

STUDENTS' AND PATIENTS' PERSPECTIVES OF CLINICAL TEACHING AT A
DENTAL SCHOOL

By

NICHOLAS J. GRIMAUDO

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To my family, especially my mother, Carmela Grimaudo, who passed away in 2003. Her encouragement was and will always be my inspiration in life. I miss her, but I know that she is proud of my accomplishments.

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Abstract of Dissertation Presented to the Graduate School
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Nicholas J. Grimaudo

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In dental education, the clinic is the learning environment that requires students to transfer knowledge from the basic sciences and utilize it to render safe and efficient patient care. The effectiveness of teaching and learning in the clinical learning environment and how it prepares dental students to independently provide patient care is a central concern for dental education. The underlying theory in this study was to describe how teacher effectiveness influences students in the clinical learning environment and impacts patient care. There is growing awareness that students' responses to and views of their educational experiences are important to shaping and modifying the educational process.

The primary purpose of this study was to describe the instructional practices among clinical dental educators as they pertain to student and patient involvement. The secondary purpose was to describe the interactions between the teacher, student, and patient during clinical teaching. The study examined the students' and patients' perspectives of the dental clinical teaching environment. Utilizing participant observation, this study focused on the oral health care educator–patient–student triad and the learning experience in comprehensive oral health care. Methods of data collection included unobtrusive observations of interactions between oral health

care educators, patients, and students, and patient and student interviews. This study is grounded in a constructivist framework, whereby the researcher considered individuals' perceptions and communications, as well as the setting, as essential for developing insight into the observable relationships and interactions.

The participants were comprehensive care patients at the U of Wallace College of Dentistry, faculty members of the College of Dentistry, and student dentists in the classes of 2006 and 2007. Data were collected from three primary sources: patient interviews, student interviews, and participant observation of the patient–faculty–student interaction for a total of 330 student/patient/faculty observation/interviews completed. The results indicate that there are particular student attributes, characteristics of teaching/learning, and characteristics of clinical teachers that are essential to clinical learning. Students reported a preference for a learning environment that emphasizes the student-patient-education relationship while promoting good rapport and respect. Attributes ascribed to the effective clinical educator are professional, competent and consistency with treatment planning and evaluation and use of teaching techniques such as demonstration and the provision of accurate, comprehensive feedback delivered in a positive emotional manner. Four major styles of communication interactions emerged: faculty- centered, student-directed, student–faculty collaboration, and patient-driven, although students reported that the student–faculty collaboration was the most positive. Although patient experiences were positive overall, these particular findings did not contribute any new information that might be used to improve or modify current clinical teaching.

The findings from this study were compared with the key concepts of studies on teaching and learning in health care environments. Finally, a theoretical model that emerged from the observations and interviews was presented and explained.

CHAPTER 1 INTRODUCTION

Dental education researchers have suggested that “the clinic is the learning environment to which all our students aspire” (Mullins, Wetherall, & Robbe, 2003, p. 58) because it requires the “transfer of knowledge from the basic sciences by tuning and restructuring of knowledge” (Gordon, Hazlett, ten Cate, Mann, Kilminster, & Prince, 2000, p. 844). The effectiveness of teaching and learning in the clinical learning environment and how it prepares dental students to independently provide patient care is a central concern among dental educators and clinical supervisors.

Although more is now known about medical/professional education, adult learners, and the development of expertise than ever before, standards and criteria for effective U.S. teaching are less well developed in medical and health profession programs than in K-12 settings. Many faculty lack current teaching skills and also lack emerging knowledge concerning how adults learn and gain expertise (Mennin, 1999), even though teaching medical/dental and health professional students is central to the mission of these schools.

All medical and health profession programs have clinical and experiential course work that permits students to practice in the field, under the tutelage of credentialed professionals (James, Kreiter, Shipengrover, Crosson, Heaton, & Kernan, 2001). These experiences allow students to put the principles and concepts learned in the classrooms into practice. Clinical or experiential courses occur throughout the students' course of study, or it can be the last stage of professional training before the students receive degrees, certificates, or licensure. Guided or one-on-one learning is used extensively in medical/dental and the health professions schools. To ensure that proficiently trained graduates enter the profession, teachers must continue to study and improve their own instructional practices (Cunningham, Stevens, Blatt, & Fuller, 1999).

The clinical learning environment is challenging for teachers and students (Gordon, et al., 2000). In this setting, the student is a trainee clinician responsible for patient care, while the clinic is both a patient care facility and a learning environment (Ferenchick, Simpson, Blackman, DaRosa, & Dunningham, 1997). In the clinic, students are expected to demonstrate diverse competencies simultaneously such as a broad knowledge base, professionalism, empathy, and ethical behavior. Recent research suggests that it is important to introduce students early to the clinical environment, because of the demonstrated value of contextual learning. The clinic is the central location where basic science knowledge is typically integrated with patient care, and teaching occurs with an experienced clinician (Mullins, et. al, 2003). Clinical supervision provides "...monitoring, guidance, and feedback on matters of personal, professional, and educational development in the context of patient care" (Kilminister, Jolly, & van der Vleuten, 2002, p. 387). Researchers have suggested that the student–clinical teacher relationship is an educational alliance that mirrors the therapeutic alliance between the patient and physician (Tiberius, Sinai, & Flak, 2002).

Effective supervision of learners requires that students and instructors together engage in problem-solving activities and while instructors provide requisite feedback, reassurance, and theory-practice linking (Hirons & Velleman, 1993). There is some evidence that effective clinical teaching in medicine has a positive impact on patient outcomes. For example, Albanese (2000) found that patient outcomes improved when direct supervision of the student clinician was combined with focused feedback and reflection.

In a dental education context, clinical teaching has been less extensively examined (Bertolami, 2001). Effective clinical instruction in dentistry requires that educators provide clinical care while they demonstrate technical competence to their students (Fugill, 2005). Their

abilities to motivate students, explain difficult concepts, display interest in the subject, show compassion and caring, and to be proactive were also rated as very important by students in a study reported by Chambers, Geissberger, and Lekinus (2004). A range of educational modalities supports clinical teaching and patient care such as large group lectures, small group tutorials, problem-based and case-based activities, interactive interactions, role-play, simulation, and computer-assisted modalities. These modalities support clinical teaching by using teaching resources efficiently, by objectifying clinical sessions, by facilitating the development of professional attributes, sharing common clinical concerns, and affording individual student interaction (Chambers, et al., 2004). One of the criteria that differentiates clinical from didactic learning is that clinical learning opportunities are typically unique. Often they cannot be repeated, anticipated, or planned (Werb & Matear, 2004). In this setting the mastery of clinical teaching is demonstrated. Instructors must recognize the moment, utilize it, and engage students so that learning occurs.

Teaching in the clinical learning environment is characterized by the separation of the teacher in time and distance from other colleagues making it difficult to collaborate with other teaching professionals. Documentation and analysis are lacking, so the pedagogical literature is bare (Shulman, 1999). To advance the scholarship of teaching and to transmit clinical teacher's knowledge, observation and studies are needed.

Some researchers question the need to study clinical teaching. However, when one considers that it is the core of professional development in medicine and dentistry (Gordon, et al., 2000) and that the quality of patient care is dependent on clinical teaching (Fugill, 2005), the need for documenting its effectiveness becomes clear.

The educational process of the pre-doctoral dental curriculum is designed to help students learn how to collect patient information data, interpret and synthesize findings, evaluate the effects of actions taken, perform procedures skillfully, and relate to patients in an ethical and caring manner (Bertolami, 2001). Taking novice dental practitioners and transforming them into competent practitioners is one challenge in dental education (Henzi, Davis, Jasinevicious, & Hendricson, 2006). The aim of clinical education is to produce students who are capable of practicing both the art and the science of dentistry.

Clinical teaching is a formidable task for faculty. Often faculty are required to teach individuals simultaneously who are at various levels of training. Patient cases that are presented are often unpredictable and avert an opportunity for faculty to prepare for teaching. Attending faculty are responsible for teaching and ensuring high quality patient care. Despite these challenges, many attending faculty are excellent clinical teachers who exemplify the best values and behaviors of practicing dentists, provide effective clinical supervision, and are enthusiastic teachers (Henzi, et al., 2006).

The clinical environment has unique advantages. For example, it is focused on authentic problems that may occur in the context of professional practice (Li, 1997). Students are typically motivated by specific demands, active participation, and the professionalism that teachers model (Levinson, 1999). Finally, this is the only setting in which taking a medical/dental history, conducting an examination, using clinical reasoning, decision-making, empathy, and professionalism can be taught and learned as an integrated whole. Despite these strengths, clinical teaching is often criticized for its variability, lack of intellectual components, electoral challenge, and haphazard nature. In other words, while clinical teaching is an educationally sound approach, it is frequently undermined by problems of implementation (Albanese, 2000).

Hutchins and Shulman (1999) pointed out that faculty in most fields do not have the training for, or the habit of, framing questions about their teaching and students' learning. Concurring with their opinion, Behar-Horenstein, Dolan, Courts, and Mitchell (2000) suggested that dental educators are usually considered subject matter experts. However, they usually provide didactic instruction whereby the students remain in passive roles.

Purpose of Study

The primary purpose of this study was to describe the instructional practices among clinical dental educators from the students' and patients' perspective. The secondary purpose of this study was to describe the interactions between the teacher, student, and patient during clinical teaching.

