

**TEACHING AND LEARNING PERSPECTIVES OF CLINICAL INSTRUCTORS
WITHIN A CANADIAN DENTAL HYGIENE PROGRAM**

by

SHANNON KERRY WALDRON

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Abstract

Entry to Practice Competencies and Standards is a document that sets the guidelines of curriculum for all Canadian dental hygiene programs. Within the document, a competency-based curricular aim is emphasized. As contemporary educational literature have been suggesting, student centered learning has become a dominant guiding principle of pedagogical approaches for competency-based education. With shifting curricular aims and pedagogical principles many current educators of dental hygiene programs may be teaching new curricula different to that which they experienced when they were students in dental hygiene programs. Furthermore, many of them may be expected to implement pedagogical approaches that are different from how they were taught due to traditional conceptions of how people learn. This study explores the perspectives on teaching and learning held by clinical dental hygiene instructors at one Canadian institution. The objective is to understand which teaching and learning perspectives dental hygiene instructors hold. Data were collected through semi-structured interviews with fifteen instructors. The results show that instructors tend to think of their teaching as student-centered, yet in a set of ‘simulated teaching’ questions, the responses were found to be teacher-centered. The research also revealed that the process by which one learns to become a clinical dental hygiene instructor is multifactorial. These factors include but are not limited to the following: instructors’ perceptions of their own learning experiences, instructors’ experiences of inter-instructor collaboration, and instructors’ methods of facilitating student self-efficacy. Given curricular change and the emergence of literature supporting a student-centered approach to teaching and learning, this study shows that it is critical to uncover the teaching/learning beliefs of the instructor’s prior to designing faculty development programs. Integrating instructors’

preconceptions into the program design may create an environment that is more accommodating of the transition towards the new pedagogical culture.

Preface

This research project was conducted under the supervision of the members of my thesis committee: Dr. HsingChi von Bergmann, Professor Zul Kanji, and Dr. Jude Walker. I submitted this research proposal to my committee, who provided me with feedback and approval of the project. A third party recruiter was used to advertise for research participants, after which the research participants made initial contact with me. I conducted all interviews and used a third party that provided a confidential transcription service to transcribe them. I analyzed the data and consulted with my research team as to the direction for further literature. I developed the final written thesis with the assistance of feedback from my thesis committee and with further review of relevant literature.

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List of Abbreviations

CBE- Competency Based Education

CDHA- Canadian Dental Hygienists Association

DHP- Dental Hygiene Program

ETPCS - Entry to Practice Competencies and Standards

NSPT - Non-surgical Periodontal Therapy

TCE – Teacher-Centered Education

SCE – Student-Centered Education

Glossary

Axial Coding: A form of coding used to fully develop categories as well as link categories together. It identifies sub-categories and categories.(1)

Categories: Groups of related codes.

Codes: Labels used to identify important words, groups of words and ideas.

Coding: The process of organizing data into categories and themes by applying labels to the data.(2)

Constant Comparison: The process of constantly comparing the data codes, and categories as one simultaneously collects further data and inductively develops a theory.(3)

Ergonomics: Operator and client positioning. Correct positioning should be optimized to prevent musculoskeletal injuries.(4)

Initial Coding: Often called open coding, this is the act of applying labels to the data.(3)

Intermediate Coding: Further coding in which properties and dimensions are developed. Further data analysis prompts relationships between categories.(3)

Final Grounded Theory: The theory that has been generated after the data analysis has been completed.

Grounded Theory: A qualitative research method in which the researcher generates a new theory that is inductively developed or grounded in the views of the study participants. (2)

Pedagogy: The art and science of teaching. It can also refer to the teaching style or way of passing on knowledge.(5)

Periodontal Debridement: The removal of supra- and sub-gingival deposits such as plaque and calculus from the teeth. This often involves a combination of scaling and root planing to resolve inflammation in the periodontal soft tissues. (6)

Member Checking: The process of seeking verification of preliminary findings through soliciting feedback from the study participants. (1,2)

Memoing: The act of writing out or journaling the researchers thinking during the research process.(3)

Subcategories: A narrower division of a larger coding category

Reflexive Process: The process by which the researcher actively and critically reflects upon their work in order to gain further insight into the analysis and interpretation of it.(7)

Respondent Bias: The bias that results when participants distort the truth intentionally or through faulty recall.(2)

Theoretical Saturation: The point at which no new data emerges or new codes can be identified.(2)

Validity: The quality and rigor of a study that ensures that the interview framework measures what it intends to measure. (2)

Validity Threat: Threats to the trustworthiness of the research. This includes researcher biases and respondent biases.(2)

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Dedication

I dedicate this work to my husband Mark and to my three daughters: Emily, Emalie, and Rachel. You will always be my true motivation and drive. I love you with all my heart.

Chapter 1: Introduction

Canadian dental hygiene programs are expected to prepare graduates who meet competencies as described in the *Entry to Practice Competencies and Standards* (2010)(ETPCS)(8). Contemporary educational philosophy emphasizes student-centered teaching approaches, which is also a shared emphasis in ETPCS. Bringing change into education is as challenging as into other sectors. Changing pedagogical approaches from a traditional lecture-based, teacher-centered model into student-centered one is not immune from such a challenge. Several articles have described the difficulties in the shift towards student-centered teaching and have proposed various approaches to help with this transition. For example, Mitchell and Arora's (2012) make an argument that an understanding of adult education theory can assist with the shift towards student-centered teaching in health care education. (9) Khalid and Khan use educational theory and evidence to propose a hierarchy of learning activities in which student centered activities are deemed to be most effective in teaching medicine. (10) Whether a program is successful in implementing new educational ideology relies quite heavily on the readiness of the instructors. Kember et al. described a disconnect between teachers' beliefs and conceptions and their approach to teaching that could contribute to challenge in implementation. (11) Although student-centered teaching is not new, currently dental hygiene programs may still be filled with educators who have had a variety of experiences and preparation that are different from student-centered teaching. A common perception is people teach how they were taught. However, little empirical work has been done in which researchers explored the formation and description of teaching conceptions of dental hygiene clinical instructors, and how such conceptions relate to their instructional practices.

Since generations of competent health professionals have been educated through the use of teacher-centered pedagogical approaches, it can be assumed that this approach was sufficient for the demands of the time. However, the role and demands of dental hygienists in Canada have changed in recent years, necessitating a shift in teaching approaches. As of 2012, the Commission on Dental Accreditation of Canada (CDAC) expects that all dental hygiene programs provide evidence of adopting the ETPCS standards into their curriculum. The evaluation process of the successful adoption of standards include whether the pedagogical approaches are supportive to assist students to meet these prescribed standards.

This study explores the perspectives on teaching and learning held by clinical dental hygiene instructors at one Canadian institution. Utilizing the interview data, we also attempted to understand how these teaching perspectives relate to instructors' past experiences, years of teaching, and their pedagogical decisions in simulated teaching scenarios. The objective of this study is to ultimately understand the following: what perspectives do clinical teachers hold toward teaching and learning,? which factors may influence their learning to teach,? and how the perspectives uncovered help inform professional development designers within that educational setting?

1.1 Context of the Study

The need for quality public healthcare and accountability has stimulated many healthcare professions to develop competency documents, the implementation of which is crucial to meeting the standards required for accreditation. An example of this is *The Entry to Practice Competencies and Standards for Canadian Dental Hygienists* (ETPCS), which was published in 2010.

1.1.1 Competency-based education

A competency-based learning environment focuses on the skills, attitudes, and knowledge that the student is expected to demonstrate prior to graduation. (12–16) Competency-based education is defined in this research as “an approach to preparing [health professionals] for practice that is focused on graduate outcome abilities and organized around competencies which are based on societal and patient needs.” (adapted from Frank et al. systematic review in 2010).

(18) The assumption that CBE always includes the use of student-centered pedagogical approaches needs to be examined in the literature.

Frank et al. address this concern in a systematic review of 173 articles to define CBE. (21) Their research identified several themes that are associated with CBE, including learner-centeredness, flexibility around organizing curriculum, a greater engagement on the part of the learners, as well as the ability of learners to progress at their own pace. These themes have also been documented elsewhere. (17–19) Therefore, one can safely assume that student-centered pedagogical approaches generally accompany CBE.

1.1.2 Student-centered learning

For students to meet competencies, the learning environment must shift from teacher-centered passive learning to learner-centered active learning. (9,10,20) Learner- or student-centered learning requires teachers being flexible in their instructional objectives, allowing students’ prior knowledge and experiences to help shape instructional objectives, and utilizing experiential pedagogical approaches to facilitate students development of their competencies. This student-centered teaching often includes humanistic approaches such as narrative pedagogy,

patient and learner-centered activities, interprofessional communication, as well as the promotion of habits of inquiry and innovation. (20) In student-centered education (SCE), the assumption is that learners are active, motivated, self-directed, and are, therefore, encouraged to take responsibility for their own learning. (9) An example of SCE in clinic would be to ask the student, “How does your operator positioning feel?” Assuming the student replied with a comment such as, “a bit strained,” the instructor would then ask the student, “How would you correct that?” This example demonstrates that rather than telling students how to correct their position of operator directly, which is fairly common in traditional, lecture-based clinical teaching, a SCE instructor will use guided questions to help students self-examine their own performance and to self-identify areas for improvement.

1.1.3 Teacher-centered learning

Mitchell described that traditional training requires a set amount of time and a set number of tasks. (9) In a teacher-centered learning environment, the learner commits facts to memory and is viewed as a passive vessel collecting knowledge. There are aspects of health education in which teacher-centered learning remains a very important part. For example, during the entry level year, the students are required to know foundational knowledge that is necessary to build on during the acquisition of skills. Dental Anatomy is an example of this.

A contrasting example of the above SCE teaching scenario, in a teacher-centered model might involve an instructor approaching a student with an incorrect operator positioning and saying, “You need to straighten your back, so move your chair over to the 12 o’clock position when you’re working in that area.” Such a direct instruction may immediately fix the identified student problem; however, it would leave little room for a student to reflect or explore why

moving her chair over to the 12 o'clock position can make a correction in her operator positioning.

Based on the literature identified in teaching approaches, Figure 1.1 is an attempt to compare and contrast the characteristics of teacher/content-centered and student/learner-centered pedagogical approaches in clinical settings. This figure also serves as the data analysis framework and will be discussed later on in the thesis.

Figure 1.1 Outline of Teaching Approaches

Teacher-Centered Approaches

Textbooks and memorization (12,21–28)
Requirements, such as number of hours or completed client care (9,29,30)
Targeting of information by recall (21,23,25,30–33)
Emphasizing of content and imparting information (11,18,23,26,29,31–38)
One way transmission of knowledge (11,23,25,26,31,33,34,39,40)
Giving Direction (11,25)
Criticisms (25,41)

Student-Centered Approaches

Measurement of performance outcomes (9,12,18,22,29,30,36,38,74)
Learners as active participants (9,11,17,27,28,31–34,36,67,119)
Exploring students thinking and misconceptions (11,23,25–27,31,34,37,39,67,120)
Questioning students thought processes(11,26,27,37,39,40,67,121)
Encourages self-reflection(9,17,28,32,34,60,62,67,120,122,123)
Collaborative learning(26–28,31,32,36,60,67,79,120)
Feedback that is constructive with an action plan(34,38,39,45,46,48,49)

Figure 1.1 is an outline of a variety of teaching approaches and categorizes them into either Teacher-centered or Student-centered approaches. The references that were used to categorize the approach are also seen to the right of each approach.

1.1.4 Teaching is not a dichotomous process

It is recognized that Figure 1.1, Outline of Teaching Approaches, consists of labels that are primarily on either side of this spectrum. However, it is difficult to categorize a teacher as consistently being at one or the other extreme, as teaching is multifaceted. Teachers will likely use strategies found in both approaches and the two approaches are not mutually exclusive.

Figure 1.1 is an attempt to summarize characteristics of either approaches, perhaps at its purist form. Figure 1.2 represents what is hypothesized in this study, that teaching practices, depending on the domain/characteristic one examines, is a spectrum. The line on the continuous line indicates a position of an individual teacher in that domain/characteristic of study.

Figure 1.2 The Spectrum of Teaching Approaches



The Spectrum of Teaching Approaches illustrates a continuum between Teaching-centered and Student-centered. The black line represents the position in which an individual's teaching style could be characterized.

1.2 Rationale of the Study

Curriculum reform demands changes from faculty in health care professional programs. Faculty are asked to assume teaching duties that they likely have not received formal training in or experienced themselves as students (42,43). See Table 4.3 to review current statistics for Canadian dental hygiene educators, as taken from the 2011 CDHA Educator's Survey Report.(44) Accordingly, to establish programs rooted in contemporary teaching approaches like student-centered teaching, it is necessary to review the complex knowledge and skills required and help instructors understand more about these approaches. (45–47) To date, there are few studies that have explored student-centered teaching within competency-based health care education. From the literature, it becomes more evident that a study investigating the perspectives toward teaching and learning of clinical instructors within a dental hygiene program (DHP) would be valuable. Such a study is to understand clinical instructors' experiences and possible challenges associated with implementing student-centered approaches in today's competency-based dental hygiene education.

In the past, dental hygiene instructors directed much of their attention to the traditional functions of preventative care. This focused more on the implementation aspect of dental hygiene and less on the comprehensive and holistic planning aspects of care. As a result, the current cohort of dental hygiene educators will have experienced varying levels of student-centered pedagogical approaches.

As noted in the literature, there have been obstacles present during the transition from the older teacher-centered approaches to the more recent student-centered pedagogical approaches. These obstacles are problematic as they can lead to the incomplete or failed development of the

competencies if the students' ability to think critically and plan are not developed. Some examples of these obstacles include faculty attitudes towards teaching as well as a lack of teaching knowledge and preparation time. (48–50) Attitudes toward teaching could be impacted by a teacher's views or perspectives toward teaching and learning.(11) The investigation of the conceptions of teaching and learning that clinical instructors within a dental hygiene program have is, therefore, necessary to explore.

1.2.1 Overview

The remainder of this chapter outlines the aims of the research and Chapter 2 supplies a thorough review of the literature regarding to use of these pedagogical approaches in relation to healthcare. It also discusses parallel findings in other disciplines, as well as the obstacles encountered with the use of the various pedagogical approaches.

The third chapter of the thesis will discuss both the background methodology and the theoretical framework that was selected to influence the decisions made in the development of the research methods. Subsequently, the research methods are described in detail and ethical and validity concerns are addressed.

In Chapters 4 and 5, the studies findings will be discussed as well as how these findings can impact teaching in a CBE environment. Finally the conclusion will discuss the strengths and limitations of the study, implications for clinical instructors in a student-centered CBE environment, and future directions for further research.

1.2.2 Aims of the research

This research project describes the perspectives and conceptions toward teaching and learning of clinical instructors in a dental hygiene program. Throughout this thesis, the researcher will describe the experiences, challenges, and needs of clinical dental hygiene

educators in a Canadian dental hygiene program. Understanding more about the perspectives of clinical instructors and their conceptions of teaching and learning may provide direction for planning future faculty development initiatives that ultimately enhance students' learning outcomes.

Chapter 2: Literature Review

This literature review will offer a more in depth discussion of how student-centered pedagogy has been used within a CBE framework. Subsequently, it will describe some parallel findings in other health sciences. Following this discussion, the review will illuminate the factors of student-centered pedagogy that assist in optimal teaching in healthcare. It will then provide a review of the obstacles that hinder the transition from teacher-centered pedagogy to a predominantly student-centered one and identify the gaps that this research will address.

