I also think emotion can impact critical thinking. If … you have a very

negative or stressful interaction, it makes it very, very hard to nicely work through all the different processes" (MD1 INT2).

Other participants viewed emotion as something to be "managed" – critical thinking required emotional awareness. These participants believed that emotions could not be, as the above participant suggests, "left at the door." However, critical thinking did require emotional analysis and a sense of "setting aside" emotions. For example:

> I think emotion is a big part of reflection. I think it's a part of understanding how you are feeling, why you are feeling that and how that affects a clinical situation. … So I think that it [emotion] has a very broad impact on reflection and critical thinking but the most important part of it for me would actually be to be aware, to name it and to talk about it so that it's considered a factor because if you don't consider it a factor you can miss things because it's there. (MD3 INT2)

Another participant discusses emotion and empathy in the context of using empathy to improve reasoning and patient care through an enhanced understanding of the patients' behaviours, needs, or goals; however they[2] also mention that this sense of "emotional intelligence" is linked to a need to be aware of and manage their own emotions:

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[2] I have used the pronouns "they" and "their" instead of "he," "she," "his," or "her" when referring to participants. Although this syntax can be a awkward, I felt that avoiding gendered pronouns would be important to preserving participant anonymity as far as possible.

> In order to help patients with chronic disease, you have to at least, on some level, be able to empathize with them … I think being aware of that and also checking your own feelings because seeing people with chronic disease sort of continually dwindle … is very distressing when you've been looking after them for a long time or if they die. You create a bond with these people so you have to check your emotions, at some point, because it can be helpful but it can also impair your ability to help them. (MD1 INT2)

This idea of managing emotion in order to reason effectively was often linked to the concept of "emotional intelligence" or developing an awareness of one's own emotions and they impact thinking. Participants again talked about managing emotions that might "get in the way" of reasoning or critical thinking:

> My view of emotional intelligence is that you are aware of your own emotions and you are aware of how your actions impact the emotions of others. And so you strive to use your emotional intelligence to be perhaps empathic but sensitive, supportive. … Sometimes I think strong emotions, especially if they have a particular personal route somewhere, will get in the way of critical thinking. (NURS2 INT2)

Conversely, a few participants challenged the idea that emotions could or should be "left at the door" or "set aside"; they saw critical thinking and emotion inextricably linked. This perspective offered a departure from understandings of critical thinking as a rational process. This view of the role of emotion in critical thinking overlaps approaches to critical thinking as reasoning and approaches to critical thinking as personal and

interpersonal – a humanistic approach to critical thinking, which, I argue, is a category better suited to the analyses and data explored in this study.

However, one participant, who, for the most part, discusses critical thinking as reasoning, is also unsure about whether critical thinking and emotion are directly linked:

> I think they [emotions] are very important in and of themselves but I don't – I am not sure whether they feed directly into critical thinking or not. Probably they're a parallel process, which is important. Thinking about it certainly in terms of seeing the whole picture and saying what would I do clinically, the empathy and emotion and imagination is a really, really important part of that because if you don't have that or you miss some of the emotional cues you are going to miss the large parts of that picture. … I don't quite see how it, it doesn't sort of naturally have a nice place in this [concept map]. I don't know where it fits exactly. (MD2 INT2)

For me, this quote occupies a space somewhere in between approaches to critical thinking as reasoning and as personal and interpersonal understanding. This participant both sees emotion as a way of improving reasoning by better understanding "the whole picture"; however, there is also a sense that emotion does not fit neatly within critical thinking.

Intuition, Pattern Recognition and System 1 Thinking. The dual process or two-systems model (Kahneman, 2013) is a popular approach to understanding human thinking. The above approaches to clinical reasoning and problem solving focussed largely on "system two" thinking – these approaches were seen as, for the most part, logical and conscious. However, most participants (particularly in medicine) were aware

of the two-systems model from cognitive psychology or more recent pop-culture interpretations such as the New York Times best seller, *Blink* (Gladwell, 2005). Participants often dichotomized quick versus slow thinking and discussed the difference between intuitive and analytic processes. Several also referred specifically to the two-systems model or to *Blink*. However, most participants were unsure about whether they would include "system one" thinking – associated with a sense of automaticity and terms such as heuristics, pattern recognition, intuition, gestalt, or gut instinct – under the umbrella of critical thinking. This area of contention came up several times in the first interview and was explored further with each participant in the second round. Participants saw intuitive processes as an important part of their clinical practice; however, they were less sure that these "system one" processes should be understood as critical thinking.

Some participants rejected the idea that critical thinking included these less conscious thought processes, focussing instead on "system two." For example:

> I was thinking about how doctors might use it [pattern recognition] or nurses and I can see that that would be a good skill to have obviously. … In social work you have to do that as well but the critical thinking I think is important to kind of lay over that and always have in mind that questioning that pattern as – I mean we have to assess and you've seen patterns of marital discord and you've seen that 100 times you know those kinds of things and you know how to intervene. Those are important things, learned skills. But the critical thinking is to kind of quote in your mind that there

> could be other alternative explanations or outcomes and that the pattern doesn't necessarily predict. (SW2 INT2)

Participants from other professions often agreed: "quick thinking can almost be anti-critical thinking if you're not aware you're doing it. It becomes reflexive rather than actually deliberate" (MD2 INT2); similarly, "from my perspective I don't know how much critical thinking goes into that [pattern recognition]; It's more the routine of the disease or the injury or whatever…. It doesn't take critical thinking" (NURS 4 INT2). Likewise:

> I don't see that [pattern recognition] as being critical thinking and I think it's one of the cautions you have to do when you are doing critical thinking is to make sure that the gut feelings and the intuitions you have stand after critical analysis and you've bothered to take the time to actually assess them. (PHARM3 INT2)

Others intentionally included both "system one" and "system two" thinking within their understanding of critical thinking. In the following example, the two systems are intimately intertwined:

> I mean, critical thinking, it just grows and becomes much more mature over time, and I think that maturity is also what I'm referring to as wisdom. I would have approached a problem five years ago a little bit different than the way I approach it now because I've had that much more experience. … I've been able to take all that gestalt and apply it and it becomes a bit of an art by that point. So there's a lot of hard, critical things or hard pieces of data and knowledge but

> then you bring, I think, your experience and a little bit of the art to it.
>
> You can't get away from it, I don't think. (MD1 INT1)

Another participant describes intuition as the “greatest pinnacle of critical thinking” (NURS1 INT2), resulting from the culmination of knowledge and experience. Alternatively, critical thinking was described as “toggling” between “system one” and “system two” thinking. Here, critical thinking is:

> Part of that melding of the two methods [“system one” and “system two”] or the sort of toggling. It's like a tug-of-war almost, right? You've got, “here, I want to be non-analytic. I want to walk in the room and I want to say, ‘oh, my gosh, that kid's got pneumonia.’” But at the same point, I want to make sure that I've thought about what the other possibilities are, and that sort of struggle back and forth, thinking of it like a tug-of-war. You don't want to ignore that gestalt because that gestalt is so important and can be very right, once you have enough experience. (MD3 INT1)

Others saw intuition or “system one” as a form of data that must be considered in critical thinking. In this sense, intuition is:

> Another form of critical thinking that isn’t like the others. It’s your brain. It is very automatic … but it impacts your critical thinking I think. I think your critical thinking is that “I’d better listen to my gut because I’ve had this experience in the past.” (NURS3 INT2)

Another adds that critical thinking involves intuition, but that intuition requires verification. They relate that even if:

> I've seen something a thousand times and I have a feeling, I still go through affirming that. … I guess instead of having to go through eliciting all that information, I can skip part of that step but I move into confirmation in terms of the patient process. (PHARM1 INT1)

Similarly, another notes that: "I think it's sort of a cautionary thing though because I think sometimes you can get too caught up in the heuristics … and you fail to think critically sometimes" (MD2 INT2). However, this participant also adds that the two systems are "hard to distinguish" (MD2 INT2).

This uncertainty often emerged when participants discussed the relationship between "system one" thinking and critical thinking. Commonly, participants' positions were fluid and sometimes contradictory. They were unclear on whether "system one" thinking contributed to critical thinking; as participants discussed examples of critical thinking, they often had difficulty separating the two types but often struggled to do so nonetheless. Descriptions might oscillate between including and excluding "system one" thinking in their understanding of critical thinking. Others would exclude "system one" thinking from their understanding of critical thinking but, when asked to describe critical thinking, would include examples of less conscious approaches to critical thinking based in pattern recognition, intuition, or expertise. For example, one participant sees critical thinking as involved in the development of "system one" thinking, but, toward the end of this quote, is unclear on whether "system one" thinking is part of the experienced practitioner's critical thinking:

> When you've been practicing for many years, it [clinical thinking] becomes automated. *It lets you just do it by rote and that's not*

> *critical thinking* [emphasis added]. … You may actually go through a critical thinking process in order to get to that. I mean presumably you would have had to have done that. I mean that's why you go through medical school. So you acquire that knowledge in order to do the critical thinking and then after a time it becomes a pattern and you can see that with young medical students. … An experienced physician wouldn't actually have to go through that process at all. They would just be purely pattern recognition and I don't think that's necessarily critical thinking. Unless as you said it's critical thinking fast, which is somebody talking about fast thinking versus slow thinking. So maybe subconsciously they are critically analysing the case. (MD4 INT2)

At the beginning of this quote, the participant strives to separate "quick" and "slow" and "conscious" and "subconscious" processes. As they go on, the processes become increasingly interrelated, until, by the end, they appear more or less indistinguishable. Similarly, another participant in unsure of whether to include intuition in their definition of critical thinking:

> I don't know. Or is it part of – I guess I do consider it under reasoning because sometimes you just have a feeling but then I think you need – when you are going to examine your assumptions, it's like "oh why do I have this and then why am I thinking that this might work?" So is it really part of critical thinking? I'm not sure. I'm going to contradict myself here and I'm thinking about if it really

> fits on the [concept] map or if it's just one of those things that happens and then you have to – it's a piece of information in the scenario versus part of your critical thinking and I think that's more so where I would see it. (PHARM2 INT2)

This sense of struggling to reconcile intuition with understandings of critical thinking as logical and intentional is evident in most discussions on the topic.

In summary, critical thinking as reasoning tends to centre on "system one" type processes, involving ideas of logic, rationality, and evaluating concrete evidence. However, when participants discussed their understandings of critical thinking in context, they often sought to challenge this approach even as they reinforced it. Participants included patient stories as "data" in their reasoning, contested the role of emotion in reasoning, and struggled to articulate the relationship between intuitive "system one" processes and critical thinking. Overall, the sense of the logical and rational invoked in "system two" type descriptions of critical thinking became murky as participants began to describe their own critical thinking processes in the clinical context.

Critical Thinking as "Examining Assumptions"

The second most frequently articulated approach to critical thinking was a cluster of understandings centred on the idea of "examining assumptions." At the core of this cluster of responses is an on-going process of examining the ideological and hegemonic assumptions embedded in participants' social worlds. This perspective was less prevalent than an approach to critical thinking grounded in reasoning or problem solving; however, as shown, it was the dominant understanding of critical thinking among participants from social work. Participants connected this perspective to ideas of examining power and

examining paradigms. Many participants who approached critical thinking in this way also felt that critical thinking was intimately linked to advocacy and social justice. They spoke to the process of critical thinking, emphasizing the need to hear and consider alternative viewpoints or entertain the other's perspective. As in understandings of critical thinking as reasoning, participants also discussed – and contested – the role of emotion in critical thinking.

Participants often articulated this view of critical thinking as a more complex extension of the reasoning approach to critical thinking – they criticized the latter as a limited understanding of critical thinking. For example, one participant describes dominant approaches to critical thinking as "a sanitized process, … like breaking it into its parts – reductionistic – and then building it up and then applying it to a particular like set of circumstances" (SW3 INT1). They go on to further describe dominant approaches to critical thinking:

> If someone introduces a concept to me, … I accept it at face value. … I don't necessarily orientate it to "where is it positioned in terms of other ways of thinking about social, personal problems or human conditions?" – "what's that philosophical orientation in its way of knowing? How was it constructed?" I just accept it. [If I] take that piece but then I deconstruct, again, I may understand some of the history and I may understand the process or the mechanics for how to do it and then I just apply and evaluate it. So it's very surface level of almost knowledge translation, if that's how you are to see it versus deconstructing its applicability and its orientation relative to humans

> in the society. … Like [using] a model or applying a theory but there's an absence of examining its relationship to self and power. (SW3 INT1)

As this quote suggests, participants in this orientation often saw problem-solving or reasoning as over-focussed on the minutiae of an identified "problem" without considering the broader societal context within which that problem is structured and through which it is made meaningful.

Examining assumptions

The participant quoted above distinguishes between an understanding of critical thinking as examining assumptions and critical thinking as clinical reasoning; however, participants focussing on clinical reasoning also used language around examining assumptions or bias. However, participants discussing reasoning most often used this terminology in the somewhat related sense of "observational bias," or the tendency of clinicians to confirm existing diagnoses (MD4 INT1). In this sense, clinicians:

> Often are presented with patients who someone else has seen and made an assumption, or made a diagnosis of, but one of the things that's really important is we don't take that at face value but we make sure we confirm the information that that diagnosis was made with. (MD2 INT2)

Here, assumptions and bias are embedded in a clinical reasoning process and bias tends to be about diagnostic, rather than societal, issues.

Participants who saw critical thinking as examining assumptions focussed more on examining societal assumptions or biases. A participant from social work notes that:

"critical thinking, for me and maybe for our Faculty, is around things like … recognizing your own bias and recognizing the bias in the world" (SW1 INT1). In another participant's words:

> I hope that they [students] will think critically about things, that they will question things and that they just won't assume things, particularly things that we're so used to that we don't even question. So it's [critical thinking is] an exercise in saying that the most mundane things that we just assume are right and correct need to be questioned. (SW2 INT1)

Figure 4.2 details relationships between some of the key terms discussed within this "cluster" of meanings. The process of examining assumptions was core to this understanding of critical thinking, but it was also related to examining paradigms, examining power, engaging with alternative perspectives, and challenging the status quo. This process was seen as building on and clarifying a sense of personal ethics and engaging with one's own emotions and the emotions of others. Critical thinking in this approach was related to discourse, where ideas are challenged. It was also linked to a sense of action – advocacy for social justice.

For participants approaching critical thinking in this way, assumptions and biases were linked to how power is preserved through dominant discourses; critical thinking is linked to "awareness of your own oppression and your potential to oppress others. … [The] thinking and observations or conclusions that you make about other people's behaviours [or] life circumstances, reflects your experience of power and privilege" (SW3 INT1). Another adds that "critical thinking, it's all about power. Now my

theoretical framework for my PhD was critical theory. … Yeah and, you know, in a sense they are similar. It's about structural things. It can be about thinking outside the box" (SW2 INT1). Through critical thinking, participants discussed challenging power relations and dominant discourses, often using terminology like "thinking outside of the box" or "challenging the status quo." In one example, the participant relates: "I think critical thinking and challenging the status quo is very common. I think that would be very important" (SW2 INT2).

Figure 4.2. Critical Thinking as Examining Assumptions

Figure 4.2. Approaches to critical thinking associated with the process of examining assumptions. This figure depicts relationships between concepts and terms that tended to be discussed together; it does not capture a universal understanding of critical thinking.

This approach to critical thinking is also linked to a constructivist epistemology – individuals could never completely escape bias; they could only seek to understand it and make efforts to remediate it. As a result, critical thinking was embedded in the personal ethics of the thinker. In the words of one participant, critical thinking is:

> the process that I use to identify, accept, interpret, synthesize phenomena … [And] there is not just reflection and reflexivity, there is your personal ethics and then professional ethics. … When we first start talking about professional ethics we go from a foundation of what are your personal – how do you think about making decisions and what informs how we make decisions? (SW3 INT1)

Structural Invitations

In one of the quotes above, the participant notes "it's about structural things." Participants often linked examining assumptions to what another participant calls "structural invitations" – a way of examining social structures, including discourses, which constrain possibilities for human behaviour. They elaborate:

> When I talk about critical thinking, I want them [students] to have an understanding of what they believe as a construct, and it's a construct based on the invitations that exist in your world. … One of the first questions I always ask [students] is: "how did your clients become your clients?" And they know what I'm asking. I'm asking them: "besides the individualist's philosophy, what are the structural limitations that led to them?" And that really makes them think about lots of stuff. It makes them think about social policy. Makes them think about institutionalism. Makes them think about the societal culture. Makes them think about families. Makes them think about all kinds of particular issues like addictions or mental health or other kinds of things. (SW4 INT1)

In this sense, critical thinking means understanding that there are limitations to individual agency, and that many marginalized groups are limited by their "social locations" (SW3, INT1, INT2)

As a result, many participants linked this analysis of "structural invitations" in critical thinking to social justice. In the words of one participant: "social justice, deconstructing privilege, well that's just an area of social work that we continue to write about and talk about and it's about examining our assumptions. Social justice is an important part of the social work" (SW2 INT2). Another relates that: "social justice encompasses deconstruction of privilege, which is what we were just talking about. It always challenges the status quo and who's benefiting from it" (SW3 INT2). This participant adds:

> If you are not orientated in a social justice position, it's [critical thinking is] more about the mechanics, which is valuable as well but it seems almost breathless or it's like a skeleton but has no clothes on. But it's very much – it's important as well to have that, those foundational elements of how we think about what we think. But if we don't understand that values associated with what we think it seems to – not be meaningless but there's a piece missing or it's assumed. The values are assumed I'll say. (SW3 INT2)

Thus, for social workers, critical thinking as examining assumptions is tied to the notion of social justice, though the reasoning-based understanding of critical thinking is embedded within that understanding.

However, this approach to critical thinking was not exclusive to social work. In the pharmacy education context, a participant describes how structures influence health:

> Why are there a disproportionate number of aboriginal inpatients than any other group? … Why are they so much sicker and have worse disease states? So when you start critically thinking about seeing the whole patient then you realize that it's not just a physiologic change and genetics and whatever. You see the whole picture and then that generates that there are social issues and there are issues related with all of society and that's why people have more diabetes. (PHARM 1 INT1)

A participant from nursing education adds: "the way some people describe critical thinking is that it would promote a sense of social justice because of the open-mindedness and the ability to understand different perspectives" (NURS2 INT1). Discussing critical thinking outside of the context of medicine, one physician educator adds: "it goes back to Karl Popper and Thomas Kuhn about the concept of paradigms and thinking outside the paradigm. … Many of us are trapped in our own paradigms" (MD4 INT1).

This approach to critical thinking did not often come up as the initial definition of critical thinking outside of social work, except in the four examples provided. Instead, participants often reacted to this idea of "examining assumptions" when they interacted with this cluster on the concept map in interview two (see Appendices D and E). When exposed to this understanding of critical thinking, participants often expanded their definitions. For example, a physician-educator relates that physicians have:

> Personal or religious or other views, so being aware of these things and how they might influence your ability to engage in critically thinking about a problem is important and I think there's no way that a human being who has a brain and has a social structure behind them doesn't have some underlying assumptions about how things might go or the type of interaction or what they think is normal and I think that's definitely huge in the background. It's all this autonomic stuff you don't think about that's sort of influencing your behaviour that you may not even be aware of. I think this is one of the most difficult things to do because to examine your assumptions you have to actually know that there is a different viewpoint. You have to be so aware and have a broader view and that, I think, is hard to do because it sort of feeds back to the whole idea of culture. .... If you haven't been in the various areas where people think differently or live differently, you might not be aware. You won't be aware probably. (MD1 INT2)

Another participant adds:

> Considering your own perspective and own biases and own background of knowledge and way of thinking about the world is definitely really important to be aware of. … There's very few people who can really honestly say that they understand what their assumptions, values, and ethics are … and can sort of put those aside

> and I don't know that you should put those aside necessarily. (MD2 INT2)

However, reactions to this "corner" of the concept map did not necessarily mean that participants fully incorporated this approach within their own understanding of critical thinking. Instead understandings of critical thinking remained somewhat resilient. Participants often took an ambivalent stance toward critical thinking as examining assumptions. This participant (MD2 INT2) goes on to explain:

> I haven't really thought a lot about that and how it relates to what I do. I mean I guess we certainly see a wide spectrum of social and economic status and cultures and things and recognizing that our system is kind of biased against certain groups as it is and knowing that but really not having a good sense of knowing even where to start deconstructing it and not being in a position where I am actually in a position to be able to do that anyway, in any grand scheme of things. (MD2 INT2)

Likewise, another participant remains ambivalent: "it's nice to have some morals in the background of what you're doing but I don't think … critical thinking should be linked to being social, politics, religion, or any of that. I think it should be freer than that" (MD1 INT2). Another adds, "I think examining assumptions relates to reflection. … I would not necessarily think of those as being specific to critical thinking, personally. When I look at them, I go "yeah, I could see how somebody would think that" (MD3 INT2).

Others rejected this cluster of understandings of critical thinking. Reacting to the concept map, one participant is surprised: "social justice, that's amazing. I'm really

surprised. I would have deleted the other stuff on the sheet and obviously I'm totally wrong but social justice has nothing to do with critical thinking, advocacy has nothing to do with critical thinking" (MD4 INT2). Another participant, coming from a more humanistic stance emphasizes that:

> Cancer can strike anybody right? There is no respect for your position or your power or your anything and I think I've come to that stage where I don't see so much the difference in power, money or whatever. It's the person and the person is dear just because they are the person. (NUR4 INT2)

This participant sees critical thinking as explicitly not related to "structural invitations" and societal barriers; instead, they focus on the individual and a more clinical reasoning-based understanding of critical thinking.

Finally, one participant from social work has, at times, a particularly troubled relationship with critical thinking. Predominantly, this participant understands critical thinking as examining assumptions or bias: "critical thinking, for me and maybe for our faculty, is around things like … recognizing your own bias and recognizing the bias in the world, different aspects of the world" (SW1 INT1). However, there are moments where they appear to view critical thinking more as clinical reasoning, relating that: "critical thinking seems to be a neutral kind of process or – no that can't be true, can it?" (SW1 INT2). Interestingly, this participant expresses some degree of conflict, which will be discussed further in chapter six.

The Role of Discourse and Alternative Views

Commonly, participants from various disciplines saw critical thinking as "examining alternative views" – a sense of being exposed to different opinions, paradigms, cultures, or perspectives. Discourse is also linked to critical thinking as clinical reasoning; however, in clinical reasoning, discourse or discussion focuses on acquiring more information or perspectives on a clinical problem in order to make a more accurate diagnosis or create a more effective management plan. In this paradigm, the purpose of discourse is to challenge one's own thinking. For example, one participant describes the role of the "devil's advocate" and multiple perspectives in critical thinking:

> In order to have effective critical thinking you have to be so-called "thinking outside of the box." I think somebody might even call it "the devil's advocate." And as leaders we often surround ourselves with people that reflect our own beliefs and our own thinking. In order to be effective as a critical thinker you have to be open-minded enough to welcome the ideas of people outside of that group. … To be an effective leader and an effective critical thinker is to welcome the ideas of others and not feel threatened by that. And if you don't do that – it goes back to critical – it means that you're not critical of your own thinking and I think a lot of leaders fall down like that because they've not, they feel threatened by people that think differently to them. (MD4 INT1)

In another example, the participant relates that students "need an opportunity to have an open discussion to think critically about a situation, to consider why other people come to

conclusions that might differ from theirs. So I think it's a building block to becoming a good critical thinker" (NURS2 INT2). Similarly, in discussing critical thinking as "understanding how your clients become your clients" participant SW4 also stresses the importance of alternative perspectives, elaborating later that "getting opposite information from your belief system I think is important. … Get a sense of what it is that they're saying, why their point of view is different because that always invites the possibility of transitioning in terms of your thinking" (SW4 INT1).

Similarly others relate that "entertaining the other's perspective" is an important component of critical thinking. These participants consider critical thinking as requiring the thinker to not only listen to other perspectives, but to attempt to suspend their own beliefs and to entertain another person's perspective. Critical thinking is "not just, 'Oh, there's another position,' but actually fully exploring those things. Critical thinking isn't just criticism – it's not just criticizing, 'oh, that's terrible.' That's a moral position – but trying to understand more deeply what that other position is" (SW1 INT1).