Research Questions

- 1) What are the characteristics of the oral health care educators–patients–students interactions in the clinical learning environment?
- 2) How are oral health care educators–patients–students interactions perceived by students'?
- 3) How are oral health care educators–patients–students interactions perceived by patients'?
- 4) How do the students' and patients' perspectives of the oral health educators-students-patients interaction compare?
- 5) How does the clinical specialty influence the type of interaction between the oral health care educators, patients, and students?
- 6) What do students consider to be the elements of an “ideal” clinical teaching/learning experience?

Definition of Terms

Attending faculty are dentists who hold state license and board credentials and work as educators at a particular dental school.

Clinical teaching is a process of teaching and learning in a health care setting that usually directly involves diagnosis and treatment of patients.

Communication is any act by which one person gives to or receives from person information about that person's needs, desires, perceptions, knowledge, or affective states. Communication may be intentional or unintentional, involve conventional or unconventional signals, and may occur through spoken or other modes.

Dental student is an individual who is currently enrolled in a professional program of study that upon matriculation will ultimately result in receipt of the degree of doctor of medical dentistry (DMD).

Non-verbal communication is information transmitted between sender and receiver via eye contact, gesture, body language, and distance.

Constructivism is a philosophy of learning founded on the premise that, by reflecting on our experiences, we create our own understanding and make meaning of the world we live in.

Oral health refers to the oral cavity, the mouth, and the collective known as the craniofacial complex that is an integral indicator and component of overall wellbeing.

Patient is the person receiving oral health care from a specified provider in the clinical setting

Significance of Study

The findings from this study will (a) contribute to an understanding of what constitutes effective clinical teaching, and (b) render suggestions for improving clinical teaching and professional education. This study provides information to the literature that is lacking in qualitative studies of clinical teaching within doctoral level experiential education at a school of dentistry, by offering a scholarly study that is “public” in that its “vision, design, enactment, outcomes, and analysis” open to critical review by the health and medical education community, as well as the larger education community.

Limitations

This study was designed to investigate oral health care educators'–patients'–students' interactions and clinical teaching in a comprehensive oral health care teaching facility, emphasizing the students' and patients' perspectives. The applicability of the results is limited to similar learning environment such as teaching institutions in the United States. In addition, the results of this study may differ from previous research findings involving oral health care educator–student–patient interactions, as this study emphasizes students' perspectives.

The participants in this study were limited by the patients, specific clinics, student assignments, and faculty coverage available during observations. The four clinics represented in this study may not be representative of all the clinics within the dental school. Furthermore, the results of this study may have been influenced by the setting, as well by the participants.

CHAPTER 2

LITERATURE REVIEW

Theory of Teacher Effectiveness

Theoretical perspectives of teacher effectiveness vary. Teacher effectiveness has been purported to be a teacher trait perspective, a teacher behavior perspective, a process-product perspective, and a process-psychological mediators-sociological mediators-process research perspective (Behar-Horenstein and Morgan, 1995). However, most educators agree that students grow and learn the most from effective teachers. Teacher effectiveness is a major issue in current movements of education reform and improvement. It is generally agreed that the teacher is the key element for the success of education (Ornstein & Lasley, 2004). Traditional studies on teacher effectiveness focus largely on the performance of individual teachers in classrooms. In recent decades, the topic of teacher effectiveness has continued to attract the attention of researchers, educators, and professional organizations. Ornstein and Lasley (2004) point out that the literature on teaching effectiveness, or teacher effectiveness, is a morass of ill-defined and changing concepts. To different people, the definition of teacher effectiveness could be very different. Some researchers focus on teacher personalities, traits, behaviors, attitudes, values, abilities, competencies, and many other personal characteristics. Other researchers are more concerned with the teaching process (including factors such as teaching styles, teacher-student interactions, and classroom climate) or the teaching outcomes (including factors such as students' academic achievements, personal development, and learning experiences). Despite thousands of studies conducted in the last 50 years, it is difficult to arrive at generally accepted conclusions. Few generalizations concerning teacher effectiveness have been established (Borich, 1996). Some scholars have criticized the underlying philosophy, methodologies, and findings in teacher effectiveness studies. They suggested that the existing perspectives of teacher

effectiveness, such as the teacher trait perspective, the teacher behavior perspective, and the process-product of teaching perspective cannot be successful in explaining or analyzing the complexity of teacher effectiveness (Fullan, 1999).

Borich (1996) suggested that effective teachers achieve the goals they set for themselves or the goals set for them by others such as school principles, education administrators and parents. According to Ornstein and Lasley (2004), effective teachers must have a body of knowledge essential for teaching and know how to apply it. By integrating these two concepts, effective teachers may be assumed to be those who possess the relevant competence (including necessary professional knowledge, skills, and attitudes) and use the competence appropriately to achieve their set goals.

From this line of thinking, the understanding of teacher effectiveness must be based on the linkage between teacher competence, teacher performance, and set goals or expected educational outcomes. Medley's (1996) structure of teacher effectiveness is a comprehensive framework which integrates the teacher trait perspective, the teacher behavior perspective, and the process-product of teaching perspective to explain the relationships between teacher competence, teacher performance, student learning experience, and educational outcomes. He explained that "teacher effectiveness" refers to the teacher results or to the amount of progress the students make towards specified goals of education. One implication of this definition is that teacher effectiveness must be defined and can only be assessed in terms of behaviors of students, not behaviors of teachers. For this reason, and because the amount that students learn is strongly affected by factors not under teachers' control, teacher effectiveness should be regarded not as a stable characteristic of the teacher as an individual but as a product of the interaction between certain teacher characteristics and other factors that vary according to the situation in which the

teacher works. According to Medley (1996) the structure of teacher effectiveness should include components such as: teacher characteristics, competence, performance, learning experience, learning outcomes, training, teaching context, and student characteristics. Cheng (1999) further developed Medley's structure by the inclusion of two more components, teacher evaluation and professional development.

Teacher effectiveness is a complex issue. Evaluation of teaching effectiveness is problematic. The ability of bright people to learn what they need to know despite any curriculum cannot be discounted and high-aptitude students tend to succeed regardless of the instructional strategy used (Woodward, 1996). One of the daunting aspects of evaluating professional education is that academics in the medical and dental field, who have been trained in the scientific methods, which are mandatory for evaluating treatment modalities, try to utilize similar methods for evaluating educational outcomes (Van der Vleuten, Dolmans & Scherpelbier, 2000). Such attempts, while efficient because of the numerical data they supply, are ultimately unreliable. The rigid quantitative scientific method of controlled experimentation cannot be considered valid in an environment where the variables of the sample are almost as great or greater than the sample itself, the student sample in any one year of a dental or medical school being statistically minute (Lechner, 2005).

Another difficulty is in delineating a clear definition of outcomes. Wilkes and Bligh (1999) grouped several types of evaluation into student-oriented, program-oriented, institution-oriented, and stakeholder-oriented. The indicators cover a wide area, ranging from attendance at class, through patient satisfaction, questionnaires, test results and peer evaluation. Several studies have attempted evaluation using examination (Login, Ransil, & Meyer, 1997, Bachman, Lua & Clay, 1998, Lindquist, Clancy, & Johnson, 1997) the number of student inquiries regarding the

levels of knowledge required for examinations (Roberts, Clancy, & Roberts, 1997), follow-up surveys (Bachman, et al., 1998), and self-evaluation by the students (Lary, Lavigne, & Muma, 1997).

The simplest measurement of outcome is by examination. Examination results can be shown numerically and analyzed statistically. However, they cannot be relied on to give a whole evaluative picture (Lechner, 2005). Currently, the most pragmatic approach in educational evaluation is to focus on students' perceptions of their experiences in a learning program. This approach has been used in several studies (Peters, 2000, Schuhbeck, 1999, Manogue, 1999, Wenzel & Gotfredsen, 1997). Enjoyment and success engender a winning cycle in the learning environment. If teaching resources can involve students and lead them to be successful in their endeavors, they are more likely enjoy their tasks and want to become even more involved. (Manogue, 1999)

In this study, students' perceptions will be explored to gain an understanding of rather than measuring teacher effectiveness.

Oral Health Care Educator–Student Relationship

Communication between instructors and students is the most important consideration in teaching (Marsh & Dunkin, 1997). Although knowledge is transferred by various means in dental education, teacher–student interactions remains foremost (Losh, Mauksch, & Arnold, 2005). A successful classroom or clinic session not only transmits the desired information, but also motivates students to learn more. In fact, the most important outcome of the experience may not be acquisition of clinical or scientific data, but behavioral and attitudinal changes that contribute to future development (Branch, Kern, Haidet, Weissmann, Gracey, Michell, & Inui, 2001).

Communication includes much more than verbal exchange; it encompasses the entire

teaching–learning environment. Instructors’ verbal skills, “stage presence,” audio-visual aids, and attitudes toward the students and the topic also influence factors in communication. Interest in the topic, the curriculum, the students and their success, and the desire to do the best job possible go a long way toward improving communication (Lizzio, Wilson, & Simons, 2002).

An adage in education states that the best classroom is one in which both the students and the instructor are learning. Teachers try to communicate information to students that will expand their knowledge base and promote acquisition of skills as they progress towards degree completion but teachers in higher education also have career goals: promotion, tenure, expanded opportunities, and recognition (Fraser, 1998). Open, two-way communication between students and teachers is one of the most effective ways to determine how well these aims are being met.

Dental education, like all postsecondary education, has the advantage of dealing with adult students. Often instructors’ teaching styles are mismatched with adults’ learning needs. However an effective communicator will seek and promote dialogue with the students so that both profit from the experience (Beasley, 1997).