2.1 Teaching in Health Science

2.1.1 Student-centered pedagogy in health science

In health sciences education, the shift to Competency-Based Education (CBE) has also resulted in a pedagogical transition from teacher-centered approaches to a student-centered approach. Student-centered teaching approaches do not solely occur in CBE. Learner-centered approaches can also be seen in the learning outcomes movement or in the abilities movement in which curriculum is dedicated to predefined graduate outcome or abilities.(51) Learner-centered approaches are also a core component of narrative pedagogy and critical thinking through the use of story telling, literature, and reflective journaling are examples that are commonly seen in nursing education. (19,27) The outcomes movement, abilities movement and narrative pedagogy are all approaches to teaching and learning that shift attention away from requirements and focus on what the student has learned.(52) Despite the eclectic uses of student-centered pedagogy, this research focused on the challenges of transitioning to the use of student-centered pedagogy within the context of one dental hygiene program. It is hoped that these findings may provide some insight, and illicit the development of a larger study.

Student-centered pedagogical approaches are educational approaches that encourage students (i) to reflect upon their learning of subject matter, (19) (ii) to challenge the assumptions of conventional practice, (25,31,34,35,39) (iii) to consider the various external factors that could affect the diagnosis and care provided, (29,30,53–55) (iv) to have respect for human values and personal choice, interpersonal sensitivity, cultural awareness, and communication skills. (56,57) Additionally, student-centered pedagogy in health sciences emphasizes the importance of relationships between teachers and students and embraces a learner-centered approach. (58) This approach is particularly important in the context of educational clinics.(59)

2.1.2 Clinical teaching using student-centered approaches

Clinical instructors who use student-centered approaches aim to create an effective learning environment by valuing, endorsing, and practicing learner engagement and learner centeredness. (19,46,51) Instructors endeavor to be adaptable and create an open atmosphere that facilitates dialogue in order to collectively explore multiple perspectives on clinical issues.(60,61) Clinical instructors who embrace student-centered pedagogy will often stimulate discussion, engage learners, and openly examine their expectations and goals. (46,58) Clinical instructors that teach from this perspective aim to make explicit links between theories, concepts, and clinical practices. (17,18,60,62)

Questioning is a common mode of the clinical instructional practice. The aim of questioning is to emphasize the importance of effective problem solving. (63) Questioning is not just a practice from teacher to students; often it is encouraged between and within students. Students are encouraged to question their own assumptions and to justify or explain a particular action. (19) In the field of dental hygiene, an example of this would be “group huddles” following a practicum session. In such “huddles,” each student has the opportunity to discuss

with others the events of the session, the challenges they experienced and how they were overcome, and consequently further learning from peers occurs.

Clinical instructors in student-centered teaching environments facilitate learning by guiding learners, rather than by transferring knowledge. Reflection in clinical experience promotes a higher level of critical thinking and more extensive analysis of a situation and these, in return, help the student clinicians arrive at a more comprehensive understanding of their own experiences. For example, reflection is a fundamental part of Non-Surgical Periodontal Therapy (NSPT). As the clinicians approach debridement, they must continually use best judgment, apply knowledge, re-evaluate, and self-correct. (64,65) Teaching reflection, however, is challenging, as it involves motivation, personal commitment, and self-awareness of existing assumptions, on the part of the educator. (57)

2.1.3 Teacher-centered pedagogy in health science

Teacher-centered approaches in health science have evolved over time from their traditional teacher-dominated, passive, and hierarchical conventions. (9,19,66) Traditional teacher-centered approaches have been described as a banking concept, in which students accept deposits of knowledge in a predetermined manner from an authoritative teacher.(67) In this model, teachers professed to be all-knowing and instructed the students on what they believed the students needed to be told. (19,67)

This teacher-centered education ideology emphasizes recall and skill acquisition around definitive objectives in specific areas. (19,57) Teachers whose practices are characterized by this ideology often perceive learning by knowing, stating the ‘factoids’ or ‘best answers’, rather than guiding students to make meaning or acquire knowledge. In any given field, learning should be composed of learning the what, why, what to do with, and how to do with the subject matter

knowledge.(17,23,56) Teaching practices that emphasize solely on what the subject matter knowledge is can be dangerous. From the literature, researchers found that such a practice can dramatically lead to an increase in the amount of teaching material over time and predispose students to mechanical rote learning and memorization of facts. (19,68) Furthermore, knowledge being delivered to students positions them as passive recipients of information. Such a position can discourage self-directed inquiry. (48)

Teacher-centered pedagogy's heavy focus on learning 'what' the subject matter knowledge is has led to instructional practices that focus on what students need to learn to practice.(5,19,27) In dental hygiene, such instructional practice translates into an emphasis on "laboratory, clinical and work experiences sufficient to qualify for private-practice employment".(69)

Traditional dental hygiene programs have predominately focused on the technical aspects of health promotion and prevention. (70) These educational models were developed to meet the perceived needs of dentistry and society of the time. During this period, the purpose of dental hygiene education was to prepare the graduate for a position in a dental clinic. (69)

Although dental hygienists are still primarily employed by dentists, their clinical role and education has been expanded to encompass independent practice. Present-day opportunities include alternatives to private practice in public health, long-term care, and independent dental hygiene practice. (71) Therefore, present-day dental hygiene programs should reconceptualise curricular aims and their associated instructional practices that can prepare their graduates for contemporary societal and employment needs.

Teacher-centered education ideology in which discipline-specific lectures are the main method of teaching do not sufficiently support the contemporary complex needs in oral health

care practices. Professionalism, for example, is a competency that is recognized and emphasized more in contemporary oral health care. (72–74) Such competency is best taught and evaluated where students are in a simulated or real clinic environment. Instead of applying a teacher-centered, traditional classroom didactic format, a student-centered learning approach is more suitable for students to develop professionalism. (53,75) Contemporary oral health care emphasizes holistic care that requires practitioners to fluidly demonstrate and apply their knowledge, skills, and attitudes. A primary focus on information recall and skill acquisition does not allow students to demonstrate the holistic care that should be seen in a competent professional. (19,57,75) When Hazelton (2011) examined the theoretical assumptions that have previously influenced medical curricula, she concluded that current trends in medical education are more receptive to patient-student learning and promote more participative learning. (9,20) Such a shift is also needed in oral health care curricula.

In addition, through the lens of a human-constructivist view, in which it is recognized that knowledge is constructed and reconstructed on a contextual basis, case studies and qualitative research in learning and understanding have led to new knowledge about teaching science for understanding. (76) In response, teaching approaches have subsequently changed to allow students to more effectively explore different perspectives, challenge conventional wisdom, and use their experiences to work together to construct and deepen their learning. (9,27,76,77) Such developed approaches are not common in the traditional teaching-centered pedagogies. Modern-day teacher centered approaches such as diagrams, illustrations, and discussion are more commonly used adjuncts to reading and memorizing. (27,77,78)

2.1.4 Evolving educational ideologies and difficulties in health science disciplines

Although pedagogical approaches applied in dental hygiene program are the focus of this study, other health science disciplines have experienced a comparable process of transitioning from one educational approach to another in response to changing professional and societal demands for more comprehensive care. Nursing, for example, is making a shift in pedagogical practices after recognizing that the complexity of current clinical situations requires more engaged understanding and persistent thinking from a holistic perspective. (23,58) Similar to dental hygienists, there are increased demands on nurses due to greater life expectancy of patients with chronic illnesses, advances in medical care, and expanding technology. (74,79,80) As a result, a pedagogy that supports reflection, collaboration, and thinking from multiple perspectives has been developed and implemented in nursing education broadly. (57,77,81) However, the change of pedagogical approaches has also encountered resistances. One source of the resistance that has been documented came from skeptical nursing educators who have always been teaching from a teacher-centered perspective.(48,81) A qualitative study by Ironside also reported concerns that some nursing students were primarily interested in learning about content. (23)

Kember et al.(11) described a study where 24 science lecturers were allocated as having a specific teaching style, yet even those identified as facilitating conceptual change, were seen to lecture in order cover to content intermittently. Conversely those instructors, who were allocated as teaching from a primarily transmissive approach, were seen to adopt a class discussion approach occasionally. (11) As these approaches shift and migrate in health professional education to the use of more student-centered approaches, this transition can also be described as teaching the students *how to think* instead of *what to think*. (15,29,58,82)

In dental education, it is also acknowledged that there is a need for contemporary advances in pedagogy that call for dental education to evolve from a “curriculum process and prescriptive stage” to an “interdisciplinary and prevention stage”. (83) Hendricson and Cohen's 2001 article suggests that dentistry should move towards an Oral Physician model; (29) however, the desire of faculty to maintain a technical focus is, in some cases, outweighing this recommendation.(29) Indeed, *The Journal of Dental Education* reported “countless calls” for dental education to change after a comprehensive review by Tedesco reported outdated pedagogical practices, the use of procedures rather than competencies, and a “petrified state” in regards to curriculum change and innovation. (83,84)

Based on the literature review thus far, to implement a competency-based educational (CBE) program, student-centered teaching seems to be more appropriate. Although CBE seems to be increasingly embraced by many health science disciplines, current literature suggests that this transition to student-centered teaching may not always happen seamlessly. DePaola observes in respect to dentistry that the “actual implementation of competency-based versus procedure-driven clinical education remains problematic”. (83) While community-based and interdisciplinary experiences have seemed to increase, the use of student-centered learning approaches did not. (15,83) Licari and Chambers, when investigating the extent to which CBE has been adopted in US and Canadian dental programs, reported findings that one third of dental educators stated that the competency-based movement led to no changes in teaching practices. (50) The authors concluded that, although the educators may have adopted some of the language and ideas that are consistent with CBE, they retained a teacher-centered approach to their instruction. (50)

Similarly, Kassebaum et al. concluded from their 2002 survey that 66% of schools across North America reported being largely discipline-based with 20% of schools reporting that their curriculum was still completely based upon teacher-centered lecture format. (15)

Various studies identified that faculty members of Health Care Profession (HCP) programs have retained a teacher-centered, discipline-specific point of view. (19,28,50) Limited willingness on the part of many teachers to reflect on their own teaching practice (19) may be a critical explanation as to why the teacher-centered, discipline-specific point of view is still so prevalent. This lack of self-reflection may lead to the incomplete adoption of student-centered pedagogy. It identifies the issue that the shift to student-centered teaching may only be accepted by the administrators of a program and not experienced by the clinical instructors and students. (50)

There have been several reasons cited in the literature explaining the lack of transition from a teacher-centered pedagogy to a student-centered pedagogy. Lack of preparation and teaching time, student resistance, and a lack of incentive are some of the practical reasons why some faculty members resist student-centered teaching approaches. (48,78,81) In addition, faculty attitudes, fear of failure, fear of criticism, fear of students not learning, and a lack of teaching knowledge have been cited as barriers for this transition. (81) It is also possible that instructors may still view conventional approaches such as covering content, using multiple choice exams, delivering lectures, and relying on passive learning as effective. This assumption may be supported by the number of successful results from board exams. (23,48,78,81)

Based on a review of the literature, it can be concluded that very little is known about the pedagogical approaches used in clinical dental hygiene education. Further, the conceptions about teaching and learning from the perspective of the dental hygiene instructor have not been explored. Given the current context of Canadian Dental Hygiene and the adoption of the CDHA

entry-to-practice document and the obstacles noted in parallel disciplines, the exploration of the teaching beliefs of clinical dental hygiene instructors is necessary to close the current gap in knowledge. The methodology and research methods discussed in the following chapter aim to address this void.

2.2 Research Question

What are the conceptions and perspectives of teaching and learning held by clinical instructors in a dental hygiene program (DHP)?

2.2.1 Sub-questions

1. How do clinical instructors view their role in facilitating learning within the context of a dental hygiene program?
2. What teaching practices and methods do clinical instructors use to facilitate learning in a dental hygiene program?

Chapter 3: Methodology and Research Methods

3.1 Epistemology

The epistemological position that informed this research is constructivism.

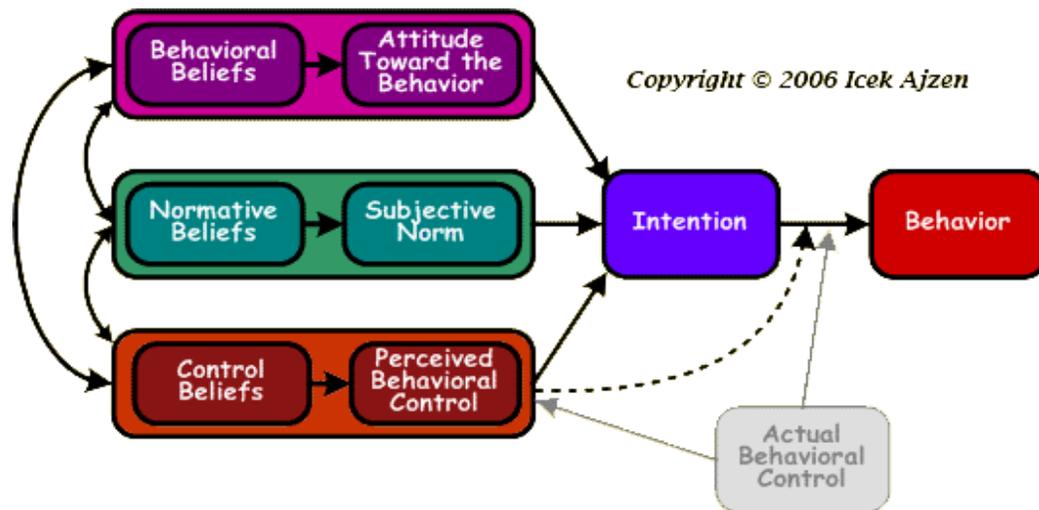
Constructivism involves a worldview that recognizes that individuals construct their own meanings for similar events. This theory of knowledge is often used as a lens to investigate issues that have a social origin. According to this epistemological position, perceptions and experiences play a key role in constructing one's reality. (85,86) Each clinical instructor holds his/her own perceptions and conceptions from similar experiences. Thus their knowledge toward teaching and learning could be different as a result of their own experiences. Evidence for what this knowledge is and how it was formed or developed can be explored by investigating clinical instructors' perceptions, discourses, and behaviors in various areas that are relevant to their teaching.

3.2 Philosophical and Theoretical Framework and Perspective

The theoretical framework on which one bases their research "has implications for every decision made in the research process". (87) Philosophical beliefs and experiences form and shape the values with which one teaches. (76) Since clinical instructors come from various educational backgrounds, it seems likely that many factors can play a role in developing their own philosophical positions in regards to teaching. In addition, there are many factors that may impact clinical instructors' pedagogical choices, including governing bodies, such as the regulatory authority in which they are registered and the institution in which they are employed. Theoretical perspective refers to the underlying assumption of the researcher. It informs the methodology and the methods of the study. (88) With the literature discussion, personal experiences, and discussion with my supervisory committee, my position is that DHP instructors

possess their own personal beliefs, and each instructor will respond in accordance with their individual meanings and perspectives. The theoretical perspective that informs my research is Ajzen's Theory of Planned Behavior (See Figure 3.1).\

Figure 3.1 Ajzen's Theory of Planned Behavior (89)



Used with permission.

Figure 3.1 is an illustration of Ajzen's Theory of Planned Behaviour.

Icek Ajzen and Martin Fishbein originally developed the Theory of Reasoned Action (1975),(90) which was the precursor to Ajzen's Theory of Planned Behavior, and it involves two main beliefs about behavior as follows:

- 1. Behavioral Beliefs** relate to an individual's beliefs about the consequences of one's behavior (*attitude toward behavior*). In the context of this study, we are concerned with whether the instructors believe that the student-centered approaches used to teach the competencies is positive (*behavioral belief*).

2. Normative Beliefs are about the normative expectations of others (*subjective norm*). In a Dental Hygiene Program this refers to whether the senior faculty of the program views the overarching pedagogy as beneficial and promotes the clinical instructors to embrace a student-centered CBE. (*normative belief*). Together, these aspects of the theory suggest that if the individual and their significant support groups view behavior as positive, then their motivation will increase to follow through with the planned action. It is noted that individuals do not always follow through with action and, therefore, Ajzen later revised and extended the theory, entitling it *The Theory of Planned Behavior* (1991). (90,91) The extension included the addition of control beliefs.