In this sense, critical thinking is embedded in social, discursive spaces. There is a sense that discourse is necessary in order to examine alternative perspectives or "entertain the other's perspective" in a meaningful way – there must be an encounter with others. Several participants who emphasized this understanding of critical thinking identified their epistemological orientation as social constructivist (NURS2, SW1, SW3, SW4).

The Role of Emotion

Much like approaches to critical thinking based in reasoning, the role of emotion came up as contentious within this understanding of critical thinking. There were several different approaches to emotion. One participant saw the process of becoming aware of

one's own bias or assumptions as an emotional as well as cognitive process, describing strategies for inviting students to:

> Connect to the process of making that emotional change which is part of the critical thinking change. The thing that I struggle with mostly with the critical thinking stuff I read … is it really did not understand the emotional. I don't think it ever connected to the emotional work that needed to happen for critical thinking to actually happen. (SW4 INT1)

Another participant discusses a connection between emotion and recognizing alternative perspectives. They suggest that: "that's part of it – this emotion I'm feeling is allowing me to see this in a particular way. Other people might feel emotional about it in a different way. … The analysis includes the emotional piece as well" (SW1 INT2). Here, emotion is a vehicle for understanding others' perspectives.

Other participants felt more ambivalent about the role of emotion in critical thinking. For example, reacting to an area of the concept map dealing with emotion (see Appendices D and E), one participant is ambivalent about directly linking emotion and critical thinking. However, they relate emotion to compassion or "unconditional regard" in their understanding of critical thinking:

> That sense of respect is more [significant] for me than emotion … But compassion is really – for me it's really about a sense of awareness and emotion of feeling at peace. … I think the whole notion of unconditional regard and compassion are perhaps personal attributes that – I know they relate to critical thinking. … And so

> critical thinking is an instrument that is aligned with those two for me. (SW3 INT2)

Finally, one participant oscillates between understanding critical thinking as reasoning and critical thinking as examining assumptions. Here, they allude to the idea of setting aside emotions that arose in the reasoning approach, but remain ambivalent:

> I guess I don't see emotion and critical thinking as connected but there's – I don't know why not. Yes, because often critical thinking almost – you have to – you can't take things personally and maybe emotion, maybe that's what I mean by – you have to be able to give and take. Give criticism but also take it as well. Empathy – I guess you can empathize and say "well, I see how you're looking at this but have you looked at it from this way?" Maybe that's empathy. (SW2 INT2)

The Role of Advocacy

Just as the reasoning approach to critical thinking was linked to decision-making, the examining assumptions approach, with its ties to social justice, is linked to the notion of advocacy. In both approaches, critical thinking is linked to action. In the words of one participant:

> It's not just the critical thinking but also the ability to take a stand and defend it, and be an advocate because part working from a policy perspective as a social worker is advocacy. If you're going to be an advocate, you have to be informed, you have to be passionate, and

> you have to be able to take a stand and articulate a stand. (SW1 INT1)

In interview two they add:

> Critical thinking does ignite some kind of movement or motivation to move in a different direction. … We want to somehow motivate social workers to not accept the status quo and to maybe work in a different way, which may require advocacy. … [Advocacy is] part of the goal [of critical thinking], igniting people to action whether that is advocacy or if it's something else. Advocacy might be part of it. (SW1 INT2)

Likewise, another participant sees advocacy as an outcome of critical thinking:

> Naturally when you study something and you really reflect on it and you are considering all these perspectives then you do get passionate about things and if you really want to be an advocate, … to me maybe this is an outcome. … You can't really remain neutral on things if you've really critically thought about it and then that makes you a bit more passionate, you have more social responsibility. (PHARM1 INT2)

Another participant agrees that: "takes a position and advocates and takes action. I think that is a good kind of way to look at that [critical thinking]" (SW2 INT2).

Lastly, one participant notes a hesitance regarding advocacy:

> It may or may not include advocacy. … Depending on the status quo, if in fact historically a group or community hasn't been included in

> participating, in receiving opportunities for employment or education, advocacy is necessary in order to bring those interests to the table right? … However, sometimes in social justice, in my mind you are not ready to pursue advocacy because there's background, you are trying to have an appreciation for the entire complexity or the context and maybe that's pre-advocacy where – the preparation for advocacy – you are not always actively engaged in that because maybe you don't have the full appreciation of the picture. Sometimes we are too quick to pursue right into activist mode right? (SW3 INT2)

In other words, advocacy resulting from critical thinking must be informed rather than reactionary.

Overall, this approach to critical thinking has at its core an analysis of the ways in which structural and social inequalities constrain individual behaviour and limit individuals' access to social goods – including wealth and social services. Attendant with this perspective is an understanding that these inequalities are working "invisibly" through a series of assumptions that are both individual and social in nature; examining and addressing these assumptions and prejudices is at the core of this understanding of critical thinking. Participants understanding critical thinking as examining assumptions often linked critical thinking to social justice, hearing alternative perspectives, and advocacy.

Critical Thinking as Personal and Interpersonal

A third core understanding of critical thinking draws on humanism and the "freedom and dignity of the individual person" (Elias & Merriam, 1995). In this approach, bettering the self and others is both the process and the goal of critical thinking; in other words, humanistic critical thinking takes place through a process of working to understand and actualizing the self, but with a broader social goal of enhancing the autonomy and self-actualization of others. This approach differed from examining assumptions, which also has a social goal, in that it did not focus on structural invitations or social critique. Instead, participants approaching critical thinking as person and interpersonal focussed on the value of the individual and of relationships. Humanistic understandings of critical thinking were often intertwined with other approaches – these conflicts and interconnections will be discussed further in chapters five and six.

The personal and interpersonal approach to critical thinking is captured best by participant NURS1. Critical thinking is seen as:

> Thinking about something for the betterment of ourself and the betterment of others. We're social beings as human beings. … So that, in itself, I think helps us to make better decisions…. It's the purpose. I think it [critical thinking] has a higher purpose. … … But I think that [if] critical thinking … [is] a human trait that we have or hope to have, then it has to have those components of what we are as humans. (NURS1 INT1)

In the second interview, they add that if you:

> Put the person, the human, first then the critical thinking is a real part of being able to exist in the world and as a person. What are the characteristics that you should have that will assist you in being a good thinker and applying it for the good purpose? (NURS1 INT2)

Likewise, another participant emphasizes that: "a great part of critical thinking is that human element and the consideration of ultimately what's a good thing, a common good" (NURS2 INT1).

Figure 4.3. Critical Thinking as Personal and Interpersonal

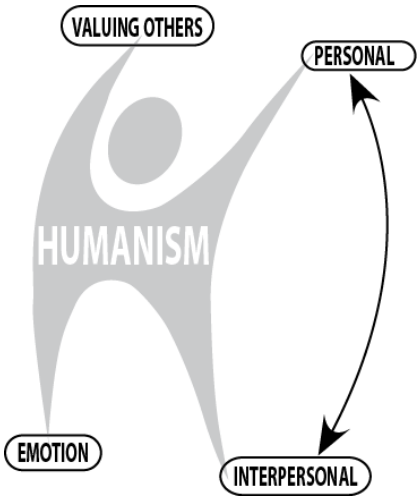

Figure 4.3. The personal and interpersonal approach to critical thinking. In this approach, participants focus on critical thinking as both a personal process and interpersonal process. This approach frequently emphasises valuing others and valuing relationships. Thinking and emotion are viewed as inextricable.

This sense of critical thinking as having a social purpose is also linked to better understanding one's own values and ethics: "I think in nursing – especially nursing, well, I guess all medical fields – the personal values and ethics, especially the ethics, have such

an influence on your care and how you value people" (NURS 4 INT2). In discussing the teaching of critical thinking, another participant adds that:

> We would take time to talk about values that are cornerstones for us regardless of what positions we move through as social workers. So I talk about relationship being a key aspect that for me needs to be present prior to working with people. I talk about self determination so regardless of capacity I want to invest in personal agency because it's critically important for how individuals use themselves in relationship but also how they contribute their interests in this world and each of us have an opportunity to do that. I talk about resiliency that people have the ability to change regardless of a trauma, in a way that is not necessarily prescribed from a medical model. (SW3 INT1)

As this quote suggests, humanistic understandings of critical thinking are often positioned as an alternative to, or of equal importance as, more positivistic approaches to thinking and clinical care. In another participant's words, "having to think of somebody else, at their most vulnerable, makes you know that knowledge alone, science alone, won't get that patient to the place you want the patient to be. It won't provide the best care" (NURS1 INT1). Another participant laments the erosion of personal relationships in medicine over time:

> A lot of the students are very smart and they've got the knowledge, but … we're forgetting about the human element of it and that's a huge concern. I think that a lot of the profession right now, a lot of us

> are very concerned about the direction that health care is going because we're forgetting that we're dealing with real people, with real lives. (MD4 INT1)

Valuing the Other's Perspective

Given that this perspective on critical thinking places intrinsic value on preserving the dignity and personal agency of others, it is not surprising that it has a strong discursive component. As the quotes above suggest, critical thinking is relational. Many times, the sense of "valuing the other" in critical thinking is entangled with the emphasis on "entertaining the other's perspective" that often arises as a component of critical thinking understood as examining assumptions. These two ideas are not easily separable. However, there is a sense that in humanist understandings of critical thinking "valuing the other" is an end in itself, whereas in discussions about critical thinking as examining assumptions, entertaining the other's perspective is more about challenging one's own perspective in order to better understand one's assumptions.

Valuing the other's perspective is also enmeshed with challenges to "hard" data in reasoning-based approaches to critical thinking. There is a tension between "listening to patients" as a means of acquiring and transmitting necessary clinical information and "listening to patients" as an end in itself, a crucial piece of human interaction and care. In my view, though these two motivations for interacting with patients appear to come from different paradigms, participants often simultaneously see the need to gather data for clinical reasoning and engage with a humanistic sense of relationship building. For example, one participant relates that in their work:

> You're valuing the other person's perspective. I think that's a big part of critical thinking, and you realize that you've got a perspective, you probably think it's better than the other person's, but now realizing that unless you value their perspective you're not going to be able to be effective with them because you need to teach, you need to come to that common understanding. (NURS3 INT1)

Another adds that:

> I think it doesn't matter what kind of expert you are, you have to be able to think about patients in the context that they're in and consider what the patient has to say, and really hear them. … There's a total lack of critical thinking in "I'm just going to get through this next patient to the next one." (MD1 INT1)

Overall, humanistic approaches to critical thinking are intertwined with understandings of critical thinking as reasoning or as examining assumptions. However, there is an underlying concern with human, personal, and relational aspects of critical thinking that do not fit neatly within the other reasoning or examining assumptions approaches to critical thinking.

The Role of Emotion

In humanistic approaches to critical thinking, emotion is emphasized to a greater extent, and is seen as integrated with critical thinking, rather than a supporting process. Some understandings of critical thinking see reasoning as a human reaction that gets in the way of critical thinking. Participant NURS1, who offers the most consistently humanistic approach to critical thinking, relates that "the neuroscience that is now

coming out says everything is processed through our emotions. … People who are really in touch with their feeling and emotions are maybe highly critically thinking at that time" (NURS1 INT1). In interview two, this participant reinforces that critical thinking processes:

> Are cognitive and they are emotional and I think the two, as I said to you, are not separate. … We often think of critical thinking as a higher level cognitive thinking but if you are to respond to the process and to push yourself, I think you have to engage in the moment of feeling, being, doing, interacting, being respectful. (NURS1 INT2)

Another participant, after examining the concept map, emphasises:

> I've noticed that's a problem in a lot of kind of thinking about thinking, is that emotion is seen as a separate thing. You know it's always on the list but it's a part of the list when really it underlies so much of each component and it's very hard to put into a diagram like this because if anything it's almost the foundation. (PHARM4 INT2)

Critical Thinking as Reflection

The words "reflection" or "reflective" came up many times when participants discussed critical thinking. Related concepts of self-awareness, reflexivity, or reflective practice also came up often in discussions. Participants brought up the terms reflection, reflexive, or reflective appeared in eleven of sixteen initial interviews; all participants saw critical thinking and reflection as related concepts in the second interview. However, much like the term critical thinking, reflection tended to mean different things to different

people. What participants meant by reflection – not surprisingly – often mirrored the clusters of meanings for critical thinking explored earlier.

Reflection could be directly linked to the clinical reasoning process. For example: "I think you can reflect but if you're not able to use that reflection and apply what you've learned later on, then it doesn't support, it doesn't really advance the clinical thinking, or critical thinking or clinical reasoning" (MD2 INT1). Most discussions about reflection in clinical reasoning described reflection as deliberate and retrospective; however, participants also discussed reflection "in action," as described in my literature review:

> We underestimate how much we talk about conscious and subconscious. If you start that instead of reflection in the moment because reflection seems to be a post – so post-something you reflect. But sometimes in the moment you're slowing things down. … You're reflecting on the last one pulling the knowledge as well as the context and you're reflecting actually in the moment – you're slowing things down to reflect in the moment because people will say actually you can't, but I think you can. (NURS1 INT1)

This quote also offers a parallel to the discussion above regarding the relationship between "system 1" thinking and critical thinking; the participant suggests that system 1 thinking – an approach seen as more subconscious – can also be included in an understanding of reflection. Discussing the two-systems model, another agrees that "reflection fits into the using both processes, right? If you are using a non-analytic process and you reflect on, "okay, is there anything else that I should think about? Is there something I'm overlooking?" (MD3 INT1).

Reflection is also an important concept in the "examining assumptions" understanding of critical thinking. For example:

> If we want people to kind of reflect on the information that they are receiving or the value base of the profession or whatever it is that we are thinking about, we have to also identify and examine our personal values to understand how those kinds of things influence our thinking or limit our thinking or open up our thinking in other ways. (SW1 INT2)

Another adds: "the instrument [of critical thinking] is of course reflection and reflexivity, which require an appreciation of self awareness and social location" (SW3 INT2).

Likewise, terms like reflection and reflexivity appear under the humanist understanding of critical thinking. There is a focus on understanding the self and others on a personal level. One participant speaks to the importance of using reflection to maintain relationships: "I think that's the reflective piece where I'm thinking about the other and how to help them … and it's more on a personal level … but then you still have to put into the context of the relationship" (NURS2 INT1).

Critical Thinking as Dispositions or Characteristics

In chapter two, I discussed the American Philosophical Association's Delphi consensus on critical thinking (P. A. Facione, 1990). The Delphi study included critical thinking "dispositions" in its definition of critical thinking, though, as I noted, about a third of participants in the Delphi study felt that critical thinking should be defined exclusively as a process or set of procedures. This tension is also reflected here.

Several participants saw critical thinking as a process and, when interacting with the concept map in interview two, were ambivalent about whether dispositions or characteristics were part of critical thinking. One participant sees "dispositions" as "a given," rather than a part of critical thinking, which is seen as a process:

> So it [the concept map] talks about characteristics of the critical thinker right? I'm like "well, yeah" all of those I would agree that, they [students] need to be engaged, excited, creative, respectful, inquisitive, etcetera and you know, empathy, emotion – I think all of that is important but I wouldn't necessarily have defined critical thinking by those characteristics. (MD1 INT2)

Another participant sees dispositions as subordinate to the process of critical thinking:

> I really like the open to new ideas and I guess that's obvious that you are willing to change your perspective. That's not even critical thinking though. That's just –I don't know even know if I would put that into critical thinking. That's even lower level to me. It's not right or wrong. … Maybe it is critical thinking but at a lower level to me. (PHARM1 INT2)

Others saw dispositions or attitudes as a crucial component of critical thinking. One participant, familiar with the Delphi consensus relates that:

> I do like that Facione's description of critical thinking as being a skill set as well as a set of attitudes. And some ideas around, you can have all the critical thinking skills in the world. But you won't be a really good critical thinker unless you also have some of those aptitudes or

> attitudes around critical thinking and open-mindedness and inquisitiveness is certainly, I think, one of the keys. (NURS2 INT1)

Overall, even participants who questioned the inclusion of dispositions tended to, at times, describe people doing critical thinking both through "what they do" and by describing "how they are."

Finally, in the second interview one participant reacted to the idea of characteristics of the critical thinker, arguing that language of characteristics:

> Implies that it's some kind of inherent skill. It's a dangerous word because, is that a learned skill? Is that practiced? Is it even a permanent skill? It's something that needs maintenance, right? (PHARM4 INT2)

Most other participants agreed that critical thinking is, at least to some extent, learned. Encapsulating most comments, one participant relates, "I think it's something that can improve, but I think there are actually people who are naturally better at it than others" (MD2 INT1). Most suggested that both critical thinking skills and dispositions could still be honed or improved.

P. A. Facione (1990) lists 19 critical thinking dispositions, drawing on the Delphi consensus:

- Inquisitiveness with regard to a wide range of issues …
- Self-confidence in one's own ability to reason
- Open-mindedness regarding divergent world views
- Flexibility in considering alternatives and opinions
- Understanding of the opinions of other people …

- Honesty in facing one's own biases, prejudices, stereotypes, egocentric or sociocentric tendencies …
- Willingness to reconsider and revise views where honest reflection suggests that change is warranted
- Clarity in stating the question or concern,
- Orderliness in working with complexity
- Diligence in seeking relevant information
- Reasonableness in selecting and applying criteria
- Care in focusing attention on the concern at hand
- Persistence though difficulties are encountered
- Precision to the degree permitted by the subject and the circumstance. (P. A. Facione, 1990)

These dispositions are also mirrored in more recent attempts to define critical thinking (Andrews, 2015; Davies & Barnett, 2015a). Given the persistence of these categories in the critical thinking literature, it is perhaps not surprising that many participants in this study touched on some or all of them. However, a few additional characteristics or dispositions were prominent in both the first and second interviews, including: open-mindedness, curiosity, confidence, creativity, and a methodical or orderly approach.

First, critical thinkers were often described as “open-minded.” To think critically, one had to listen to alternative perspectives, echoing processes already discussed, and to change one’s mind with sufficient evidence. In discussing critical thinking, one participant maintains that:

> There was a study done in Boston at Harvard several years ago where they looked into doctors that were considered by their peers to be very good clinicians, compared to those who were thought to be weaker, and one of the biggest differentiating features between the two is they were willing to change their minds. So, in other words, I don't get fixated on this, and I'm humble enough to say when I might be wrong and to change my mind if a piece of information shows up that doesn't fit the clinical picture. (MD4 INT1)

Likewise, others agreed that: "you won't be a really good critical thinker unless you also have some of those aptitudes or attitudes around critical thinking and open-mindedness" (NURS2 INT1). These discussions were also linked to the importance of alternative perspectives in critical thinking; students should be open to "other ways of seeing and understanding points of view" (SW3 INT1).

Closely related to open mindedness, curiosity or inquisitiveness was seen by several participants as an important characteristic of critical thinkers. One participant relates: "the characteristics – inquisitive I think is a good word, that always questioning, wanting to know and open to new ideas seems linked and important" (PHARM2 INT2). Though many participants often used the word "curious" or "inquisitive" when describing an example of a critical thinker, they rarely elaborated; for example, one participant reacts to the concept map, agreeing that "respectful, inquisitive, engaged … those are the ones that resonate with me" (NURS4 INT2).

Confidence was also discussed as an important attribute of critical thinkers – critical thinkers had to be confident enough in their ability to think through a problem in

order to attempt it. Confidence was also required in order to express an opinion and test that perspective. For example: “one thing that impairs people [in their critical thinking] … is when they’re really nervous and insecure. They don’t believe in themselves. They might know it but they don’t actually believe in themselves (PHARM4 INT1). Another participant relates:

> Here we come back to the confidence piece, to question knowledge. When I think about clinical situations and the interdisciplinarity of clinical situations, that confidence and self-efficacy is really important because based on historical power relations among disciplines, there may not be confidence or the custom that certain people are questioned or that certain information that you received from others is such that you can question it. (NURS2 INT2)

In this sense, questioning received knowledge is a crucial component of critical thinking but cannot be done without confidence in one’s own perspective.

A few participants questioned the link between critical thinking and confidence. One participant’s perspective changed over the course of two interviews. Initially, this participant had linked the two quite closely; however, later they convey “that the assertiveness comes to what I would perceive as one's effectiveness, but doesn't necessarily speak to whether or not they have the process or are thinking critically, just on what they're saying” (PHARM2 INT1). In other words, critical thinking can go on “behind the scenes,” though educators aren’t able to assess it when students do not have the confidence to articulate their perspective.

When reacting to the concept map, another participant discussed the limitations of confidence in critical thinking:

> I know that for my own self, as I told you, I tend to be overconfident and, after the fact, someone will point something out. So confidence to a point I would say is important but I would say overlaps to the previous one, willingness to change your perspective. (MD4 INT2)

Creativity was another characteristic linked to critical thinking for many participants. In describing an example of a critical thinker, one participant emphasises:

> One of the things that make her an absolutely brilliant critical thinker is that she is incredibly imaginative and creative, so she can take the information and always is able to think outside the box and bring something fresh and new to it. … She's not somebody who is stuck on the norms of how it should be or what the rules are. (MD1 INT1)

Several other participants agreed that critical thinking involves "creativity as well, thinking about alternatives that aren't necessarily readily available or readily evident" (SW1 INT1).

Critical thinkers were described as methodical several times during the first round of interviews when participants were describing a person that they thought of as a great critical thinker. For example, "critical thinking is … being methodical in attempting to look at … the literature or the experience that is out there that gives evidence to something. That's the methodicalness about it" (NURS4 INT1). When speaking to their own examples, others added, "she's quite thorough, methodical, organized" (NURS2 INT1) or, when "I think of someone, she's very logical and methodical" (PHARM 2

INT1). In the second round of interviews, others disagreed, positing that being too methodical could interfere with creativity or "system one" type thinking: "I think if you're too methodical you kind of lose it on some heuristics and some of that common sense. So I don't think it's a be all end all" (MD2 INT2).

Overall, characteristics or dispositions of a critical thinker were prominent in many participants' descriptions or critical thinking. However, what these dispositions were and the degree to which these various dispositions were "traits" – relatively fixed abilities – or "states" – attitudes that are learned and appear only relative to the context – was contentious.

Summary

This chapter has addressed key findings related to my first research question: how do health professional educators understand critical thinking? The first three core categories examine the process of critical thinking. These categories closely map to the framework I used in my literature review, using Walters (1994b) and McLaren's (1994) "waves" of critical thinking. My methodology did not involve coding through these categories initially. However, I did find that as analysis progressed, the categories served as an effective way to frame the data. Thus, understandings of critical thinking in this chapter are framed as: 1) positivistic or post-positivistic reasoning process, 2) a process of examining societal and personal assumptions, and 3) as a humanistic approach to personal and interpersonal development. These categories were rarely discreet – participants might draw on one or more approaches on critical thinking during the course of the interviews.

In addition to framing my data through the three "approaches" in my literature review, I have added two categories drawn from elsewhere in the literature – critical thinking as reflection and critical thinking as dispositions or characteristics of the thinker. As with the previous categories, these overlapped with and were frequently discussed within each of the former three categories. Not surprisingly, no single understanding of critical thinking was universally agreed on, reflecting participants' very different contexts, experiences, and perspectives.

In chapter five, I build on data laid out in this chapter, focussing on my second research question: how does an educators' unique personal and professional experiences inform their understanding of critical thinking? I examine how educators draw on experiences and values from particular contexts in constructing their understanding of critical thinking. More specifically, I look at how professional program, practice setting or specialization, institutional context, and personal contexts impact how educators understand critical thinking; as suggested in this chapter, these contexts are interwoven and result in unique and shifting constructions of critical thinking.

CHAPTER 5: CONSTRUCTING CRITICAL THINKING

This chapter discusses results related to my second research question: how do educators' unique personal and professional experiences inform their understanding of critical thinking? Critical thinking is a loaded term, standing in for "good thinking." Understandings of "the good," in turn, are a product of the unique belief and value system of each individual. These systems are produced in and through the shifting social contexts in which individuals move, and are themselves shifting. No two participants had identical understandings of critical thinking. At various times participants linked their understandings of critical thinking to their social contexts, including: profession, practice context or discipline, institutional context, and personal context.

Given that professional groups organize much of healthcare and health professions education systems, it is not surprising that professional program impacted how participants viewed critical thinking. It was linked to "good thinking" in that profession, thinking "like a physician" or "like a nurse."