Accepting the principle that effective communication is bilateral, instructors strive to create a democratic, humane atmosphere in both classrooms and clinics (Branch, et al., 2001). An environment that encourages communication between instructors and students, and—even more importantly—among the students themselves, especially outside the learning situation, will provide the most successful learning experience (Emerson & Groth, 1996).

The Role of the Teacher

Many medical and dental educators think that the only role of the teacher is to be a reservoir of knowledge and skills that occasionally, and unpredictably, spills over its dam, letting information flow randomly down a canyon of learning (Benor & Levy, 1997). However, as McKeachie (2002) emphasized, expertise in a particular discipline is not sufficient to ensure

good teaching.

Clinical teachers assume multiple roles in their interactions with their students. In a review of 20 of the most significant studies of perceptions of excellent clinical teaching Stockhausen (1998) found that the behaviors and characteristics of excellent clinical teachers fall into four roles: Physician/Provider, Teacher, Supervisor, and Person.

The Physician/Provider is considered to be the expert and the source of all knowledge. There is considerable discrepancy between the Physician/Provider's level of experience and wisdom and that of the students. This discrepancy is the reason the medical/dental teacher and students are together. The physician is also responsible to school administrators, specialty boards, and hospital credentials committees for evaluating and certifying the competency of students. The physician upholds professional standards and is a socializing agent of the professional discipline.

As Teacher, the medical/dental educator is acutely aware of the needs and aspirations of students, but does not automatically assume it will be possible to provide them everything they need. The Teacher can listen, question, paraphrase, encourage, or doubt students, but cannot always provide for them.

As a Supervisor, the medical/dental educator demonstrates procedures, provides practice, observes and assesses performance, and provides feedback.

Finally, as a Person, the educator develops an atmosphere of sufficient trust so that the students are comfortable sharing ideas, feelings, and thoughts. The physician/dentist-educator does not necessarily have to like the students, but does need to accept their learning needs and imperfections. The Person may provide significant personal help and support outside the formal teaching setting.

The Role of the Learner

Research on student learning in higher education has shown that students adopt qualitatively different approaches to their studies, depending upon their prior learning experiences and the particular context in which they find themselves (Prosser & Trigwell, 1999). Because of the varied experiences students have had, they are likely to have qualitatively different learning outcomes. These experiences can be characterized as surface and deep learning. Surface approaches, in which students focus on reproducing the content and processes they are studying, are associated with high workload and assessment demands that are expected to be met by reproductive learning. Deep approaches are associated with good teaching experiences whereby goals and standards are clear, and students have some freedom and choice in how and what they learn. Deep approaches to study are in turn associated with an understanding subject matter, which can be broadly described as relational, while in surface approaches, the understanding can be described as multi-structural (Biggs, 1999). That is, students can understand the outcomes of their courses and programs and what their courses and programs are about in terms of a coherent (relational) or of an unrelated (multi-structural) set of ideas and procedures. The way institutions structure the teaching and learning contexts of students has a substantial impact on what and how students learn (Gendrop & Eisenhauer, 1996).

Students' perceptions of teaching and learning contexts are a function of both their prior experiences of teaching and learning and the present context (Anderson & Speck, 1998; Brown & Gillis, 1999). Through prior learning experiences, students develop perceptions that guide the ways that they approach future studies. To improve students' learning outcomes, university teachers need to be concerned with the context, students, and their own perceptions of that context (Fenderson & Damjanov, 1997).

Conditions for Effective Learning

Since medical/dental students are adult learners, professional education should follow the principles of adult learning (Irby, 1983; Klineberg, et al., 2002). Unfortunately, this does not always happen. Medical/dental learners are certainly adults chronologically, and they are pursuing a field of study that requires discipline and maturity. Medical/dental education is, or should be, an adult learning process (Lyon, 2004). There are several principles that enhance adult learning (Spencer & Jordan, 1999).

Malcolm Knowles was the first to theorize about how adults learn. As a pioneer in the field of adult learning, he described adult learning as a process of self-directed inquiry. Six characteristics of adult learners were identified by Knowles (1970), they are: autonomous and self-directed, accumulated a foundation of experiences and knowledge, goal oriented, relevancy oriented, practical and need to be respected. He advocated creating a climate of mutual trust and clarification of mutual expectations with the learner. In other words, a cooperative learning climate is fostered.

The reasons most adults enter any learning experience is to create change. This could encompass a change in (a) their skills, (b) behavior, (c) knowledge level, or (d) even their attitudes about things (Adult Education Centre, 2005). Compared to school-age children, the major differences in adult learners are in the degree of motivation, the amount of previous experience, the level of engagement in the learning process, and how the learning is applied. Each adult brings to the learning experience preconceived thoughts and feelings that will be influenced by each of these factors. Faculty are well advised to assess the level of these traits and the readiness to learn should be included each time a teaching experience is being planned.

Adults learn best when they are convinced of the need for knowing the information.

Often a life experience or situation stimulates the motivation to learn (O'Brien, 2004).

Meaningful learning can be intrinsically motivating. The key to using adults' "natural" motivation to learn is tapping into their most teachable moments (Zemke & Zemke, 1995).

Adults have greater depth, breadth, and variation in the quality of previous life experiences than younger people (O'Brien, 2004). Past educational or work experiences may color or bias the students' perceived ideas about how education will occur. If successfully guided by the health care provider, former experiences can assist the adult to connect the current learning experience to something learned in the past. This may also facilitate making the learning experience more meaningful. However, past experiences may actually make the task harder if the teacher does not recognize these biases.

Adults learn and process information in different ways. There are different ways to classify learning styles. Learning styles can be classified into general categories: perceptual modality, information processing, and personality patterns. The categories represent ways to focus on the learner.

Perceptual modalities define biologically based reactions to the physical environment and represent the way people most efficiently adopt data. It is advantageous for learners and educators to know perception style so that information can be given in the format that the learner can process most efficiently. Educators should pay attention to modalities to ensure programs incorporate all physiologic levels (Dunn & DeBello, 1999).

Information processing distinguishes between the way people sense, think, solve problems, and remember information. Each learner has a preferred, consistent, distinct way of perceiving, organizing, and retaining information. Personality patterns focus on attention,

emotion, and values. Studying these differences allows educators and researchers to predict ways learners will react and feel about different situations (Dunn & DeBello, 1999).

Most adult learners develop a preference for learning that is based on childhood learning patterns (Edmunds, Lowe, Murray, & Seymour, 1999). Several approaches to learning styles have been proposed, one based on the senses that are involved in processing information. An assessment of the students' learning style is a fundamental step prior to beginning any educational activity. Determining the students' learning style will help identify the preferred conditions under which instruction is likely to be most effective (Richardson, 2005). The most frequently used method of delineating learning styles is identifying visual, auditory, and kinesthetic learners.

Visual learners prefer seeing what they are learning. Pictures and images help them understand ideas and information better than explanations (Jezierski, 2003). A phrase you may hear these learners use is "The way I see it is." The teacher needs to create a mental image for the visual learner as this will assist in processing the information. For a visual learner to master a skill written instructions must be provided. Visual learners read and follow the directions as they work and appreciate when diagrams are included.

Auditory learners prefer to hear the message or instruction given. These adults prefer to have someone talk them through a process, rather than reading about it first. A phrase they may use is "I hear what you are saying." Some of these learners may even talk themselves through a task, and should be given the freedom to do so when possible. Adults with this learning style remember verbal instructions well and prefer that someone else read the directions to them while they engage in the physical work or task.

Kinesthetic learners want to sense the position and movement of the skill or task. These learners generally do not like lecture or discussion classes; they prefer to "do something." These adults do well learning a physical skill when materials are available for hands-on practice.

The adult learner has many responsibilities that must be balanced against the demands of learning. Because of these responsibilities, adults may have barriers that mitigate their participation. Melton, Calder, and McCollum (2005) discuss the barriers that adult learners face such as time, confidence, convenience, and motivation. They propose alternative types of education delivery such as distance and open learning to reduce the barriers. If the learner does not see the need for the behavioral change or acquiring knowledge, then a barrier exists. Likewise, if the learner cannot apply learning to his/her past experiential or educational situations, the teacher will have barriers to overcome. A successful strategy includes showing the adult learner the relationship between the knowledge/skill and the expected outcome.

Dental students are considered professional students and typically are 22 years of age or more. Leaving aside the question of whether chronological age is an appropriate definition of adulthood (Fraser, 1995), for the purpose of this study, the researcher makes the assumption that dental students are adults. From there, it follows that we should ask how they learn and how they should be taught. Does andragogy describe the way dental students learn? Doubts have been expressed about the validity of the assumptions on which Knowles model is based. Stephen Brookfield (1995 p.75) is among such critics:

“We are far from a universal understanding of adult learning...Theory development... is weak and is hindered by the persistence of myths that are etched deeply into adult educators' minds...Indeed, a strong case can be made that as we examine learning across the lifespan the

variables of culture, ethnicity, personality and political ethos assume far greater significance in explaining how learning occurs and is experienced, than does the variable of chronological age."

Typically, adults want to apply what they learn soon after they have learned it. This rule is broken somewhat less in clinical teaching than in other areas of medical/dental education. Even so, clinical teachers should feel compelled to justify any clinical teaching that cannot be shown to have relevance or be applicable to a patient problem or clinical situation.