3. Control Beliefs (*perceived behavioral control*) have an impact on the actual behavior performed. More specifically, the perceived level of difficulty of the behavior either facilitates or prevents the behavior and, therefore, it states that what one actually believes will determine the actual behavior (89,92,93). The control beliefs in this study refers to any obstacle or barrier that would deter an instructor from following through with using a student-centered teaching approach.

The theory of planned behavior has been used in several studies (73,94,95) and its application to modern dental health programs is fitting. When the theory is applied to this study, the instructors will follow expectations and teach using student-centered approaches. However, if the research demonstrates that the clinical instructors in dental health programs report that there are challenges to adopting the student-centered pedagogical approaches (*normative belief*), from the perspective of the theory of planned behavior, these beliefs and perceptions will impede the instructor's behaviors when teaching in a dental health program. (92)

With this ‘Theory of Planned Behavior’ theoretical perspective, further investigation of the conceptions of the teaching and learning of clinical instructors is necessary to determine if there are factors that impede or support clinical teaching using student-centered teaching approaches. Since this research values the participants’ perspectives, this theoretical framework was thought a suitable basis from which to develop the interview questions.

3.3 Baseline Position

Since little is known about what is needed to support clinical educators who adopt a student-centered pedagogy to teach in a dental hygiene program, the research will be based on the following assumptions.

- 1) Clinical faculty members are autonomous, capable, and self-reflective life-long learners that have individual perspectives regarding teaching.
- 2) Clinical instructors are dental hygienists who are self-directed, and their expertise lies in clinical care.
- 3) Clinical instructors’ knowledge of teaching is, in most cases, limited to their knowledge of teaching from their own educational backgrounds, as well as from their own practice.

3.4 Researcher Prior Assumptions

Bias is inherent in qualitative research, as all researchers are a sum of all they have experienced. Accordingly, it is prudent to examine and disclose any assumptions. (1,2,96,97) Since the researcher has also worked within a dental hygiene program, specific biases and preconceptions are present as a result of the work environment. The researcher acknowledges the prior belief held that many clinical instructors “teach the way they were taught”. Further, the researcher acknowledges a bias towards student-centered teaching methods. By disclosing these assumptions, the process of conscientiously suspending feelings or “bracketing” may more

feasibly be practised. Bracketing is the process of acknowledging any preconceived beliefs prior to conducting research and attempting to set them aside. (2) The researcher attempted to bracket any prior beliefs in order to prevent them from impacting the data analysis. This was done through a process of journaling, becoming aware of opinions regarding the participant's length of program and institution and ensuring that the research was objective during the interview process and data analysis. The researcher also attempted to set aside preconceived experiences helped the researcher understand the participants in the study and remain open-minded with the data. (1,97)

The researcher acknowledges the additional following assumptions:

- 1) The students may be of the opinion that some activities in the clinical portion of the dental hygiene program are of a questionable educational benefit and therefore resist the instructor's attempts to use student-centered teaching approaches.
- 2) That clinical instructors may not really understand student-centered teaching approaches and may still teach from a teacher-centered pedagogy.
- 3) That clinical instructors may question the benefits of student-centered pedagogy practices within the dental hygiene program.

3.5 Research Approach

A qualitative approach was chosen, due to the exploratory nature of the research question. An investigation of the understandings and experiences of the participants warrants this type of research approach. The specific approach adopted is grounded theory approach, which is often used in social contexts in areas that not much is known.

3.5.1 Grounded theory

Grounded theory is one of the first and most well developed methods of qualitative data collection and theory development. (3,96,98) It is an iterative process commonly used for

research areas where not much is known about the area of the study. Developed by Glaser and Strauss in the 1960's, grounded theory is rigorous and has spawned many other methods due to various modifications of the original methods.(99) This research project will draw upon an initial theoretical framework, discussed above, which will be "held lightly and discarded easily"(47,96). This sensitizing theory is used as the conceptual framework from which to develop the interview questions and, following this, an inductive process is used to analyze the data. In a sense, the study is "grounded" in the data as it is collected and analyzed; through this process, the researcher challenges and refines the emerging theory. (2,96,99,100) The strength of this methodology is that it has the ability to gather data with rich detail that is applicable to the specific context of CBE DHP's. (46,47,49,52,53)

This process of gathering and analyzing data allows the researcher to continue to develop theories based on data collected. Through a deductive process of constant comparison and coding (described below), the investigator will arrive at a final theory as a result of the data.(46,47,49,52,53) It is not limited to one source of data collection since additional knowledge from the literature can be accessed in conjunction with one-on-one interviews in order to support theory development. (96)

Grounded theory is particularly suited to research that involves social interactions where the aim is to develop a theory rather than test an existing thesis. This method was chosen because the aim of the study is to develop a theory to explore what is happening from the perspectives of the participants. A phenomenological study would not meet the aims of this study as it focuses on describing a particular lived experience, rather than developing a theory regarding it. Ethnographic methods are not suited to this research either as they would focus more on describing the culture of dental hygiene teaching. It also would not allow the researcher to

develop a theory of clinical instructors' beliefs about teaching and learning within a CBE-DHP.

(2)

Rogo (2012) provides one example of a grounded theory research project in dental hygiene. In Rogo's example, the researcher investigated independent dental hygienists who were direct access practitioners. Using grounded theory methodology, the researcher was able to successfully develop a workable theory which drew on adult learning principles. This study concluded that a strong educator role was necessary to improve the current oral health delivery system. (101)

In 1978, Glaser asserted that "the goal of grounded theory is to generate a conceptual theory that accounts for a pattern of behavior which is relevant and problematic for those involved"(102). Using this approach, the researcher will identify the instructor's pattern of behaviors and will increase the knowledge surrounding any difficulties they may have.

Using grounded theory for this study will promote new knowledge surrounding the conceptions and understanding of clinical dental hygiene instructors toward teaching and learning and provide new insight into supporting student-centered clinical instruction.

The decision of when and how to use literature has been a disputed topic in grounded theory methodology. First-generation grounded theorists such as Barney Glaser suggested delaying any kind of literature review until after the development of the grounded theory. (102) However, evolved grounded theorists such as Strauss and Corbin believe that engaging in the literature and interweaving it with the data from the beginning will assist in developing the final grounded theory by adding another voice to the construction. (103) Prior to planning the methods of the study, the researcher first analyzed the literature to identify potential gaps in the research; subsequently the researcher accessed the literature to inform the sensitizing theories of this study.

Theoretical Sensitivity is a multifaceted concept that includes ideas based on both literature and the researcher's personal knowledge of the research area. (103) Therefore, I have also chosen to use the literature to develop my initial theoretical framework as well as to support the theory being developed. To summarize, the literature will be discussed throughout the thesis in both the findings and discussion sections.

3.6 Sampling

A purposeful sample occurs in qualitative research when the participants are chosen for the study purposefully by the researcher because they have specific access to the information about the studied phenomenon. (2)

The sample was chosen for this study from the inclusion criteria and the specific nature of the research question. The participants in this study were dental hygiene clinical instructors in a dental hygiene program. The sample was taken from only one dental hygiene institution. Didactic and community instructors were not included unless they were also clinical instructors. (8,104) In summary, the sampling follows the following criteria.

Inclusion criteria:

- Registered dental hygienist;
- Being a clinical instructor of a dental hygiene program at the studied institution.

Exclusion criteria:

- Didactic or/and community instructors who are not teaching in a clinical setting;
- Members of the graduate student's supervisory team.

3.7 Recruitment

A third-party recruiter solicited the participation of clinical instructors. The third party recruiter invited a possible 28 clinical instructors to participate in a semi-structured interview through an emailed introductory letter; this minimized possible coercion of the participants that may have resulted through direct recruitment by the researcher. The prospective participants were notified that participation in this research was completely voluntary and that they were welcome to withdraw from the study at any point. The participants were also informed that involvement in this project would have no effect on job performance criteria or employment opportunities. The Introductory Letter is attached in Appendix B.

3.8 Data Collection

The data for this grounded theory study was collected through a variety of methods. Initial data sources included interview transcripts from one-on-one semi-structured interviews and memos. Fifteen interviews, in total, were conducted and transcribed verbatim by a third party transcriber. A secondary literature review was also conducted based upon the initial data.

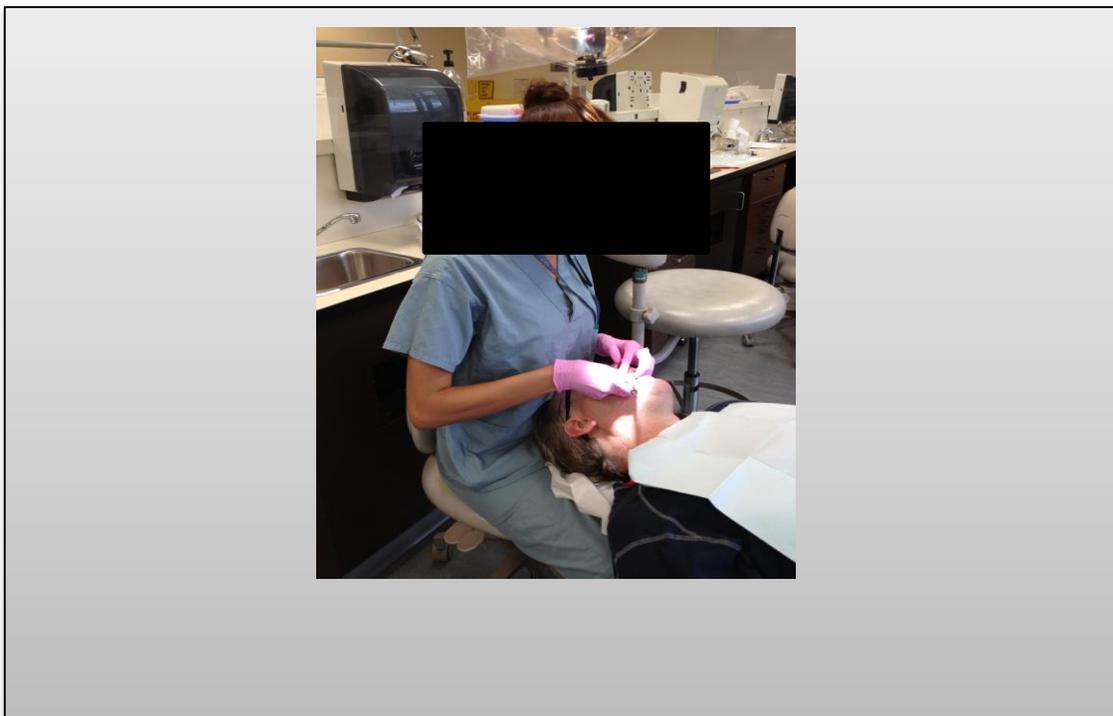
3.8.1 Interviews

The initial interview framework was adapted from a quantitative questionnaire and utilized the guidelines from the Theory of Planned Behavior Questionnaire Construction (89) to frame the research questions. The Theory of Planned Behaviour Questionnaire Construction is a guide which assists in developing standard questions which measure both, the intentions and the final actions of the participants. The theory of planned behavior has largely been used in quantitative research; and it was developed to explain human behavior and, according to Ajzen, can be used as a “framework to guide questions to be raised in qualitative research”. (105)

The researcher conducted a pilot interview with a convenience sample of two clinical instructors from the previous academic year. The researcher analyzed the questions and the alignment of the responses to the original research questions for clarity. Most of the changes to the questions ensured there was a connection between the questionnaire and actual research question.

The final interview protocol/guide was slightly modified from the pilot interview guide. The questions were based on perceived teaching and learning behaviors. For example, What do you feel is expected of you as a clinical instructor in a Dental Hygiene Program? (Probe: What actions are expected of you to facilitate student learning?) Also, Can you tell us a bit about what you do to facilitate student's clinical learning? In addition, there were two simulated teaching questions designed around a picture of a student with poor operator/client positioning, i.e., bent wrist, and a short video of incorrect scaling and root planning practices. See figure 3.2 and 3.3 respectively.

Figure 3.2 Visual A Simulation Picture



Imagine you just walked past a student, what do you see? What would be your response?
(Probing: How would you communicate what you saw with the student?)

Figure 3.3 Visual B Simulation Video



If this was your student how would you address the student's performance? (106)

https://www.youtube.com/watch?feature=player_detailpage&v=BuyyflDnOzc#t=113s

View Footage from 3:48 to 4:05

Figures 3.2 and 3.3 are the Visual Simulations of students in a Dental Clinic. These visuals are the hypothetical situations which were used to discuss the participants proposed actions. These two visuals were selected because they represent what a clinical instructor commonly observes in clinic. The examples reflect the direct observation that a clinical instructor makes and simultaneously assesses during the various aspects of clinic. Visual A is

an actual dental hygiene student and represents the students ergonomic positioning during her assessments and Visual B is an example of a student performing instrumentation. The video was taken from the Oral Health Podcast Series from the School of Dentistry at the University of Michigan. The video is posted for historical purposes and is available at open.umich.edu.

After each of these visuals were shown, the following question was asked.

Imagine you just walked past a student; what do you see? What would be your response?

(Probing: How would you communicate what you saw with the student? And if this was your student, how would you approach them?)

The interviews ranged from 25 to 40 minutes, conducted in person and audio-recorded, whenever possible, using a digital voice recording device. Alternatively, a Skype or telephone interview was arranged and recorded. There were 13 in-person interviews and 2 interviews done over Skype. No interviews were done over the telephone. The interviews were subsequently transcribed verbatim by a confidential transcribing company. (107) Transcripts were uploaded in the program Nvivo 10 Qualitative Research Software (108) for analysis by the researcher.

3.8.2 Memoing

The researcher also undertook memo writing from the early phases of data collection until the final stages and grounded theory findings. (100) These memos were saved and analyzed using the Nvivo 10 program. The following is an example of a memo: “At the participants’ school, they did not always attempt to watch the student’s performance but rather assigned a mark based on the amount of calculus remaining.”

Drafting memos, also known as “Memoing” in this study was intended to act as an adjunct during the phases of data analysis, and to help ensure that a rigorous study was being

conducted. Memoing can improve quality during coding and category development. Such *a priori* assumptions are suggested to help to prevent the researcher from forcing the data into categories prematurely. (109)

3.8.3 Additional data collection

After the initial pilot interviews were conducted, and the questions were modified, the researcher went back to the initial participants to ask the additional questions. In addition, the interview guidelines were deviated from, if a follow-up question was necessary to gain relevant information. An example of this was:

INTERVIEWER: [W]hat I'm asking is, [how did you know] what you had just said about not telling her what's wrong because she won't self-assess if you tell her?

RESPONDENT: I think I learned that way myself. [...]; [I] ask the question to myself, like what can I do better? Otherwise, if I rely on somebody else all the time, I'm not going to get my answer when I need it.

Also, the interviewer added the following question to clarify one of the themes that was seemingly being developed in the initial coding. Specifically, the following question was asked. “[D]o you see yourself as having a responsibility in developing student confidence?” The researcher eventually found this question to be repetitive of the questions, “What do you feel is expected of you as a clinical instructor?” And, “What actions are expected to facilitate student learning?”

Finally, additional data collection occurred while the researcher continued to read relevant research of various educational and learning theories. These were chosen based on the analysis of the transcripts and memos.

3.8.4 The elements of data collection

The critical elements involved in the data collection are multifaceted. In review, data collection initially involved the development of the interview framework and subsequently the collection of data from pilot research interviews, and research interviews. Data collection also involved memoing, member checking, and follow-up questions. Figure 3.4 Illustrates the critical data gathering elements involved in this study.