However, other contexts compete with understandings of critical thinking generated within a given profession. For example, participants discussed a sense of thinking "like an internist" or "like a geriatrician." At times these practice context-specific approaches to critical thinking appeared as a subcatetgory beneath critical thinking for each professional group. However, at other moments understandings of critical thinking tied to practice context were more significant than those tied to profession. Participants' experiences in working with their particular patient group and the thinking requirements of that context significantly structured understandings of critical thinking.

Institutional context was also significant in participants' understandings of critical thinking. Professional program and institutional context often overlap given that these academic programs are structured around professional groups; however, participants discussed aspects of critical thinking that were unique to a particular institutional place and time. For example, scope of practice changes tied to regulatory bodies and the provincial government's legislation impacted how pharmacist educators understand critical thinking. Likewise, institutional factors unique to the Faculty of Nursing at the U of A impacted participants' understandings of critical thinking. Thus, participants' experiences within an institutional context result in understandings of critical thinking that are situated in a particular place and time – these understandings are thus unlikely to translate across institutional contexts. However, the ways in which critical thinking is bound to institutional contexts and local experiences is an interesting result in itself.

Finally, participants discussed how their personal experiences relate to their understandings of critical thinking. "The personal" is a broad and complex category, unique to each individual. The diversity of personal experiences is a major factor in the idiosyncratic character of participants' understandings of critical thinking. For example, participants spoke to their family background, religious background, and current family context when they discussed their thoughts on critical thinking, and how they came to understand critical thinking in the way that they do.

Professional Contexts

Not surprisingly, educators within a given profession have some common conceptions about how they, as a group, think. One educator articulates: “I've always thought about it [critical thinking] specific to medicine and how we think about patients and how we think about patient problems” (MD3 INT1). In the preceding chapter, I noted a few differences between the ways that educators from different professions in this study understand critical thinking. That said, with only four participants from each professional group it is impossible to generalize. Additionally, participants are likely not representative of (for example) physicians, or even of academic physician-educators. As I noted in my discussion of delimitations, they occupy a unique space as practitioner-educators located in academia, who are also interested enough in “critical thinking” and in teaching and learning to volunteer significant time to participate in this study. Moreover, in this study I have sought to appreciate the complexity of overlapping activity systems and the multiple understandings of critical thinking that stem from them. Creating stable definitions for each professional program would be at odds with such a goal. Nonetheless, it is useful to map the ways in which understandings of critical thinking are aligned with a profession-specific perspective, which, not surprisingly, many participants saw as significant in their understanding of critical thinking. However, as I suggest in the introduction to this chapter, professional group is one among many overlapping contexts through which participants construct their unique understandings of critical thinking.

Medicine

Educators in medicine tended to focus on reasoning-based approaches to critical thinking outlined in the previous chapter. This approach to critical thinking appears tied to the context of their work, where thinking focuses on diagnosis and treatment of individual patients. The activities of gathering, evaluating and interpreting clinical data for the purpose of decision making or building a management plan figures prominently in each physician-educator's understanding of critical thinking. Links between critical thinking and clinical reasoning were clearest and strongest in medicine.

When presented with the concept map in interview two, participants were asked to identify part or parts of the map that most resonated as representing critical thinking. All four participants from medicine focussed on the upper right quadrant, and three of the four pointed out "clinical reasoning" as best capturing their definition of critical thinking: "I think the one that, to me, that makes the most sense with what I do day to day and try and teach is the clinical reasoning and that kind of thing" (MD2 INT2); "I think of critical thinking, trying to distinguish if critical thinking is beyond what I would call clinical reasoning, like reasoning in the clinical context" (MD3 INT2); "it's got everything to do with reasoning, which makes sense" (MD4 INT2).

Discussions about the two systems model of clinical reasoning, and the relationship between system one thinking and critical thinking were prominent among participants from medicine. Participants from medicine were divided on whether system one thinking should be included in their understanding of critical thinking. One participant felt that "I think it's [critical thinking is] really good pattern recognition and taking all the pieces and being able to sift what's important and what's not, and what's

relevant and not, and fit those all together" (MD2 INT1); another described an understanding of critical thinking as "toggling" between the two systems (MD3). The other two participants focussed more on system two, a deliberate and rational approach to thinking, explaining that system one thinking "would have a very minor relationship to critical thinking" (MD4 INT2), or that system one offers "an initial reaction to the questions and the data that you're presented with, but rarely is that where you stop" (MD1 INT2).

Interestingly, medical educators were unsure about whether "examining assumptions" and related concepts could be included under the umbrella of critical thinking. For example:

> I've kind of heard of the terms. I would be hard pressed to really be able to unpack them very well in terms of – I've heard deconstructing privilege but I don't have a really good vehicle for understanding what those kinds of things mean. I haven't really thought a lot about that and how it relates to what I do. I mean I guess we certainly see a wide spectrum of social and economic status and cultures and things and recognizing that our system is kind of biased against certain groups as it is and knowing that but really not having a good sense of knowing even where to start deconstructing it and not being in a position where I am actually in a position to be able to do that anyway, in any grand scheme of things. (MD2 INT2)

In this quote, there is a sense that examining assumptions is somewhat of a foreign concept for this participant. This sense of "foreignness" was not uncommon among

participants from medicine. The participant relates that they "haven't really thought a lot about that and how it relates to what I do" and that they do not "having a good sense of knowing even where to start." Likewise, another participant reacts by saying, "I would not necessarily think of those as being specific to critical thinking, personally. When I look at them, I go "yeah" I could see how somebody would think that" (MD3 INT2).

Both of these quotes demonstrate a sense of ambivalence – placing examining assumptions neither inside their understanding of critical thinking, nor outside of it. The other two participants in medicine both stated that they would include parts of the examining assumptions cluster in their understanding of critical thinking – particularly "examining assumptions" and "considering alternative views." However, this category was not central to their understanding and, often, they included these understandings more in the sense of examining the accuracy of data or previous diagnoses. As I have noted, in my view this understanding fits more with clinical reasoning approaches to critical thinking than with examining assumptions approaches prevalent with social work participants.

Social Work

Participants from social work often reacted to reasoning based understandings of critical thinking and sought to challenge understandings that they perceived as dominant through an examining assumptions approach. One participant relates that:

> I am more familiar with or more used to kind of this language here [bottom right of the concept map]. Examining assumptions, this just seemed much more – I guess maybe within our discipline. Social

> justice, deconstructing privilege, all those things seemed to be very familiar. (SW1 INT2)

As opposed to focussing on critical thinking in specific patient cases, social work participants tended to discuss critical thinking as occurring primarily at a societal level – examining cultural assumptions. This understanding of critical thinking is intimately tied to social justice. While there is always some similarity between understandings of critical thinking in the fields of medicine and social work, the core process understood as critical thinking is framed very differently within these disciplines.

Additionally, social work educators emphasized dispositions or characteristics of the thinker – they were more likely to construct critical thinking as a disposition compared to participants from medicine. Two participants pointed to the characteristics segment of the concept map as a core definition: "these are familiar to me ... I think the social/political responsibility and being creative and respectful and inquisitive. I think all of them kind of do [relate to critical thinking]" (SW2 INT2). Another adds: "if I were to select a couple that reflect my perspective around critical thinking, certainly the notion of the characteristics piece of it" (SW3 INT1). This participant goes on to add that the characteristics component of critical thinking "reflects the challenging assumptions … which is also the instrument of reflection and reflexivity, which require an appreciation of self-awareness and social location" (SW3 INT2).

Relatedly, social work educators emphasized the role of discourse or discussion in critical thinking. As discussed in the previous chapter, challenging others and having one's own viewpoint challenged through discourse with people who have different perspectives was crucial in examining one's own assumptions. All four participants

emphasized the role of discourse in the classroom as important to developing students' critical thinking skills.

Nursing

What is most unique about nursing educators in this study is that many had a clear existing definition of critical thinking and some familiarity with the literature on critical thinking. This familiarity is related to a unique institutional context that will be discussed later in this chapter. Other notable features of understandings of critical thinking in nursing education included a focus on the personal and interpersonal – a humanistic approach; like participants from medical education, participants from nursing tended to focus on individual patients when describing their understanding of critical thinking.

Although (as with all categories) there is some overlap with other professions and approaches, the humanistic approach to critical thinking is somewhat unique to nursing. One participant discusses valuing the personal and interpersonal in the context of nursing, linking those values to critical thinking:

> Nursing looks at not just an illness and the pathophysiology but what is the lived experience of the illness? What's it like to have this? What does it do to your family relationships? How do you feel? What's it done to the course of your life? (NURS3 INT2)

Critical thinking in nursing is about trying to understand the patient's perspective and experiences. On a similar vein, nursing educators also emphasized the role of emotion and emotional intelligence related to critical thinking: "I always look at emotional intelligence and emotion as – I always think of that word relational as well. … Emotions

are knowledge" (NURS1 INT2). Relatedly, three of the four participants from nursing emphasized discourse and discussion as central to critical thinking.

While most participants in Nursing did highlight personal and interpersonal understandings of critical thinking, NURS4 offers an exception, stressing that:

> The problem solving and the clinical reasoning are so prevalent in what I do. It's sort of like that's what critical thinking is at and where this other side [the left hand side of the concept map] seemed, at least initially, much more sort of emotional or the soft side of things and I don't really see critical thinking as being that. (NURS4 INT2)

However, at other moments, this participant underscores a humanistic notion of caring as the foundation of critical thinking. In relating a story about a time that critical thinking wasn't used, they assert:

> It's the whole aspect of caring. … If people care, they will go further. I always think if that nurse, no matter how young she is – she was a very young nurse – if she would have cared enough she would have said, even if she didn't know what was wrong, "what could go wrong?" … So it's that caring enough for your patient, putting yourself aside. (NURS4 INT1)

Pharmacy

For pharmacy participants, problem solving and reasoning were central to critical thinking:

> At least for me the core of critical thinking is problem solving. That's the intent, that it is to try that to assess problems and basically

> solve them or at least come up with the best option that you have and not necessarily the right one but the one that you believe is best. (PHARM3 INT2)

Another identifies critical thinking as the "pharmacy process, which is probably related to sort of the reasoning one [branch on the concept map] and the prioritizing and observing" (PHARM1 INT2). One pharmacy participant included both system one and two reasoning within critical thinking when responding to the concept map: "I'm sort of finding myself … getting into [the] analytical approach, like pattern recognition, experience, intuition" (PHARM2 INT2).

Participant PHARM4 began with a reasoning-based approach to critical thinking, but went on to consistently emphasise emotion as intimately linked to critical thinking. They begin by linking critical thinking to system one and system two thinking:

> [Critical thinking is] a systematic approach to something, usually problem solving. So for pharmacy, a lot of it has to do with problem solving. And I think that's what they mean by critical thinking where you have to look at all your options and actually weigh everything. And some of that might happen very quickly and almost subconsciously. But you know it's happening, and kind of being aware of it, and then learning to tweak it. (PHARM4 INT1)

However, this participant also emphasises the role of emotion in critical thinking:

> The first thing is the idea of separating emotions. How is that even possible as a human being? We are emotional people. We are not rational beings. We rationalize things but we are not rational. So in

> the end it is self defeating to try to even be this thing that's above the emotions as if the emotions are hindering the thinking. There are a lot of technical activities where at that moment you may separate emotions so I can see why people think that way, but in the end it's so self defeating in the long run to distance yourself from emotions. … You get to a point of more mastering your emotions and actually being able to use them properly and not have them take up the cognitive space in your mind where it's more fully integrated. It's a level of mastery. (PHARM4 INT2)

Another key feature of critical thinking among pharmacy participants is an emphasis on "challenging the status quo" or "adapting processes." Participants link this understanding of critical thinking to changes in the profession itself.

Practice Contexts

While some participants described themselves as generalists (NURS3, NURS4), other participants' understandings of critical thinking were deeply embedded in the practice context in which they work. This was particularly true of Medicine, where all practicing physicians undergo postgraduate residency training in a particular specialty. Moreover, academic physicians – the sample group for this study – often undergo further subspecialty training. The emphasis on subspecialty was also more marked in pharmacy. Likely contributing to this focus in medicine and pharmacy, faculty members in these two

professions tended to maintain a clinical practice[3]. Participants from Social Work and Nursing rarely maintained a clinical practice. This is not to say that participants in nursing and social work did not speak to critical thinking in the context of their specialty; rather, the specialty context tended to feature less prominently than for participants who maintained a clinical practice. Noting this difference, one participant from Nursing remarks that "our clinical tutors probably view critical thinking a little bit more directly in relation to nursing practice and nursing actions and making sound judgments with respect to nursing practice" (NURS2 INT1). This distinction is certainly a feature of each faculty's academic staffing model – a part of the institutional context.[4]

Practice context has a great impact on the kind of work that practitioners do on a day-to-day basis. For example, clinicians working in emergency medicine have a very different pace to their work and very different expected outcomes than practitioners working in geriatric care. Thus, while there are some common interpretations of critical thinking for educators in a given profession, understandings of critical thinking are also linked to specialty and practice context. One participant articulates:

> People use critical thinking and your understanding, my understanding would be completely different, but contextually we

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[3] All participants from medicine maintained a clinical practice, while three of the four participants from pharmacy practiced clinically. One pharmacy participant noted, though, that this was not the norm for the faculty members in pharmacy at the U of A. Participants from social work and nursing often had some relationship with the practice setting through practicum supervision but only one participant from nursing maintained a part-time independent practice.

[4]In medicine, physician educators are most often cross-appointed clinically with Alberta Health Services (or other health service institution like Covenant Health) and with the University's Faculty of Medicine. Pharmacy offers part-time release for some faculty members (including participant PHARM1). At the time of Interview 1, participant PHARM2 had only taken a full-time position at the University with in the last year and participant PHARM4 worked primarily within a private pharmacy while taking practicum students and periodically taking on teaching activities in the Faculty of Pharmacy and Pharmaceutical Sciences.

> would be different. I really believe that a surgeon's approach to critical thinking will likely be very different to an internist's approach to critical thinking. … Surgeons, for example, tend to be very structure-orientated, very precise, very decisive, … whereas internal medicine, for example, I think tend to be much more reflective in the way they actually think. So they use a different form of critical thinking. (MD4 INT1)

Here, the participant ascribes different temporalities (fast thinking versus slow thinking) to critical thinking in different specialty contexts, presumably related to the demands of the specialty. Surgeons are seen as making quicker "decisive" decisions, whereas internists are described as more reflective and take longer to make decisions. This participant goes on to add:

> For example, emergency medicine. I'm not criticising any person or discipline, but it's a very fast-paced environment and I think that a lot of times decisions are made very quickly. And sometimes if something doesn't quite fit, it's very easy to ignore it and say, "well, it clearly looks like this. It's got most of the features. Therefore, that's what it is." Whereas once they're admitted and they become in-patients, we have a little more time to think about those things. (MD4 INT1)

Other participants emphasize complexity and ambiguity in their understandings of critical thinking, linking this aspect of critical thinking to the complexity of their patients, usually relative to other disciplines. Often, this idea of complexity is linked to

challenging “hard data,” such as tests and physical examinations, as discussed in the previous chapter. Participants discussed how individual patients’ unique decisions and behaviour challenges their clinical decision-making and increases complexity. For one participant:

> No two patients are alike. I'm constantly being surprised by what I find with patients’ habits. … When I learned it as a medical student, this type of insulin had this half-life and peaked here and here's how you adjust it. They look at this lab test and you do that. This is not like that at all. It is nothing like that. If you take those rote rules, you'll do that to everybody and you'll be wrong 75% of the time. So it's a perfect example of a place where you have to be creative and you also have to be a bit of a sleuth, which involves a little bit of creative thinking. Wow, what are they [the patient] doing here? And then looking to see. (MD1 INT1)

Likewise, another participant situates critical thinking within the context of geriatrics. Elderly patients often have multiple co-morbidities; moreover, the health context is also influenced by patients’ complex social, financial and psychosocial needs. This participant describes critical thinking in their context:

> I view it through geriatrics, where it’s taking something that appears simple and questioning it or being able to handle complexity without having to boil it down to some little nugget, being able to prioritize, balance, being able to look at something in its complete state without having just to have it reduced to one bullet point. …. [In other

> disciplines] 99% of the time, there's no complexity to it. Or, in a sense, there's one problem. This woman's in labour, all the vitals are fine, baby delivered. And I don't want to undermine that it's not complex, but challenging, unsolved messy problems, that complexity, our society just kind of steers clear from. (PHARM1 INT1)

Finally, another participant adds that in mental health, critical thinking focuses more on the interpersonal. This participant focuses on teaching students to be:

> Able to manage an interpersonal relationship with their client and knowing exactly what's going on in there. I think a nurse can get, for example, so focussed on giving physical care [but] I think in mental health that relationship stuff is front and centre and the other stuff goes to the periphery. In med surg it's often the other way around - get that bed made, get them into the shower or get them off to the operating room. (NURS3 INT1)

Other participants situated critical thinking in the acute care environment. One participant discusses critical thinking as using problem solving to handle emergent problems quickly, using the knowledge and evidence available at the time (PHARM2 INT1). They relate that critical care:

> Does require critical thinking because even in those situations you have to be careful not to go down the road of the obvious in a lot of those situations. You had to kind of say – this is where that pattern thing comes in – “this looks like that, but, boy, we better get some

> information to prove that's really what it is." But you would start all those steps simultaneously almost. … But at the same time you're having to make decisions with the information you have. You can't say, "well the lab tests aren't back so we just let him die". You've got to continue to make decisions, the best decisions you can with the most information you have available, and the people in critical care who couldn't do that froze. Basically they weren't capable of functioning in that kind of an environment. So you, again, you operate with the best information you have, but have to get more most of the time to make really good decisions. (PHARM3 INT1)

This attention placed on trying to "operate with the best information you have" through a clinical reasoning approach to critical thinking is somewhat at odds with the idea of human complexity proposed in the examples provided. However, it is reflective of a very different context. Decisions in more acute contexts do happen more quickly and the patient status is often very different – patients in acute or critical care are often less conscious and consultation is not always possible given the relative acuity of the illness or injury.

Institutional Contexts

In addition to profession and practice contexts, understandings of critical thinking are also situated in an institutional context. By institutional context, I mean the codified – either formally or informally – organizational context through which the possibilities for individuals' behaviour are constrained and enabled (Greenwood, Oliver, Sahlin, & Suddaby, 2008). They are codified with particular sets of rules or codes that are both

material and historical – they have particular spaces and administrative structures and are embedded in a historical context. Health professional educators tend to work in-between organizational contexts or activity systems such as the university, their faculty, a variety of healthcare organizations and professional regulatory bodies.[5] These overlapping contexts each have their own institutional rules and norms. Further, universities are fragmented organizations with multiple institutional contexts, to the extent that some have described them as "organized anarchies" (Manning, 2013). For example, institutional norms are often very different between faculties, or between faculties and central units. These differences in the institutional context of participants in this study are in dialogue - and often produce – the differences between professions. In the following, I examine three specific cases: first, I look at the ways in which the Pharmacy policy context in Alberta influences beliefs about critical thinking; second, I examine the context of the Faculty of Nursing at the University of Alberta and how a faculty focus on the term critical thinking changes how it is understood by participants; finally, I examine the unique institutional context of social work at the University of Calgary, Central and Northern Alberta Region and the ways in which critical thinking is unique to that institutional location.

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[5] Regulatory bodies that dictate practice standards and professional behaviour governs most health professions, including those in this study. Regulatory bodies can be either provincial or federal and individual professionals may belong to more than one regulatory body. For example, physician-educators in this study belong to the Royal College of Physicians and Surgeons a nurse-educators to the College or Registered Nurses of Alberta.

Pharmacy Practice in Alberta

Institutional context was particularly relevant among pharmacy educators; a recent scope of practice expansion in Alberta means that there is a call to challenge the status quo in pharmacy culture and practice. In recent years, Alberta pharmacists have expanded their scope of practice to enhance pharmacist autonomy. According to the Canadian Pharmacists Association: "Pharmacists are taking on expanded roles and are increasingly being recognized as the medication management experts of the health care team" (Canadian Pharmacists Assocation). Albertan pharmacists, in particular, have the widest scope of practice of any province (Canadian Pharmacists' Association, 2015). This shift is reflected in educators' understandings of critical thinking.

Participants from pharmacy discussed changes in the role of the pharmacists alongside a schism in pharmacy culture, In the words of one participant, critical thinking is:

> Important from the professional side too – that if we're going to be the profession that we say we are, we have to think and work differently than we have in the past, and that means a very different mindset. … We need to look for people who can think and don't need a kind of policies and procedures for every step they take in a decision. (PHARM3 INT1)

Other pharmacy participants have added that, historically: "we're quite a practical profession and, in relation to critical thinking or any other topic, pharmacists aren't always super comfortable with theory or philosophical discussions and our students,

they're socialized into that quite quickly" (PHARM1 INT1). Finally, a third participant summarizes what they see as a schism in the profession; historically, the profession:

> Was more focused on the dispensing and the pill counting. There's a group of people who … had a much easier time making that change and adapting and embracing that [shift in scope] and so there's that kind of group that's over here and they are doing it and they are pushing for more and then there is that group now that's struggling with the changes that have happened" (PHARM2 INT1).

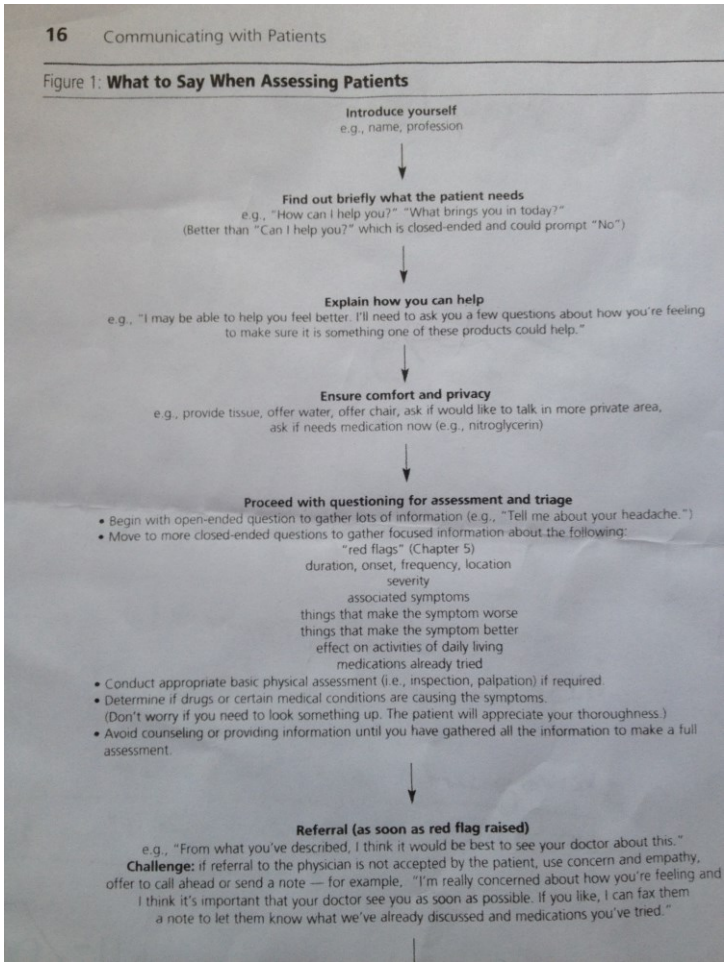
Pharmacist-academics in this study tended to, not surprisingly, align themselves with the new expanded scope.

Participants' understandings of critical thinking reflected this change in institutional context. Pharmacy educators tended to emphasize advocacy within the profession – a sense of challenging or changing the way that pharmacists work. As noted in chapter three, in the first interview participants were asked to bring in a teaching artefact they felt represented critical thinking. One participant brought in a page from a pharmacy textbook that offers an "algorithmic process" for patient communication, which was torn up. See figure 5.1 for the original page. The participant describes the artefact:

> This is just a terrible way to do it, not that that's wrong … and I think that's what the insidious thing is, is that it's not wrong. But I do find it can set people wrong. Or it can set up habits that actually cause problems. And it'll actually reinforce them because it'll set up this rigid system of, "okay, these are the sets of questions I need to

ask." … And [if a patient interaction goes badly] it's like, "okay. It's actually okay. I just haven't memorized enough questions to ask." … It needs to go beyond that. (PHARM4 INT1)

Figure 5.1. PHARM4 Teaching Artefact



16 Communicating with Patients

Figure 1: **What to Say When Assessing Patients**

Introduce yourself
e.g., name, profession

↓

Find out briefly what the patient needs
e.g., "How can I help you?" "What brings you in today?"
(Better than "Can I help you?" which is closed-ended and could prompt "No")

↓

Explain how you can help
e.g., "I may be able to help you feel better. I'll need to ask you a few questions about how you're feeling to make sure it is something one of these products could help."