Adults are interested in learning concepts and principles; they like to solve problems rather than just learn facts. Medical/dental education suffers terribly under the weight of unrelated, and often relatively useless, facts. As medical/dental knowledge expands, so does the density of the medical/dental education process, often to the detriment of the problem-solving and clinical reasoning skills of future professionals. By the emphasizing use of facts, rather than their mere retention, clinical educators will not contribute to what is already recognized as a major problem by national authorities. Behar-Horenstein, Mitchell, and Dolan (2005) used a case study to illustrate how an evaluation strategy was used to assess classroom instructional practices following a multi-year institutional curriculum revision process in the first and second year basic science courses. Observations revealed that seventeen of the twenty classes observed were teacher-centered, passive, and lacked observable efforts to help students understand the relationship of the lecture content to the oral health problems. The findings of their study illustrated the importance of using formative evaluation as a mechanism to assess change efforts. In addition this study showed how evidence-based study can support initiatives directed toward assessing active student learning and problem solving. Behar-Horenstein, et al., (2005) also reported that raising faculty awareness about the importance of acquiring evidence-based educational skills, aligning instruction with course goals and objectives, formatively assessing

teaching, and providing practice-based learning experiences are essential to ensuring that demonstration of active learning and critical thinking are demonstrated in the curriculum.

Adults like to participate actively in the learning process by helping to set appropriate learning objectives, yet can students realistically know what they need to know? The teacher possesses considerable knowledge and experience that learners do not.

Adults also like to know how well they are doing, thus, providing timely formative feedback helps them evaluate their own progress. Medical and dental education offers numerous opportunities for making decisions about competence, promotion, or advancement using summative evaluation (Bardes, 1995). Clinical teachers play a critical role by providing feedback and critiques, particularly negative ones, which can help shape students' professional behaviors, decision-making, and skill performance. Personal, well-intentioned feedback is the critical element for cementing a teacher–student relationship and bringing closure to the learning process (Gillespie, 2002).

Although it is each individual's responsibility to learn, a teacher can help or hinder a student's attempt to learn; by facilitating learning and helping the students, a teacher can exert a positive influence (Gerzina, 2003). Good teachers of adults are people-centered, more interested in people than things, more interested in individuality than conformity, and more interested in finding solutions than following rules (Hekelman, 1996). The teacher must be understanding, flexible, patient, humorous, practical, creative, and prepared (Ziv, 1998).

Students are individuals, with individual experiences and individual abilities. Thus, knowing the strengths and weaknesses, rather than the age of the student may be more important in teaching.

The Interaction Between Clinical Teacher and Student

The physician–patient relationship has been characterized as a continuum with two complementary control scales along which physicians and patients move at equal rates and in the same directions. The conceptual model for this is shown in Figure 2.1.

As the physician moves from left to right and uses interviewing and communication behaviors that are increasingly less assertive or controlling, the patient moves from left to right, with the opposite results. An example of a situation to the far right of the scales would be a traditional psychoanalytic relationship in which the patient takes almost total responsibility for the outcome of the interaction and receives little or no feedback or comment from the psychiatrist (Pasquale & Pugnaire, 2002). The interactions between teacher and student can be characterized in a similar manner. A high degree of control and activity on the part of a teacher calls for a relatively passive role for the learner, and vice versa.

Communication Skills

The clinical teacher draws upon a broad range of communication skills and behaviors and chooses the specific technique that is appropriate to the particular situation (Benor & Levy, 1997). The necessary repertoire of communication skills ranges from a group that might be labeled “attentive silence” whereby the teacher is passive, to a group labeled “cooperative negotiation” when teacher and learner take a fairly equal stance, to a group labeled “persuasive confrontation” when the teacher takes an active and controlling stance in the relationship.

Attentive silence is a group of skills that communicates that the teacher is paying attention and gives the learner time to think. One of these skills is observation, whereby the teacher gathers behavioral and nonverbal data about the student. The clinical teacher may also use purposeful eye contact to engage learners who require special attention and tracking to indicate

understanding and general approval (Manague, Brown, & Foster, 2001). Open-ended encouragement and advocacy is used to provide a supportive learning environment. Although it is not a completely anxiety-free, learning environment, surface paraphrasing, and exploration helps the clinical teacher gain additional general information from the learner. The self-disclosure approach is used to strengthen the teacher's image and credibility by revealing personal experiences and "war stories" (difficult cases and mistakes) and active listening, when the clinical teacher probes the student's thinking for purposes of clarification, expansion, justification, and correlation about patients' presenting problems and potential treatment planning. Intense paraphrasing allows the teacher to more aggressively question the learner for specific information or for specific responses. Open-ended questioning is used to expand the discussion and to probe the student about treatment options. Giving positive and negative feedback allows the teacher to give negative information in a way that the learner can improve future performance, whereas summarizing and interpreting enables the clinical teacher to take control of a discussion and add appropriate emphasis, clarity, and emotional punctuation. The clinical teacher transmits expert knowledge directly to the learner by information giving and prescribing (Mark, Saayler, & Geddes, 1997). Critiquing, correcting, and closed questioning is a technique that provides the student with summative evaluations and examines the student's knowledge in a focused and convergent style. Persuasion, challenge, and confrontation allows the teacher, in the most active and assertive way possible, to challenge old knowledge and attitudes in an effort to persuade the student to adopt new knowledge and attitudes (Cameron, 1996; Elnicki, et al., 2003; Engel, 1996; Irby, 1987; James, 1998).

Interpersonal skills involve such care-related areas as communication, provision of a safe and comfortable environment, privacy and confidentiality, respect, and courtesy, all of which are

vital to the effective performance of skilled providers (DaRosa, Dunningham, Stearns & Fernchick, 1997).

Effective role modeling is also essential to teaching interpersonal skills (Elnicki, Kolarik & Bardella, 2003). Whether working with a model or a patient, demonstrating a skill, or coaching a student who is developing a skill, the teacher must incorporate effective interpersonal skills. For example, the teacher must communicate with the anatomic model while performing a procedure. The teacher must be careful to drape the model and be aware of the need for privacy and respect as if the model were a patient. When assessing the student's care of the patient, the teacher must give as much attention to interpersonal skills as to psychomotor skills. Post-clinical conferences should bring up issues and practices around communication and interpersonal skills as well as those pertaining to the more technical aspects of care (Schaefer & Zygmont, 2003).

Effective verbal communication is a key factor in interpersonal skills, whether in interactions with patients, families and communities, administrators, supervisors, and other healthcare workers. Interpersonal communication is a person-to-person, verbal or nonverbal exchange of opinions, feelings, and information (Spiegel, 1995). Effective communication is a two-way process. To be effective, counseling, for example, must be a two-way communication process. Good communication skills are as important as good clinical skills in providing high quality healthcare (Emerson & Groth, 1996).

Communication skills are fundamental to medical and dental practice (Epstein & Hundart, 2002). These skills are critical for information gathering, diagnosis, treatment, patient education, and health team interactions. Patients' benefits resulting from effective communications with health care providers include increased satisfaction, greater symptom resolution, lower referral rates, improved functional status, and enhanced health outcomes. Health Care Providers' benefits

from effective communications include increased satisfaction, efficacy, and reduced malpractice claims (Hickson, Federspiel, Pichert, Miller, Gauld-Jaeger, & Bost, 2002). Recognizing the importance of communication skills in medical and dental encounters, the Association of American Medical Colleges and the American Dental Education Association have called for medical and dental educators to carefully define, teach, and evaluate communication skills for physicians and dentists in training (Stewart, Brown, Boon, Galajda, Meredith, & Sangster, 1999). Patients' expectations regarding health communications have also shifted as more patients take active roles in information gathering and decision-making. Many medical and dental schools have established programs to respond to these new expectations (Little, Everitt, & Williamson, 2001).

Students develop communication skills by observing others and then practice these skills in settings where they can receive feedback. Communication skills are usually introduced in the preclinical years, but these skills have been less frequently reinforced and evaluated during the clinical years when students are actively practicing communication in clinical settings. Although fast-paced clinical teaching environments present challenges for systematic teaching of communication skills, attention to communication during clinical encounters can bring these skills to life and allow students and faculty to see their relevance (Haq, Steele, Marchand, Seibert, & Brody, 2004).

Patients are more likely to seek timely care, cooperate with necessary procedures, follow through on recommendations, and return for follow-up care when they have trust and confidence in their providers. Developing a relationship of trust and confidence requires the ability to communicate well. Effective communication skills are therefore powerful and essential tools for all providers. Verbal communication is more than the words themselves—it also involves the

tone and volume of words. Tone can communicate compassion, hostility, anger, or indifference (Irby, 1978). Nonverbal communication can be as powerful as, or even more powerful than, verbal communication. Therefore, providers must be especially alert to the nonverbal messages they convey. Besides the position and stance of the body, nonverbal messages can be communicated through hand shaking, laughing, gently patting, handholding, eye contact (in some cultures), and facial expressions (e.g., frowning, furrowing the brow, and smiling) (Ferenchick, et al., 1997).

Negative verbal or nonverbal communication can be a barrier to healthcare. Not only should providers be careful about the messages they are communicating through verbal and nonverbal means, but they must also pay close attention to the verbal cues and nonverbal behavior of other people.

The learning environment is also an influential factor in effective interpersonal communication. The provider should try to create an environment that is culturally appropriate, emotionally safe, and comfortable. Examples of factors that should be considered in the cultural environment are gender preference in providing healthcare, the language and culture of the provider (if different from that of the patient), traditional food customs, beliefs about blood transfusions, and values and ideals related to modesty (Ellis & Llewellyn, 1997). Lack of regard and respect for cultural values can become an obstacle to receiving care. The negative attitudes of providers can frighten patients away. Therefore, providers should respect patients' culture, values, and beliefs, even when they are unfamiliar with them (Gillespie, 2002).