Figure 3.4 Illustration of the Critical Research Elements of the Data Collection

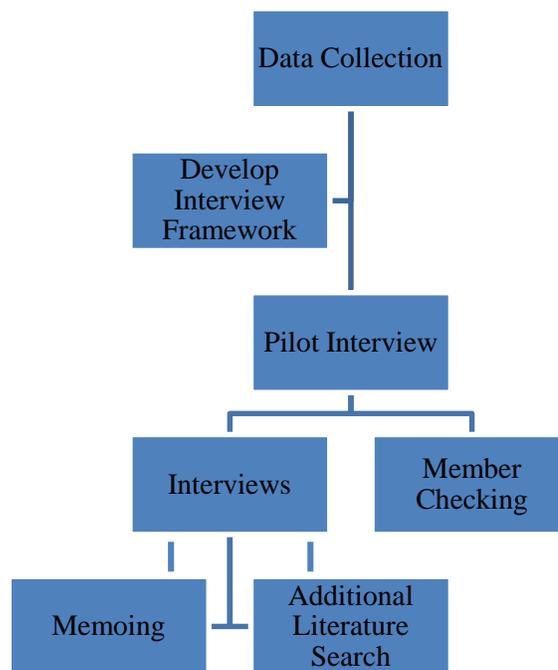


Figure 3.4 illustrates the key elements of the Data Collection in this study. This illustration outlines the different aspects of the interview process as well as elements of additional data collection. The bottom portion of flow chart illustrates that memoing and additional literature search accompany each interview as a form of data collection.

3.9 Data Analysis

The researcher analysed the data through the use of coding. Coding is the process of identifying and analysing concepts through repetitions, themes, and patterns. (1) As discussed previously, the coding process and theme development were assisted by the use of the Nvivo 10 program but the information was mainly analysed through the interpretation of the researcher and the use of a story board.

The process of constant comparison was used to cycle between inductive data collection and theory development. Constant comparison occurs when data collected is generated into codes and these codes are then compared to other codes, categories, and then subcategories. (1) Initial coding is a reflexive process used to develop low-level concepts. (1,100) It was performed using line-by-line coding in the early stage of analysis until categories formed. This is referred to as Category Development. (1) For example, in response to Figure 3.2 One participant responded: “I would tell them that their wrist is bent, and say, how would you address that?”

The first part of the sentence would be coded Teacher-Centered Education, or TCE. However that later part of the response would be coded Student-Centered Education, or SCE. These decisions were based upon the Literature and the Outline of Teaching Approaches labelled as Figure 1.1. Figure 3.5 also demonstrates that teaching in clinic is multifaceted and can not simply be label as one genre or another.

Intermediate coding was also used as a part of the Data Analysis. Intermediate coding is also referred to by Strauss and Corbin as axial coding, (1,100) an is a method of making new associations among the categories and sub-categories. This method of coding increases the level of conceptual analysis and created the foundation for the final grounded theory.

Figure 3.5 Example of Line by Line Coding.



Figure 3.5 is an example of line by line coding. In this example the first half of the comment is coded as Teacher-Centered Education and the second part is coded as Student-Centered Education.

3.9.1 Spectrum of teaching approaches

As discussed previously, (See 1.1.4, and 2.1.4) individual teaching styles often draw upon a variety of teaching approaches. Therefore a spectrum of teaching approaches has been developed as part of the Data Analysis. See Figure 1.2. The spectrum illustrates the position in which each participant would be on a continuum between teacher-centered and student centered learning teaching approaches. The calculations for these locations were made by adding up the total number of comments that could be characterized as student- centered and dividing them by the total number of comments that were made.

3.10 Theoretical Saturation

The categories were refined until the dimensions of the theory were defined. Any holes or gaps in the theory were identified and existing data was sought out from the interviews until the point where theoretical saturation was achieved. Strauss and Corbin defined theoretical

saturation as the point when there are no new codes identified that pertain to a well-developed category. (1,3)

3.11 Theoretical Integration

The final step was to sort through the memos and identify relationships. The final theory was integrated after theoretical saturation was achieved and the core categories were identified.

(100)

3.11.1 Review of the Data Analysis

The Data Analysis in this study includes various levels of coding and theoretical integration. Memoing and further reflection upon literature is also a critical aspect of the Data Analysis. As a review, Figure 3.7 provides a flow chart for the process of Data Analysis in this study.

Figure 3.6 A Review of the Data Analysis as a Flow Chart

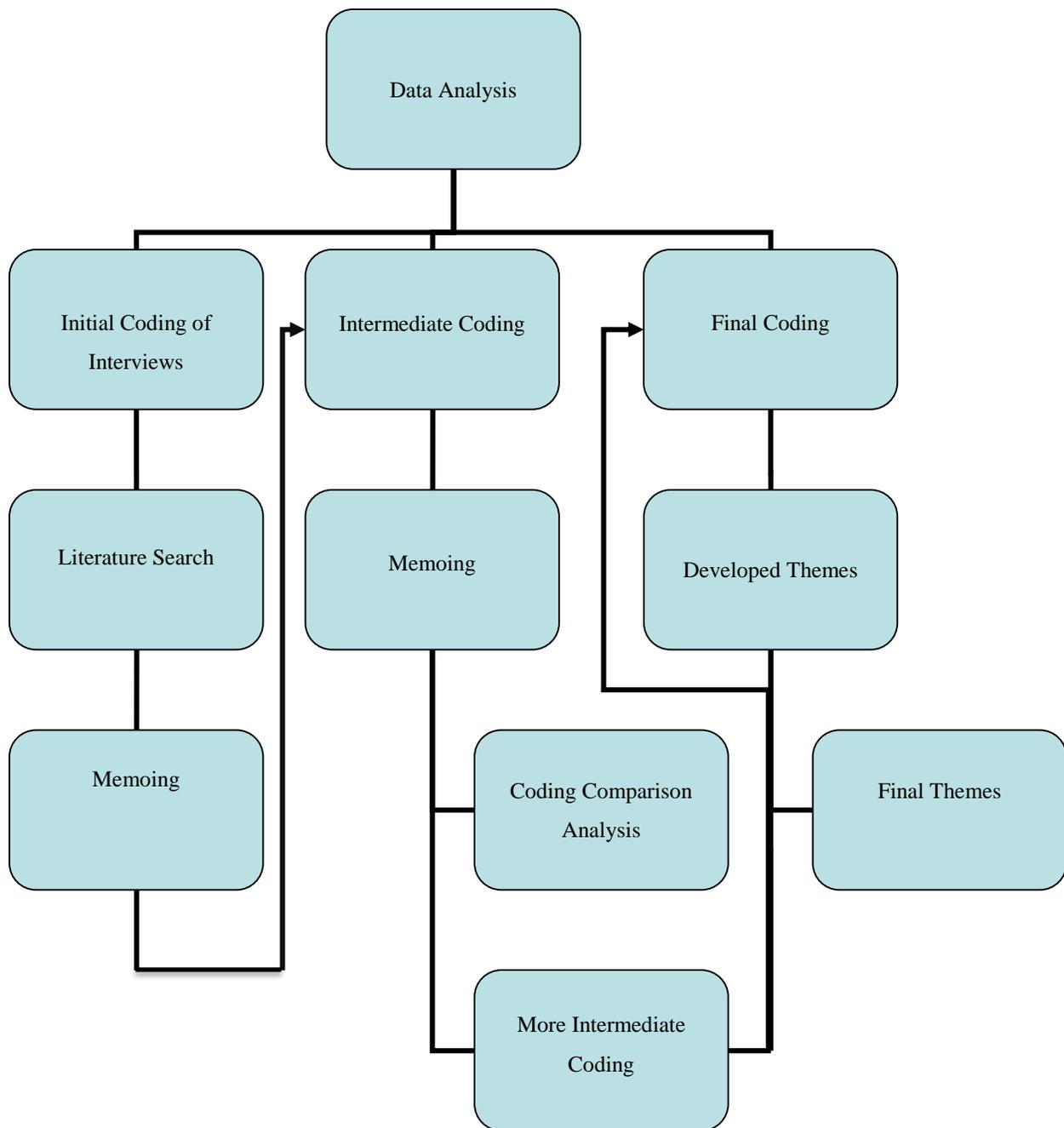


Figure 3.6 is a flow chart of the data analysis done in this study. The initial coding of the interviews was followed up by a literature search based on the findings. The researcher reflected on the initial codes while developing memoes and developed intermediate codes or groups of

codes as subsequent interviews were conducted. Additional memoing and a coding comparison analysis was performed, followed by more intermediate coding. The flow chart demonstrates the iterative process of the final coding as themes were developed, further analyzed and redefined in relationship to one another until the final theory was developed.

3.12 Ethical and Validity Concerns

Although researcher bias has already been acknowledged, it is necessary to consider this with reference to the validity of the study. In pursuit of rigor in the study, the researcher exercised additional caution to refrain from reacting to the subject's statements, and act in a professional and impartial manner. In addition, the researcher implemented the following strategies to enhance the rigor of the study.

- 1) A pilot interview was conducted and interview questions were modified to enhance clarity.
- 2) A third-party recruiter was used to solicit the participation of clinical instructors to minimize coercion of the participants.
- 3) As discussed previously, memoing was conducted by the researcher. This enhances the validity of the study.
- 4) 'Member checking' was used to ensure the validity of the data collection. This means that the researcher returned each of the transcribed interviews to the participants to verify the accuracy of the transcript and to add any other necessary information. In addition, a brief summary of the researcher's interpretation of the interview, summarizing the main points of the data collection, was given to the participant to verify that the researcher's interpretations were accurate. (2,97)

- 5) Thematic saturation: each of the categories have been refined until the dimensions of the theory are defined. Data was sought out from the interviews until redundancy in the participants responses occurred and thematic saturation was achieved.
- 6) To avoid respondent bias, it was clearly communicated to the participants that there would be complete anonymity and that their responses and participation would not impact their employment, pay or reward status.
- 7) Informed consent was obtained prior to the interview, including consent to be audio-recorded. There were no instances in which the participant refused to be recorded, however, in this event the researcher had made alternate arrangements to record written notes to the best of her ability. It was also made known to the participants that although the information would be disclosed to the research committee and the findings possibly published, the identity of individual participants would be protected. The interview transcripts and the key to the encrypted identity of the participants were stored in a password protected computer. Ethics approval was obtained for this project from the Behavioral Research Ethics Board at UBC.

Figure 3.8 provides a summary of the aspects of the study which have enhanced the Dependability, Validity, and Rigor of this study.

Figure 3.7 An Outline of the Dependability, Validity, and Rigor of the Study

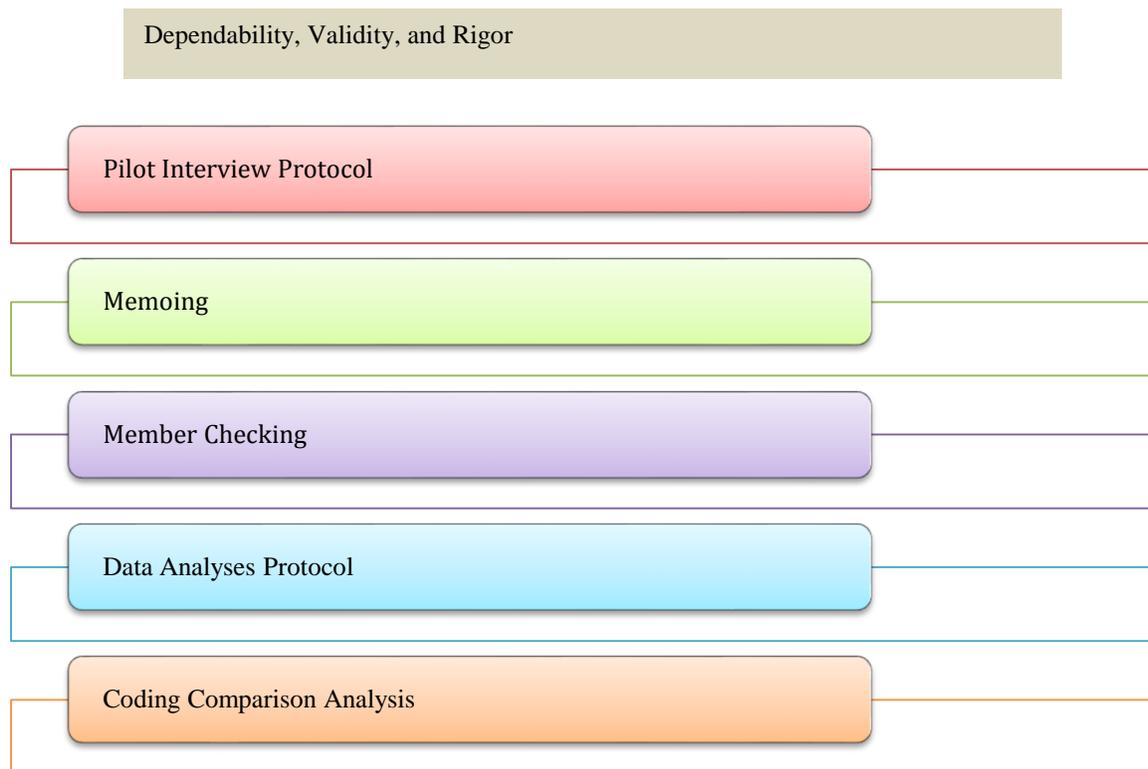


Figure 3.7 is an outline of the Dependability, Validity and Rigor that was incorporated into the study. Initially a Pilot Interview Protocol was developed, this allowed the research to ensure the questions were worded and understood as intended. Memoing is integrated into the Data Analysis as a source of Validity. This not only assisted in the formulation of theory, but is also ensured that the theory was grounded in the data. Member Checking increased the reliability and dependability of the study, and thus improved the quality of the study. The Data Analysis Protocol was developed and the Coding Comparison Analysis was performed as additional part of triangulation of the study. This ensured that coding was performed from multiple sources and in a validated manner. These elements meet the criteria used when one judges the strength of

a qualitative study. They represent several corroborating strategies that safeguard the quality of this study.

Chapter 4: Findings

After an extensive and exhaustive data analysis, relevant literature necessary to understand and support the findings was identified to help with the formation of the theory; such a process is customary with grounded theory methods. A figure is included to help clarify this process in keeping with rigorous grounded theory methods. This has been attached as Appendix F.2.

A number of questions arose that required answering. How does a community of educators from different educational backgrounds function within the context of a student-centered education and contemporary dental hygiene program? If students are taught in an environment based on being competent rather than on clinical requirements (number of patients completed), how does that affect their ability to work in a practice-based environment? What faculty development needs could help the students operate more autonomously in a clinical situation? In this chapter, when discussing the findings, I will answer the following research question: “What are the conceptions and perceptions of teaching and learning held by clinical instructors in a dental hygiene program?” and also hopefully respond to these newly emerged questions.

4.1 Sample Characteristics

There were 15 participants in the study, including 14 females and 1 male, ranging in age from 25 to 55 years. The instructors were characterized by the level of students that they usually taught. Instructors that taught students during their first year of clinic were labelled A: Level taught = Novice. Instructors that taught students in their second year of clinic were labelled B: Level taught = Intermediate. Instructors that taught students in their third and final year of clinic

were labelled C: Level taught = Senior. Amongst the 15 participants in the sample, 20% taught in the novice year, 40% taught in the intermediate year, and 40% taught in the senior year.

Amongst the entire faculty 20% are allocated to teach the novice year, 46% teach in the intermediate year, and 34% teach in the senior year. Table 4.1 presents this distribution for both the sample instructors as well as the Clinical Faculty as a whole.

Table 4.1 Proportion of Instructors by Student Level

Level Taught	A Novice	B Intermediate	C Senior
Amongst Sample			
	20%	40%	40%
Amongst Entire Clinical Faculty			
	20%	46%	34%

¹ Clinical Faculty Statistics were provided from the Clinical Coordinator

Table 4.1 illustrates the percentage of the sample in this study that taught Novice level students was equal to the distribution of the entire faculty of clinical instructors. The sample of instructors whom taught Intermediate level students was similar, just 6% less than the distribution of the entire faculty of clinical instructors. Table 4.1 also demonstrates that the percentage of instructors in the sample whom taught Senior Level students was similar, with 6% more, in comparison to the entire clinical faculty.