↓

Ensure comfort and privacy
e.g., provide tissue, offer water, offer chair, ask if would like to talk in more private area, ask if needs medication now (e.g., nitroglycerin)

↓

Proceed with questioning for assessment and triage
- Begin with open-ended question to gather lots of information (e.g., "Tell me about your headache.")
- Move to more closed-ended questions to gather focused information about the following:
  - "red flags" (Chapter 5)
  - duration, onset, frequency, location
  - severity
  - associated symptoms
  - things that make the symptom worse
  - things that make the symptom better
  - effect on activities of daily living
  - medications already tried
- Conduct appropriate basic physical assessment (i.e., inspection, palpation) if required.
- Determine if drugs or certain medical conditions are causing the symptoms.
  (Don't worry if you need to look something up. The patient will appreciate your thoroughness.)
- Avoid counseling or providing information until you have gathered all the information to make a full assessment.

↓

Referral (as soon as red flag raised)
e.g., "From what you've described, I think it would be best to see your doctor about this."
Challenge: if referral to the physician is not accepted by the patient, use concern and empathy, offer to call ahead or send a note — for example, "I'm really concerned about how you're feeling and I think it's important that your doctor see you as soon as possible. If you like, I can fax them a note to let them know what we've already discussed and medications you've tried."

Figure 5.1. Teaching artefact from participant PHARM4, from interview one. Participant PHARM4 provided one copy of the "what to say when assessing patients" guide intact as a reference (represented here). The teaching artefact consisted of a version of this page, torn up and stuffed into a large pill bottle.

In tearing up the algorithm, the participant speaks to an idea of challenging a rigid "pill counting" approach that is, in these interviews, associated with the traditional pharmacist role and an outdated pharmacy culture.

Likewise, artefacts from PHARM1 and PHARM3 also highlight the idea of "getting them [students] to think about it differently" (PHARM1 INT1) in some way. Relatedly, pharmacy participants stressed accountability in their interviews, an emphasis likely related to expanded scope and "moving beyond dispensing and providing clinical services and being accountable, getting them to prescribing" (PHARM2 INT2). This participant emphasises the relationship between "taking responsibility" and critical thinking, as opposed to enacting a physician's orders. They link critical thinking to:

> The professional value system – as a pharmacist it doesn't matter whether or not I've learned about something. If my patient has it, I have to be able to manage them, so that means that I have to use my skills, whether it's looking things up or I need to be able to get myself to a place where I can contribute and do something about it, because you can't ignore it. … It's that idea, so when you encounter a situation that you've never been in before or don't know how to handle, what are you gonna do? (PHARM2 INT1)

Similarly, another pharmacy educator emphasized the role of courage in implementing critical thinking in the pharmacy context. They link critical thinking to:

> Having the courage to make that decision, because sometimes it will be easy but sometimes it'll be very hard. So to me, the decision-making is – you do all the critical thinking and then it's leadership

> and courage that helps you make the decision. So with a patient situation, I might disagree with the team or have a different view. Or it might be a really hard thing – I have to tell the patient that, "you know, the best thing that we can do here is actually—you're going to have so many complications, we're not going to aggressively treat your cancer." (PHARM1 INT1)

In both of the quotes, participants link critical thinking to the leadership and decision-making roles of pharmacists, challenging historical perceptions of pharmacists as solely responsible for dispensing and enacting the decisions of other health professionals.

Particularly for pharmacy, the results of this study are very much situated within the unique cultural and institutional context of Alberta. However, the fact that understandings of critical thinking are so strongly situated in an institutional and policy context, in dialogue with a professional culture context, is in itself an interesting result. Most visibly in pharmacy, but also in other professions, critical thinking is very much embedded in a particular institutional place and time, reflecting the rules and discourses of a particular activity system.

Faculty of Nursing

Participants from the Faculty of Nursing had a strong background in the literature on critical thinking, as noted earlier, often naming particular scholars or listing domains of critical thinking from Facione's (1990) Delphi study. Several senior administrators in the Faculty of Nursing study critical thinking (e.g. Myrick, 1998; Profetto-McGrath, 1999), particularly using Facione's taxonomy, including the former Acting Dean of the faculty; as a result, there has been emphasis on this approach to critical thinking within

the faculty for many years, and the terminology is reflected in program policy. One participant relates that: “I’ve done quite a bit of reading on it [critical thinking]. … So I do like Facione’s description of critical thinking as being a skill set as well as a set of attitudes” (NURS2 INT1). They add that “when I first started teaching at university and one of the key criteria for evaluating students was critical thinking I really had to think about what it was” (NURS2 INT1).

As a result, nursing educators tended to have “ready definitions” that they could refer to when asked to define critical thinking, whereas participants in other programs tended to work through their definition starting with a problem. For example, a physician-educator describes her process of describing critical thinking:

> I tried to imagine myself going in to do a consultation, how would I approach that. So that was how I was thinking when I started it. So it was based on if I am given a consult to do, where do I start? That’s how I looked at it. (MD1 INT2)

Participants in Nursing tended to begin by listing aspects of critical thinking from the literature or citing particular authors. One participant’s early definition was:

> Being able to analyze, being able to discriminate, being able to apply standards, being able to recognize the need for more information, to be able to reason logically, and then even at the higher level …would be to transform information or being able to ask those questions that you can either add to knowledge or even develop new knowledge. (NURS4 INT1)

This participant cites the definition as coming from Rubenfeld and Scheffer (1999). Other participants from nursing cited P. A. Facione (1990) (NURS2) and Paul (1995) (NURS3).

Participants from other programs were often more sceptical of the term critical thinking. For example, one participant sees critical thinking as:

> One of those words that look good but I'm not sure that people who are writing them know what it means. … But it looks really impressive in terms of – they want to create physicians who are critical thinkers. But what that looks like, how you operationalize that, I don't think anybody really knows. (MD2 INT1)

Participants in medicine and pharmacy, in particular, were inclined to have less "ready definitions." Most clearly, a participant from pharmacy relates that: "you know what's interesting is I actually don't ever think of the term critical thinking" (PHARM4 INT1). This was a common sentiment, particularly for participants from medicine and pharmacy. It is clear that critical thinking had not entered the departmental discourse in the same way that it had in nursing and, to a lesser extent, social work. Though social work participants SW1, SW2, and SW4 cited authors writing on critical thinking – particularly Paul and Elder (2002) – they tended to have fewer "ready definitions" than in nursing, possibly because critical thinking terminology was less integrated in policy and the department did not appear to have a research focus on critical thinking specifically.

Overall, a focus on critical thinking (as a term) in Nursing tended to change the ways in which participants responded to interview questions. They were likely to use "ready definitions" and were more enthusiastic and less suspicious of the term than those in other programs. This focus appears to be a somewhat local phenomenon. As a result,

participants understandings of critical thinking in the Faculty of Nursing at the University of Alberta must be seen within that institutional context; their understandings may be very different from understandings of critical thinking held by nurse educators within other institutions. That said, the nursing education literature appears to focus more on the term critical thinking than other professional education literatures. For example, the medical education literature tends to privilege the language of clinical reasoning, an emphasis reflected in interpretations of critical thinking from participants from medicine.

Faculty of Social Work

Social work educators' focus on critical thinking for social justice can be linked to a shift in the profession over the past few decades. Social work education has sought a balance between engaging with individual clients and considering larger contextual factors – or "structural invitations" discussed in the previous chapter – that constitute the range of possible actions/identities for those individuals. For the University of Calgary program, the academic shift has been toward a focus on social structures. According to one participant:

> I was interested in the notion of social justice and when I went to school all those many years ago, it wasn't really high on our radar. It wasn't something that was part of the curriculum. … There had been a critique around clinical social work practices not really solving problems but maintaining problems and this critique of social work as focused on the individual and not enough attention on structural barriers that hold people down. (SW1 INT1)

Likewise, another participant adds that the schism in social work is not just historical, but also divides academic and practice contexts in the contemporary moment:

> I would say there's a definite tension that almost is necessary for the evolution of the social work profession at the present time, in terms of what is our identity. … My opinion is that it's not consistent between the academic social workers and the practicing social workers. … [Social justice is] not a common term that they [practitioners] would use because they feel it challenges the current funders. It challenges the status quo and so it's unsafe for them to use that term. It also has a notion or affiliation with the role of activist, which scares employers because they feel that they are going to be criticized and judged. (SW3 INT2)

Thus, understandings of critical thinking specifically, and social work practice more broadly, is not unified across the profession. Rather, interpretations of critical thinking as "examining assumptions," linked to social justice and advocacy, are unique to academic social work educators. In particular, participants in the U of C context are academic social work educators at a large research-intensive institution, in a program that is theoretically focussed. Not all social work programs are oriented around social justice.

In the first case in this section, the policy and cultural context of Alberta pharmacy practice, regulatory activity systems (government and regulatory bodies) and pharmacy practice systems (private pharmacies as well as publicly run) have implications for the institutional context of the faculty of Pharmacy. Pharmacy educators react to this context when they construct their understandings of critical thinking. In the second case,

the Faculty of Nursing, there are historical institutional factors impacting how educators talk about critical thinking. Finally, for social work educators, critical thinking is situated alongside a value system based in social justice, reacting to a historical practice context.

Personal contexts

Lastly, and not surprisingly, more personal beliefs, values and contexts impact how critical thinking is understood. Personal experiences serve to further complicate understandings of critical thinking; each educator describes affiliations with multiple social groups and related value and belief systems. Even for a single participant, critical thinking might mean different, and sometimes contradictory, things in different contexts and at different moments in time. For example, religious and family background, as well as interactions within the school system, interweave with other aspects of identity as participants construct their understanding of critical thinking. Personal background and experiences offer additional contexts that shape understandings of critical thinking. These personal experiences both produce participants' understandings of critical thinking, and are produced in the present moment as personal narrative. However, the ways that these moments are narrated are nonetheless significant to understanding how participants actively construct critical thinking within the present moment.

Religious Experiences

Two participants from Social Work describe their current understanding of critical thinking as a reaction to a rule-bound or authority-based upbringing. According to one participant, their family was:

> Military and Roman Catholic and so dogma and rule
>
> taking/accepting was the way one learned. I like to use myself as an

> example in class. My dad would say “Jump,” you ask “how high'?" I mean, it was just like authority-based learning, "here it is," and I was pretty much—I probably still am. … So that really squashed me for a long time, in terms of being a critical thinker, I think. But, on the other hand, it probably pushed me a little bit because I did reject some of that kind of authoritative or religious: you do it because, you know, God said it or the Pope said it, or this is the way we've always done it. (SW1 INT1)

Relatedly, like other social work participants, this participant sees critical thinking within the examining assumptions approach: critical thinking is “an ability to question the status quo. Critical thinking, for me and maybe for our Faculty, is around things like recognizing bias” (SW1 INT1).

Similarly, another social work educator’s approach to critical thinking is entangled with the emotion involved in shifting one’s worldview. To reiterate a quote from chapter four, this participant posits that reducing critical thinking to:

> A level that is intellectual doesn’t involve the emotional. As a social worker, and as someone who has made a transition through faith, away from faith, I think that you need to tend to people’s emotional transition if you really want them to make an intellectual transition. (SW4 INT1).

There is a clear relationship to individual background, where:

> I was raised in a very Catholic academy. … I decided to take philosophy and theology. … By the time I got to the end of the

> degree, I wasn't religious anymore. So it was a pretty major transition. … And what happened for me was I kind of wondered why people believe what they believe. … As soon as you apply some critical thinking to it, you have to abandon a lot of what you believed at one time, and that's hard. (SW4 INT1)

Clearly, the participant links the experience of questioning faith to critical thinking, which is centred around questioning "why people believe what they believe." Likewise, they see changes in belief structure through a transformative lens, coupled to an emotional transition that is intimately linked to critical thinking.

Family Background

Rather than seeing critical thinking as a "break" with their background, other participants recollect moments where their upbringing promoted critical thinking as they understand it. Several participants recollected that they were invited to participate in "high level" conversations with their parents and that they were rewarded for "thinking critically" within their family. Alongside these stories is a sense of self-efficacy that is often reflected in their understandings of critical thinking – critical thinking is linked to the ability to tackle a problem, make a decision, or take action.

One participant describes being invited to "problem solve" by their parents, an approach to critical thinking that resonates in the context of medicine:

> My father … used to take his bicycles apart and so I remember I spent a lot of time working with him and learning how to change the tires on bikes and that kind of thing, or he'd get me to change the washers under the taps and that kind of thing. So I'm learning how to

> do those things and fix things and figuring [it] out. Looking at something and taking it, dissecting it, figuring out how it works and getting it back together. … Just figuring out how to do something and make it work. (MD2 INT1)

Similarly, another agrees that self-efficacy as linked to critical thinking:

> I would say it probably started with my parents as really good critical thinkers and facilitators of critical thinking for me. Why would you do that? Why questions and little pieces. … I can remember I used to make fabulous Lego houses that were quite complex and I remember my father telling me – he was a engineer – and he said you could be an engineer or an architect. … Then I just pursued learning a different way. But you could, if you wanted to, you can be curious. … I just remember him saying that and feeling, "Oh, I can make really good Lego houses." (NURS1 INT1)

Both of these participants discuss an early sense of self-efficacy, or confidence in their ability to engage in critical thinking; both also, to some extent, ascribe to understandings of critical thinking as problem-solving or reasoning. That said NURS1, also tends to understand critical thinking through a personal and interpersonal approach.

Others discuss the importance of being invited to participate in "high level" conversations. One participant relates that, "I just always assumed people had philosophical or high-level discussions at dinner with their families or something. … I guess it did – it would start young. My parents would talk about high-level things" (PHARM1 INT1). Another adds that their critical thinking ability:

> Comes just from a family that really approached the world from an intellectual point of view. We … would sit around the kitchen table every day, and it was the quality of our intellectual argument that gave you space at the table. If you had something to say in terms of an intellectual argument, you got more space at the table, that's just the way it is. (SW4 INT1)

Notably, this quote comes from the same participant who describes critical thinking as questioning belief and links it to "transitioning away from faith." As I have discussed, critical thinking is never understood in one way only; rather, individuals shift their definitions and understandings of critical thinking as they are produced in and through multiple complex experiences and contexts. Though these participants discuss "high level" conversations with family, the meaning could likely be very different. Their understandings of critical thinking were also quite distinct.

Schooling

Several participants discussed experiences within the school system that promoted critical thinking and informed their understanding of what critical thinking means. The participant quoted above, who discusses leaning to "problem solve" at an early age, also notes a sense of being rewarded for problem solving in the school system:

> In grade five, I got put in one of those special classes, thinking back, some of the stuff they were trying to do was trying to get us to do more critical thinking. … I think in high school I distinctly remember some of the science teachers and math teachers who really taught processes and encouraged us and taught us how to figure things out.

> Really, that sort of clicked. It resonated well with me. That kind of worked for me in terms of being taught how to figure things out. (MD2 INT1)

Another participant relates a story about a high school teacher who was initially disappointed in their performance, but challenged them to problem solve:

> By the end of my time, he said that he hadn't seen anyone quite so analytical. … I remember answering one class, one question in physics where he gave us a problem, left the room to go do something basically the expectation was that none of us would answer it, but there was something that was said in my grade seven science class that I had the idea of how to put the two equations together and solve the problem, and so when he came back in and I was like "yeah, the answer is this" he was like "what?" … That sort of changed how I approached my learning. … I was so used to just regurgitating things instead of thinking about them and how to apply them. … I guess at the time, I wouldn't have identified it as critical thinking, but that idea that I liked problem-solving. (PHARM3 INT1)

Particularly within the reasoning or problem-solving approach to critical thinking participants discuss being rewarded for problem solving at an early age. They draw on these early memories and understandings of critical thinking as they construct critical thinking today.

Conversely, when participants approached critical thinking as examining assumptions they tended to characterize their schooling experiences as adversarial and more often discussed times that they were not rewarded in the system. These stories of opposing the status quo were similar to stories told by participants in the "religious experiences" section, discussed earlier. One participant recounts that:

> Academically I always felt like I was fairly confident. Didn't always accept the school rules, I'll say that. …. When I was in kindergarten there was a group of boys that were playing with this set of wooden blocks and I wanted to play because they were the huge blocks and they were making this playhouse. They said, "no, girls cannot build." … So once the boys were in this house that they created I pushed the blocks in and said, "there, I know how to destruct it." … That was the first of three or four incidents where I said no that I wasn't gonna accept the status quo of the classroom. And so that was the first of many. I don't know how I had the confidence to do it. I just wasn't going to accept it. And that's when I was labelled potentially as a behavioural problem. (SW3 INT1)

Another relates a similar feeling of opposing the system in college:

> Education systems generally when I grew up were not trying to make you a critical thinker and I think they were feeding information to you and you regurgitated it on exams and that was it. … I do remember one class … we had to take a topic of an issue of concerns and a friend of mine in the class and I did something on the

> environment. … And so we went out to the local dump and we did this video and we put the American flag on the top of the dump and the guy who was running the tractor got so angry at us and he got out and he told us to get away, and "how dare you put the American flag on the dump" and I think that was the first time I really remember being challenged by somebody but also doing something that was challenging the system. And I'll never forget that. (SW2 INT1)

While the first participant is challenging the school system itself, the second participant is challenging the waste in modern society alongside a glorified idea of America. However, what both participants have in common is a sense of coming of age as individuals who "challenge the status quo." Likewise, both participants are constructing critical thinking and their own identities through their experiences as rule-challengers.

It is impossible to link one type of personal experience directly to understandings of critical thinking. However, participants, of course, do link their ideas about critical thinking back to significant personal and professional experiences. They construct their experiences retrospectively in order to explain their current understandings of critical thinking; however, those understandings of critical thinking are likewise constructed through previous experiences.

Summary

This chapter builds on chapter four in discussing how participants' personal and professional experiences inform their understandings of critical thinking. Specifically, I have outline the ways in which participants draw on their profession, practice context, institutional context, and personal contexts. This analysis is complex given that the

experiences and contexts are intertwined; in this sense, participants' understandings of critical thinking are embedded in a series of related, but sometimes conflicting, discourses, values, and belief systems. Participants draw on various contexts and experiences at different moments; there are often moments where participants' understandings of critical thinking crystalize within a particular context. However, there are also many moments that are rife with tension, contradiction, and complexity.

Many approaches to critical thinking in the literature have attempted to resolve these contradictions by developing a model or common definition of critical thinking. In keeping with my understanding of critical thinking as shifting and constructed through the contexts, experiences, values, and beliefs of educators I have tried to avoid resolving these tensions. I use cultural historical activity theory (CHAT) in chapter six to theorise the tensions and contradictions in critical thinking. I employ the concept of the activity system to discuss educators' shifting notions of the object of education – the "good" practitioner or the critical thinking graduate. After mapping activity systems in health professions education in relation to their object, I examine the ways in which CHAT can be used to analyse the contradictions within and between in participants' unique understandings of critical thinking. Through CHAT, I see these moments of contradiction as productive – they complicate any neat definition of critical thinking and invite richer understandings of the complex values and beliefs held by educators.

CHAPTER 6: ACTIVITY SYSTEMS ANALYSIS

Ideas readily live in harmony with one another, yet they collide violently in space.

Lev Vygotsky

In this chapter I focus on cultural historical activity theory (CHAT) in order to understand how educators actively construct their object – the ideal graduate. Such an ideal is often constructed around the notion of critical thinking; in this sense, critical thinking is both meaningful and meaningless. The term often serves as a catch-all for the "good" health professional, and is actively constructed and reconstructed by educators through their contexts. In the critical thinking literature, the multiplicity of meanings for critical thinking has often been lamented, both in health professions education (Krupat et al., 2011; Scheffer & Rubenfeld, 2000) and in other fields (Black, 2008; Brookfield, 2012; Ennis, 1989; P. A. Facione, 1990; Fisher et al., 2009). However, I have argued that developing a universal model or definition for critical thinking fails to appreciate the complex values and beliefs that inform those understandings. Creating a universal definition or model will elide rather than resolve these underlying tensions.

CHAT offers tools for theorizing contradictory understandings of critical thinking and seeing them as productive. In chapter five, I look at the various contexts and related experiences that educators draw on in constructing critical thinking; as I suggest, these contexts overlap significantly. They can be theorized as activity systems, and the overlap between systems is understood as a source of productive contradictions (Engeström, 1999, 2008; Engeström & Miettinen, 1999). According to Edwards (2005), contradictions between systems create space where:

> Interpretations of the object (i.e. problem space) are contestable, different voices can be heard and existing rules, expectations and power relations can be questioned. The framework therefore allows an expansion of the object so that new meanings can be revealed which in turn call for new responses and the development of refined conceptual tools in those responses. (p. 202)

In the context of this study, this quote suggests that contradictions between different understandings of critical thinking can open up space for new learning, where "rules, expectations and power relations can be questioned." In order to capture this potential, I use CHAT in this chapter to engage with contradictions raised in chapters four and five.

I begin by describing the activity systems in this study, outlining their dimensions using a now classic activity system triangle (Engeström & Miettinen, 1999). I describe the types of tools in use, and the community, subjects, rules, division of labour, and object(s) around which it is structured. For the purpose of this analysis, I focus particularly on the object of activity – critical thinking. After describing the various activity systems at play, I look at the conflicts and contradictions that exist within and between systems, specifically conflicts between dominant reasoning-based approaches to critical thinking and alternative approaches detailed in chapter four. These conflicts occur at multiple levels, within a single educator, between educators, and between social groups. Such an analysis allows for an appreciation of the ways in which educators engage with different understandings of critical thinking at different moments in time and in different contexts; as activity systems intersect, some understandings may become more meaningful and others fall into the background. The object of critical thinking can

be imbued with multiple interpretations, even for a single educator. This analysis also engages the tensions and contradictions in educators' understandings of critical thinking as productive, rather than attempting to neatly resolve them.

Structure of Health Professions Education Activity Systems

In this section, I begin by outlining how the activity systems falling under the banner of "health professions education" are structured. I do not see health professions education as a unique activity system in the context of this study. Rather, each professional education program operates as an activity system with different understandings of the object, different rules, and different tools. However, as Engeström and Miettinen (1999) suggest, activity systems are rarely completely discreet or easily defined. However, each point will be taken up slightly differently in different health professions education systems. Elements of these systems are illustrated through an activity system triangle in figure 6.1.

The sections below detail the ways in which elements of activity systems are treated within this chapter. These sections also describe elements of activity systems that are common to the professional education activity systems examined in this study. I then use the following section to look more specifically at overlapping systems, mirroring headings from chapter five; I detail how educators' contexts, and the beliefs and experiences associated with them, are structured as unique activity systems.

Object. I have argued that educators in the health professions concentrate their activity on educating professionals who can "thinking critically." This can mean a variety of things, depending on multiple intersecting contexts discussed in the previous chapter. There is a sense that "good thinking" can mean diverse things including: effective

reasoning, caring, advocacy, challenging of the status quo, or unpacking of hegemonic assumptions, for example. For the most part, critical thinking has been used as a stand-in term to encapsulate a broad and shifting object of activity for educators in the health professions. In this sense, critical thinking constitutes what Engeström (2008) calls an open object – an object that is subject to multiple meanings and interpretations – and also a boundary object – an object that overlaps multiple activity systems. As such, critical thinking looks different when engaged through different activity systems such as professional, practice, institutional, or personal contexts. As I have suggested, these systems and contexts are fuzzy and continually overlapping.