Just as interpersonal skills are part of every patient-provider interaction, these skills are woven throughout the learning resource process. Case studies can be used to acquaint students with the sociocultural environment of the patient and teach them how to communicate so that

they can effectively gather data and manage complications (James, 1998). During training, attention must be given to development of the students' attitudes and interpersonal skills, as well their psychomotor and clinical decision making skills (Knight, et al., 1997). Patients require attention to emotional and psychosocial needs as well as to physical needs. Effective teachers are constantly attentive to the students' need to develop interpersonal skills throughout the learning experience (Kernan, et al., 2000).

Clinical Education

Clinical education is a problem-centered approach in the context of professional practice, an experience-based learning model, and a combination of individual and team learning (Bligh, Lloyd-Jones, & Smith, 2000).

The focus of clinical education is on the patient. Patient problems provide teaching opportunities for the faculty and learning opportunities for the student (James, et al., 2001). The richness of that learning experience depends in large measure upon the faculty member's instructional skills and the patient mix available. Since clinical instruction takes place in the context of professional practice, students' questions about the relevance of what is to be learned are minimal and motivation is high. Students actively strive to emulate faculty and resident role models (Colliver, 2000).

In clinical education, the process of learning is principally by doing. This form of experiential learning differs from most classroom settings, where the symbolic medium is used to transmit information. In experiential learning, information is generated through the sequence of steps (O'Malley 1999) whereby the student: (a) acts in response to a particular situation and experiences the consequences, (b) infers the effects of action in the particular case, (c) generalizes understanding over a wider range of circumstances, and (d) acts in a new circumstance anticipating the consequences.

Experiential learning is time consuming and requires repeated actions in enough circumstances to allow for the development of a generalization from experience. When the consequence of action is separated in time and space, the learning process is not effective (Karuhije, 1997)

A “typical” observation of those who have learned something through this process is that “they cannot verbalize it, but they can do it.” The weakest link in experiential learning is in generalizing from the particular experiences to a general principle applicable in other circumstances. Thus, post-experience discussion is critical to the learning process so that students can infer general principles from the experience (Li, 1997). The strengths of this learning process include intrinsic motivation. Recall is often stronger from experiential learning than during learning through information processing. Clinical education relies heavily on experiential learning, but also uses information processing for knowledge acquisition.

Bligh, Lloyd-Jones, and Smith (2000) proposed an instructional model for clinical settings that postulates a developmental sequence for educational activities. Learning begins with the attending physician providing an orientation to the service and to the work at hand. This is followed by the acquisition and application of knowledge and skills in the context of practice and finally, the termination of the instructional/work sequence. This model is tied directly to the tasks of the work group and relies heavily upon the instructional leadership role of the faculty.

The term clinical practice appears to suggest that learning occurs through student practice. But how is this experience converted into learning? There seems to be a belief, inherent in dental school curricula, that student learning in the clinic occurs through practice. Until recently, most dental schools used a “quota” or requirement system, whereby students were required to achieve at least a minimum number of different operative procedures. Though the quota system

has been changed with the introduction of competence-based curricula, the changes so far appear to relate principally to student assessment rather than to teaching (Chambers, 1998; Walsh, 2000). The assumption remains that students can learn operative procedures through multiple repetitions.

The processes of learning in the classroom and learning to carry out clinical activity do not appear to be the same. Much has been written about experiential learning (i.e., the idea that we learn by doing things), and there are many definitions of what is meant by the process (Kolb, 1984; Clark, et al., 2001). This idea has become a popular educational ideology, so much so, that there now appears to be a divergence of opinion and lack of clarity about the process.

The development of experiential learning as a concept is attributed particularly to Kolb. The Kolb learning cycle describes experiential learning as involving “four stages which follow each other in a cycle” (Gibbs, 1988), viz, concrete experience, reflective observation, abstract conceptualization, and active experimentation. Some researchers believe that Kolb’s learning cycle describes the way that adults learn (Best & Rose, 1996; Fraser, 1995). This may or may not be completely true, but ideas expressed in the Kolb learning cycle have directed curriculum development for adults and various aspects of students’ clinical practice (Stockhausen, 1998).

From Kolb’s observation learning is cyclical—that repetitions do allow the student to make changes based on past experience—but as discussed above, the basic tenet of Kolb’s work was that “it is not sufficient simply to have an experience in order to learn” (Gibbs, 1988). Yet there have been few studies in dentistry that have examined *how* students learn in clinical practice.

Individual and Team Learning

Strength of clinical education is the combination of individual and team learning. While students are responsible as individuals for their learning during a clinical clerkship, this learning

occurs in the context of the work team (Barfield, 2000). Instructional time and effort are allocated in the context of teamwork and team function. In a field study of instruction by attending physicians in an internal medicine department, Branch and Paranjape (2002) observed that learning by individual team members appeared tied to overall team development. As individual team members learn, they appear able to contribute and use the contributions of others to their teams, and as teams develop their abilities to work together. They also appear to promote additional learning among their individual members.

Clinical education is a challenging experience for most students because it allows them to participate actively in the health care team, seek solutions to real problems, and learn by doing, all while caring for patients.

Findings Relevant to Studies on Clinical Education

The review of the health care education literature that differentiates clinical and didactic teaching sharpens the definition of “clinical” teaching for this study. Some researchers have identified basic components or dimensions of health care teaching that claim to be exclusive to clinical teaching but, in fact, are applicable to both didactic and clinical practices. Several studies in medical or health care education make clear distinctions of clinical teaching in comparison to didactic teaching.

These distinctions have been categorized as: (a) Purpose or goal of teaching, (b) Learning context, (c) Requirements and demands from the learning setting (d) Role modeling and (e) Concept of service.

Purpose or goal of clinical teaching

Clinical teaching in dentistry is primarily centered on the provision of patient care. (Fugill, 2005) While providing patient care, the clinical teacher and student interact on a one-to-one basis. In the clinical environment, students interact with patients to learn how to care for

them in the most skillful manner possible. This is distinctively different from didactic teaching where cognitive learning prevails and experiences are based on course-specific objectives that are less frequently correlated to clinical experience (Karuhiye, 1997).

Learning context

Clinical teaching in medicine occurs “at the bedside,” which refers to an acute care hospital setting, a client/patient interaction in an examining room at an ambulatory setting, or an out-patient clinic with walk-in clients. Irby (1994) states that clinical education occurs at the bedside.

In dentistry, the operatory is the realm for clinical teaching. The teacher and student form a relationship that has traditionally been perceived as a key element in clinical teaching (Fugill, 2005). The clinical learning environment also includes the patient, who adds complexity to the learning process. For the student, clinical practice involves irreversible procedures, which must be completed without harm to the patient. The clinical teacher must ensure that patients' treatment is acceptable and s/he has a duty to prevent harm to the patient while providing a learning experience for the student. (Henzi, et al., 2007)

Didactic teaching most often occurs in a classroom environment, away from the vicinity of patients (Perry, 1997). Didactic teaching may emphasize theoretical concepts, whereas clinical teaching utilizes psychomotor skills involving patient care (Sharp & Spence, 1999).

Requirements and demands from the learning setting

The key distinctions between clinical teaching and didactic teaching are the requirements and demands that arise in the learning setting. According to James and Shipengrover (2001), these include the element of risk for safety and wellbeing of the patients with whom the students are interacting. There is limited control over outside factors that occur in the clinical setting, such as interactions with unanticipated personnel, patient treatment procedures, or a change in

the status of the patient. Thus, learning experienced in a clinical environment may be unique and cannot be repeated (James & Osborne, 1999). Diversity of facilities is a factor in the distinction of clinical teaching (Talwar & Weilin, 2005). Within the teaching time frame of the day, many rooms, units, or bedsides become the location for teaching within the institution, unit, or facility. Thus, the clinical teacher must be able to function within various settings as learning opportunities arise and as the needs of the patient change.

In contrast, didactic teaching utilizes lecturing primarily to transmit new knowledge and reinforce previous knowledge that is often infrequently correlated to clinical experience. Behar Horenstein, Mitchell and Dolan (2005) utilized a case study in first and second year dental basic science courses to assess classroom instructional practices. Observations revealed that most of classes observed were teacher-centered, passive, and lacked observable effort to help students understand the relationship of the lecture content to the oral health problems.

The didactic teacher has full authority over a classroom environment. Learning experiences are planned for a full term or a semester (Karuhiye, 1997), whereas in clinical teaching, experiences planned for a day can be changed by others and are dictated by case loads and patient conditions. In clinical teaching, the clinical instructor must address the patient's concerns and identify the student's goals (Spencer & Jordan, 1999). This emphasizes the dual role of the clinical instructor, a need to assess concomitantly the patient's oral health needs and the student's learning needs. The didactic teaching encounter is focused solely on the student's learning needs.

Professional role modeling

The clinical teacher's job is complex and the teacher's main responsibility is to provide opportunities for practical experience, discuss and review patients, respond to questions, provide explanations and be supportive (Parsell & Bligh, 2001). The clinical teacher acts as a role model

for the profession (Bergman & Gaitskill, 1990; Chapnick & Chapnick, 1999; Irby, 1978). Biddle (1996) demonstrated that both faculty and students ranked being a good role model of the profession as the highest-rated characteristic of the best instructors and the lowest-rated characteristic for the worst clinical instructors.