The participants in this study had varying levels of teaching experience. A new instructor was defined as two or fewer years of teaching experience. An experienced instructor was defined as having commenced their third year or more of teaching experience. This decision was based

upon the novice-expert literature, in which it is well recognized that the progression from novice to mastery can take 3-5 years in order to develop the professional independence that is necessary for the mastery of a skill set. (12,54,110) In total, there were eight new instructors with less than 2 years of teaching experience and five experienced instructors with 2 - 5 years of experience. There was also one instructor with greater than 5 years but less than 10 years of experience and one with over 11 years of experience. This cohort exhibited significantly less instructors with between 6 and 40 years of experience in contrast to the 2011 CDHA Educators' Survey Report. This is likely due to newness of the program.(44) Table 4.2 presents the number of years teaching for the all of the clinical instructors in the program. It also provides these statistics for all Canadian Educators, as taken from the 2011 CDHA Educators' Survey Report. (44)

Table 4.2 Number of Years Teaching for cohort participants compared to nationwide data.

Number of Years Teaching	Total % of Participants in Sample	Total % of Canadian Educators ¹
1-2	53.3%	42%
<2-5	33.3%	
>5-10	6.7%	20.4%
<10-40	6.7%	37.6%

¹ 2011 CDHA Educators' Survey Report

Table 4.2 presents the number of years teaching for the all of the clinical instructors in the program. The majority of the participants (53%) had 1 – 2 years of teaching experience, 33.3% had greater than 2 years but less than 5 years of experience and only 1 (7%) fell into each

of the final two categories. Table 4.2 also shows how this sample compares with a nationwide sample, taken from the 2011 CDHA Educators' Survey Report. (44) In the nationwide survey, there were more instructors with more than 6 years (20%) and more than 11 years (38%) experience.

Descriptive statistics, such as the number of years of dental hygiene practice and the level of education of the participants is presented in Table 4.3. Data for this table has been provided for the institution's overall clinical faculty, when available, as well as Canadian Educators, as taken from the 2011 CDHA Educators' Survey Report. (44) The institution's overall clinical faculty refers to all clinical instructors within the Dental Hygiene Program, it does not include teaching faculty outside of the clinic.

Table 4.3 Clinical Experience and the Education of the Sample, Institution Clinical Faculty and all Canadian Educators (44)

	Sample	Institution Clinic Faculty	Canadian Educators ¹
Number of Years Practicing			
5 years	26.7%	–	6.9%
6-10 years	20%	–	10.7%
11-20 years	26.7%	–	36.5%
21-35 years	26.6%	–	45.9%
36 and Over	0%	–	6.9%
Highest Level of Education Completed			
Dental Hygiene Only	0%	0%	21.7%
Additional Diploma	0%	0%	24.3%
Bachelor's Degree	73.3%	93.3%	28.9%
Master's Degree	26.7%	6.7%	22.4%
Doctorate	0%	0%	2.6%

¹ 2011 CDHA Educators' Survey Report

More than one quarter of the instructors in this cohort had 5 or less years of dental hygiene practice experience. This is in contrast to the Canadian Educator's Survey where the largest proportion, almost half of all instructors had 21 – 35 years of experience. The categories of 6-10 years, 11-20 years were comparable in both populations. The cohort had more than one quarter of instructors with between 21 and 35 years of dental hygiene practice experience however no one had been a practicing dental hygienist for more than 35 years. In comparison,

the Canadian Educators' Survey reported 7% of instructors had over 35 years of dental hygiene practice experience.

The current sample had a much higher proportion of instructors with a bachelor's degree than in the nationwide survey. This is reflected in institution's clinical faculty where more than 90% had a minimum of a bachelor's degree. Results of the nationwide survey found almost half of the instructors did not have a minimum of a bachelor's degree (46%). In comparison to the overall clinical faculty the sample is weighted with more dental hygienists who have obtained a Master's Degree as their higher level of education. This could be because many Graduate Degree Students begin teaching, by obtaining a teaching assistantship.

4.2 Disconnect between Teaching Beliefs and Teaching Practice

There seems to be a discrepancy between how instructors reported the way they viewed their teaching and the way they actually approached their students in a simulated environment.

During the semi-structured interview, several questions related to how the participants viewed their teaching. Questions such as, "What is different about the clinical instruction you currently provide compared to the instruction you received as a student?" and "What do you feel is expected of you as a clinical instructor in a dental hygiene program?" generated conversations regarding the views and beliefs of the instructors. The majority of these comments gathered from the interviewees were indicative of a student-centered learning environment and exhibited the use of student centered pedagogical approaches.

Of interest is the contrast in the instructors' responses to hypothetical students' behavior. The participants were asked a question involving the simulated environment of 1) a picture of a student with poor ergonomics in clinic and 2) a video showing a student performing aggressive

debridement practices. The participants were then asked in each simulated environment, “If this was your student, how would you approach him/her and what would your response be?” Despite the participants expressing beliefs consistent with a student-centered approach, their comments and responses to the simulated scenarios primarily corresponded to a teacher-centered approach. Figure 4.1 provides a spectrum of the teaching approaches of each participant. This figure is based upon the calculation discussed in the methods section. Refer to section 3.9.1.

Figure 4.1 Described Practices Comparing Teacher-Centered and Student-Centered Approaches.

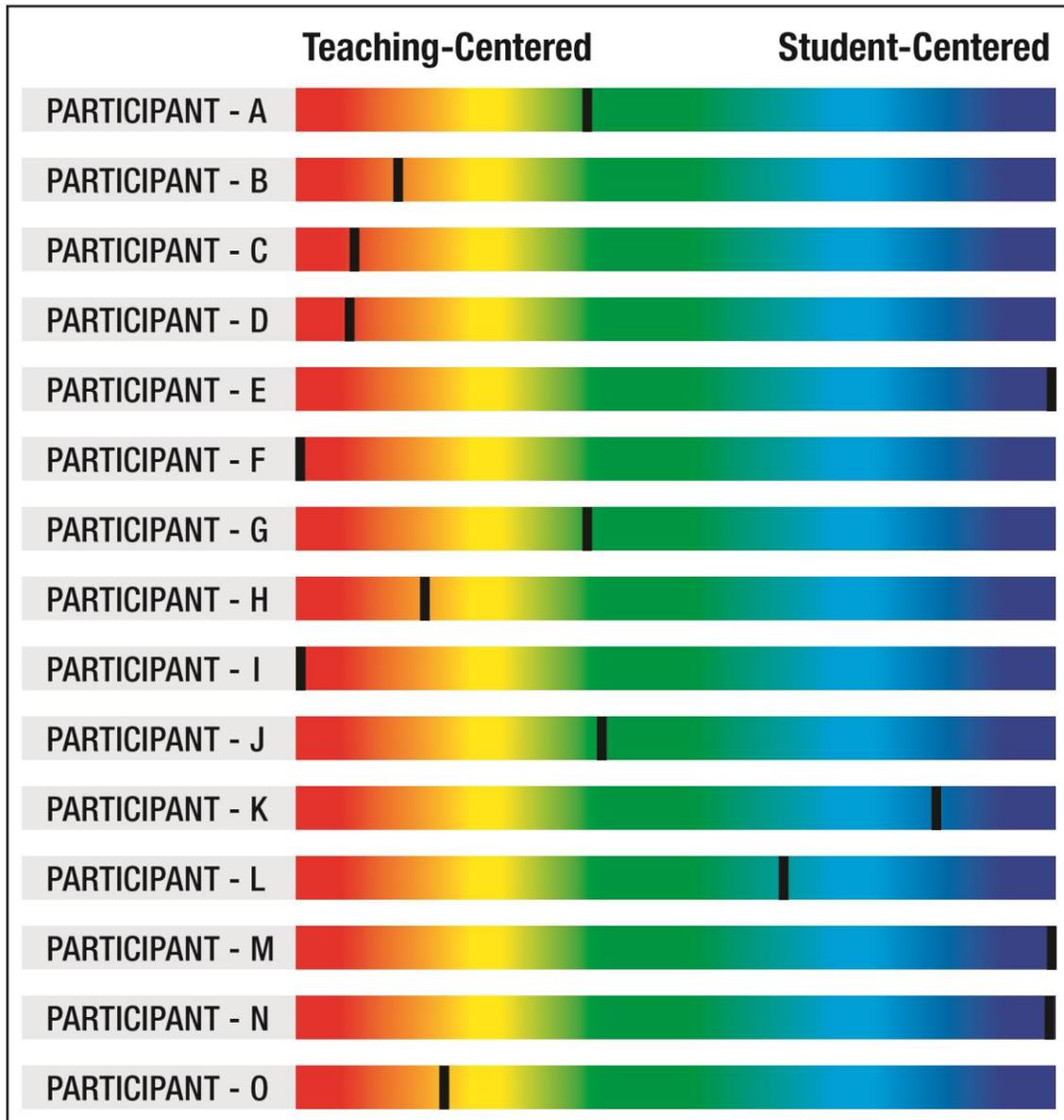


Figure 4.1 Illustrates the sample of 15 clinical instructors. Each of the vertical black bars in the figure signals where an interviewee's approaches to teaching and learning lies.

Figure 4.1 shows that in the sample of 15 clinical instructors, some discussions regarding the hypothetical situations and the instructors proposed responses favored a Teacher-Centered approach. This is despite the participants expressing primarily Student-Centered beliefs. Figure 4.1 illustrates that two participants had responses that consisted completely of Teacher-Centered approaches and five participants that had responses which are heavily weighted toward a Teacher-Centered approach. The sample also consisted of three participants whose responses consisted completely of Student-Centered approaches and two participants that had responses which are heavily weighted toward a Student-Centered approach. Three participants had responses to the hypothetical situations which were weighted approximately equally with Teacher-Centered and Student-Centered approaches.

In contrast to their self-reported views toward teaching and learning, during the simulated teaching events, several participants made statements contrary to their previously discussed beliefs and conceptions of teaching and learning. Table 4.4 lists contrasting comments made from individual participants, each of these statements have been coded as either Teacher Centered Education (TCE) or Student Centered Education (SCE).

Table 4.4 Reported Beliefs versus Proposed Responses of Participants

Beliefs of Teaching	Responses to Hypothetical Situations
<i>Participant A</i> “I think I should be getting the students to be thinking about why they're doing the things that they're doing.” (SCE)	<i>Participant A</i> ““Switch your instrument first of all.’ Tell them, ‘Let's just slow down. Do smaller strokes. Really get in a little bit around the sub-gingival area.’” (TCE)
<i>Participant B</i> “...promote them to think for themselves and come up	<i>Participant B</i> “I would show them some of the instruments that I

with problem solving themselves rather than just giving them the answer.” (SCE)	would have chosen for that area and how to adapt it.” (TCE)
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Beliefs of Teaching	Responses to Hypothetical Situations
<p><i>Participant C</i> “...I also value independence, and I value...competence in that way, so I try to instill that as well.” (SCE)</p>	<p><i>Participant C</i> “My first instinct is to tell her that I don't think she is accessing the area very efficiently.” (TCE)</p>
<p><i>Participant D</i> “So have their self-reflection of what they did.” (SCE)</p>	<p><i>Participant D</i> “I would let the student know that ‘Your strokes are a bit too aggressive. Kind of need a lot smaller stroke.’ Telling them to adapt a bit more.” (TCE)</p>
<p><i>Participant E</i> “...gets the third person able to think..., and it also helps the person who's actually doing [the instrumentation] as well. It instills ...critical thinking ...” (SCE)</p>	<p><i>Participant E</i> “‘This is how you're supposed to do it,’ and then show them.” (TCE)</p>
<p><i>Participant F</i> “...asking questions, how they feel about something or what do they know about [the topic]. Rationale.” (SCE)</p>	<p><i>Participant F</i> “‘So I would tell her, ‘So watch your posture. So straight your back and don't bend your neck too forward.’” (TCE)</p>
<p><i>Participant G</i> “I ask them questions. I would ask ‘Where would we use this instrument in the mouth?’” (SCE)</p>	<p><i>Participant G</i> “‘Let’s try this way.’ And they’ll say, ‘Would you mind if [you] demonstrate again?’ And then show them how to do it properly” (TCE)</p>
<p><i>Participant H</i> “I don't want my students to act and behave as written in a textbook, I want them to understand the premise and the theories in a textbook and apply them in individual cases.” (SCE)</p>	<p><i>Participant H</i> “I’ll go and say, ‘Hey, if you don't mind, Carrie, I notice there's a bit of a challenge in adapting the instrument around this area. So would you like me to sit down and share some tips with you?’” (TCE)</p>
<p><i>Participant I</i> “‘We’ll ask them, ‘do you feel that you correctly have your instrument adapted to the tooth?’” (SCE)</p>	<p><i>Participant I</i> “‘Just show her the correct positioning.’” (TCE)</p>
<p><i>Participant L</i> “the interaction with the instructors, that's one thing I've tried as an instructor, is to make that as open and as accessible.” (SCE)</p>	<p><i>Participant L</i> “I would [ask], ‘Have you considered, or would you consider trying this?’ So inviting them to look at there could be an alternative way to achieve what they're doing”(SCE)</p>
<p><i>Participant M</i> “I think now with our students we try to assess the challenge that they're having, and what have you tried, why would you choose that to think about...” (SCE)</p>	<p><i>Participant M</i> “‘I would ask them to stop and think about their activation stroke and looking again at how to initiation that from the fulcrum for the activation phase.’” (SCE)</p>
<p><i>Participant P</i> “I think they learn best by having a chance to practice themselves.” (SCE)</p>	<p><i>Participant P</i> “‘I’d ask her to kind of tell me what she sees about what she’s doing right now and give her a chance to actually self-correct’” (SCE)</p>

Table 4.4 Describes the participants reported beliefs and contrasts them to the same participants proposed response to the hypothetical situation. This table demonstrates that Participants' described teaching beliefs compared to their described teaching practices in response to a simulated event. The first nine examples illustrate beliefs and proposed responses which contrast each other. The last three examples illustrate beliefs and proposed responses which are congruent with one and other.

These findings prompted questions related to the reasons for the discrepancy between the instructors' teaching beliefs and their proposed actions. For example, why is there a discrepancy between the instructors' beliefs and their responses? Is there a difference in such an observed discrepancy between the newer instructors and those with more experience? The participants seemed unaware that they were contradicting themselves. Reports of what was expected of them and the kind of learning environment they wanted to provide did not always correspond to the teaching approach they proposed to use. Further exploration and data analysis regarding the instructors' experiences provided insight.

4.3 Process of Learning to Teach Clinical Dental Hygiene.

Through analysis of the data, it became apparent that the following themes (see Figure 4.2) emerged relating to the process of learning how to teach clinical dental hygiene with a student-centered educational approach. The majority of the participants began teaching with no formal teaching education and began with various preconceptions from their own dental hygiene education. Essentially the instructor's training is depicted as a, "learn as they go" method, which is exhibited and validated by the critical role that inter-instructor collaboration plays. As the instructors continue to gain experience and "learn as they go," they also perceive students'

experiences and begin to understand students challenges. Another important finding is that during this process the instructor enhances the significance that they place on providing a safe learning environment and facilitating students self-efficacy. The instructors perception of how students learn best changes and instructors begin to recognize the need to continually ask questions and promote critical thinking and self-reflection.

Figure 4.2 The Process of Learning How to Teach Dental Hygiene with the use of Student-centered Approaches.