Figure 6.1. Health Professional Education Activity Systems

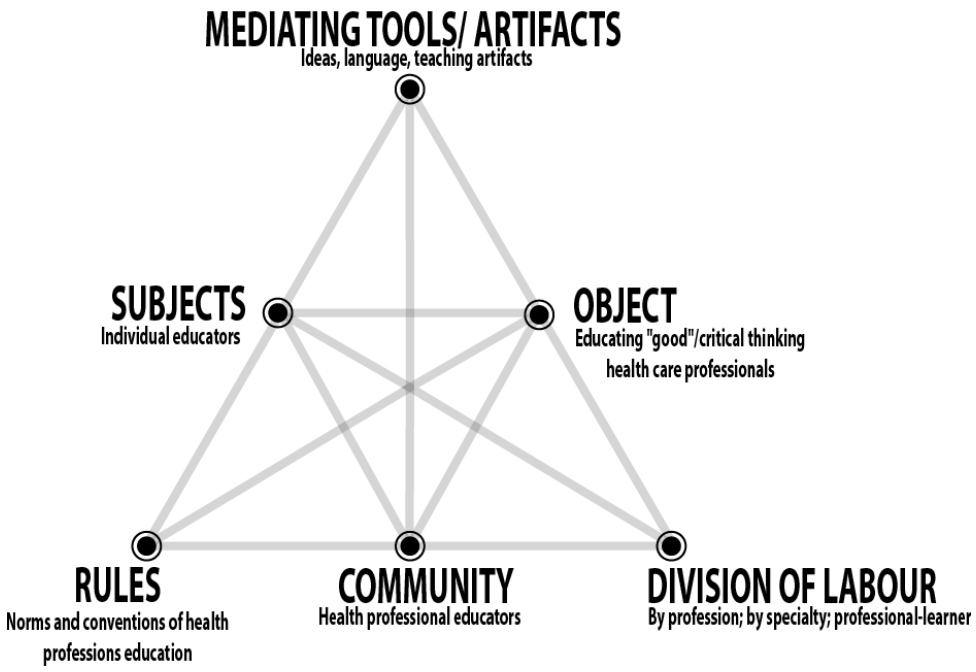


Figure 6.1. Activity systems triangle (Engeström, 1987). The triangle demonstrates the interactively between aspects of an activity system within health professions education. Each "point" on the triangle demonstrates a component of activity systems related to health professions education.

Mediating tools. Mediating tools in health professions education are diverse and include, for example, the various teaching objects used, the institutional structures organizing education, and the physical structures used in education (such as lecture theatres, small group rooms, and various clinical contexts). Given that in this study I look at how educators construct critical thinking, a mental process, I am primarily interested in the mediating ideas and language that are mobilized to understand and describe critical thinking in health professions education and healthcare.

These ideas often have a physical manifestation in printed texts, assignments, or clinical protocols. The communication algorithm for pharmacy (ripped up by the participant) described in the previous chapter offers one example. Discussions about how these tools mediate teaching for critical thinking took place in interview one; as the pharmacy example suggests, participants interacted with these tools in a variety of ways and modified those tools to fit their object. Simultaneously, these tools (as well as interview guides, and the construct of critical thinking) mediated the interview itself. Interview two used the concept map as a mediating tool – I mapped out my interpretation of how participants understood critical thinking in interview one, which then focussed and constrained the conversation in interview two.

However, some of the tools used by participants were less tangible. As I discuss in chapter three, Sawchuk et al. (2006) have argued that "ideas should he treated as artefacts: tools that mediate activity but which can also be re-made by people to allow us to change ourselves and our world" (p. 6). As an example, several participants used the idea of the two systems model as a tool to understand and describe their thinking. This tool was modifiable, meaning slightly different things when different participants

engaged with it; however, it also structured the ways in which participants thought about and discussed their own thinking. The two systems model, as a tool, was common in medicine. However, other tools were commonly employed in other programs. The concept of social justice was a tool for evaluating and describing the work of social work educators; it was also an object associated with critical thinking, and oriented activity in that program. Likewise, nursing educators often used the concept of caring as a tool to understand their work and as an object (the caring relationship) to orient activity.

Community. Communities shifted throughout interviews, along the lines of profession and practice context in particular; the configuration of each community around a particular understanding of the object will be discussed in the sections on each overlapping activity system below.

Subject. Within this study, it made sense to understand each participant as a unique subject. Participants' understandings of critical thinking are unique, as are the constellations of overlapping activity systems within which they live and work.

Rules. Health professions education is dominated by many educational conventions; for example, all professional programs involve some combination of classroom and clinical teaching. Some of these conventions are unique to the professional program, such as the "two plus two" division of classroom and clinical years in medicine, while others are common. The rules and norms most relevant to this study centre around codified ways of understanding thinking, particularly the dominance of the rational, reasoning approach as well as certain accepted practices of challenging that approach.

Division of Labour. The division of labour in health professions education is unique. There are traditional (and often quite pronounced) practitioner/teacher-student

hierarchies; there is also significant teaching, particularly in clinical settings, between learners at different levels of training (more senior learners and residents teach junior learners). In this sense, divisions of labour in health professions education are also caught up in divisions of labour in health professional practice – students operate in practice settings as learner-practitioners, where they learn and deliver care simultaneously.

Student-practitioner labour in the clinical setting is also divided by profession and by specialty, as activity systems overlap. Education for students in nursing, for example, has a strong focus on caring and patient care "at the bedside," while medical education and practice focuses more on diagnostic reasoning; each educational program asserts a unique professional knowledge base that they align with a division of labour in the practice setting. Thus, division of labour is significant in this study in the sense that it further illustrates a point of overlap between activity systems of professional practice and education. Moreover, historical and hierarchical divisions of labour in practice settings exacerbate professional boundaries and tensions.

Building on chapter five, I outline the intersections between activity systems related to profession, practice context, institutional context, personal contexts. Not all of these contexts form independent activity systems; however, they all fall under, intersect with, or form activity systems that are significant to this study.

Professional Contexts

As I suggest in previous chapters, I see the primary activity systems in this study as based in participants' professional programs; I see medical, nursing, pharmacy and social work education as unique but overlapping systems. The significance of professional programs as separate activity systems is perhaps not surprising given that

educational structures such as, accreditation requirements, administrative structures, curricula, and physical spaces are largely based on profession (Frenk et al., 2010). This is particularly true in the programs in this study, each of which forms an independent department.[6] As a result, communities of educators form around particular objects or understandings of "the good" or critical thinking graduate in their profession.

These communities serve to reinforce particular understandings of the object, particular uses of tools, and particular rules. Thus it is not surprising that particular tools profession-specific tools, such as the dual process model in medicine or the concept of caring in nursing are of such significance when educators construct their understandings of critical thinking. As I suggest in chapters four and five, educators within these systems also have shared interpretations of critical thinking as an object – this shared understanding of the object forms the dominant approach to critical thinking in each program.

Practice Contexts

I have also discussed the overlap and conflict between other activity systems and systems based on professional program; specifically, educators and educator-practitioners form communities around objects relevant to their practice context or specialty. In this respect, professional boundaries blur and the practice setting comes to the forefront. For example, in the previous chapter, geriatrics, acute care, surgery, and internal medicine were identified by participants as systems within which critical thinking is constructed in

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[6]Nursing, pharmacy and social work also each form their own faculty, with relatively independent budgeting associated with that status. The Faculty of Medicine and Dentistry also includes dentistry, dental hygiene, a medical laboratory science programs. However, the Department of Medicine is the largest and most powerful of these.

unique ways that are distinct from how the participant's professional group constructs the object of educational activity. These objects are centred more around the context of care, such as educating compassionate, non-discriminatory practitioners for geriatric practice.

Although activity systems based on practice context are primarily significant for professional practice (as opposed to professional education), there is significant overlap between the two. Many educators are also practitioners, and are focussed on educating students (their object) for work in a particular practice setting. Moreover, the division of labour makes these educational and practice settings indistinct. For health professional students, education and practice happen simultaneously; much of their education occurs in clinical settings, and students actively work as trainees in their chosen profession as a component of education.

Practice contexts are mediated by unique tools; these tools are configured around their object. In chapter five, I drew on an example from medicine, where the participant compared the thinking of surgeons (quick thinking) to the thinking of internists (reflective thinking). This distinction, made by participant MD4, echoes the two systems model, a common tool used by medical educators to understand and describe their thinking. These tools also communicate the participants preferred image of the culture of each practice context. This is particularly true of participants who actively work within a particular practice setting. The overlap between activity systems tied to professional program and those tied to practice context creates potential for contradictions to arise and for reconstruction of the object of educational activity (Engeström, 2008). Later in this chapter, I discuss such contradictions within participants' understandings of critical thinking. What it means to teach critical thinking, as an object, is thus destabilized.

Institutional Contexts

Given that educational institutions are largely structured around particular professions, there is significant overlap between professional program and institutional context. Each profession exists as a department or faculty within the university, and, in the practice setting, professions continue to be structured around separate professional bodies and, in many cases, different departments and office spaces. For example, the institutional context of pharmacy practice is impacted by current changes to pharmacy's scope of practice; this change, in turn, affects the culture and curriculum in pharmacy education. Conversely, research and advocacy from pharmacy faculties has likely had an impact on these scope of practice changes. Thus, because educational, policy and practice contexts overlap, this institutional context is unique to participants within the Faculty of Pharmacy at the University of Alberta. As a result, the activity system oriented around a pharmacy education object at the University of Alberta is highly local.

The significance of institutional context in the cases discussed in chapter five illuminates the limitations of understanding professional group as the primary activity system relevant to education; instead, activity systems at play in the Alberta policy context overlap and alter the object of activity for educational systems. For example, pharmacy education systems are impacted by policy making in, for example: the Government of Alberta, which regulates scope of practice through the Health Professions Act (Government of Alberta, 2000), The Canadian Council for Accreditation of Pharmacy Programs (2014), which accredits professional programs in pharmacy, and the Alberta College of Pharmacists (2009, n.d.), which (under authority of the Government of

Alberta) regulates scope of practice and produces codes of ethics. These layers of policy influence are common among health professional programs in this study.

Given the multiple intersections at which health professional education occurs, understandings of critical thinking in a particular profession cannot be easily generalized. Instead, institutional context significantly impacts the way that individual educators' understandings of critical thinking are shaped. These intersections highlight how activity systems overlap in unique ways that lead to shifts in the critical thinking object.

Personal Contexts

Finally, the heterogeneity of participants' understandings of critical thinking can be traced to the unique context and personal experiences of each individual. These unique experiences and the religious, familial, or community activity systems (for example) that they are drawn from overlap with the professional, practice, and institutional contexts. Thus, understandings of critical thinking are not constructed solely through professional experiences, but also draw on more personal experiences, values and beliefs. Any attempt to generalize understandings of critical thinking across any particular group must be tentative given that meanings of critical thinking will always be, to some extent, idiosyncratic.

Contradictions

Throughout the interviews, there were many areas of tension or approaches to critical thinking that didn't fit neatly into the framework developed in chapter four. One of these areas of tension arose when participants challenged a perceived over-emphasis on "hard" sources of data in critical thinking; instead they asserted the value of patient narratives and stories. Likewise, there was an uncomfortable tension when participants

who generally ascribed to a rational, reasoning-based approach to critical thinking discussed the role of emotion in their thinking. In both of these instances, "listening to the patient" and "integrating emotion," there appeared to be a tension between a rational, reasoning-based approach to critical thinking, and a more humanistic approach to care where the relational and emotional are valued. This analysis focuses on participants from medical education, where articulated understandings of critical thinking were most often oriented around a reasoning-based approach; however, participants in this group also had strongly held beliefs that could be best connected to a relational or humanistic approach to care. These humanistic values were not always included in participants' explicit understandings of critical thinking; however, these values did tend to be closely connected to conversations about critical thinking, as I explore these connections below.

I see another area of contradiction centred on participants' discussions of the relationship between examining assumptions and critical thinking. For participants from the Faculty of Social Work, examining assumptions was very much the dominant approach; however, these participants occasionally struggled with how to approach dominant understandings of critical thinking as reasoning and where they fit in the participant's own understanding of critical thinking. Participants from other programs often struggled to connect the examining assumptions approach to critical thinking. When reacting to the concept map, few participants outright rejected this approach; rather, struggled to incorporate it in a variety of ways.

Patient stories

There was a distinct tension between "valuing patient stories" or narratives as a humanistic enterprise, and using patient information to engage in a rational approach to

reasoning. In one example, the participant relates a hope that students will "get to know" their patients. In this, there is a sense of valuing patients for their own sake. However, that sense of engaging on an interpersonal level is also held in tension with a more transactional approach to the patient interaction, where communication occurs for the purpose of extracting knowledge from patients, and translating knowledge back to patients for implementation. They want students to:

> Learn that it's really important to know the patient—*not just know about the disease—but actually know about the patients*. And then *know how to get that information about the patients and interpret it* and develop an effective management plan, and how to effectively communicate that with the patients. *So it's kind of about the clinical care and about the patient* [emphasis added]. (MD2 INT1)

Although the participant was not speaking to critical thinking directly when relating this educational goal, the idea of "getting that information" and developing a management plan does directly relate to their understanding of critical thinking as clinical reasoning. Moreover, the quote relates a sense of ambiguity about what it means to "actually know" the patient, and what the value of doing so might be.

Similarly, as quoted in chapter four, another participant discusses feeling shocked by physicians "who'll say [to their patients]: 'just say yes or no.' … It's not very good and they're missing stuff. So, critical thinking is dynamic in that you have to have time and you also have to have an interaction" (MD1 INT1). Here too there is a tension between a transactional approach to communication ("getting information" from patients) and a sense of valuing the interaction itself. Earlier in the interview they relate that:

> If I could teach the students anything, it would be to talk to and listen to patients, what they have to say, *regardless of whether you think of them as an authority or not. To really listen. And to look at people as whole beings from a psycho-social perspective* because just looking at them as a collection of symptoms or constellations of problems is problematic. *You're going to miss important detail. You're going to have a less robust differential and your treatment plan isn't going to be good.* So just to think about the person as a whole [emphasis added]. (MD1 INT1)

Again, there is a tension between listening to patients "whether you think of them as an authority or not" and listening to patients to catch "important detail" for a "robust differential." In the first sense, the informational transaction is made irrelevant – they argue that this imperative does not hinge on whether information provided by the patient is medically reliable; in the second sense, there is an implication that the result, a "robust differential," hinges on a successful informational transaction.

Similarly, a third participant, also in medicine, relates the importance of engaging with patients:

> I believe very strongly in developing a relationship with my patients, which I want the residents to do, because I think you provide better care by doing that… because it shows that you're paying attention and you're picking up on it. And I think we're losing that art, to some degree, because a lot of our junior colleagues emphasize the science

> of medicine, but we tend to be losing the art of medicine, and maybe we're not teaching it well either. I don't know. (MD4 INT1)

In all three of these examples, participants affirm the value of "getting information" rather easily – it fits into a physician's diagnostic work, their clinical reasoning. The more humanistic or relational value is less easy to define and justify within a paradigm that privileges rational and reasoning-based approaches to critical thinking. At these moments I see a sense of discomfort. Participants begin with an emphasis on the importance of the relational; however, they justify the value of the interpersonal through a transactional approach that tends to value informational exchange over human relationships.

Role of Emotion

Similarly, in chapter four I discuss a tension between rational approaches to managing emotion – "leaving your emotions at the door" (MD4 INT2) – and more humanistic approaches that see emotion as integral to critical thinking. One participant relates a hesitance to connect emotion and critical thinking, stating that emotion and empathy are:

> Very important in and of themselves but I don't – I am not sure whether they feed directly into critical thinking or not. Probably they're a parallel process, which is important. Thinking about it certainly in terms of seeing the whole picture and saying "what would I do clinically?" The empathy and emotion and imagination is a really, really important part of that because if you don't have that or you miss some of the emotional cues you are going to miss the large parts of that picture. (MD2 INT2)

Again, there is an emphasis on the value of these more humanistic and affective approaches to medicine; however, where critical thinking is concerned, those values are placed in service of a rational, reasoning-based process where emotional and empathy are a vehicle for gathering information, or an additional source of information themselves.

Similarly, another participant's words reflect that same sense of tension between emotion and critical thinking:

> In order to help patients with chronic disease, you have to at least, on some level, be able to empathize with them. … You create a bond with these people so you have to check your emotions, at some point, because it can be helpful but it can also impair your ability to help them. … So emotions are helpful but they have to be kind of checked a little bit. (MD1 INT2)

This approach to emotion echoes some of the tensions observed in the previous section, related to the role of patient stories in critical thinking. On the one hand the participant emphasizes humanism and relating to patients as a professional value that is intimately tied to critical thinking; on the other hand, the participant sees humanism as always qualified with an appeal to the rational and the idea of "checking emotion."

Though most apparent in the data provided by participants from medicine, the tension between the rational and the humanistic was also apparent in other programs. For example, one participant from nursing, quoted in chapter five, discusses at length the intimate relationship between caring, an approach tied to emotion and empathy (Noddings, 2010), and critical thinking, which is premised on "caring enough for your patient, putting yourself aside" (NURS4 INT1). However, I also cite the same participant

in chapter four, as rejecting emotion in critical thinking. This participant sees reasoning or problem solving as critical thinking, whereas, the "emotional or the soft side of things … I don't really see critical thinking as being that" (NURS4 INT2). This hesitation around the role of emotion or empathy in critical thinking was common where rational and reasoning approaches to critical thinking are dominant.

I see this as a tension between two competing approaches to medicine, and by extension, in medical education. These two approaches are focused on slightly different understandings of the object of practice – patient care. The first is focussed on an object of effective diagnosis and management that connects easily to the reasoning approach to critical thinking. The second object is more closely aligned with humanist critical thinking, and is associated with empathy and an ethic of service that is intimately linked to the history of medicine as a profession (Reiser, 2012).

Thus, participants within the activity system, medical education, actively navigate contradictions within that system, contradictions between two historically entrenched understandings of the object of medical practice. As I discuss in chapter three, this focus on contradictions is at the heart of third generation activity theory. (Engeström, 1999) sees these contradictions as moments of productive tension and potential for learning; likewise, I see this potential in the apparent contradiction between humanistic and reasoning-based approaches to critical thinking. When conflict arises, participants actively negotiate between a goal of providing the best diagnosis and management through reasoning and providing the best care through empathy and human interaction. Though participants struggle to reconcile these goals, the two need not be mutually exclusive.

Instead, this intersection might enable a space that simultaneously allows for science (the rational) and caring (the humanistic), challenging historical hierarchies where health professionals hold knowledge and power over patients. This is particularly promising given the nature of these contradictions, where patient knowledge and more emotionally engaged relationships with patients challenge purely rational approaches to thinking. That said, reasoning-based approaches to critical thinking in medicine are dominant and the fact that participants continually justified humanistic approaches to thinking and patient care through an appeal to reasoning – a need to "get information" from patients – is significant.

Role of Examining Assumptions

The cluster of meanings for critical thinking centred around examining assumptions was dominant in social work. It was contested in other programs when participants encountered this perspective through the concept map in interview two. As I suggest, there is a persistent tension between a dominant rationalist understandings of critical thinking other understandings that decentre or challenge that dominant discourse.

The understanding of critical thinking as examining assumptions is quite clearly set in oppositions to dominant reasoning-based approaches. To revisit chapter four, one participant describes how examining assumptions approaches to critical thinking are different from, and often in opposition to, reasoning-based or "mechanical" approaches. Critical thinking understood as reasoning is:

> More about the mechanics, which is valuable as well but it seems almost breathless or it's like a skeleton but has no clothes on. But it's very much – it's important as well to have that, those foundational

> elements of how we think about what we think. But if we don't understand that values associated by what we think it seems to – not be meaningless but there's a piece missing or it's assumed. (SW3 INT2)

When examining assumptions is offered as an explicit challenge to dominant approaches, it is not surprising that these two approaches to critical thinking would be in tension. However, like reasoning and humanist approaches to critical thinking, these approaches need not be mutually exclusive. In this quote, the participant suggests that examining assumptions could be seen as an extension of or addition to reasoning based approaches.

By way of further example, in chapter four I quote one physician-educator who, in interview one, explains that critical thinking, "goes back to Karl Popper and Thomas Kuhn about the concept of paradigms and thinking outside the paradigm. … Many of us are trapped in our own paradigms" (MD4 INT1), echoing an "examining assumptions" approach dominant in social work. However, in interview two this participant reacts strongly to this section of the concept map:

> Social justice, that's amazing. I'm really surprised. I would have deleted the other stuff on the sheet and obviously I'm totally wrong but social justice has nothing to do with critical thinking, advocacy has nothing to do with critical thinking (MD4 INT2).

As discussed in chapter three, this participant had a very exclusive approach to the concept map, partially explaining this change in perspective. It is also likely that this participant saw critical thinking differently when speaking to critical thinking outside of medicine (in the first interview) and in the context of medical practice (in interview two),

though these two contexts were by no means mutually exclusive. It is possible that some of the language used on the concept map, drawn from social work educational contexts – "social justice" and "advocacy" – was less familiar than other language that appeared on the map, drawn both from social work and from this participant's initial interview – language like "examining paradigms." Regardless of these mediating factors, I do see this ambivalence as indicative of a larger tension between these two approaches to critical thinking. This participant's change in perspective between interview one and two is fairly drastic and suggests a contradiction between these understandings of critical thinking.

In chapter four, I discuss a more inclusive reaction to this section of the concept map. For such participants, working through thoughts about the "examining assumptions" section of the map (bottom right corner in Appendices D and E) often led to a sense of ambivalence:

> Considering your own perspective and own biases and own background of knowledge and way of thinking about the world is definitely really important to be aware of. … [But with respect to "deconstructing privilege"] I haven't really thought a lot about kind of that and how it relates to what I do. I mean I guess we certainly see a wide spectrum of social and economic status and cultures and things and recognizing that our system is kind of biased against certain groups as it is and knowing that but really not having a good sense of knowing even where to start to start deconstructing it and not being in a position where I am actually in a position to be able to do that anyway, in any grand scheme of things. (MD2 INT2)

At the beginning of this quote, the participant seemed prepared to include "examining assumptions" within their definition of critical thinking. Toward the end, they struggled to see this approach as part of the role of a physician or physician-educator. Similarly, others saw various aspects of examining assumptions as important, but were ambivalent when asked if they would include this approach within their own understanding of critical thinking. For example, one participant reacts to examining assumptions by saying: "when I look at them, I go 'yeah, I could see how somebody would think that'" (MD3 INT2).

Conversely, in the Faculty of Social Work there is likewise a tension between the dominant approach to critical thinking – examining assumptions – and reasoning-based approaches that are dominant in other disciplines. One participant begins by relating that "critical thinking, for me and maybe for our Faculty, is around things like … recognizing your own bias and recognizing the bias in the world, different aspects of the world" (SW1 INT1); they see examining assumptions as core way of understanding critical thinking in the social work education context. However, they also express ambivalence regarding this understanding of critical thinking. In interview two, they relate that "critical thinking seems to be a neutral kind of process or – no that can't be true, can it?" (SW1 INT2). This quote begins by ascribing to the seemingly neutral reasoning process that is rejected by colleagues, and then pauses, questioning whether those dominant assumptions about a neutral process do fit within the dominant understanding of critical thinking in the faculty.

A departmental orthodoxy and belief system based in the notion of critical thinking as examining assumptions comes into conflict with the dominant reasoning approach to critical thinking from other activity systems, such as other professional

education programs. Likewise, participant SW3 speaks to a tension between dominant reasoning-based understandings of critical thinking within the kindergarten to grade twelve school system, an approach referred to earlier as "mechanical" and understanding assumptions.

Implications

From a CHAT perspective, two things in particular are significant about these contradictions. Any contradiction within or between activity systems has the potential to be productive in that it stimulates individuals and communities to question received knowledge and challenge dominant discourses and practices (Engeström & Miettinen, 1999). I see an understanding of critical thinking as reasoning or examining assumptions as dominant tools mobilized within their respective activity systems; these historically embedded tools come with particular processes that constrain the possibilities for how educators can think within each system. However, contradictions within and between systems open up space through which these dominant tools are, to some extent, called into question.

As I have discussed, contradictions exist between the "service" and "rationalist/scientific" discourses, which are historically connected to the practice of medicine. I also see a contradiction between discourses or care in nursing and those same rationalist/scientific discourses present in both medicine and nursing – this contradiction thus appears within the nursing education activity system, and between a nursing education activity system and a medical education activity system. Discourse of service and discourse of care are both connected to humanism, and surely represent an overlap between the latter two systems. There is also a tension between dominant tools for

understanding critical thinking in social work education and reasoning-based approaches dominant in other activity systems, such as other health professions and health professional programs. In the context of this study, I see participants continually grappling with the ways in which these discourses, and related tools for understanding and explaining thinking, can be used to make sense of the broad, abstract, and value-laden concept of critical thinking.