Clinical teaching takes place within the context of the professional environment. Since teaching takes place “at the bedside,” or operatory, the clinical instructor is in his or her roles both as instructor and medical, dental or health care professional. During clinical teaching, students participate in a teaching/learning process while observing the clinical teacher as a role model for the profession. Sharp and Spence (1999) found that students ranked the professional role of their instructor higher than person or teacher role characteristics. Irby (1978) also identified the modeling professional behaviors as one of the factors that is unique to clinical teaching. The didactic teacher is primarily concerned with transmitting knowledge and is not necessarily acting in the professional role of his or her discipline while teaching. The didactic teacher does need professional knowledge of his or her field but is not actively engaged in such actions during classroom teaching.

For clinical teachers to be role models, they must teach the psychosocial aspects of medicine and dentistry, demonstrate the importance of building positive doctor-patient relationships, and have a comprehensive approach to patient care (Branch, et al., 2001). This example set is the most powerful way for learners to acquire the values, attitudes, and behavior needed for professional and ethical practice (Parsell & Bligh, 2001)

Concept of service

In the clinical learning environment, the clinical instructor provides education to the learner and also delivers a service to patients (Stemmler, 1988). In other words, the instructor has an obligation for providing competent, thorough, and up-to-date instruction to students, and

good patient care within the same encounter. Several authors (Biddle, 1996; Branch, et.al., 2001; DaRosa, et al., 1997; Elnicki, et al., 2003) have pointed out that medical clinical instructors are members of two service professions as they are clinicians whose goal it is to help patients as well as teachers whose goal it is to help students. In this service role, the clinical teacher not only assesses the needs of the patient, but must also assess the student's needs. The didactic instructor provides educational learning experiences only to the student with no other immediate service obligations to patients or others.

Advantages/Disadvantages of Clinical Education

Clinical education is a conceptually sound learning model, which, unfortunately, is flawed by problems of implementation. Some of the more glaring problems of clinical teaching include: (a) limited emphasis on problem-solving, (b) lack of clear expectations for student performance, and (c) inadequate feedback to students.

Problem solving opportunities

One of the persistent complaints about clinical education is the overwhelming work demands placed upon students, leaving them little time for thinking and reflecting, but primarily memorizing facts. The clinical years perpetuate non-thinking; because an inordinate amount of time is spent in mechanical "doing." Operating-room work, repetitive wards, rounds, and nights and weekends lead to fatigue, which dulls thought. Most bedside teaching is mini-lecturing, noneducational chores, and the reflexive ordering of test after test. Students rarely have an opportunity to reflect on their learning, make connections to basic science information, restructure the knowledge that they already have, and engage in real problem-solving about patients under their care.

In order for students to learn problem-solving skills, they must actively participate in the learning process. Gordan, et al. (2000) stressed the importance of engaging students as active

learners at an early stage, so that they can acquire knowledge and skills that are relevant, organized, accessible and functional. There is some evidence to suggest that students are not active participants in their clinical education. Brown and Gillis (1999) concurred when they stated that students should “...be active, independent learners and problem solvers, rather than passive recipients of information.”

The simplistic approach of “see one, do one, teach one”, prevalent in clinical teaching for years, is no longer acceptable, although the statement does imply a strong relationship between practical learning, skill acquisition and teaching (Parsell & Bligh, 2001). Students must recognize their own thinking and learning strategies in order to develop and organize a knowledge base for problem solving (Gordan, et al., 2000).

Expectations and feedback

Another problem with clinical teaching is the lack of clear expectations for student performance. Few clerkships have clearly defined objectives and descriptions of work responsibilities. As a result, students encounter differing and sometimes conflicting expectations. As a consequence, each student tends to have a different educational experience with respect to the information learned and the proficiency of skills developed (Beasley, 1997; James, et al., 2002). Students frequently complain about the lack of feedback on their learning and performance. Although feedback on their skills and abilities is essential for efficient and effective learning, students often experience clinical clerkships in a feedback vacuum. Feedback from written evaluations of their performances is as inadequate as oral feedback, due to the lack of specificity by faculty members in identifying their student’s strengths and weaknesses.

Clinical Teaching

Definition of Clinical Teaching

In regard to dental education, it has been suggested, “the clinic is the learning environment to which all our students aspire,” (Mullins, et al., 2003 p.35), requiring the “transfer of knowledge from the basic sciences to the clinic by tuning and restructuring of knowledge.” How learning and teaching best occur in this environment for the preparation of dental students to advance to independently provide patient clinical care is important and a central business of dental educators and clinical supervisors alike.

The learning environment of the clinic or hospital is challenging for both teacher and student. In this setting, the student is a trainee-clinician responsible for patient care, and the clinic is both a patient care facility and a learning environment. In clinic, students are expected to demonstrate diverse competencies simultaneously, including a range of skills, a broad knowledge base, professionalism, and empathic, ethical behavior. Recent reports in dental education point to the value of the early introduction of students to the clinical environment, largely because of the demonstrated value of contextual learning and the facilitation of integration of knowledge from basic to clinical sciences (Mullins, et al., 2003).

Role of Clinical Instructors

Clinical teaching typically involves the supervision of a trainee clinician by an experienced clinician, and as a consequence, involves a range of teaching modes. Clinical supervision may be defined as the “provision of monitoring, guidance, and feedback on matters of personal, professional, and educational development in the context of patient care” (Kilminister, et al., 2002). The student/clinical teacher relationship has also been compared to the therapeutic alliance that exists between patient and physician because it represents an educational alliance (Tiberius, et al., 2002).

Clinical teaching in medical education has been extensively examined (Irby, 1995). Effective medical clinical teachers are considered to be those who have empathy, are capable of providing support, exhibit flexibility, and have the ability to gauge student development, in addition to being interpretive, focused, and practical (Kilminster, et al., 2002). Effective supervision of learners involves problem solving by students and instructors together, along with feedback, reassurance, and theory-practice linking (Hirons & Velleman, 1993). There is preliminary evidence that effective clinical teaching in medicine may have a positive impact on patient outcomes. For example, Fallon, et al. (1993) found that patient outcomes improved when direct supervision of the student clinician is combined with focused feedback.

Davis, Thomson, Oxman, and Haynes (1995) have conducted rigorous reviews of the research literature related to what educational methods are most likely to produce desirable changes in physicians' patient care strategies. These publications were the catalyst for similar reviews in health profession education that addressed a variety of questions: What constitutes "effective clinical instruction"? Do effective clinical teachers have unique attributes that less effective instructors do not possess? Are there components of the educational process that are more effective than others in the clinical setting? These questions have been the subject of several comprehensive reviews (Irby, 1995; Heidenrich, et al., 2000), numerous observational studies and surveys (Ende, Operant, & Erickson, 1995; Epstein, et al., 1997; Frank, et al., 1997; Goertzen, Stewart, & Weston, 1995; Hekelman, et al., 1996; Irby, 1994; O'Malley, 1999; Pinsky & Irby, 1997), and countless anecdotal "teaching tips," guidelines (Da Rosa, et al., 1997; Biddle, 1996; Cunningham, et al., 1999; McGee & Irby, 1997)—primarily in the medical education literature but also, to a lesser extent, in dental education. Irby's (1995) massive summary of the

literature for best practices in ambulatory teaching in medicine remains the most comprehensive and most frequently cited review of clinical teaching practices.

Irby identified four key factors that distinguish the “excellent” clinical teacher from other instructors. He/she 1) serves as a positive role model of a competent and compassionate health care provider, 2) provides effective supervision and mentoring for learners, 3) employs a varied and dynamic approach to teaching, and 4) is a supportive person. Teaching strategies consistent with effective supervision and mentoring include communicating clear expectations for students’ behavior and performance, providing practical and helpful “just-in-time” teaching (commonly known as prompting), explaining concepts and techniques clearly at the students’ level and then confirming their understanding, providing “how-to” feedback in a non-belittling manner understanding students’ learning needs at different levels of training and adjusting teaching accordingly.

In 2000, Heidenreich and colleagues reported the results of a comprehensive review of more than 600 articles on clinical teaching strategies in medical education to identify empirical evidence supporting frequently recommended teaching strategies. Hekelman, et al. (2003) identified forty-one papers that reported either quantitative or qualitative data related to eleven clinical teaching methods, but concluded that there was inadequate evidence to support the effectiveness of any of these techniques in spite of widespread student and faculty belief in the desirability of these methods. In contrast to Heidenreich, et al. (2000) and Hekelman, et al. 2003, reviews conducted by Davis, et al. (1995) identified a group of learning strategies that are strongly associated with modifying providers’ clinical behaviors. These strategies include persistent feedback on performance in relation to standards, comparison of performance to other practitioners, emotionally intense activities such as role-play, observed performance and peer

feedback, participation in live-action simulations that require decision making, personal reflection on performance, and notably, an absence of lecture-based instruction (O'Brien, et al., 2003).

Many investigators have studied clinical teaching effectiveness and the clinical learning environment in dental school. Chambers, et al. (2004), Manague, et al. (2001), and McGrath, et al. (2005) reached essentially the same conclusions as Irby, Heidenreich, and other medical school investigators about “what effective clinical teachers do.” Teacher attributes associated with effective clinical teaching in dental school include providing specific feedback about performance, demonstrating an interest in teaching, making an effort to motivate students, knowing how to translate didactic information into patient care situations, explaining difficult concepts clearly, showing compassion, and approaching treatment in a proactive manner (Chambers, et al., 2004). Dental students also reported that the most effective instructors took their teaching responsibilities seriously, behaved in a professional manner during interactions with students and patients, and were technically competent.