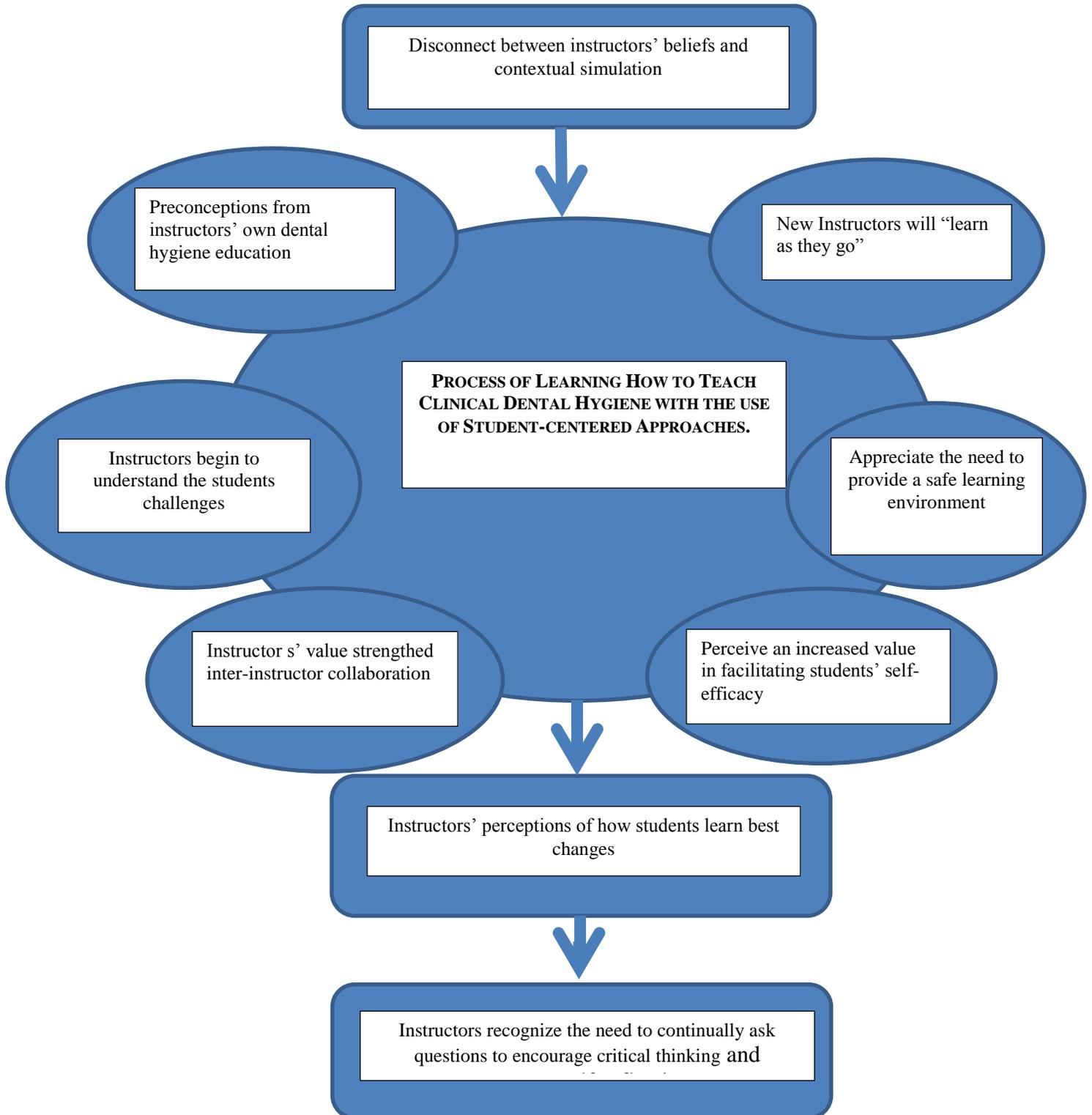


Figure 4.2 illustrates the theory that is developed from the findings. The Process of Learning How to Teach with the use of Student-Centered Approaches portrays the six elements that play a role in the instructors elaboration of their knowledge of teaching and learning. The six aspects are, “Preconceptions from instructors’ own dental hygiene education”, “New Instructors will ‘learn as they go’ ”, “Instructors begin to understand the students challenges”, “Appreciate the need to provide a safe learning environment”, “Instructor s’ value strengthened inter-instructor collaboration” and “Perceive an increased value in facilitating students’ self-efficacy”. These elements then play a role in how the instructors perceptions of teaching and learning change. Subsequently, “Instructors’ perceptions of how students learn best changes” and “Instructors recognize the need to continually ask questions to encourage critical thinking.” In the following subsections, this process will be further discussed.

4.3.1 Instructors’ own education impacts their conceptions of teaching

Some participants reported that they “teach as they were taught,” yet others reported that they learned how not to teach from the militant environment that they had experienced in their prior education. One participant explained that “so much of how you teach comes from how you learned” yet others made a conscious effort to create a safe learning environment that was very different from their own education. Participant X compared her current teaching to the clinical setting she attended as a student. She claimed that in her education:

[There] is more education in clinical instruction so it's much more comprehensive. And I think [when I went to school], our preclinical sessions were more, “these are the steps in how you do it”, not so much the research behind, or different approaches, or the whys of what we

were doing; [it was just] that this was how it was done and this is how you're going to do it.

Participant Y demonstrated how she actively tried not to teach the way she was taught, and ultimately experienced the frustration of the students:

And I guess, you know, back then, I suppose that traditional learning is more like a shortcut method of learning. Because, you know, 'we [the students] just want the answers. Just give us the answers!' You know, 'don't make us look it up!' (Chuckling). 'Aren't you the teacher (chuckling)?'

She went on to express the outcomes she expected from teaching this way:

I actually do think that this way is the best way to learn. I think it's almost like... growing the student in a way. Because I think ... that, by fourth year, they're almost ready to just go out into the world by themselves... And they should be able to bring up all those thought processes, you know, without actually us telling them what it is.

4.3.2 The majority of instructors “learn as they go”

Since most instructors received no formal teaching training, they often felt like they were initially unprepared to teach. Participants often reported they were learning as they went and made comments such as, “okay, we don't really know what we're doing” and “I'm a new instructor, [so] I don't know much.” Many instructors often began to instruct the students by simply providing information partially due to not knowing much about the learning environment. They began teaching by using primarily teacher-centered learning approaches. One participant said, “I started last year with wanting just to spill out everything.” Another instructor said she

wanted to “...share everything with them” and was very much simply conveying the answers (paraphrased). As they continued teaching throughout the academic year, teaching approaches began to change. For example, one participant said that, “over the years, I've observed other instructors, the way they talk to their students, and I've learned to be more graceful.”

4.3.3 Inter-instructor collaboration plays an imperative role in learning how to teach with a student-centered education approach.

As instructors continue to teach, they formed relationships with other instructors. These relationships were recognized and valued by the new instructors and endorsed by the administration. Comments such as, “What I found most useful was talking to other people who were working with the same group as me, so instructors that were working together” and “[It's] great to spend more time with the instructors and the professors... That is always, always helpful” were prevalent among the interviewees' transcripts. One participant had the following insight: that in teacher-centered dental hygiene programs, “it was more like if we didn't know, we just pretend that we knew” and that is no longer the environment in which clinical instructors teach. She further elaborated: “And a lot of us, we're from that school of thought, [but] now that we're in [this program], we work collectively and ...collaboratively.”

Instructors tended to use a combination of self-reflection and peer dialogue as a method of determining how to manage student assessment. One participant claimed: “I like a lot of communication-positive guidance. I think, at the beginning, when I first started teaching, my evaluation [of students] was way too abrupt and harsh.” Many of the participants valued the role that their co-workers played in their decision making, and expressed that it was helpful, “having [someone else] there just to be able to go say, ‘What do you think of this or what do you think of that?’ ” With peer support, the clinical instructors of this study seemed to grow in a variety of

different pedagogical areas. As the instructors grew more experienced, they came to a greater appreciation of inter-instructor collaboration. They were not simply learning from the more experienced instructors, but also giving back to the discourse.

I think, again, having the opportunity to share with my fellow instructors the successes, or the challenges, or what worked best. And things that I've learned from my colleagues about different simple visual things that you can make to demonstrate concepts that you're trying to help students comprehend.

The role that inter-instructor collaboration plays in learning how to teach in a clinical environment seemed to be vital to the participants.

4.3.4 Instructors also expand their knowledge and understanding of their students' experiences.

As instructors spent more time in the clinical environment, they began to understand more about what the students were experiencing. The participants reported that they developed an appreciation of the learning environment from the perception of the students after working with them for a period of time. Participants stated that the students were "...scared. They're nervous," and felt a "sense of urgency." Students were also characterised as being, "high-achievers" and "bright" but also as having a "lack of confidence." After further data analysis, it became apparent that student confidence was a critical component, perceived by the instructors, for student learning in a competency-based clinical environment. One participant observed, "...some of them [the students] just don't have the confidence within themselves to go

forward... even some of the students that excel academically [do] not have confidence in clinic ...because they [don't] have that interactive component.” This comment addressed the lack of communicative and collaboration skills of the student. Yet another instructor said that, “I found that a lot of the students, particularly the ones that are very bright with not, maybe, as good communication skills or as good clinical skills tend to want to – they would...prefer to have a requirement base.”

The instructors also began to see that there was a false sense of security in having checklist of things to learn. One participant said the students “thrive on all of that information, because I think that they would prefer to have a requirements base.”

[The students] want to have everything manageable and [feel] in control of everything, they wanted to have sheets of paper to tell them where they should work...they want to make sure that, next time you see them, that all of those boxes are ticked properly....So [student-centered learning] is difficult for them because it is – it is a grayer area, and they can't *grasp* what you expect of them as easily.

4.3.5 Instructors begin to understand the role of a safe learning environment

It was generally recognized among the instructors that the students learn effectively in a safe learning environment. But what constitutes a safe learning environment according to the participants in this study? A low-pressure environment in which there is reduced stress, an approachable instructor, and freedom to learn through their mistakes were all examples that emerged in the interviews. Overall, it was thought that the students could learn more when they were not as stressed. There was also a shared perception that constant evaluation would put “roadblocks up for their learning.”

One participant commented that, “it’s just different . . . because it’s almost like they’re there to learn and so that’s what they’re doing. They’re absorbing a lot more because they’re not as stressed.” Several instructors indicated that creating an environment where the students could approach them and feel free to learn from their mistakes would “help them facilitate better learning.” The instructors stated that they do play a role in building on the students’ strengths and in bridging theory and practice. For example, one participant described her role to, “[b]e a coach and bring out the best in my students . . . and help them build upon their unique strengths.” The more experienced instructors shared that students often seek information from the instructor due to their lack of confidence. One example is: “They’re looking at you for the answer.”

However, not answering them directly, but instead placing the importance on “knowing *why* they are supposed to do things instead of just [doing them as a prerequisite]” was seen as a crucial element to learning. Participant Y, an experienced instructor, claims that it is her job “to instill some confidence in them . . . I think that that builds clinical skill and competency . . .” One participant theorized that if we apply confidence to the students and provide a relationship in which they can relax, then we think all the knowledge application will just come forth and it will actually be a lot easier to teach them. (paraphrased)

4.3.6 The instructors’ perceptions of how students learn best changes

This research study found that as clinical instructors continued to work in their positions, after reflecting on their past teaching the clinical instructors could expand on their perception of how students learn best. One participant said, “I actually do think that [student-centered teaching] is the best way to learn, because in the real world, as you know, it’s not always black and white.” Such a realization represents a more sophisticated understanding toward the nature of uncertainty

in clinical science as compared to a more beginner style of perceiving how students learn best is through “student practice” or “regular instructor feedback.”

Pedagogical approaches such as “huddles” (group discussions) are increasingly valued as a beneficial teaching approach with greater instructor experience. One participant stated, “So having the huddles, I see the benefit of it now.” Another participant stated that huddles help students so they can share their experiences with each other. It was also thought that sharing mistakes would prevent them from being repeated.

Instructors found that an increase in awareness of student learning caused them to reflect on how their teaching approach affected the students. “I find that it [student-centered approaches to teaching] allows the student to be freer to learn and to have critical thinking, and that they know that each clinic is a learning experience.” One participant also reported: “I see the students are a lot more open to ask questions. I think they feel a lot more comfortable to ask questions if they don't understand something than it was when I went to school.”

Instructors began to view learning as a by-product of self-reflection and experience. In addition, they saw that the students had become autonomous and learned to look things up if clarification was necessary. For instance one participant claimed that she “tr[ie]d not [to] just give the answers to the students,” she further explained, “if they've already learned it, then we need to try to get them to think about it a little bit more.” However, this shift to an autonomous learning was not always initiated by instructors, and even when it was, it was not always perceived by the students. Many instructors also began to shift their interactions with students, and would “...get them to think about that [what they're doing and why], as opposed to saying, “Let me sit down and you watch me.” The instructors noticed that the students were just “...looking at you for the answer,” and so the most beneficial response would be “Well, let's just

back up and think about common sense, and what would – what do *you* think you would do first?” A common theme that developed was that instructors had to learn to not just give the students the answers they sought. “I’m learning now to hold back and get them to think...” and “I am learning that they need to be able to think it through.”

There was also a variety of resources which influenced how the instructors began to draw upon student-centered teaching approaches. The participants often just learned from each other. “I’ve observed other instructors, the way they talk to their students.” The instructors also felt that self-reflection was an important theme. It became important for the students to realize that they should not rely on somebody else all the time for their decision-making. “I have decided to take a more ‘back seat’ approach, where I observe more and ask questions, rather than telling them what to do, versus taking the lead in such discussions.” The newer instructors also changed in response to the students’ needs. “I changed as the students were finding my technique less effective and contradictory to what they were used to.” The instructors focused on providing a safe learning and one instructor expressed, “I became more lenient with the students, recognizing they are learning and it’s a process.”

4.3.7 Instructors recognize their role in prompting critical thinking and promoting self-efficacy

After observing that the students retain more knowledge and are able to apply it to clinical practice by having the instructors encourage critical thinking, the instructors were able to understand the benefits of facilitating self-efficacy, promoting self-reflection, and allowing the students to come to conclusions themselves rather than having information provided to them, that they began to make a shift in their pedagogical approaches. One participant claimed that she made a switch to promote “...critical thinking, [and] making [the students] think and give you

answers and that's what I'm finding different in having to make my mind shift.” The instructor found that even after realizing that the students learn better using student-centered approaches, it was often challenging to draw upon these approaches in clinic. Participant Z said she was learning how “to ask them questions and say, ‘What do you think and what would your ideas be?’ versus, ‘This is what it is.’” Another instructor claimed she learned “to promote them to think for themselves and come up with problem solving themselves rather than just giving them the answer.”

Learning how to teach using student-centered approaches is not a prescriptive course but rather a process composed of elements which work in combination of each other. Instructors recognized their role in prompting critical thinking and promoting self efficacy, but this is subsequent to reflection and awareness of student learning. Inter-instructor collaboration, understanding more about the students challenges and experiences, and providing a safe learning environment were all critical aspects of clinical teaching which affected the students learning. Upon reflection, these elements ultimately prompted the instructors to conceptualize how to best facilitate the students learning.

Chapter 5: Discussion

The following section will return to the original concerns outlined in the introduction and discuss the implications of these results for the current context of dental hygiene education. The discussion will also explore how the results can be interpreted through the lens of the original theoretical framework and examine what they mean for future faculty development programs.

This research investigated the perspectives of Dental Hygiene instructors in a student-centered CBE environment. After learning more about the instructors' teaching beliefs, this study has confirmed that there are obstacles to using a student-centered teaching approach in clinic. A gap has been identified between the instructors' discussions regarding their teaching beliefs and their described teaching practices. A theory has been developed, "Process of Learning to Teach Clinical Dental Hygiene from the Perspective of a New Instructor." which may provide some insight into the development of student centered teaching approaches.