Given CHAT's emergence from Marxism, a CHAT perspective would certainly be sympathetic to understandings of critical thinking dominant in social work, which are also drawn from Marxist and critical theory traditions[7]. However, from a macro-level perspective, the social work participant's self-questioning moment, quoted above, points to a departmental orthodoxy that also bears questioning. While participants in medical education in particular grapple with the role of humanism and examining assumptions in their education and practice contexts, participants from the Faculty of Social Work likewise grapple with the role of reasoning in their own work. Like participants from medical education confronted with examining assumptions approaches in the concept map, they never entirely dismiss reasoning as a component of critical thinking but are conflicted around how it fits. That said, I think it is also important to bear in mind the hierarchical nature of healthcare and the power of dominant professions, particularly medicine. These hierarchies support and are supported by dominant discourses – the scientific and rational.

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[7] Participants SW1 and SW2 explicitly align themselves with critical theory and poststructuralism, both of which have links to Marxism.

Summary

By using CHAT to explain, but not necessarily resolve, the tensions discussed in this chapter, I have defined activity systems within which participants act, and analysed the contradictions that I see both within and between those systems. CHAT has analytical tools for exploring the moments of tension where participants contradict their earlier statements and change their minds mid-sentence. Participants' unique understandings of critical thinking shift, and are made meaningful only within particular contexts and systems.

CHAT also supports exploration of spaces where participants' meanings conflict with each other, both within and between professional programs. Participants' understandings of critical thinking are idiosyncratic because of their unique intersections of professional, practice, and personal activity systems. Rather than viewing these contradictions as problematic, I have explored them as moments that are productive in that they call into question dominant assumptions, and are indicative of tensions within each program's activity system.

Finally, CHAT offers a vehicle for understanding how particular understandings of critical thinking operate as tools, such as ideas about thinking as reasoning, as caring, or as a project of deconstruction and examining assumptions. It has also allowed me to understand how educational activity is oriented around an object, educating "critical thinkers." Given the ways in which activity systems overlap and contradictions emerge, it helped me make sense of my initial project, which was to explore how and why critical thinking is such a contested term that is both so devoid of and invested with meaning.

CHAPTER 7: CONCLUSIONS AND IMPLICATIONS

It is better to debate a question without settling it than settle a question without debating it

Joseph Joubert

Throughout this project, I have approached critical thinking as a contested term that is actively constructed by individuals; this process of constructing critical thinking is embedded in an historical and social context that is both broad and specific to the individual and their unique personal and professional experiences. This work has been framed by two core research questions. First, how do educators in the health professions understand critical thinking? Second, how do an educator's unique personal and professional experiences inform their understanding of critical thinking?

Coming to this project, I had my own views on what critical thinking can and should mean; I saw this project as a way of exploring what was initially a troubling difference between my own "right" way of understanding the critical and another person's very different "right" way. I have continued to understand critical thinking as anything but a neutral term. In the broadest sense, critical thinking is a term loaded with all of the values and beliefs behind interpretations of "good thinking" and the project of education. At its most local, critical thinking stands in for effective thinking processes situated in a particular context. Naturally, these two movements are not separate things, but are wrapped up in a dialectic – in context, broad normative values and decision making at the local level are constantly in tension.

At times I have struggled to step back from my own values and beliefs to hear other ways of understanding critical thinking from the standpoint of a curious researcher. I have worked to focus on *how* critical thinking is constructed by participants, rather than

over-focussing on *what* these articulated understandings entail. In addition to my two core questions, I have considered: how do participants situate critical thinking in their contexts? What experiences, values, and beliefs do they draw on? How are those values and beliefs linked to experiences as an educator, a health professional, a specialist, and a person? What are the tensions present in how critical thinking is constructed?

What We Know About Critical Thinking

In this study, my aim has been to contribute to knowledge in the field of health professions education, through enhancing our understanding of what critical thinking means, and the values and beliefs through which educators construct this loaded term. This exploration also has implications beyond simply examining what critical thinking means to educators – it has broader implications and contributes to important normative conversations on "the good" in health professions education and healthcare. Some of the contributions made by this study are confirmatory: this study builds on and confirms many things that we already know about critical thinking and about how individuals make meaning in and through their contexts. This study also contributes new knowledge and ways of thinking about this topic.

Mapping Critical Thinking

In chapter four, I address my first research question: how do health science educators understand critical thinking? I explore three core approaches to critical thinking, examining the meanings and language that tended to cluster together as participants described their understandings. In my literature review, I drew on Walters (1994b) and McLaren's (1994) three approaches to critical thinking: 1) rationalist or technical approaches, 2) humanist approaches, and 3) emancipatory approaches derived

from critical pedagogy. Although I actively sought other ways of categorizing approaches to critical thinking through the data, the categories held up well in data analysis. Not all participants were unanimous on all parts of each "cluster" of meanings; however, there were clear commonalities within each approach. In viewing data from this study through the framework developed in chapter two (drawing on Walters and McLaren's three approaches to critical thinking), I first identify a positivistic or post-positivistic understanding of critical thinking viewed by participants as a neutral clinical reasoning or problem-solving process. Second, I identify an approach to critical thinking that is centred on a process of examining broad social (ideological and hegemonic) assumptions; this approach draws on critical theory and critical pedagogy traditions and focuses on critical thinking as a process of analysing power and privilege. Third, I look at a humanistic understanding of critical thinking that values the personal and the interpersonal – critical thinking is seen as relational.

Chapter four also deals with how understandings of critical thinking map onto language of reflection and reflective practice. The literature on critical thinking suggests that this overlap is well documented, to the extent that some authors use the terms *critical thinking* and *reflection* interchangeably. To this point, Brookfield has authored two very similar books, covering much of the same content, respectively titled *Teaching for critical thinking* (2012) and *Becoming a critically reflective teacher* (1995). In this section of chapter four, I examined the interplay between reflection and critical thinking in the context of health professions education.

The final section of chapter four echoes a core, if slightly contentious, category found in Facione's (1990) Delphi consensus. Perhaps this is not surprising, given that

some participants actively referenced Facione's definition. In this section, I examined the ways in which participants understood critical thinking as a set of dispositions or characteristics. Much like Facione's Delphi consensus, the role of individual characteristics or dispositions, whether viewed as innate or contextual, in critical thinking was contested.

There were few surprises in the data as represented in chapter four. Given the nature of the data, I found that categories available in the literature were adequate for representing how participants understand critical thinking. However, when these categories are contextualised through the data, there were already moments of tension, and categories were challenged in various ways. Participants' unique understandings of critical thinking never entirely fit into one category; rather, many participants "fit" within multiple categories, or they challenged the categories in various ways. They challenged the nature of "data" in the reasoning approach, integrating patient narratives and stories in their reasoning processes. They also discussed and contested the roles of discourse, emotion, and advocacy within their understandings of critical thinking. Moreover, as in Walters and McLaren's conceptualization, the approaches to critical thinking based in humanism and in critical pedagogy were themselves constructed as a way of challenging dominant understandings of critical thinking as reasoning.

Constructing Critical Thinking

In chapter five, I addressed my second research question: how do an educator's unique personal and professional experiences inform their understanding of critical thinking? I examined the contexts and experiences through which educators construct their understandings of critical thinking. The fact that critical thinking is highly

contextual is perhaps not surprising. However, the critical thinking literature has been largely preoccupied with understanding *what* critical thinking means, attempting to generate broad definitions and to recommend particular instructional approaches. With few exceptions (e.g. Brookfield, 2000; Walters, 1994b), the literature does not examine the values and beliefs that lie behind diverse understandings of critical thinking, or the contexts from which they are drawn (e.g. A. Jones, 2015). This examination of contexts as multiple and overlapping, drawing on the concept of overlapping activity systems from CHAT, is a novel way of looking at the ways in which critical thinking is constructed; that said, the fact that professional, practice, institutional, and personal contexts impact how educators think about critical thinking is in itself not surprising.

The data presented in these chapters do extend and, in some ways, challenge the critical thinking literature. Instead of attempting to build universal definitions or taxonomies of critical thinking, I have presented a map of the various ways in which critical thinking has been understood comprehended and constructed by participants. Rather than creating resolutions, I have tried to maintain the tensions between various understandings of critical thinking, and the values, beliefs, and experiences that they are constructed through. This approach is novel in the literature; the following section addresses the new knowledge contributed by this study.

Contributions to Knowledge

This section examines the contributions that this study makes to knowledge, including the critical thinking literature and theory in health professions education. I also make suggests regarding how my findings might be applied to various practice settings,

including the individual educators' teaching, policy-making, curriculum design, and faculty development.

Contributions to the Critical Thinking Literature

In one sense, contextualising critical thinking has challenged the categories offered by Walters and McLaren in interesting ways; it shows moments of overlap and tension within and between categories. With few exceptions, the critical thinking literature has not adequately dealt with the contextuality of critical thinking. Scholarship does focus on critical thinking as tied to disciplinary knowledge and contexts (it's subject or domain-specificity); however, this attention to context largely deals with the disciplinary knowledge that McPeck (1990, 1994) and others see as required in order to "think critically" in a given context. Others have viewed critical thinking as social, and thus constructed within its particular social context (e.g. Missimer, 1994; Thayer-Bacon, 2000). This abstract approach to contextuality offers a point of departure for this study. This empirical work takes theoretical contextuality and uses empirical data to explore how critical thinking is constructed through participants' unique social, institutional, and material contexts.

Further contributions to knowledge stem from the overlapping contexts through which critical thinking is constructed, explored in chapter five. In chapter six, I dealt with the ways that CHAT can be used to understand those overlapping contexts as activity systems and explore the curious moments of tension that came up in many of the interviews. The critical thinking literature so far has largely tried to reconcile differing views on what critical thinking can and should mean, even if those meanings are linked to subject or context. This approach suggests that the tensions between understandings of

critical thinking ought to be explored, but ought not to be fully resolved. These tensions are productive in opening up opportunities to challenge received wisdom and encourage debate.

In *Rethinking reason* McLaren (1994) notes that the framework I have used – viewing critical thinking through rationalist, humanist, and emancipatory lenses – offers:

> A bridge that joins the fields of critical pedagogy and critical thinking. I want to make it clear that this bridge is not a one-way thoroughfare. It is not just critical pedagogy that will be transported across the bridge to enhance critical thinking. Much in the realm of critical thinking will be concomitantly used to deepen and add refinement to the project of critical pedagogy. (p. xxi)

Both McLaren and I have sympathies with the projects of critical theory and critical pedagogy. As a result, it has been important to me, throughout this project, to avoid seeing rationalist approaches as a viewpoint that must be "fixed." Both perspectives have something to learn from each other; at the same time, each perspective has its own orthodoxies that should be interrogated. However, I think McLaren's words do suggest that there might be an end result to the effects of this "bridge" in the sense that we might build a single enhanced understanding of critical thinking. I do believe that these results will be useful to educators interested in challenging and expanding their own understandings of critical thinking and building more robust and reflective understandings of critical thinking. However, I also see a need to continually contest what is meant by "the good."

Contributions to Theory

From a theoretical perspective, the tensions and contradictions inherent in critical thinking are themselves more useful than any final or ultimate definition, which must necessarily have its own problems and exclusions – no one definition, no matter how broad, can serve all people. Moreover, even if each individual critically and reflectively developed their own understanding of critical thinking, any final product must become static and will not fit all contexts or circumstances. Instead, Engeström's assertion that contradictions can be productive offers an entirely new way of looking at critical thinking; in this sense, it is inevitable that a loaded term like critical thinking would have multiple meanings both within and between contexts or systems. Moreover, these contradictions in meaning are productive. They offer a space where existing ideas of what "the good" is in health professions education, including "good thinking," "good pedagogy" and even "good care" can remain continually contested. I believe that these concepts should (and must) remain contested. Thus, instead of seeing participants' moments of confusion and contradiction as flawed data, they can, in turn, be seen as exciting moments of learning and change.

The Marxist origins of CHAT also encourage an examination of power and the ways in which dominant discourses dominate the conversation. As I discuss in chapter six, there is a sense that humanist and critical theory approaches to critical thinking and, more broadly, care do not suffice on their own. Instead, participants often begin a thought about the role of the interpersonal and the value of the patient in critical thinking, but end the thought by reconsidering whether that approach can fit within a rationalist, reasoning-based approach to critical thinking. Alternatively, participants might end that thought by

placing the interpersonal in service of the rational – valuing the patient becomes about making a transaction, either gathering or disseminating information. These tensions reassert the role of the dominant, even while it is contested.

Participants also struggled to see how "examining assumptions" approaches might fit into their understanding of critical thinking, despite seeing how social justice issues impact their patients' health and access to care. To recall one participant's words, discussed in chapter six:

> I haven't really thought a lot about kind of that and how it [examining assumptions] relates to what I do. I mean I guess we certainly see a wide spectrum of social and economic status and cultures and things and recognizing that our system is kind of biased against certain groups as it is and knowing that but really not having a good sense of knowing even where to start to start deconstructing it and not being in a position where I am actually in a position to be able to do that anyway, in any grand scheme of things. (MD2 INT2)

This participant focuses attention on the reasoning processes involved in work with individual patients. Reasoning-based approaches seem to fit more easily within her context, suggesting the power of that dominant discourse as an assumed approach to practice.

It might be tempting, then, to see examining assumptions approaches to critical thinking as redemptive; however, as I have suggested, these approaches to critical thinking are also embedded in particular values and orthodoxies that cannot be neutral, and are never entirely emancipatory. In this sense, my analyses can enhance not only how

particular interpretations of critical thinking can be used to understand power, but also how power operates through loaded terms like critical thinking.

Overall, this study has offered a new way of looking at critical thinking, through a conceptual eclecticism. Critical thinking can and should mean different things in different contexts, and to different people. CHAT offers a way of challenging the drive toward creating a single model or understanding of critical thinking; through this study, various understandings of critical thinking are useful at various times. Moreover, this conceptual eclecticism offers a perpetual destabilisation of "good thinking." In taking an interpretive approach, challenges to dominant discourse emerge through competing discourses and overlapping activity systems.

Contributions to Practice

Critical thinking is a widely used term – it appears in many policy documents, curriculum meetings and pedagogical discussions. Though it is far more common language in some disciplines than in others, it is nonetheless true that many people in this study had strong opinions about what critical thinking means. The language of critical thinking is as common as it is contentious. While I see the contestation and contradictions in critical thinking as important in theory construction and in practice, I also see that there is a need to construct some shared understandings, or at least for educators to share their understandings with each other. On policy and individual practice levels, I hope that this study might invite a more careful consideration of what is meant by critical thinking in context, as opposed to the empty rhetoric that is often a criticism of the language of critical thinking. This study offers a more sophisticated consideration of the assumptions,

values, and beliefs behind critical thinking; this foundation would be useful in informing future conversations where meaning of critical thinking are negotiated.

Viewing critical thinking as contested will also, I hope, contribute to an appreciation of the diversity of opinions and beliefs within any particular professional group. Individual educators are seen through overlapping and complex affiliations and identities. Viewing critical thinking in this way might productively destabilise codified beliefs about "what we are like" in any one professional group. These static senses of identity tend to be exclusionary and reify the status quo. Regarding professionals as unique individuals and group identity as intersectional and contested is useful in that it opens more space for negotiated, rather than rigid, collective rules and objects with the activity system. Such negotiation, moreover, opens up space for change and adaptation within a system, including challenges to professional hierarchies.

Policy Considerations

Both in written policy documents and in practice, many of the assumptions behind the policy decisions made and terminology used go unstated. I hope that, with dissemination through academic journals and through faculty development work, this study might offer a vehicle for enhancing existing conversations or starting new ones about the values and beliefs informing those assumptions. I do not think that the solution is for critical thinking, however difficult it may be to define, to be left out of policy. In some documents, such as the new medical education accreditation standards for Canada and the U. S. (Liason Committee on Medical Education, 2015), policymakers have preferred slightly narrower terms such as *problem solving*, *clinical judgement,* or *scientific method* (Liason Committee on Medical Education, 2015, p. 10); however,

values are always present behind such terms, narrow or broad, and I would suggest that the very ambiguity of critical thinking might be productive in opening up space for broader discussions and more diverse perspectives, including those across health professions. Such breadth invites policymakers to interrogate their own assumptions about what "critical thinking" means in their context, or across contexts.

Such policy conversations are already occurring through policy groups like the Association of Faculties of Medicine of Canada (n.d.). This group has begun to explore the role of the hidden curriculum in medical education and to advocate for exploring and remedying negative aspects of the hidden curriculum. Such a conversation must be grounded in a robust understanding of the competing discourses in health professions education. Examinations of the values and beliefs informing critical thinking – or any loaded term standing in for "good thinking" – would offer a productive place to start. In this study, I advocate for an eclectic and inclusive understanding of critical thinking. However, in the context of the hidden curriculum, it is also important to examine the ways in which dominant discourses (such as critical thinking as reasoning) act to preserve hierarchies, including professional-patient hierarchies, hierarchies between professions, and hierarchies between students and educators. Policy conversations around the hidden curriculum should challenge the ways in which logic and reasoning are used to disempower patients and families. My analyses suggest that approaches to critical thinking as personal and interpersonal, or as examining assumptions, might offer one potential challenge.

Curriculum Design Considerations

Educators and curriculum designers should interrogate their assumptions about what "good thinking" means. The values, beliefs, and intentions behind their pedagogical approaches could be made more transparent to other educators and to their students. As discussed, there have been significant conversations in recent years about "the hidden curriculum" or the values and beliefs that are passed onto students, but that are never stated or discussed (Association of Faculties of Medicine of Canada). Conversations about loaded terms like critical thinking and a sophisticated understanding of the values embedded in such terms might aid in making the implicit "hidden curriculum" explicit, and in exposing the values that many educators see as problematic. In effort to be explicit about the values and goals of professional education, programs will need to explicitly state goals in their curriculum mapping documents, and work to ensure alignment between goals, objectives, instructional strategies, and content. Currently, goals of "patient centred care," and attempts to put patient needs and goals first are undercut through messages implicit in the way that education and practice are conducted. For example, teaching about patient care might occur at the bedside, without involving the patient in the conversation.

In another sense, the interdisciplinary nature of this study offers a unique context for such curricular conversations. Interprofessional teamwork is becoming increasingly emphasized in contemporary healthcare contexts (Frenk et al., 2010); additionally, as this study demonstrates, there are significant cultural differences in different health professional programs, offering diversity in meanings of critical thinking that challenge educators and build space for productive contradictions.

This exploration of diverse interpretations of critical thinking, and the various values, beliefs, and contexts from which those meanings are drawn, will also be useful in enhancing conversations about diversity and commonalities between professional values and cultures. Destabilizing ideas of what "good thinking" means in any profession and viewing critical thinking as heterogeneous and idiosyncratic can be helpful in dispelling professional stereotypes. Such stereotypes are, by definition, built on rigid views of what any one professional group "is like." Examining diversity within professional groups, and similarities that cross-cut professional boundaries can be productive toward this end.

Reflections on Research

I have sought to explore a breadth of understandings of critical thinking across professions, practice contexts, age groups, and genders. This approach allows for greater diversity and, relatedly, increased understanding of the contexts and experiences through which critical thinking is constructed. However, the corollary is that this study does not go into depth to fully explore the meanings generated from any one population, context or perspective. The breadth of approaches I have used and addressed in this study offers less obvious transferability than other more traditional grounded theory studies that are either larger or focus on a narrower context. In order to mediate this limitation, I have made an effort provide contextual information that allows readers to make their own decisions about when and how results might apply in their contexts (Tracy, 2010).

As I have noted elsewhere, the local and contextual nature of understandings of critical thinking is both a strength and a limitation of this study. On the one hand, a robust analysis of how critical thinking is constructed through context has been very productive, allowing for a close examination of the very local and individual nature of educators'

understandings of critical thinking. However, resisting the appeal of creating a single model has been difficult. In conversations about my research, I am often asked if I have developed a model or theory for understandings critical thinking. Sophisticated models of critical thinking do exist (e.g. Barnett, 2015); however, I have found it more useful and true to my theoretical perspective to examine heterogeneity than to reconcile it.

Directions for Future Research

From these limitations, I see several directions for future research in addition to a few additional areas for exploration drawn from the existing data. Based on the reflections discussed, I am keen to explore individual programs or contexts in greater depth. I think the breadth and interdisciplinarity of this study has been invaluably and might be enhanced by a closer look at specific programs, contexts, or demographics. It would also be fascinating to replicate this study at other institutions or in health professional programs not included in this study and then compare results. Lastly, it would be productive to examine the practices of teaching critical thinking and examining how the espoused beliefs of educators are put into practice. Given the increased messiness of practice this may expose some additional areas of overlap and resulting contradictions within and between activity systems.

I also look forward to further exploring how, from a CHAT perspective, educators use particular metaphors and ideas as tools to explain and translate their thinking to their students. I have noted a few examples already, including the dominance of the dual process model as a way of understanding thinking in medical education, and social justice orientations in social work education. I am intrigued by the ways that educators use these

tools in effort to capture the nature of clinical thought and the ways that these tools might also constrain and shape that thinking. I believe that this area bears further exploration.

Final Thoughts

In this study, I have been challenged to, insofar as possible, step back from my own values and beliefs about this value-laden term even while finding a theoretical framework, CHAT, that is congruent with my epistemological and theoretical considerations. In addressing my first research question - how do health science educators understand critical thinking? – I believe that I have offered a comprehensive map of the various approaches taken by participants, as well as the ways in which those approaches are both in dialogue and in conflict with each other.

My second research question - how do an educator's unique personal and professional experiences inform their understanding of critical thinking? – has allowed me to move beyond the descriptive and to begin to develop an understanding of the process through which those beliefs are constructed and the contexts that they arise from. Even more interestingly, analysis of those contexts or activity systems has offered a way to explore the contradictions and tensions within educators' understandings of critical thinking, reflective of tensions present in their larger belief system.

References

Aberegg, S. K., O'Brien, J. M., Lucarelli, M., & Terry, P. B. (2008). The search-inference framework: A proposed strategy for novice clinical problem solving. *Medical Education, 42*(4), 389-395. doi:10.1111/j.1365-2923.2008.03019.x

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2014). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research*. doi:10.3102/0034654314551063

Abrami, P. C., Bernard, R. M., Borokhovski, E., Wade, A., Surkes, M. A., Tamim, R., & Zhang, D. (2008). Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research, 78*(4), 1102-1134. doi:10.3102/0034654308326084

Abu-dabat, Z. I. (2011). Critical thinking, skills and habits. *Journal of Education and Sociology, 2*(1), 28-34.

Adorno, T. (1990). *Negative dialectics* (E. B. Ashton, Trans.). London, UK: Routledge.

Alberta College of Pharmacists. (2009). *Code of ethics*. Retrieved from https://pharmacists.ab.ca/Content_Files/Files/CodeofEthics_2011.pdf

Alberta College of Pharmacists. (n.d.). *Standards of practice for pharmacists and pharmacy technicians*. Retrieved from Edmonton, CA: https://pharmacists.ab.ca/sites/default/files/StandardsOfPractice.pdf

Alfaro-LeFevre, R. (2013). *Critical thinking, clinical reasoning, and clinical judgement: A practical guide* (5th ed.). St. Louis, MO: Elsevier Saunders.

Andrews, R. (2015). Critical thinking and/or argumentation in higher education. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 49-62). New York, NY: Palgrave MacMillan.

Angus, I. (2009). *Love the questions: University education and enlightenment*. Winnipeg, CA: Arbeiter Ring Publishing.

Aronowitz, S. (1998). Introduction (P. Clarke, Trans.) *Pedagogy of freedom: Ethics, democracy, and civic courage* (pp. 1-20). Lanham, MD: Rowman & Littlefield.

Association of Faculties of Medicine of Canada. (n.d.). *The future of medical education in Canada (FMEC): A collective vision for MD education*. Retrieved from Ottawa, ON: http://www.afmc.ca/fmec

Austin, Z., Gregory, P. A. M., & Chiu, S. (2008). Use of reflection-in-action and self-assessment to promote critical thinking among pharmacy students. *American Journal of Pharmaceutical Education, 72*(3), 1-8.