Contributions of Clinical Teaching to Dental Practitioners

Research conducted in the 1980s and 1990s demonstrated the importance of orienting learners prior to task performance, providing frequent “formative” (progress) feedback to students, guiding students with questions, and helping students understand the desired outcome for a technical procedure (Berk, et al., 1998; Croft, White, Wiskin, & Allen, 2005; DaRosa, et al., 1997). In a dental school environment, Behar-Horenstein, et al. (2000), and in medical education (family medicine residency programs), Taylor, et al. (1998), both found that instructors in their respective settings were aware of teaching best practices such as asking students open-ended questions to stimulate critical thinking but rarely used these techniques when working with students. McGrath, et al. (2005), recently pilot-tested an instrument known as the Effective

Clinical Dental Teaching Inventory (ECDT) to gauge student views of clinical instruction. This instructional environment survey elicits students' opinions about an instructor's skill in creating a positive learning climate, controlling the clinic, communicating goals, promoting understanding and retention, evaluating performance, providing feedback, and promoting self-directed learning. Authors of the ECDT suggested that the inventory can be used to collect data for assessment of instructors' clinical teaching effectiveness.

One difference in the literature on effective clinical teaching in medical and dental schools is that dental students place more emphasis on evaluation skills in their reports of teachers' best practices (Chambers, et al., 2004). This may occur because dental students are graded/rated far more frequently and in greater detail than medical students. From a student's point of view, faculty members who are able to provide helpful and prompt feedback and accurate ("fair") evaluations are viewed as the most effective instructors. Chambers, et al. reported that certain faculty members who saw themselves as experts were likely to be seen as poor evaluators by students because they were out of touch with students' actual capabilities and thus unrealistically expected "expert" level performance from the students. In this situation, students reported that they were graded down for performing at an appropriate level of competence for a student in training.

Challenges Associated with Clinical Teaching

To identify best practices for evaluation of dental students, Manague and colleagues. (2001) surveyed dental faculty to identify their perceptions of the most effective evaluative techniques. Faculty members viewed self- and peer-assessment, portfolio-based learning, the provision of consistent feedback to students, and the use of objective criteria as crucial to student evaluation. However, when asked how often these evaluation techniques were implemented, faculty indicated that these methods were used infrequently. Manague, et al. (2001) found that

the most prevalent assessment tools in dental school were day-to-day observations and the number of competency exams (competency patients) completed. Although observations and completing competency exams were the primary forms of assessing student learning, the faculty perceived that these assessment methods were not particularly valuable to student development (Chambers, et al., 2004).

In summary, the literature related to the question of what constitutes effective clinical teaching in dentistry and medicine is extensive but has been comprised primarily of observational studies, opinion surveys, and anecdotal “teaching tip” guidelines. There is limited evidence to support the actual influence of these techniques on student learning, although Davis, et al. have associated a number of instructional strategies with positive learning outcomes in the arena of continuing education (Davis, et al., 1995; O’Brien, et al., 2003). Key elements of “effective clinical teaching” are quite similar in both disciplines.

However, there are four limitations to these data that constrain generalizability. First, most of the observational studies and opinion surveys that form the basis for this literature were limited to one set of students in a single academic program or health care facility. Second, in many of these studies, the numbers of survey respondents or teaching observations were quite small. Third, in studies where researchers collected student impressions of clinical teaching by surveys and interviews or implemented protocols to observe teaching, they used a wide variety of data collection instruments—many of which were created by the investigators and not subjected to pilot-testing to verify validity and reliability. And fourth, much of the data that still provides the basis for assumptions about student perceptions of their clinical education that were collected in the 1980s and 1990s.

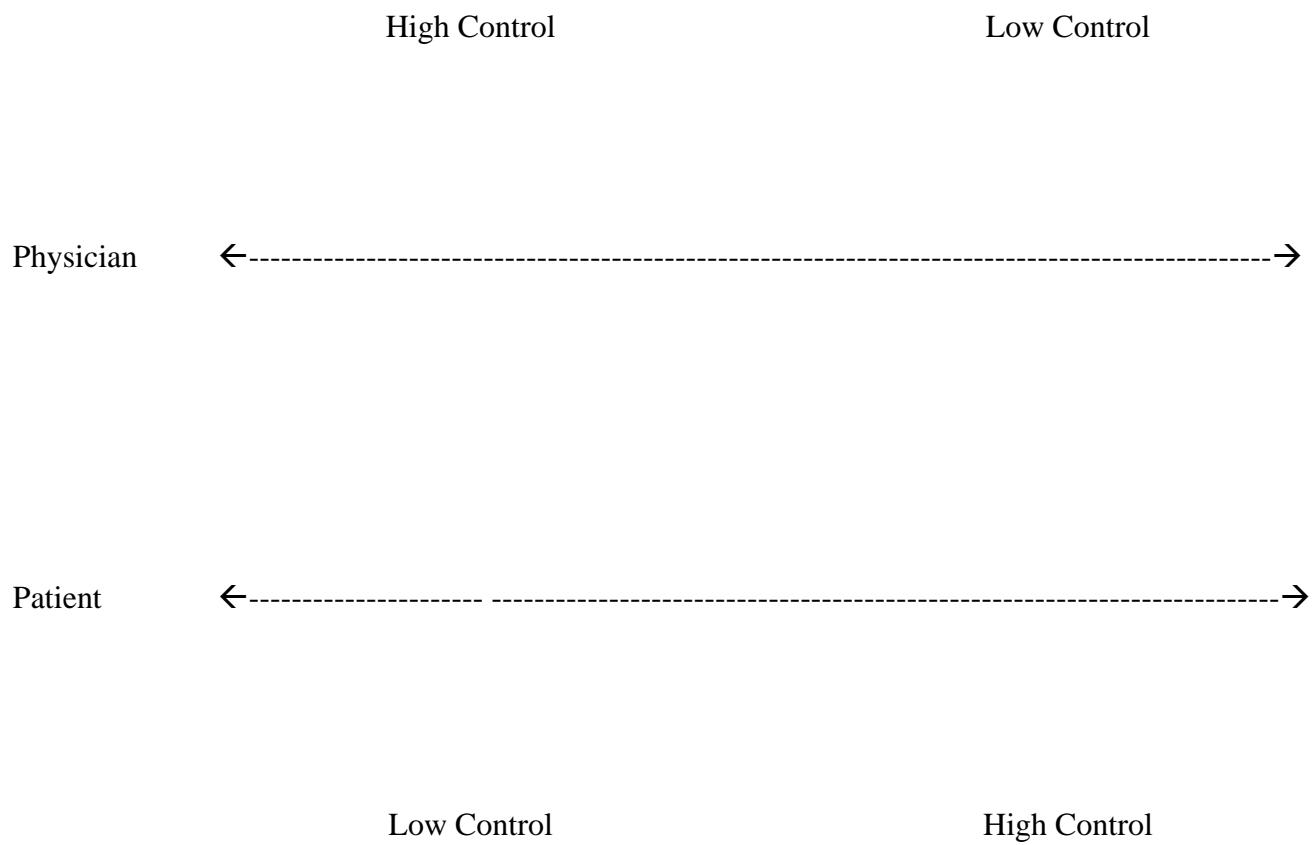


Figure 2-1 Conceptual model for physician–patient relationship continuum

CHAPTER 3 MATERIALS AND METHODS

Theoretical Framework for Data Collection and Analysis

The theoretical framework for this study is interpretivism. Proponents of interpretivism seek to “understand human action” by understanding the meaning of that action (Schwandt, 2005). “The interpreter objectifies (i.e., stands over and against) that which is to be objectified. In that sense, the interpreter remains unaffected by and external to the interpretive process. (p. 191)” This method of participant observation allows the researcher to objectively understand someone’s intent by studying his or her actions in the context of the situation. The epistemological framework for interpretivism is understanding. Schwandt (2005) states that understanding is “an intellectual process whereby a knower (the inquirer as subject) gains knowledge about an object (the meaning of human action)” (pp. 193-194). For this study, the researcher will analyze interaction between the student, teacher, and patient to interpret the student’s perspective of the clinical teaching/learning that takes place during student, faculty, and patient interaction.

Methodology

The methodology used in this research was participant observation and interviews. Participant observation is a process whereby the researcher immerses himself or herself in the subject being studied to gain understanding, perhaps more deeply than could be obtained, for example, from participants’ responses to survey items.

Observations between patients, students and faculty were used to acquire insight about interactions that are characteristic of each group as well as the relationship between the three

groups. As a result, an understanding of the attributes that are common to the relationships were developed. Observations in the clinic over a seven-month period were used to collect data for the assessment of the characteristics of the educators-students-patients interactions.

A qualitative interview research design was chosen to obtain data relevant to the educator–student–patient relationship and clinical teaching/education. According to Taylor and Bogdan (2005), “qualitative methodologies refer to research procedures which produce descriptive data: people’s own written or spoken works and observable behavior” (p.128). Glesne (1999) noted that qualitative research is better understood by the characteristics of its methods than by a definition.

According to DeWalt and DeWalt (2002), qualitative researchers want study participants to be heard and to actively provide their perspectives. Therefore, qualitative research is an interactive process in which the persons studied teach the researcher about their lived experiences. Qualitative researchers attend to the experience as a whole, not as separate variables. Thus, the aim of qualitative research is to understand experience as unified. One qualitative research method that lends itself to this study is the interview.

Kvale (1996) noted that an interview is “a purposeful conversation usually between two people (but sometimes involving more) that is directed by one in order to get information” (p.151). He also stated that the major purpose of an interview is to learn to see the world from the eyes of the person being interviewed. The researcher learns from the interviewees and seeks to discover how they organize their behavior. The interview should be approached as one in which “the researcher asks those who are studied to become the teachers and to instruct her or him in the ways of life they find meaningful” (p.163).