5.1 Linking Theory to Literature

This research uses a proxy of the teachers' proposed actions in order to explore teaching practices. The findings from this research validate the observations of prior research. Previous findings from Murray and Macdonald (1997) and Norton et al. (2005) have also cited that there may be a gap between teaching beliefs and actions. (25,33) This research study echoes these findings that teachers' attitudes and beliefs may not be translated into their teaching practices.

In addition, the findings from this research project have shown that conceptions of teaching are influenced by a change in both the perception of how students learn best and a change in the perception of the students themselves. The suggestion that instructors' beliefs and conceptions about teaching will have an impact on the teaching approach used is not new. In 2000, Kember and Kwan proposed a model suggesting that teaching beliefs are altered as a result

the instructor's perception of students experience. (11) These authors concluded that changes to teaching are unlikely to happen without changes to the conceptions of teaching.

Many authors support the role that self-reflection plays in promoting competence in Dentistry and Dental Hygiene. MacEntee proposes that a shift in educational pedagogies to include a focus on self-reflection as a fundamental part of education for geriatric care is vital to the clinical care for an aging population. (80) In addition, Springfield found that students who were proficient at critical self-reflection showed an increase in confidence and professional behavior. (62) The findings of this study add to Springfield's prior research by providing results from the perspective of the instructors. The results of this study show that a movement towards student self-reflection as a component of student-centered learning occurred after the instructors began to view learning as a by-product of self-reflection and experience. For example, one participant described that her perception of the role self-reflection played in student learning had changed. She explained that, "[The students] are pretty honest with their self reflections with what they see. Most of them seem to recognize when they've done something that isn't correct or they need work on." As a result, there was a shift in teaching approaches from correcting the students to having discussions with them. Subsequently, instructors began to ask more questions to encourage their learning.

5.2 Linking Findings to Theory of Planned Behavior

Figure 3.1 Azjen's Theory of Planned Behavior is the conceptualization framework that was initially drawn upon in order to complement and assist in understanding the details of the research problem. The Theory of Planned Behavior (TPB) was chosen as an existing relevant theory. After analysis of the research data it is thought that TPB could be maintained but further refined in accordance with the findings.

The theory that has been developed from this research study can be linked to the theoretical framework in several ways. See Figure 3.1 Ajzen's Theory of Planned Behavior. To refresh the reader's memory, The Theory of Planned Behavior claims that if a behavior is viewed as positive (behavioral beliefs) and expected of them, (normative beliefs) then the individual will follow through with the behavior. Unless, the individual believes the behavior to be too difficult or consist of barriers which prevent the behavior (control beliefs), then the theory asserts that the individual will not follow through with the behavior.

Initially, instructors enter into the teaching environment with various preconceptions about teaching and learning. The instructors are expected to teach in a student-centered environment and they view this style of teaching as a positive pedagogical approach, this is comparable to Ajzen's original theory.

However, this hypothesis could be further modified when one considers the instructor's recognition of how students learn best. The increased awareness of instructors seeing the benefits of student-centered learning from the perspective of the students triggered the instructors to modify teaching approaches and shift away from teaching-centered approaches. This alteration of teaching approaches could also be equated to a change in perceived behavioral control as is suggested by Ajzen's TPB. (93)

5.2.1 Instructor's obstacles and control beliefs

It was also observed that instructors' original beliefs did not always align with the teaching approaches that they used. Several variables, such as students' spoken expectations and the instructors eagerness to impart knowledge may have influenced the instructors actual actions. In accordance with the TPB, these variables may have impacted the instructors control beliefs, and initially interfered with creating a student-centered learning environment. For

example, the student asks a question with the expectation of being given the answer. Participant Y describes the student exclaiming, “Just give us the answers!” “Aren't you the teacher?” The instructor may believe it is easier to just provide the answer.

Teaching in a clinical environment also brings with it, time constraints. The instructors’s time can be divided between 6 and 8 students. Often each student is at the same stage of treatment (i.e., debridement) at the same time. In order to use clinic time most effectively, instructors may feel they just do not have the time for responding to a question, with a question and waiting for the student to work things out in their own minds.

Another control belief is that teaching in a clinical environment using SCE can be very difficult, subconsciously. Instructor-learner communication can be very difficult for the Instructor. This may be due to the their own education, but it may also be due to the skills and techniques that have developed a sense of “automaticity” in the Instructor’s minds. The Instructors perform the task and may not know how to describe the steps of the task without sitting in the operator chair to demonstrate. According to the Theory of Planned Behavior, if the instructor believes that they are not able to describe a clinical approach using SCE, then they will not do it.

5.3 Faculty Development and The Process of Learning How to Teach Dental Hygiene

Since the adoption of the CDHA Entry-to-Practice competencies, there has been a lot of discussion around the need to ensure that graduates of Canadian Dental Hygiene Programs have achieved these competencies. After investigating the perspectives of educators whom teach in a student-centered CBE program, but whom were taught using a different approach, this study has confirmed there are some obstacles to teaching with the use of student-based approaches.

This research study adds knowledge of how clinical dental hygiene instructors learn to teach. Information about this process is important to assist instructors to become effective clinical educators and expedite training. Furthermore, faculty development programs can use this information and focus on the instructors' beliefs about how students learn prior to addressing how to instruct in clinical dental hygiene programs.

One of the main implications for this study is the realization that instructors should be encouraged to collaborate with their fellow teachers as well as the students. This is necessary to develop a knowledge base of effective student interactions, as well as an optimal learning experience of the students. This research has illustrated that when instructors change their perceptions of how students learn best, subsequently they may also change their view about their role to facilitate student learning. These findings supports Kember and Kwan's contention that the conceptions of teaching and learning must be explored prior to making a preemptive shift from a predominantly teacher-centered approach towards a student-centered approach.

This means that from a practical perspective, new instructors and experienced instructors need to take time to investigate and explore their beliefs about learning as a critical initial part of transitioning towards a student-centered learning environment. There are several excellent techniques to clinical teaching, but they require an underlying awareness of the instructors conceptions towards teaching and learning in order to be effective.

The "one minute preceptor," for example, is an excellent tool for improving the interaction between the student and the instructor within a time limited clinical environment.

(111) It is based upon the following concepts which are to take place during a short interaction:

1) seeking the students commitment to their learning, i.e., What aspect of treatment do they require feedback for? 2) prompting the student for evidence, 3) teaching general clinical

principles, 4) reinforcing what the student has done correctly and finally, 5) addressing the students' errors. However, when the findings from this study are considered, it becomes imperative to develop the awareness of an instructors teaching and learning beliefs. Otherwise this, or any other framework, would reflect the instructors control beliefs. This could cause an impediment to the effectiveness of the framework. Sufficient faculty development is necessary to prevent the "one minute preceptor" from being incorrectly implemented. Addressing students mistakes could just as easily become a one way dialogue of teacher-centered interactions.

It is also crucial to spend time reflecting on ones own account of student behaviors. Each instructor should be or become aware of each instructor-student interaction. A sense of personal self-reflection of there own teaching is required in order to ases that an instructors teaching is truly based on helping students construct knowledge and come to their own conclusions, (SCE) or are they simply imparting knowledge. (TCE)

The Process of Learning to Teach Dental Hygiene has shed some light onto the journey that an instructor takes to make a connection and develop a personal commitment to student-centered education in a clinical environment. By being able to identify some critical elements of this process, it is possible to incorporate these aspects into faculty development programs.

5.4 Meeting CDAC Requirements

As Dental Hygiene Programs aim to meet accreditation requirements, they will ensure that a programs curriculum is based upon the CDHA Entry-to-Practice competency document. This will include teaching and learning stategies, outcomes and assessments. R. Harden (2007)(112), Davis (2007)(113) and Quinn (2007)(114) have described examples of programs that go beyond listing the competencies and outcomes as a part of the curriculum. These authors

maintain that appropriate implementation of such programs must include a student-centered learning environment in order to assist the students learning on the basis of competencies (others use the term outcomes). Davis (2007)(113) and Harden (2007)(82) also maintain that staff buy-in and staff development are factors for the successful implementation of a CBE. This research adds a significant missing piece to this puzzle. By investigating the perspectives of dental hygiene clinical instructors, we are able to glean from the experiences of the staff. Focusing on the teaching/learning beliefs of the instructor's allows the program to integrate the feedback and pre-conceptions of the instructors into the staff development, thereby creating an environment that is more accommodating of the transition towards the new accreditation requirements.

Chapter 6: Conclusion

Chapter 6 will discuss the strengths and limitations of this study as well as the broader implications, future direction for further research, and final conclusion of this study.

6.1 Limitations

6.1.1 Alternative influences

There are several limitations to this research and final theory development. It is recognized that many of the fears that the instructors experienced when they first began teaching are experienced in any new job. As noted in the descriptive statistics, the sample for this study was heavily weighted with instructors that had less than 5 years of teaching experience. This may have effected the confidence of the instructors or mastery over their teacher-student interactions. Further, it is possible that the reason new instructors teach in a more teacher-centered manner is that they were too uncomfortable to think about prompting critical thinking and self-reflection.

Some of these findings may also be attributed to the theory of enculturation. (115–117) This occurs when there is a displacement of prior knowledge and teaching beliefs due to a transition to a new environment. The theory of enculturation commonly refers to teachers who teach overseas. There have been several studies which support the theory of enculturation in conjunction with sociocultural learning theories. According to Casanave's 2002 definition of *disciplinary enculturation* occurs when students become at home in their communities of practice. (117) It is accepted that a portion of the process of becoming a dental hygiene instructor may be attributed to this phenomena.

6.1.2 Biases

Additional concerns relate to bias. Firstly with researcher bias, despite attempts to remove subjectivity, data analysis is always subject to some bias. This is also acknowledged and as a result, the researcher has practiced reflexivity. This is a heightened level of self-reflection during the iterative process of data collection and analysis in order to guard against biases.

Contextual bias has some influence on the interview data and teaching methods. It is recognized that some teaching approaches are dependent on the development (or experience) of the student (e.g., Novice or Senior). It may be necessary to use much more of a “follow me approach” when teaching a student who has never observed competent instrumentation before. However, it would be expected that a senior student require far less coaching in self-assessment and self-correction techniques.

It has all been noted that the sample is disproportionately weighted with participants whom have obtained a Master’s Degree. This is characteristic of a participant bias and may have had an impact on the findings.

6.1.3 Limitations of the data collected

Much of the data was collected based on the responses of only two simulations or proxies of the participants teaching. The participants also gave their responses based on their reaction to a limited number of samples. For example, the errors that were demonstrated in the video may have prompted the instructors stop the student as a measure of ensuring patient safety. It should be considered that the participant responses were impacted by these selected examples and with an increased number of samples may have more accurately reflected their teaching behaviors.

Within the data that was obtained from this sample, there was no confirmation that the majority of instructors experienced the proposed, “aha” moment. To be clear, it cannot be assumed that every instructor who tends to take more of a student-centered approach to teaching has, in fact, come to the precise realization that they need to set aside their eagerness to help by sharing knowledge and shift their thinking into a way which facilitates the students coming to their own conclusions.

6.1.4 Convenience sample

The fifteen interviews that were conducted were selected from a convenience sample. This allowed the researcher to achieve theoretical saturation, which is the point at which no new data or ideas could be identified and further interviewing would have been repetitive. However, a limitation of this sample was that it did not achieve as much of a variation that may have been achieved with a larger national sample. Table 4.3 describes the characteristics of Canadian dental hygiene educators. Upon comparison, it would appear that the sample used in this study appears to possess less education and have less experience than the entire population of Dental Hygiene Educators. This may be due to infancy of the program studied. It also may be due to generalization of all educators, (didactic, community, and clinical) and an inability to separate clinical educator’s from the statistics reported.

6.1.5 Safety considerations

As discussed previously, the simulations that were used in this study are context-specific to only two simulated questions. There are times in dental hygiene when for safety reasons, even the most student-centered instructor will intervene to tell the student that their angle of instrumentation is causing the patient trauma. They would not wait until the student can construct this knowledge.

6.1.6 Teaching is not a dichotomous process

The study attempted to illustrate teaching as a spectrum between student-centered, and teacher-centered or content-centered. However it is recognized that the data analysis framework consisted of labels which were primarily on either side of this spectrum. It is difficult to categorize a teacher as consistently being at one or the other extreme, as teaching is multifaceted. Therefore it is further recognized that having only two simulations is a weakness in this study.

6.2 Strengths

6.2.1 Trustworthiness

In qualitative research, trustworthiness refers to the evaluative standards of the study and can be determined by assessing the strategies for rigor used in the research. For this study credibility was ensured through a variety of methods.

Member checking was used to verify the accuracy of the researcher's interpretation of the participants' views. Dependability is also an important aspect of this study and the research methods are well documented and may be reviewed in Figure 3.1 the Research Flow Chart. In addition, a Data Analysis Flow Chart is included in Appendix F.2 and much of the process that occurred during the data analysis is attached in Appendices F.3 to F.8.

Maximum variation was achieved with the help of a third party recruiter that was used to obtain 15 participants without coercion. This makes the study's findings transferable within the context, as the sample of instructor's consisted of maximum variety of both the new and experienced instructors.

Thematic saturation was also a strength of this study. Each of the categories had been refined until the dimensions of the theory are defined. Data was sought out from the interviews until redundancy in the participants responses occurred and thematic saturation was achieved.

Prolonged engagement is also considered to be a strength in qualitative studies and continuous interactions between the researcher and the respondents are seen as a method of reducing respondent bias and increasing the veracity of the data collected. This research was conducted using a convenience sample, and since the interviewer was a colleague of the interviewed participants, varied encounters have occurred over several years.

Data triangulation and Theory triangulation are both considered to have a positive effect in reducing the threats to validity and thereby increasing validity.(118) The researcher used both interview data as well as incorporating literature into the analysis. The process of theory triangulation means that the interviewer examined multiple theories in order to interpret the data set. See Appendices F.3 to F.8.

6.3 Implications

6.3.1 What this research adds to the literature in health science education

This research adds a clinical component to what is already known in the area of conceptions of teaching and learning. To date, there is much literature about the conceptions held by instructors of teaching and learning, particularly in the areas of lecture-based learning in secondary education and science. However there is very little of this research in the area of health sciences or clinical education.

Further, there have been several studies addressing faculty development issues in medical education; however, this writer was only able to locate one recently-published study that addresses conceptions of teaching and learning in medicine. The writer is not aware of any studies of this kind to date in the field of dental hygiene.

This research study adds the specific component of clinical education, as well as having highlighted the key role that inter instructor collaboration plays in the process. In addition, the

crucial element of shifting the focus from instructors' prior experiences to an increased insight of student's experiences has been identified. In contrast to Licari and Chamber's (50) findings that the movement towards competency-based education in dentistry and other health care professional education has led to very little changes, these findings may uncover a key component necessary to shift teaching towards student-centered approaches. Changes to the teachers conceptions and beliefs about student learning must be addressed prior to the actual changes in teaching behavior.

6.3.2 Impact on faculty development in dental hygiene

This research will affect faculty development in dental hygiene by shifting the focus of the education from teaching techniques to how students learn best. Knowledge of the process of learning to become a dental hygiene instructor will influence faculty development programs to incorporate interprofessional and collaborative learning as well as self-reflective exercises that develop one's conceptions of and beliefs about learning.

6.4 Future Research Directions

6.4.1 Further research needs to be done on the nature of building self-efficacy

One component of this theory is the perception that the students thrive on confidence. This is a theory within itself that remains unproven. Perhaps matters have more to do with how one instills confidence by allowing students to come to their own conclusions through self-reflection, rather than through encouragement. Further research needs to be done in this area of students' needs and attitudes towards learning.

6.4.2 Study replication and expansion

Future research could involve conducting a similar study using a control interviewer and a national sample of clinical instructors from various educational institutions. Investigating the perspectives of the students and including student interviews would also be valuable.