Baker, C., Wuest, J., & Stern, P. N. (1992). Method slurring: The grounded theory/phenomenology example. *Journal of Advanced Nursing, 17*, 1355-1360.

Barnett, R. (2000). *Realizing the university*. Buckingham, UK: Open University Press.

Barnett, R. (2015). A curriculum of critical being. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 63-76). New York, NY: Palgrave MacMillan.

Barrows, H. (1985). *How to design a problem-based curriculum for the preclinical years*. New York, NY: Springer.

Barrows, H., & Tamblyn, R. (1980). *Problem-based learning: An approach to medical education.* . New York, NY: Springer.

Behar-Horenstein, L., & Niu, L. (2011). Teaching critical thinking skills in higher education: A review of the literature. *Journal of College Teaching & Learning, 8*(2), 25-42.

Black, B. (2008). *Critical thinking - a definition and taxonomy for Cambridge Assessment: Supporting validity arguments about critical thinking assessments administered by Cambridge Assessment.* Paper presented at the International Association of Educational Assessment Annual Conference, Cambridge, UK.

Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. London: Kogan Page.

Bowell, T., & Kemp, G. (2001). *Critical thinking: A concise guide*. New York, NY: Routledge.

Brookfield, S. D. (1995). *Becoming a critically reflective teacher*. San Francisco, CA: Jossey-Bass.

Brookfield, S. D. (2000). *Contesting criticality: Epistemological and practical contradiction in critical reflection.* Paper presented at the 40th Adult Education Research Conference, Vancouver, BC.

Brookfield, S. D. (2010). Critical reflection as an adult learning process. In N. Lyons (Ed.), *Reflective inquiry in the medical profession* (pp. 215-236). New York: Springer.

Brookfield, S. D. (2012). *Teaching for critical thinking: Tools and techniques to help students question their assumptions*. San Francisco, CA: Jossey-Bass.

Brookfield, S. D. (2015). Speaking truth to power: Teaching critical thinking in the critical theory tradition. In M. Davies & R. Barnett (Eds.), *The Palgrave*

handbook of critical thinking in higher education (pp. 529-543). New York, NY: Palgrave MacMillan.

Brunt, B. A. (2005). Critical thinking in Nursing: An integrated review. *The Journal of Continuing Education in Nursing, 36*(2), 60-67.

Bryant, A., & Charmaz, K. (2007). Grounded theory in historical perspective: An epistemological account. In A. Bryant & K. Charmaz (Eds.), *Sage handbook of grounded theory*. Thousand Oaks, CA: Sage.

Burgess-Allen, J., & Owen-Smith, V. (2010). Using mind mapping techniques for rapid qualitative data analysis in public participation processes. *Health Expect, 13*(4), 406-415. doi:10.1111/j.1369-7625.2010.00594.x

Caelli, K., Ray, L., & Mill, J. (2003). 'Clear as mud': Toward greater clarity in generic qualitative research. *International Journal of Qualitative Methods, 2*(2). Retrieved from http://www.ualberta.ca/~iiqm/backissues/pdf/caellietal.pdf

Canadian Association for Social Work Education. (2012). *Standards for accreditation*. Retrieved from http://caswe-acfts.ca/wp-content/uploads/2013/03/CASWE-ACFTS-Standards-11-2014.pdf

Canadian Association of Schools of Nursing. (2014). *CASN accreditation program standards*. Retrieved from Ottawa, CA: http://www.ccapp-accredit.ca/obtaining_accreditation/degree/standards/

Canadian Association of Social Workers. (2005). *Code of ethics*. Retrieved from http://www.casw-acts.ca/en/what-social-work/casw-code-ethics

Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council. (2010).

Tri Council policy statement: Ethical conduct for research involving humans. Retrieved from http://www.pre.ethics.gc.ca

Canadian Nurses Association. (2008). *Code of ethics for registered nurses*. Retrieved from https://www.cna-aiic.ca/~/media/cna/page-content/pdf-fr/code-of-ethics-for-registered-nurses.pdf?la=en

Canadian Pharmacists Assocation. Pharmacists' Expanded Scope of Practice. Retrieved from http://www.pharmacists.ca/index.cfm/pharmacy-in-canada/scope-of-practice-canada/

Canadian Pharmacists' Association. (2015). Pharmacists' expanded scope of practice in Canada. Retrieved from http://www.pharmacists.ca/cpha-ca/assets/File/news-events/ExpandedScopeChart_June2015_EN.pdf

Carlisle, S. (2000). Health promotion, advocacy and health inequalities: A conceptual framework. *Health Promotion International, 15*(4), 369-376.

Carter, A. G., Creedy, D. K., & Sidebotham, M. (2015). Evaluation of tools used to measure critical thinking development in nursing and midwifery undergraduate students: A systematic review. *Nurse Education Today, 35*(7), 864-874. doi:10.1016/j.nedt.2015.02.023

Cave, M. T., & Clandinin, D. J. (2007). Learning to live with being a physician. *Reflective Practice, 8*(1), 75-91. doi:10.1080/14623940601138998

Centre for the Advancement of Interprofessional Education. (2002). Defining IPE. Retrieved from http://www.caipe.org.uk/resources/

Chan, Z. C. (2012). A systematic review of creative thinking/creativity in nursing education. *Nurse Education Today, 33*(11), 1382-1387. doi:10.1016/j.nedt.2012.09.005

Chan, Z. C. (2013). A systematic review of critical thinking in nursing education. *Nurse Education Today, 33*(3), 236-240. doi:10.1016/j.nedt.2013.01.007

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London, UK: SAGE.

Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Thousand Oaks, CA: SAGE.

Charon, J. M. (2010). *Symbolic interactionism: An introduction, an interpretation, an integration*. Boston, MA: Prentice Hall.

Charon, R. (2004). Narrative and medicine. *New England Journal of Medicine, 350*, 862-864.

Charon, R. (2010). Calculating the contributions of the humanities in medical practice - motives, methods, and metrics. *Academic Medicine, 85*(6), 935937.

Charon, R., Trautmannn Banks, J., Hunsaker Hawkins, A., Montgomery Hunter, K., Jones, A. H., Montello, M., & Poirer, S. (1995). Literature and medicine: Contributions to clinical practice. *Annals of Internal Medicine, 122*(8), 599-606.

Clandinin, D. J., & Cave, M. T. (2008). Creating pedagogical spaces for developing doctor professional identity. *Medical Education, 42*(8), 765-770. doi:10.1111/j.1365-2923.2008.03098.x

Cosby, K. (2011). The role of certainty, confidence, and critical thinking in the diagnostic process: Good luck or good thinking? *Academic Emergency Medicine, 18*(2), 212-214. doi:10.1111/j.1553-2712.2010.00979.x

Crotty, M. (1998). *The foundations of social research*. Los Angeles, CA: Sage.

DasGupta, S., & Charon, r. (2004). Personal illness narratives: Using reflective writing to teach empathy. *Academic Medicine, 79*(4), 351-356.

DasGupta, S., Fornari, A., Geer, K., Hahn, L., Kumar, V., Lee, H. J., . . . Gold, M. (2006). Medical education for social justice: Paulo Freire revisited. *Journal of Medical Humanities, 27*(4), 245-251. doi:10.1007/s10912-006-9021-x

Davies, M., & Barnett, R. (2015a). Introduction. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 1-25). New York, NY: Palgrave MacMillan.

Davies, M., & Barnett, R. (2015b). *The Palgrave handbook of critical thinking in higher education*. New York, NY: Palgrave MacMillan.

Dharamsi, S., Ho, A., Spadafora, S. M., & Woollard, R. (2011). The physician as health advocate: translating the quest for social responsibility into medical education and practice. *Academic Medicine, 86*(9), 1108-1113. doi:10.1097/ACM.0b013e318226b43b

Dharamsi, S., Richards, M., Louie, D., Murray, D., Berland, A., Whitfield, M., & Scott, I. (2010). Enhancing medical students' conceptions of the CanMEDS Health Advocate Role through international service-learning and critical reflection: A phenomenological study. *Medical Teacher, 32*, 977-982. doi:10.3109/01421590903394579

Dobson, S., Voyer, S., Hubinette, M., & Regehr, G. (2015). From the clinic to the community: The activities and abilities of effective health advocates. *Academic Medicine, 90*(2), 214-220. doi:10.1097/ACM.0000000000000588

Doukas, D. J., McCullough, L. B., & Wear, S. (2012). Perspective: Medical education in medical ethics and humanities as the foundation for developing medical professionalism. *Academic Medicine, 87*(3), 334-341. doi:10.1097/ACM.0b013e318244728c

Draucker, C. B., Martsolf, D. S., Ross, R., & Rusk, T. B. (2007). Theoretical sampling and category development in grounded theory. *Qualitative Health Research, 17*(8), 1137-1148. doi:10.1177/1049732307308450

Earnest, M. A., Wong, S. L., & Frederico, S. G. (2010). Physician advocacy: What is it and how do we do it? *Academic Medicine*(85), 1.

Edwards, A. (2005). *'Cultural Historical Activity Theory and Learning: a relational turn'*. Paper presented at the TLRP Annual Conference, Warwick, UK.

Elias, J. L., & Merriam, S. B. (1995). *Philosophical foundations of adult education* (2nd ed.). Malabar, FL: Krieger.

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to devleopmental research*. Helsinki, FI: Orienta-Konsultit Oy.

Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen, & R.-L. Punamäki (Eds.), *Perspectives on activity theory* (pp. 19-38). Cambridge, UK: Cambridge University Press.

Engeström, Y. (2005). On the Life of the Object. *Organization, 12*(3), 307-330. doi:10.1177/1350508405051268

Engeström, Y. (2008). *The future of activity theory: A rough draft*. Paper presented at the ISCAR, San Diego, CA.

Engeström, Y., & Miettinen, R. (1999). Introduction. In Y. Engeström, R. Miettinen, & R.-L. Punamäki (Eds.), *Perspectives on Activity Theory* (pp. 1-16). Cambridge, UK: Cambridge University Press.

Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review, 32*, 81-111.

Ennis, R. H. (1989). Critical thinking and subject specificity: Clarification and needed research. *Educational Researcher, 18*(3), 4-10. doi:10.3102/0013189x018003004

Ennis, R. H. (1990). The extent to which critical thinking Is subject-specific: Further clarification. *Educational Researcher, 19*(4), 13-16. doi:10.3102/0013189x019004013

Epstein, R. L. (2003). *The pocket guide to critical thinking* (2nd ed.). Toronto, CA: Wadsworth Group.

Facione, N. C., Facione, P. A., & Sanchez, C. A. (1994). Critical thinking disposition as a measure of competent clinical judgement: The development of the california critical thinking disposition inventory. *Journal of Nursing Education, 33*(8), 345-350.

Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction*. Retrieved from Millbrae, CA: http://eric.ed.gov/?id=ED315423

Facione, P. A. (1991). *California critical thinking skills test in research, evaluation, and assessment*. Millbrae, CA: California Academic Press.

Facione, P. A. (2011). *Critical thinking: What it is and why it counts*. Retrieved from http://www.insightassessment.com/Resources/Critical-Thinking-What-It-Is-and-Why-It-Counts/Critical-Thinking-What-It-Is-and-Why-It-Counts-PDF

Fenwick, T., Edwards, R., & Sawchuk, P. (2011). *Emerging approaches in educational research: Tracing the sociomaterial in education*. New York, NY: Routledge.

Finlayson, J. G. (2005). *Habermas: A very short introduction*. Oxford, UK: Oxford University Press.

Fisher, S. C., Spiker, V. A., & Riedel, S. L. (2009). *Critical thinking training for army officers volume two: A model of critical thinking*. Retrieved from http://www.au.af.mil/au/awc/awcgate/army/critical/criticalthinking1882.pdf

Flynn, L., & Verma, S. (2008). Fundamental components of a curriculum for residents in health advocacy. *Med Teach, 30*(7), e178-183. doi:10.1080/01421590802139757

Ford, J. S., & Profetto-McGrath, J. (1994). A model for critical thinking within the context of curriculum as praxis. *Journal of Nursing Education, 33*(8), 341-344.

Francis, A., & Flanigan, A. (2012). Self-directed learning and higher education practices: Implications for student performance and engagement. *Self-directed learning and higher education, 7*(3), 1-18.

Freire, P. (1996). *Pedagogy of the oppressed* (M. Ramon, Trans.). Toronto, CA: Penguin Books.

Freire, P. (2008). *Education for critical consciousness* (M. Bergman Ramos, Trans.). New York, NY: Continuum.

Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., . . . Zurayk, H. (2010). Health professionals for a new century: Transforming education to strengthen

health systems in an interdependent world. *The Lancet, 376*, 1923-1958. doi:10.1016/s0140-6736(10)61854-5

Gambrill, E. (2012). *Critical thinking in clinical practice: Improving the quality of judgements and decisions* (3rd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Garrison, D. R. (1992). Critical thinking and self-directed learning in adult education: An analysis of responsibility and control issues. *Adult Education Quarterly, 42*(3), 136-148. doi:10.1177/074171369204200302

Getzlaf, B. A., & Osborne, M. (2010). A journey of critical consciousness: An educational strategy for health care leaders. *International Journal of Nursing Scholarship, 7*(1), 1-15.

Gibbons, J., & Gray, M. (2004). Critical thinking as integral to social work practice. *Journal of Teaching in Social Work, 24*(1/2), 19-38. doi:10.1300/J067v24n01_02

Giroux, H. A. (1994). Toward a pedagogy of critical thinking. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 199-204). Albany, NY: State University of New York Press.

Giroux, H. A. (2006). Youth, higher education, and the crisis of public time. In H. A. Giroux (Ed.), *The Giroux reader* (pp. 199-204). Boulder, CO: Paradigm Publishers.

Gladwell, M. (2005). *Blink: The power of thinking without thinking*. New York, NY: Back Bay Books.

Glaser, G. M., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.

Gordon, J. M. (2000). Congruency in definiting critical thinking by nurse educators and non-nurse scholars. *Journal of nursing education, 39*(8), 340-351.

Health Professions Act, H-7 Stat. (Alberta Queen's Printer 2000).

Grace, S., & Orrock, P. J. (2015). Criticality in osteopathic medicine: Exploring the relationship between critical thinking and clinical reasoning. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 479-490). New York, NY: Palgrave MacMillan.

Greenwood, R., Oliver, C., Sahlin, K., & Suddaby, R. (2008). Introduction. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds.), *The SAGE handbook of organizational institutionalism* (pp. 1-46). Los Angeles, CA: Sage.

Gruen, R., L, Pearson, S. D., & Berennan, T. A. (2004). Physician-Citizens—Public Roles and Professional Obligations. *JAMA, 291*(1), 94-98.

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 191-215). Thousand Oaks, CA: Sage Publications, Inc.

Halpern, D. (2003). *Thought and knowledge: An introduction to critical thinking*. Mahwah, NJ: Lawrence Erlbaum.

Hammick, M., Freeth, D., Koppel, I., Reeves, S., & Barr, H. (2007). A best evidence systematic review of interprofessional education: BEME Guide no. 9. *Medical Teacher, 29*(8), 735-751. doi:10.1080/01421590701682576

Harasym, P. H., Tsai, T.-C., & Hemmati, P. (2008). Current trends in developing medical students' critical thinking abilities. *Koohsiung Journal of Medical Sciences, 24*(7), 341-355.

Harrison, K. (2009). 'Listen: This *really* happened': Making sense of social work through story-telling. *Social Work Education, 28*(7), 750-764. doi:10.1080/02615470802535755

Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education, 11*, 33-49.

Heron, G. (2006). Critical thinking in social care and social work: Searching student assignments for the evidence. *Social Work Education, 25*(3), 209-224. doi:10.1080/02615470600564965

Hitchcock, D. (2015). Effectiveness of instruction in critical thinking. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 283-294). New York, NY: Palgrave MacMillan.

Hoffman, J. J. (2008). Teaching strategies to facilitate Nursing students' critical thinking. *Annual Review of Nursing Education, 6*, 225-236.

Holloway, I., & Todres, L. (2003). The status of method: Flexibility, consistency and coherence. *Qualitative Research, 3*(3), 345-357. doi:10.1177/1468794103033004

Holton, J. A. (2007). The coding process and its challenges. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 265-290). Thousand Oaks, CA: Sage.

hooks, b. (2010). *Teaching critical thinking: Practical wisdom*. New York, NY: Routledge.

Horkheimer, M. (1995). *Critical theory: Selected essays*. New York, NY: Continuum.

Huang, G. C., Newman, L. R., & Schwartzstein, R. M. (2014). Critical thinking in health professions education: ummary and consensus statements of the Millennium Conference 2011. *Teaching and Learning in Medicine, 26*(1), 95-102. doi:10.1080/10401334.2013.857335

Hubinette, M., Dobson, S., Towle, A., & Whitehead, C. (2014). Shifts in the interpretation of health advocacy: a textual analysis. *Medical Education, 48*(12), 1235-1243. doi:10.1111/medu.12584

Hubinette, M. M., Ajjawi, R., & Dharamsi, S. (2014). Family physician preceptors' conceptualizations of health advocacy: implications for medical education. *Academic Medicine, 89*(11), 1502-1509. doi:10.1097/ACM.0000000000000479

Huddle, T. S. (2011). Perspective: Medical professionalism and medical education should not involve commitments to political advocacy. *Academic Medicine, 86*(3), 378-383. doi:10.1097/ACM.0b013e3182086efe

Hung, T. M., Tang, L. C., & Ko, C. J. (2015). How mental health nurses improve their critical thinking through problem-based learning. *Journal of Nurses in Professional Development, 31*(3), 170-175. doi:10.1097/NND.0000000000000167

Hunt, M. R. (2009). Strengths and challenges in the use of interpretive description: Reflections arising from a study of the moral experience of health professionals in humanitarian work. *Qualitative Health Research, 19*(9), 1284-1292. doi:10.1177/1049732309344612

Johnson, M., Long, T., & White, A. (2001). Arguments for 'British pluralism' in qualitative research. *Journal of Advanced Nursing, 33*(2), 243-249.

Johnston, L. B. (2009). Critical thinking and creativity in a social work diversity course: Challenging students to “think outside the box”. *Journal of Human Behavior in the Social Environment, 19*(5), 646-656. doi:10.1080/10911350902988001

Jones, A. (2015). A disciplined approach to critical thinking. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 169-182). New York, NY: Palgrave MacMillan.

Jones, S. (2006). A journey of seven steps - Social work students as critical thinkers. *Special education, 1*(14), 48-54.

Jones-Devitt, S., & Smith, L. (2007). *Critical thinking in health and social care*. London, UK: SAGE.

Kahneman, D. (2013). *Thinking, fast and slow*. Toronto, ON: Anchor Canada.

Kamin, C., O'Sullivan, P., Deterding, R., & Younger, M. (2003). A comparison of critical thinking in groups of third-year medical students in text, video, and virtual PBL case modalities. *Academic Medicine, 78*(2), 204-211.

Kaplan, L. D. (1994). Teaching intellectual autonomy: The failure of the critical thinking movement. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 205-220). Albany, NY: State University of New York Press.

Kelle, U. (2007). The development of categories: Different approaches in grounded theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 191-213). Thousand Oaks, CA: SAGE.

Khoiriyah, U., Roberts, C., Jorm, C., & Van der Vleuten, C. P. (2015). Enhancing students' learning in problem based learning: Insight Assessmentalidation of a self-assessment scale for active learning and critical thinking. *BMC Medical Education, 15*, 140. doi:10.1186/s12909-015-0422-2

Kinchin, I. M., Streatfield, D., & Hay, D. B. (2010). Using concept mapping to enhance the research interview. *International Journal of Qualitative Methods, 9*(1), 52-68.

King, P. M., & Kitchener, K. S. (1990). The reflective judgement model: Transforming assumptions about knowing. In A. B. Knox (Ed.), *Fostering critical reflection in adulthood* (pp. 159-176). San Francisco, CA: Jossey-Bass.

Knowles, M. S. (1973). *The adult learner: A neglected species*. Houston, TX: Gulf Publishing Company.

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. New York, NY: Cambridge: The adult educaiton company.

Kowalczyk, N. (2011). Review of teaching methods and critical thinking skills. *Radiologic technology, 83*(2), 120-132.

Kreiter, C. D., & Bergus, G. (2009). The validity of performance-based measures of clinical reasoning and alternative approaches. *Medical Education, 43*(4), 320-325. doi:10.1111/j.1365-2923.2008.03281.x

Krupat, E., Sprague, J. M., Wolpaw, D., Haidet, P., Hatem, D., & O'Brien, B. (2011). Thinking critically about critical thinking: Ability, disposition or both? *Medical Education, 45*(6), 625-635. doi:10.1111/j.1365-2923.2010.03910.x

Kuh, G. D., Kinzie, J., Schuh, J. H., Whitt, E. J., & Associates. (2010). *Student success in college: Creating conditions that matter*. San Francisco, CA: Jossey-Bass.

Kumagai, A. K., & Lypson, M. L. (2009). Beyond cultural competence: Critical consciousness, social justice, and multicultural education. *Academic Medicine, 84*(6), 782-787.

Lempert, L. (2007). Asking questions of the data: Memo writing in the grounded theory tradition. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 97-128). Thousand Oaks, CA: SAGE.

Leveridge, M., Beiko, D., Wilson, J. W. L., & Siemens, D. R. (2007). Health advocacy training in urology: A Canadian survey on atatitudes and experience in residency. *Canadian Urological Association Journal, 1*(4), 363-369.

Liason Committee on Medical Education. (2015). *Functions and structure of a medical school: Standards for accreditation of medical education progrmas leading to the M.D degree*. Retrieved from http://www.lcme.org/publications.htm - standards-section

Lieberman, S. A., Trumble, J. M., & Smith, E. R. (2000). The impact of structured student debates on critical thinking and informatics skills of second year medical students. *Academic Medicine, 75*(10), S84-S86.

Lipman, M. (1988). Critical thinking - What can it be? *Educational Leadership, 46*(1), 38-43.

Llano, S. M. (2015). Debate's relationship to critical thinking. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 139-152). New York NY: Palgrave MacMillan.

Lompscher, J. (2006). The cultural-historical activity theory: Some aspects of development. In P. H. Sawchuk, N. Duarte, & M. Elhammoumi (Eds.), *Critical*

Perspectives on Activity: Explorations across education, work, and everyday life (pp. 35-51). New York, NY: Cambridge University press.

Macpherson, K., & Owen, C. (2010). Assessment of critical thinking ability in medical students. *Assessment & Evaluation in Higher Education, 35*(1), 41-54. doi:10.1080/02602930802475471

Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education, 14*(4), 595-621. doi:10.1007/s10459-007-9090-2

Manning, K. (2013). *Organizational theory in higher education*. New York, NY: Routledge.

Marcuse, H. (1986). *Negations: Essays in critical theory* (J. J. Shapiro, Trans.). Boston, MA: Beacon Press.

Martin, C. (2002). The theory of critical thinking in nursing. *Nursing Education Perspectives, 23*(5), 243-247.

Mason, M. (2009). *Critical thinking and learning*. Hoboken, NJ: Wiley-Blackwell.

Maudsley, G., & Strivens, J. (2000a). Promoting professional knowledge, experiential learning and critical thinking for medical students. *Medical Education, 34*, 535-544.

Maudsley, G., & Strivens, J. (2000b). 'Science,' 'critical thinking' and 'competence' for *Tomorrow's Doctors.* A review of terms and concepts. *Medical Education, 34*, 53-60.

May, B. A., Edell, V., Butell, S., Doughty, J., & Langford, C. (1999). Critical thinking and clinical compentence: A study of their relationship in BSN seniors. *Journal of Nursing Education, 38*(3), 100-110.

McLaren, P. L. (1994). Forward: Critical thinking as a political project. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. ix-xv). Albany, NY: State University of New York Press.

McPeck, J. E. (1990). Critical thinking and subject-specificity: A reply to Ennis. *Educational Researcher, 19*(10), 10-12. doi:10.3102/0013189X019004010

McPeck, J. E. (1994). Critical thinking and the "Trivial Pursuit" theory of knowledge. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 101-118). Albany, NY: State University of New York Press.

Meier, P. S. (2007). Mind-mapping. *Social Research update, 52*, 1-4.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Merriam, S. B., & Bierema, L. L. (2014). *Adult learning: Theory and practice*. San Francisco, CA: Jossey-Bass.