Further research on facilitating self-efficacy and teaching and learning in clinic is worthwhile. Researchers need to further explore the role that self-confidence plays in clinical learning and the role that dental hygiene instructors have in facilitating student's self-efficacy. A replication of this study which includes clinical observation by the researcher would also be a useful expansion to this study.

6.4.3 Development of competencies specific to dental hygiene educators

In order to address the increased demands of teaching, it could be possible to develop a framework for the competencies for dental hygiene educators. Further research would need to be done in this area to identify the competencies which are specific to teaching dental hygiene. A similar framework was created in the field of medicine and is grounded in the core values of learner engagement, learner centeredness, adaptability and self-reflection. (38,46)

6.5 Conclusion

This thesis has reviewed the literature related to teaching and learning approaches in health science. This research has also investigated teaching and learning from the perspective of new and experienced instructors in a student-centered dental hygiene clinical education environment and identified a disconnect between instructors beliefs and proposed actions. These findings raise important questions regarding the obstacles of learning to teach with the use of student-centred approaches in a clinical dental hygiene environment. This research has also led to the development of a theory, "The Process of Learning How to Teach Dental Hygiene From

the Perspective of New Instructors.” This theory identifies various elements that instructors reflect upon and use to ultimately conceptualize how to best facilitate students learning. These findings create a renewed focus on teaching beliefs and conceptions about learning in a student-centered environment and can add insight to Faculty Development in the current context of dental hygiene clinic education.

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Appendices

Appendix A - Introductory Letter

THE UNIVERSITY OF BRITISH COLUMBIA



Faculty of Dentistry
J.B. Macdonald Building
The University of British Columbia
2199 Wesbrook Mall
Vancouver, BC V6T 1Z3
www.dentistry.ubc.ca

Letter of Initial Contact

To:

You are being invited to participate as a Dental Hygiene Instructor who has specialized knowledge in teaching and learning in a Competency Based Education Dental Hygiene Program and your opinion is greatly valued. Faculty will be recruited from the Entry to Practice Dental Hygiene program to become a participant in a qualitative research project developed to answer the research question below.

Research Aim: This research aims to use a one-on-one interview to investigate the clinical Instructors perspectives and conceptions toward teaching and learning in a Competency Based Education Dental Hygiene Program. (CBE-DHP)

Research Question:

What are the perspectives and conceptions of teaching and learning of clinical instructors within a CBE-DHP? In order to achieve the maximum amount of information, the criteria identified for this purposeful sample, consists of individuals who have firsthand knowledge of teaching as a clinical instructor within a competency based education Dental Hygiene Program. The inclusion criterion for the interview participants are:

- a Registered Dental Hygienist, with at least 3 years of experience
- A Clinical Instructor within a CBE-DHP at the studied institution

This sampling strategy was selected to allow perspectives from clinical Instructors to provide information specific to teaching and learning in clinic within a Competency Based Education program. Exploration of the pedagogy currently used will provide direction for future Faculty Development Programs.

Your participation is appreciated. If interested please contact Shannon Waldron by email at

[REDACTED] or by telephone at [REDACTED]

Sincerely,

[REDACTED]

Shannon Waldron, BSc, RDH.

Appendix B - Participation Consent Form

THE UNIVERSITY OF BRITISH COLUMBIA

Principal Investigator:

Dr. HsingChi von Bergmann
UBC Faculty of Dentistry.
604-827-5699



Faculty of Dentistry

J.B. Macdonald Building

The University of British Columbia

2199 Wesbrook Mall

Co-investigators

Bonnie Craig Dip. DH, M. Ed., RDH
UBC Faculty of Dentistry.
604-822-4680

Zul Kanji BSc, Dip.DH, MSc, RDH
UBC Faculty of Dentistry.
604-827-3358

Jude Walker, Post-Doctoral Research Fellow
UBC, Faculty of Dentistry.
604-822-3567

Shannon Waldron, Dip. DH, BDS (DH),
Graduate Student
UBC, Faculty of Dentistry.
[REDACTED]

CONSENT FORM

INVESTIGATING CLINICAL INSTRUCTORS' PERSPECTIVES AND CONCEPTIONS
TOWARD TEACHING AND LEARNING WITHIN A
COMPETENCY BASED DENTAL HYGIENE PROGRAM

STUDY TEAM

This research is part of a thesis which will be submitted in partial fulfillment for the Degree of Master of Science for Shannon Waldron.

SPONSOR

This study is not being funded.

INVITATION AND STUDY PURPOSE

You are invited to participate in a study that will investigate the perspectives and conceptions towards teaching and learning of clinical dental hygiene instructors, within a Competency Based

Dental Hygiene Program. As a Clinical Instructor, teaching in a Competency Based Education Dental Hygiene Program your participation is greatly valued.

The study addresses the questions: How do clinical instructors view their role in facilitating learning in a competency based dental hygiene program? What are instructors' understandings, if any, of the strengths and limitations of CBE?

STUDY PROCEDURES

The Interview will take approximately 45 minutes and can be completed on campus, or alternatively over Skype. Each of the interviews will be audio recorded and transcribed. The transcripts will then be sent to the participant to verify the accuracy and add any information. In addition, a brief summary of the researchers' interpretation of the interview, summarizing the main points of the data collection will be given to the participant to verify that the responses were accurate. Participants may also choose to retract their statements or clarify their opinions. Once the audio-recordings have been transcribed they will be erased from the recording device. The transcripts will be kept in a password protected computer for the duration of the study. Upon completion of the study, the files will be permanently deleted and the interview transcripts will be turned over to the principal investigator where they will be stored for the required minimum of five years at a locked UBC facility. After the five year period, the data will be shredded to ensure confidentiality will not be breached.

STUDY RESULTS

The identities of the participants and the institution studies will not be disclosed in published reports of this study. Upon completion of the study, the participants will be supplied with a draft of the research findings prior to publication.

POTENTIAL RISKS OF THIS STUDY

We do not think that there is anything in this study that could harm you. The participant's involvement in this project has no effect on job performance criteria, or employment opportunities. The researcher declares that there are no conflicting interests. Participation in this research is completely voluntary and participants may withdraw from the study at any point.

POTENTIAL BENEFITS OF THIS STUDY

The researcher who will conduct the interview is Shannon Waldron, a Dental Hygienist, pursuing graduate research at The University of British Columbia. The researcher-participant relationship will be equitable, unprejudiced and the participants are valued for their knowledge and input into the project. The mutual benefit, among the participants, will be identified as the satisfaction of contributing to research which would improve public care by way of improvements to teaching and learning within competency based education.

CONFIDENTIALITY

All documents will be identified only by code number and kept in a locked filing cabinet. Some of the questions may seem personal; however we have minimized the risks. All of the raw data will be kept strictly confidential and the identities of the participants will only be known by Shannon Waldron. All other research committee members will only have access to data coded by numbers, not name.

PAYMENT

A \$20 Starbucks gift certificate will be provided to you as a Gift-in-kind, in appreciation for your participation

CONTACT FOR INFORMATION ABOUT THE STUDY

If you have any questions or concerns about this study, please contact the study leader, or one of the study staff. The names and phone numbers are at the top of the first page of this form.

CONTACT FOR COMPLAINTS

If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598

PARTICIPANT CONSENT AND SIGNATURE PAGE

Taking part in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without any negative impact on you. Your signature below indicates that you consent to participate in this study and that you have been given a copy of this consent form for your own records.

Date: _____

Participant Signature: _____

Printed Name of Research Participant:

Appendix C- Request for Participation

You are invited to participate in a study that will investigate the perspectives and conceptions towards teaching and learning of clinical dental hygiene instructors within a Competency Based Dental Hygiene Program. As a Clinical Instructor, teaching in a Competency Based Education Dental Hygiene Program your participation is greatly valued.

The study addresses the questions: How do clinical instructors view their role in facilitating learning in a competency based dental hygiene program? What are instructors' understandings, if any, of the strengths and limitations of Competency-Based Education?

The researcher who will conduct the interview is Shannon Waldron, a Dental Hygienist, pursuing graduate research at The University of British Columbia. The researcher-participant relationship will be equitable, unprejudiced and the participants are valued for their knowledge and input into the project. The mutual benefit among the participants will be identified and expressed as the satisfaction of contributing to research which would improve public care by way of improvements to teaching and learning within competency based education. A \$20 Starbucks gift certificate will be provided to you as a Gift-in-kind, in appreciation for your participation.

The Interview will take approximately 45 minutes and can be completed on campus, or alternatively over Skype. Each of the interviews will be transcribed and sent to the participant to verify the accuracy of the transcript and add any information. In addition, a brief summary of the researchers' interpretation of the interview, summarizing the main points of the data collection, will be given to the participant to verify that the responses were accurate. Participants may also choose to retract their statements or clarify their opinions.

The identities of the participants and the institution studied will not be disclosed in any published reports of the study. Participation in this research is completely voluntary and

participants may withdraw from the study at any point. The participant's involvement in this project has no effect on job performance criteria, or employment opportunities. The researcher declares no conflicting interests. Upon completion of the study, the participants will be supplied with a draft of the research findings prior to publication.

Please contact Shannon Waldron at [REDACTED] or by phone at [REDACTED] if you would like to participate.

Thank you.

Appendix D - Request for Additional Participation

THE UNIVERSITY OF BRITISH COLUMBIA



Faculty of Dentistry
J.B. Macdonald Building
The University of British Columbia
2199 Wesbrook Mall
Vancouver, BC V6T 1Z3
www.dentistry.ubc.ca

Attention: Dental Hygiene Instructors

In need of additional volunteers

to conduct research for study regarding the perspectives and conceptions of dental hygiene instructors about teaching and learning in a competency based education program.

Your time and contribution is appreciated. Should you consider participating, here is what you can expect to happen:

- We will send you a welcoming letter to explain the project more in details.
- We will ask you to read a consent information letter.

If you agree to participate, there will be a one-on-one interview (no longer than 45 min) conducted by the graduate student. The interview will take place at your convenience on campus, or alternatively over Skype.

All participation is voluntary and your identity will not be disclosed to anyone. Only the graduate student will know your identity.

An incentive of a \$20 coffee gift certificate will be offered as a gift in kind for your participation.

Please Contact Shannon Waldron, either in person or at [REDACTED]

Appendix E- Interview Guide

Interview Framework

(Define Population)

Were you a student in a CBE program?

How or where did you learn to teach?

(Perceived Norm)

What similarities do you see between the program you attended and the program you currently teaching?

What is different about the clinical instruction you currently provide compared to the instruction you received as a student?

What do you feel is expected of you as a clinical instructor in a Dental Hygiene Program?

(Probe: What actions are expected of you to facilitate student learning?)

(Define Behavior)

How do you think clinical competency is best obtained? (Prompt: How do you think students learn best?)

Can you tell us a bit about what you do to facilitate student's clinical learning?

(Probe: Is there anything that you do and feel other instructors should do to encourage student learning in clinic?)

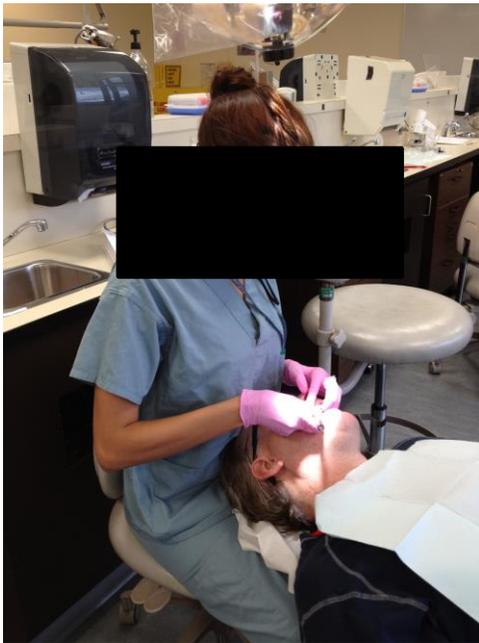
Have you changed anything about your teaching since you began? OR If you are a new instructor, were there any assumptions about teaching that you had proved to be untrue since you started?

(Intention)

Imagine you just walked past a student, what do you see? What would be your response?

(Probing: How would you communicate what you saw with the student?)

(Visual A)



(Visual B)

If this was your student how would you address the student's performance? (106)

https://www.youtube.com/watch?feature=player_detailpage&v=BuyyfIdnOzc#t=113s

View Footage from 3:48 to 4:05

(Perceived Behavioral Control)

What, if anything, would you find helpful to support and facilitate teaching within UBC-DHDP?

(Attitude)

What are the strengths of teaching in the context of a CBE-DHP?

Follow-up Questions:

Upon reflection, was there any time in which you decided to change your approach to teaching the students, and if so then How, What, When and, Why did you change?

Appendix F – Details of thought processes during Data Analysis

F.1 Data Analysis Framework

(Define Population)

Were you a student in a Competency-Based Dental Hygiene Program?

How or where did you learn to teach?

(Q1) What is this Data telling me?

For the most part, this is just a warm up interview question. It will tell me how long the Participant has been in practice, and what program they attended.

It may help us determine how foreign the concept of competency-based education and student-centered teaching approaches are to the instructor.

(Q2) What do I want to know?

I would like to know how familiar the instructors are with teaching the competencies. It also may shed light on to whether or not the instructors, “teach as they were taught.”

(Perceived Norm)

What similarities do you see between the program you attended and the program you currently teach in?

What is different about the clinical instruction you currently provide compared to the instruction you received as a student?

(Q1) What is this Data telling me?

This will further determine if the program they were taught in was a competency based program.

(Q2) What do I want to know?

If the program was traditional, the participant will likely identify the differences in the programs. These questions will also provide some insight as to whether the instructors, “teach as they were taught”

What do you feel is expected of you as a clinical instructor in a student-centered DHP? (Probe:

What actions are expected of you to facilitate student learning?)

(Q1) What is this Data telling me?

This tells me what the participant perceives as being important to the institution and program.

(Q2) What do I want to know?

How they view their role as a clinical instructor.

(Define Behavior)

How do you think clinical competency is best obtained? (Prompt: How do you think students learn best?)

(Q1) What is this Data telling me?

What the perception of learning is for the instructors.

(Q2) What do I want to know?

What perceptions and underlying assumptions drive the instructors to make decisions about how to facilitate learning? Are these perceptions in line with the programs goals of teaching the competencies?

Can you tell us a bit about what you do to facilitate student’s clinical learning?

(Probe: Is there anything that you do and feel other instructors should do to encourage student learning in clinic?)

(Q1) What is this Data telling me?

This data tells me which approaches are being used to help facilitate learning of the competencies.

(Q2) What do I want to know?

What approaches are being used to help facilitate learning of the competencies?

I would like to know how the instructors report their teaching to be, and how closely aligned the instructors teaching is to student-centered approaches used in Dental Hygiene Education.

(Intention)

Imagine you just walked past this student, what do you see? What would you do as a clinical instructor? What exactly would you say?

(Visual A)

and

(Visual B)

If this was your student what would you do and say to address the student's performance?

(Q1) What is this Data telling me?

This data tells me how the instructors are actually teaching. Do they use student centered-approaches, or teacher-centered approaches?

(Q2) What do I want to know?

Is there any difference between how the instructors perceive they are teaching and how they actually are teaching when placed in context?

(Perceived Behavioral Control)

What, if anything, would you find helpful to support and facilitate your teaching within CBE-DHP?

(Q1) What is this Data telling me?

What the needs of the instructors are.

(Q2) What do I want to know?

What the instructors require for faculty development, what is working well and what could be improved.

(Attitude)

What do you think some of the strengths are of teaching within a Competency Based Dental Hygiene Program?

(Q1) What is this Data telling me?

If instructors see the positive outcomes of teaching to the profession's competencies.

(Q2) What do I want to know?

Do the instructors appreciate student-centered pedagogical approaches? Do they buy-in to the programs methods and goals?

Appendix F.2 – Data Analysis Flow Chart