Mezirow, J. (1990). *Transformative dimensions of adult leanring*. San Francisco, CA: Jossey-Bass.

Mezirow, J. (1998). On Critical Reflection. *Adult Education Quarterly, 48*(3), 185-198. doi:10.1177/074171369804800305

Miller, S. E., Harnek Hall, D. M., & Tice, C. J. (2009). Assessing critical thinking: The use of literature in a policy course. *Journal of Baccelaureate Social Work, 14*(2), 89-104.

Miller, S. E., Tice, C. J., & Harnek Hall, D. M. (2011). Bridging explicit and implicit curricula: Critically thoughtful critical thinking. *Journal of Baccelaureate Social Work, 16*(1), 33-45.

Missimer, C. (1994). Why two heads are beetter than one: Philosophical and pedagogical implications of a social view of critical thinking. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives in critical thinking* (pp. 119-134). Albany, NY: State University of New York Press.

Mok, C. K., Whitehill, T. L., & Dodd, B. J. (2008). Problem-based learning, critical thinking and concept mapping in speech-language pathology education: A review. *International Journal Speech Language Pathology, 10*(6), 438-448. doi:10.1080/17549500802277492

Morey, D. J. Developoment and evaluation of web-based animated pedagogical agents for facilitating critical thinking in nursing. *Nursing Education Perspectives, 33*(2), 116-120.

Morley, C. (2008). Teaching critical practice: Resisting structural domination through critical reflection. *Social Work Education, 27*(4), 407-421. doi:10.1080/02615470701379925

Morrall, P., & Goodman, B. (2013). Critical thinking, nurse education and universities: Some thoughts on current issues and implications for nursing practice. *Nurse Education Today, 33*(9), 935-937. doi:10.1016/j.nedt.2012.11.011

Morse, J. M. (1991). Qualitative nursing research: A free-for-all? In J. M. Morse (Ed.), *Qualitative nursing research: A contemporary dialogue* (Rev. ed.). Newbury Park, CA: SAGE.

Morse, J. M. (1998). Validity by committee. *Qualitative Health Research, 8*(4), 443-445.

Morse, J. M. (2007). Sampling in grounded theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 229-244). Thousand Oaks, CA: Sage.

Mruck, K., & Mey, G. (2007). Grounded theory and reflexivity. In A. Bryant & K. Charmaz (Eds.), *SAGE handbook of grounded theory* (pp. 515-538). Thousand Oaks, CA: SAGE.

Musolf, G. R. (2003). The Chicago School. In L. Reynolds & N. J. Herman-Kinney (Eds.), *Handbook of symbolic interactionism*. Toronto, CA: Altamira Press.

Myrick, F. (1998). *Dissertation - preceptorship and critical thinking in nursing education.* University of Alberta, Edmonton, AB.

Neergaard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative description - the poor cousin of health research? *BMC Medical Research Methodology, 9*, 52. doi:10.1186/1471-2288-9-52

Newman, C. (1999). *The idea of the university*. Washington, D. C, : Regnery Publishing.

Newman, F., Couturier, L., & Scurry, J. (2004). *The future of higher education: Rhetoric, reality, and the risks of the market*. San Francisco, CA: Jossey-Bass.

Noddings, N. (2010). Moral education and caring. *Theory and Research in Education, 8*(2), 145-151. doi:10.1177/1477878510368617

Nokes, K. M., Nickitas, D. M., Keida, R., & Neville, S. (2005). Does service learning increase cultural competency, critical thinking, and civic engagement. *Journal of Nursing Education, 44*(2), 65-70.

Norris, S. P. (1995). Sustaining and responding to charges of bias in critical thinking. *Educational Theory, 45*(2), 199-211.

Nosich, G. (2005). *Learning to think things through: A guide to critical thinking across the curriculum* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Oandasan, I. F. (2005). Health advocacy: Bringing clarity to educators through the voices of physician health advocates. *Academic Medicine, 80*(10), S38-S41.

Ordera, G. M. (2010). An environmental scan on the status of critical thinking and problem solving skills in colleges/ schools of pharmacy: Report of the 2009-2010 Academic Affairs Standing Committee. *American Journal of Pharmaceutical Education, 74*(10), 1-14.

Paul, R. (1995). *Critical thinking: How to prepare students for a rapidly changing world*. Santa Rosa, CA: Foundation for Critical Thinking.

Paul, R., & Elder, L. (2002). Critical thinking tools for taking charge of your professional and personal life. Upper Saddle River, NJ :: Financial Times/Prentice Hall.

Phelan, A. M., & Garrison, J. W. (1994). Toward a gneder-sensitive ideal of critical thinking: A feminist poetic. In K. S. Walters (Ed.), *Re-thinking reason: New Perspectives on critical thinking* (pp. 81-97). Albany, NY: State University of New York Press.

Pithers, R. T., & Soden, R. (2000). Critical thinking in education: a review. *Educational Research, 42*(3), 237-249. doi:10.1080/001318800440579

Pitkälä, K., Mäntyranta, T., Strandberg, T. E., Mäkelä, M., Vanhanen, H., & Varonen, H. (2000). Evidence-based medicine - how to teach critical scientific thinking to medical undergraduates. *Medical Teacher, 22*(1), 22-26.

Popil, I. (2011). Promotion of critical thinking by using case studies as teaching method. *Nurse Education Today, 31*(2), 204-207. doi:10.1016/j.nedt.2010.06.002

Profetto-McGrath, J. (1999). *Critical thinking skills and critical thinking dispositions in bacchelaureate nursing students.* (Doctor of Philosophy), University of Alberta, Edmonton, CA. Retrieved from http://www.collectionscanada.ca/obj/s4/f2/dsk1/tape9/PQDD_0025/NQ39582.pdf

Readings, B. (1996). *The university in ruins*. Cambridge, MA: Harvard University Press.

Reeves, S., Goldman, J., Burton, A., & Sawatzky-Girling, B. (2010). Synthesis of Systematic Review Evidence of Interprofessional Education. *Journal of Allied Health, 93*(3 pt 2), 198-203.

Reiser, S. J. (2012). The concept of service in medicine. *Journal of Pain Symptom Management, 44*(1), 150-153. doi:10.1016/j.jpainsymman.2012.02.005

Reynolds, L. (2003). Intellectual precursors. In L. Reynolds & N. Herman-Kinney (Eds.), *Handbook of symbolic interactionism*. Toronto, CA: Altamira Press.

Richards, L., & Morse, J. M. (2007). *Readme first for a user's guide to qualitative methods.* Thousand Oaks, CA: SAGE.

Royal College of Phyicians and Surgeons of Canada. (2005). *The canMEDS 2005 physician competency framework*. Retrieved from http://www.ub.edu/medicina_unitateducaciomedica/documentos/CanMeds.pdf

Royal College of Physicians and Surgeons of Canada. (2005). *CanMEDS 2005 Framework*. Retrieved from

Rubenfeld, M. G., & Scheffer, B. K. (1999). Critical thinking in nursing: An interactive approach (2nd ed. ed.). Philadelphia, PA:: Lippincott.

Ryan, C. A. (2010). Reflective inquiry in the medical profession. In N. Lyons (Ed.), *Handbook of reflection and reflective inquiry: Mapping a way of knowing for professional reflective inquiry* (pp. 101-130). New York: Springer.

Sandars, J. (2009). The use of reflection in medical education: AMEE Guide No. 44. *Med Teach, 31*(8), 685-695. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/19811204

Sawchuk, P. H., Duarte, N., & Elhammoumi, M. (2006). Introduction: Exploring activity across education, work and everyday life. In P. Sawchuk, N. Duart, & M. Elhammoumi (Eds.), *Critical perspectives on activity: Explorations across education, work and everyday life* (pp. 1-19). New York, NY: Cambridge University Press.

Scheffer, B. K., & Rubenfeld, M. G. (2000). A consensus statement on critical thinking in nursing. *Journal of Nursing Education, 39*(8), 352-359.

Schön, D. A. (1983). *The reflective practitioner: how professionals think in action*. New York, NY: Basic Books.

Shinnick, M. A., & Woo, M. A. (2013). The effect of human patient simulation on critical thinking and its predictors in prelicensure nursing students. *Nurse Education Today, 33*(9), 1062-1067. doi:10.1016/j.nedt.2012.04.004

Simpson, E., & Courtney, M. (2002). Critical thinking in nursing education: Literature review. *International Journal of Nursing Practice, 8*, 89-98.

Social Constructivism. (2008). In L. M. Given (Ed.), *The SAGE Encyclopedia of qualitative research methods* (Vol. 2, pp. 116-120). Thousand Oaks, CA: SAGE.

Sorensen, H. A. J., & Yankech, L. R. (2008). Precepting in the fast lane: Improving critical thinking in new graduate nurses. *Journal of Continuing Education in Nursing, 39*(5), 208-216.

Spencer, B. (2006). *The purposes of adult education: A short introduction* (2nd ed.). Toronto, CA: Thompson Educational Publishing, Inc.

Staib, S. (2003). Teaching and measuring critical thinking. *Journal of Nursing Education, 42*(11), 498-508.

Strauss, A. L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: SAGE.

Taylor, D., & Miflin, B. (2008). Problem-based learning: where are we now? *Med Teach, 30*(8), 742-763. doi:10.1080/01421590802217199

Teo, T. (2011). Radical philosophical critique and critical thinking in psychology. *Journal of Theoretical and Philosophical Psychology, 31*(3), 193-199. doi:10.1037/a0024708

Thayer-Bacon, B. (2000). *Transforming critical thinking: Thinking constructively*. New York, NY: Teachers College Press.

The Canadian Council for Accreditation of Pharmacy Programs. (2014). *Accreditation standards for the first professional degree in pharmacy programs*. Retrieved from Toronto, CA: http://www.ccapp-accredit.ca/obtaining_accreditation/degree/standards/

Thompson, A. (2001). *Clinical reasoning: A practical introduction*. Florence, KY: Routledge.

Thorne, S., Kirkham, S. R., & MacDonald-Emes, J. (1997). Interpretive description: A noncategorical qualitative alternative for developing nursing knowledge. *Research in Nursing and Health, 20*(2), 169-177.

Thorne, S., Kirkham, S. R., & O'Flynn-Magee, K. (2004). The analytic challenge in interpretive description. *International Journal of Qualitative Methods, 3*(1), 1-11.

Tishman, S., Jay, E., & Perkins, D. N. (1993). Teaching thinking dispositions: From transmission to enculturation. *Theory into Practice, 32*, 147-153.

Tiwari, A., Lai, P., So, M., & Yuen, K. (2006). A comparison of the effects of problem-based learning and lecturing on the development of students' critical thinking. *Med Educ, 40*(6), 547-554. doi:10.1111/j.1365-2929.2006.02481.x

Toohey, S. (1999). *Designing courses in higher education*. Buckingham, UK: SRHE and Open University Press.

Tracy, S. J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. *Qualitative Inquiry, 16*(10), 837-851. doi:10.1177/1077800410383121

Turk, J. L. (2008). Introduction. In J. L. Turk (Ed.), *Universites at risk: How politics, special interests and corporatization threaten academic integrity* (pp. 10-21). Toronto, CA: James Lorimer & Company.

van Gelder, T. (2015). Using argument mapping to improve critical thinking skills. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 183-192). New York, NY: Palgrave MacMillan.

Verkerk, M. A., de Bree, M. J., & Mourits, M. J. (2007). Reflective professionalism: interpreting CanMEDS' "professionalism". *Journal of Medical Ethics, 33*(11), 663-666. doi:10.1136/jme.2006.017954

Verma, S., Flynn, L., & Seguin, R. (2005). Faculty's and residents' perceptions of teaching and evaluating the role of health advocate. *Academic Medicine, 80*(1), 103-108.

Victor-Chmil, J. (2013). Critical thinking versus clinical reasoning versus clinical judgment: differential diagnosis. *Nurse Educator, 38*(1), 34-36. doi:10.1097/NNE.0b013e318276dfbe

Videbeck, S. L. (1997a). Critical thinking: A model. *Journal of Nursing Education, 36*(1), 23-28.

Videbeck, S. L. (1997b). Critical thinking: Prevailing practice in baccalaureate schools of nursing. *Journal of Nursing Education, 36*(1), 5-10.

Walters, K. S. (1994a). Critical thinking rationality, and the vulcanization of students. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 61-80). Albany, NY: State University of New York Press.

Walters, K. S. (1994b). Introduction: Beyond logicism in critical thinking. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 1-22). Albany, NY: State University of New York Press.

Walters, K. S. (1994c). *Rethinking reason: New perspectives in critical thinking*. Albany, NY: State University of New York Press.

Walthew, P. J. (2004). Conceptions of critical thinking held by nurse educators. *Journal of Nursing Education, 43*(9), 408-411.

Warren, K. J. (1994). Critical thinking and feminism. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 199-204). Albany, NY: State University of New York Press.

Warren, T. H. (1994). Critical thinking beyond reasoning: Restoring virtue to thought. In K. S. Walters (Ed.), *Re-thinking reason: New perspectives on critical thinking* (pp. 221-232). Albany, NY: State University of New York Press.

Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco, CA: Jossey-Bass.

Weiner, J. M. (2011). Is there a difference between critical thinking and information literacy? A systematic review 2000-2009. *Journal of Information Literacy, 5*(2), 81-92.

Wheeldon, J., & Åhlberg, M. K. (2012). *Vizualizing social science research: Maps, methods, & meanings*. Thousand Oaks, CA: SAGE.

Wheeldon, J., & Faubert, J. (2009). Framing Experience: Concept Maps, Mind Maps, and Data Collection in Qualitative Research. *International Journal of Qualitative Methods, 8*(3), 68-83.

Whiting, M., & Sines, D. (2012). Mind maps: Establishing 'trustworthiness' in qualitative research. *Nurse Researcher, 20*(1), 21-27.

Whittemore, R., Chase, S. K., & Mandle, C. L. (2001). Validity in Qualitative Research. *Qualitative Health Research, 11*(4), 522-537. doi:10.1177/104973201129119299

Wiggerhaus, R. (1986). *The Frankfurt school: Its history, theories and political significance* (M. Robertson, Trans.). Oxford, UK: Polity Press.

Worrell, J. A., & Profetto-McGrath, J. (2007). Critical thinking as an outcome of context-based learning among post RN students: a literature review. *Nurse Education Today, 27*(5), 420-426. doi:10.1016/j.nedt.2006.07.004

Yamagata-Lynch, L. C. (2010). *Activity systems analysis methods: Understanding complex learning environments* doi:10.1007/978-1-4419-6321-5_2

Yanchar, S. C., Jackson, A., Hansen, K., & Hansen, J. (2012). Critical Thinking in applied psychology: Toward an edifying view of critical thinking in applied psychology. *Issue in Religion and Psychotherapy, 34*, 69-80.

Yanchar, S. C., Slife, B. D., & Warne, R. (2008). Critical thinking as disciplinary practice. *Review of General Psychology, 12*(3), 265-281. doi:10.1037/1089-2680.12.3.265

Yuan, H., Williams, B. A., & Fan, L. (2008). A systematic review of selected evidence on developing nursing students' critical thinking through problem-based learning. *Nurse Education Today, 28*(6), 657-663. doi:10.1016/j.nedt.2007.12.006

Appendix A

Interview Guide for Initial Interview

You have been asked to participate in this interview because of your interest in teaching and learning. This interview is voluntary, and you can choose not to answer any questions you would prefer not to, or to end the interview at any time and for any reason. This interview will be audio recorded.

Critical thinking can mean many different things in different contexts and to different people, so there is no "right answer." The literature contains many different means that are contested. This interview aims to explore what critical thinking means to you, in your context.

The interview is semi-structured, which means that I have some specific questions I want to ask, but also that a lot of the questions will be guided by what you tell me.

The interview has several different parts.

1. First we'll talk about your teaching background and beliefs about teaching
2. Then we'll discuss what you mean by *critical thinking*, and how you have heard it talked about.
3. Then we'll talk about how you came to think about CT in this way – what moments in your personal/professional life inform your thinking
4. Finally, we'll talk about the teaching artefact(s) that you brought in, and discuss why you chose it and what it means in your practice

	Prompts

Teaching background/ beliefs	**So we'll start by talking a bit about you and your teaching background…**
	• Can you tell me a bit about how and why you became and educator?
	  o How long have you been teaching?
	• Can you tell me a bit about what you teach?
	  o What do you teach?
	  o How often do you teach?
	  o What does that look like?
	• So if there is a "typical day" or days of teaching what would it look like? Can you give me a sense?
	  o Any other teaching roles?
	• What do you hope, in a perfect world, students will learn
	  o From you?
	  ▪ In specific course?
	  ▪ More generally?
	  ▪ Why is that important?
	  ▪ Short term?
	  ▪ Long term?
	  o From their program more broadly? From other educators?
	  o What do you hope they will value?

What does *critical thinking* mean?	**The next bit is about critical thinking more specifically …**
	• Can you tell me a bit about what you think of when you hear the term *critical thinking?*
	• Have you heard critical thinking talked about in other ways? How are other ideas different than yours?
	  ○ Friends and family
	  ○ Colleagues from your discipline
	  ○ Colleagues from another discipline
	  ○ Within your institution
	  ○ In the literature or policy documents (e.g. your code of ethics)
	• Have you heard critical thinking talked about in ways that surprised you? What surprised you?
	• You said that you think CT is _____, have you ever encountered someone who had a different definition and made you think "wow, that's not what I think CT is"?
	• Are there any contexts in which you think about critical thinking differently?
	• Are there different kinds of critical thinking?
	• Is there ever a point where the definition becomes so broad that we can't have a conversation anymore? Or the construct falls apart?
	• Why is it important?
	  ○ Professionally?
	  ○ Healthcare context?
	  ○ Society?

What does it look like?	• Can you tell me a bit about someone that you think is a real "critical thinker"
	  ○ What kind of skills or abilities do you think he/she is putting together in order to do that?
	  ○ What effect has that had?
	  ○ Do you have an example of great critical thinking?
	• How do you know if a student is thinking critically? What does it look like?
	  ○ Can you provide an example?
	  ○ How do you know if you're *not* thinking critically?
	• How do you know if you're thinking critically? You have more insight into your own processes than anyone else's…
	  ○ How do you know if you're not thinking critically?
	• You have also used the terms _____. How are they related to CT? Are they the same thing? Different?
	• So, at the end of that, if you were to give me a definition of CT, what would it be?

How did you construct it?	**So, the next questions is about how you came to understand CT this way…**

	• Why is critical thinking of interest to you specifically?
	  ○ What experiences have you had that have reminded you of the importance of critical thinking?
	• How did you first understand CT as a learner?
	  ○ How has it changed?
	• What experiences as a learner have shaped how you think about critical thinking?
	  ○ Any that changed how you think about critical thinking?
	• What teaching experiences have you had that shaped how you think about critical thinking?
	  ○ Any that changed how you think about critical thinking?
	• Have you had any experiences as a patient or family member that impact how you think about CT?

Discuss teaching artefacts…	**So I asked you to bring in an example of a teaching artefact or assessment that promotes critical thinking in students…**
	• Can you tell me a bit about this artefact?
	  ○ In what context(s) is it used?
	• Why did you choose it? How did you choose it?
	• So if you gave a student _____, what do you hope would happen?
	• How would you know if it's not working? Why wouldn't it work? Example?
	• What would you need to do to support it?
	• What other objects did you consider? Why did you decide not to use them?
	• Can you assess critical thinking? If so, how?
	  ○ What do you mean by assessment?
	  ○ How do you assess it – if at all?
	  ○ There can be different ways of thinking about assessment. There's summative assessment, like grading. There's also formative assessment where try to find out what they've learned to give them informal feedback or evaluate the success of your teaching. What do you think about that?

Review	• At the beginning of the interview, you said CT means _____ to you. Would you change that now? ○ What about this conversation has changed that? • Is there anything else that's changed for you? New ideas?

Appendix B

Interview Guide for Second Interview

Introductory statement

I developed this visual representation. I've tried to map out how people from different disciplines and different backgrounds have talked about CT in the first round of interviews. You don't have to agree with all of them – I expect most people will see themselves in some areas more than others. Critical thinking is a social construct that means different things to different people and in different disciplines and practice contexts.

For this interview, I'd like you to have a look at the map, and find one or two places where you think you MOST fit. I'll give you a few minutes just to familiarize yourself with the map. Mark the spots you identify with most. Then go through and talk about how other areas connect to your idea of critical thinking, including those that might not quite fit. Please cross out areas that you think don't fit. Finally, I'll ask you to talk about any areas that you think might have been left out.

While you're marking up the map – the more marks the better! – please 'think-aloud' so that I can get a sense of why you're making the connections you are. I might prompt you to talk things through, or ask you follow up questions about why you're going in directions you're going. Once we've gone through the map, I'd like to ask you a couple of follow- up questions from the last interview, time permitting.

Sound good? Any questions?

OK, take a few minutes just to have a look at the map. When you're ready, identify one of two spots that resonate most as "critical thinking" and we'll go from there.

Core Topics	Prompts
• Can you tell me how/why you chose to start there?	• What does it remind you of? • Is there anything you would add to it?
• What other ideas resonate for you?	• Do they translate directly as a definition of CT? • How are they related to CT?
• Are there any other ideas that connect to CT	• How do they connect? • Why didn't you identify them initially?
• Are there any ideas on the map that do not fit with your concept of CT?	• How is it different?
• Is there anything you'd like to change about how concepts are related?	• How would you draw this map differently?

• Is there anything else that you would like to change or emphasize on the map?	• Did that just occur to you, or have you been thinking about it? • What made you decide to change/add that?
• How did you feel about interacting with the map?	• Did you identify familiar language right away? • Did it look foreign? • Overwhelming? • What did/didn't you like about it?
• Your discipline generally centres here. Does that surprise you?	• Any other thoughts/feelings?
• Just a couple of additional follow-up questions …	
• How would you characterize your family culture growing up?	• How was it significant? • How does it relate to your beliefs about education/CT today?
• How would you describe the culture of your profession?	• Positive aspects? • Negatives? • How do you fit with your profession?
• Is there anything else you would like to add or ask?	

Appendix C

Letter of Introduction

UNIVERSITY OF ALBERTA [redacted]

[redacted]

Dear <NAME>,

My name is Renate Kahlke and I am a PhD Candidate from the Faculty of Education at the University of Alberta. I invite you to participate in a research study about how health science educators understand the concept of critical thinking.

STUDY TITLE: Constructing Critical Thinking: A Qualitative Analysis of Health Science Educators' Interpretations

PRINCIPAL INVESTAGATOR: Renate Kahlke, PhD Candidate; Dr. Paul Newton (Supervisor)

I will examine how health science educators understand critical thinking in this study. There are many different ways of understanding critical thinking, linked to the disicipline, practice context and values of each educator. There is a long history of research on critical thinking. However, most researchers attempt to develop a single defintion of critical thinking without looking at why people understand it in the ways that they do. I will examine 1) how health science educators understand critical thinking and 2) how each educator's personal and professional experiences inform that understanding.

If you choose to participate, you will be asked to complete up to three individual in-depth interviews, scheduled at your convenience over the next 12 months. Interviews will take between 2.5 and 5 hours of your time in total. Participating in this study might help you to reflect on your own teaching. You may also learn more about what critical thinking means to other educators, including those from other disciplines.

Your participation is voluntary. If you wish to participate, please respond by email to the address below. I will contact you to set up an initial telephone or in-person meeting to discuss details about the project. You can decide whether or not you wish to participate at that time.

Thank you for your consideration,

Renate

Renate Kahlke
PhD Candidate
Department of Educational Policy Studies
University of Alberta
Email: renate.kahlke@ualberta.ca

The Research Ethics Office at the University of Alberta has approved this research. Any questions you have about this study may be directed to me by email at renate.kahlke@ualberta.ca or to my supervisor, Dr. Paul Newton at telephone number (780) 492-0773. Questions about your rights as a research participant may be directed to the University of Alberta Research Ethics Office at the telephone number (780) 492-2615.

Updated June 4, 2013

Appendix D

Concept Map Used in Interview 2, Version 1
Used in Interviews May 2-12

Appendix E

Concept Map Used in Interview 2, Version 2
Used in Interviews May 12-June 10