Researcher Qualifications and Bias

In studies where extensive qualitative fieldwork is conducted, the researcher is the “primary research instrument” because all data are collected through observations, and interviews and are filtered through the lived experiences—past and present—of the researcher. The level of contact that occurs during the observation and interview places the research under the microscope and requires persistent self-monitoring to ensure that data are documented and reported objectively. The researcher should describe his limitations as the primary research instrument. A personal biography and a description of data collection methods are essential to describe the researchers’ limitations (Fischer, 2005).

As a practicing dentist and dental educator, I have worked in private practice and the dental college for the past twenty-five years. Consequently, I have insight into the daily operations and culture of dental practice and dental education. Since 1996, I have been an associate professor in the Department of Operative Dentistry at the college where this study was conducted. As a result, I have to acknowledge any biases resulting from this experience to prevent them from influencing my analysis and discussion of the data.

As a qualitative researcher, I received formal training in participant observation as a program evaluator and experience in using qualitative research methods. Subsequently, I co-authored and published a research article delineating the findings of a nursing study (Tasso, Behar-Horenstein, Aumiller, Gamble, Grimaudo, Guin, Mandell, & Ramey, 2002). The publication resulted from a study that involved participant observation of health care providers, and patient interviews about their satisfaction. I have published several other qualitative studies dealing with patients’ attitudes, beliefs and opinions concerning dental care. The purpose of one of these studies, *Qualitative Description of Dental Patients Perceived Rights* by Grimaudo, Behar-Horenstein and Yantorni (2003) was to describe and characterize how dental patients perceive their rights and to

identify which specific rights patients remember after reading and asking questions pertaining to the form. There appeared to be some correlation to ethnic minority and beliefs/perceptions. The findings of this study suggest that patients perceive the form more as a legal or protective document for the school rather than an informative tool and suggest that many patients were unaware and unsure of their rights as patients.

Another study by Stewart, Grimaudo, Behar-Horenstein and Rawal entitled, *Description of Patient Perception of Quality Dental Care* (2003) reported that a major issue in clinical dentistry is providing quality dental care. Luborsky's thematic analysis was used to analyze structured interview and it was shown that the perceptions provided by the patients emphasized that providing quality dental care has more to do with interpersonal skills, empathy, care, concern, and provider relationship with the patients than the actual technical dental care provided. Grimaudo and Piedra (2004) reported patients' perceptions of the "ideal" dentist using a survey that included topics such as: cleanliness, openness of discussion, recommendation of relatives, primary language and ethnic origin, gentleness, and time spent. The data from this study indicate that there are differences in the way that ethnic minorities choose an oral healthcare provider. These differences were between the minority and majority as a whole and between the specific minority groups.

And finally, Grimaudo, Bhaktha, and Potter (2007) compared patient knowledge of HIPAA from 2003 to 2006 and through surveys showed that patient knowledge and understanding of HIPAA has significantly declined over time. Patients involved with health care knew more about HIPAA, but even after patients were given information, they did not know what HIPAA was. This 2007 was a follow-up study concerning HIPAA completed by Grimaudo and Potter (2004) that showed about 60% of patients were aware of HIPAA because they had recently heard about

it from media advertising and the dental students. HIPAA was enacted to protect patient information and patients are not fully aware of the law.

From these experiences, I developed a deep understanding of the factors that influence patient and dental provider interactions. The progression from these studies was to study the faculty–student–patient triad relationship and clinical teaching/education. Consequently, from my experiences as a researcher and patient care provider, I feel I am qualified to conduct this study. While bias cannot be ignored, it can be kept on the side. My role as researcher has been to listen and allow the participants to speak openly about their experiences. My hope is that the findings in this study will contribute to developing a better understanding of faculty–student–patient interaction and improve clinical teaching/education.

Participants

Because I am a faculty member at the University of Wallace (a pseudonym), College of Dentistry, gaining access to the clinics was non-problematic. Institutional IRB approval was obtained for faculty–student–patient observations and interviews. (Appendix A contains a copy of IRB 2006-U-0433.) The participants in this study were comprehensive care patients at the College of Dentistry, faculty members of the College of Dentistry, and student dentists in the classes of 2006 and 2007. The four clinics used for observations and interviews were operative (opr), oral health maintenance (ohm), prosthodontics (pros), and periodontics (per). Eighty (80) students were in the Class of 2006 and 81 in the Class of 2007. A total of 168 interviews/observations were conducted among the class of 2006, of which n=84 (50%) were female and n=84 (50%) were male. The males were aged 24 to 34 and the females were aged 24 to 32. The class of 2007 completed 162 interviews with approximately n=65 (40%) female and n=97 (60%) male. The males were aged 23 to 35 and the females were aged 24 to 29.

Overall there were 330 patient observation /interviews in all. The patients ranged in age from 19 to 84 years including n=166 (50%) male and n=164 (50%) female, n=198 (60%) Caucasian, n=56 (17%) African-American, n=50 (15%) Hispanic, n=17 (5%) Asian, and n=9 (3%) unknown.

Instrumentation

The researcher-constructed interview protocols were based on literature research. The protocol used in this study was comprised of open-ended questions (See Appendices B and C). The semi-structured format allowed for the participants to elaborate on their viewpoints.

Data Collection

Data were collected from three primary sources: patient interviews, student interviews, and participant observations of the faculty–student–patient interaction. Triangulation of the data contributes to the credibility of the results (Creswell, 2002). The observations and interviews were conducted on regular clinic days during regular hours. The observations and interviews took place over a seven-month period. Each clinic was observed one half-day per week on an alternating basis. This strategy was adopted because different faculty members were assigned to each clinic on a given day and the process allowed access to more faculty rather than observing the same faculty repeatedly (See Appendix D).

An interaction consisted of the dialogue between the student and faculty member, student and patient, and a student and faculty member during the treatment appointment. Student and patient interviews were completed at the end of the appointment and lasted fifteen to twenty minutes. All interviews were conducted by the researcher. Running notes were used to document the interactions and nonverbal cues were also recorded. The written notes were entered into a word processing program for analysis.

Data Analysis

There are two major purposes for analyzing data in qualitative studies: interpretation and translation into concepts. In this study the latter process was used. Identifying concepts help to explain the relationship between the data. Data from the student interviews were compiled and analyzed to determine if there were common patterns among the students regarding what they learned, how the faculty fostered their learning, and what they perceived to be important about clinical teaching. Data from the patient interviews were compiled to see how patients felt the faculty and student interacted with them and each other, if they knew what dental treatment they were receiving, and their main reasons for coming to the dental school. Data gathered during patient interviews was compiled and analyzed to see if there were common trends and patterns among the patient's responses. The constant comparative method (Denzin & Lincoln, 2005) was used in this study to analyze and determine common attributes among the student, faculty, and patient interviews. Student and patient interview responses were compared to assess common patterns and themes in relation to each question. Responses from student and patient interviews are also used to compare the perspective of the patient and student to the same interaction.

Data from the faculty–student–patient interactions was coded. The data were classified and categorized to allow for development of common themes, patterns, and concepts. The researcher used memo writing during the code, which enabled him to express personal reflections from the data analysis.

Trustworthiness of Data

The basic question regarding trustworthiness in naturalistic inquiry is: “How can an inquirer persuade his or her audiences that the findings of an inquiry are worth paying attention to, worth taking account of?” (Denzin & Lincoln, 2005). Criteria for trustworthiness include credibility, transferability, dependability, and confirmability (Denzin & Lincoln, 2005).

In qualitative research, the trustworthiness of data is equated with validity in quantitative research (Glesne, 1999). Trustworthiness is achieved through prolonged engagement in the field that allows for persistent observation and the opportunity to acquire sufficient data to support the study. The data collection process for the present study took place over a seven-month period. The observations consisted of more than one-hundred hours spent in the field. Student and patient interviews were an additional 150 hours. Approximately 350 hours were spent analyzing the data from interviews and observations. Another contribution to the trustworthiness of the study is triangulation of the data. Member checks are also used to establish trustworthiness of data (Glesne, 1999). Member checking is a process through which respondents verify data and the interpretations thereof (Denzin & Lincoln, 2005). To ensure the accuracy of the data, a summary was reviewed with the data source in order to understand the perspective of the participant. In this study, during interviews, verbal information was restated to the patient or student as a means of member checking.

Credibility

Denzin and Lincoln (2005) recommend a variety of strategies for improving the likelihood that findings and interpretations produced through naturalistic inquiry methods will be credible. Two of these strategies are peer debriefing and member checking. Denzin and Lincoln (2005) define peer debriefing as “a process of exposing oneself to a disinterested peer in a manner paralleling an analytic session and for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within the inquirer’s mind.” (p.122). The peer debriefer for this study was Dr. Sandi Anusavice who analyzed ten percent of the data. Her interpretation of the data agrees with the findings of this study.

Transferability

The emergent theory of naturalistic inquiry is dependent on a specific context and interactive dynamics, necessarily lowering the possibility and desirability of a focus on external validity, as compared with positivistic inquiry (Denzin & Lincoln, 2005). Qualitative observational research describes and classifies various cultural, racial and/or sociological groups by employing interpretive and naturalistic approaches (Fischer, 2005). It is both observational and narrative in nature and relies less on the experimental elements normally associated with scientific research (reliability, validity, and generalizability). Qualitative observational research is a systematic inquiry into the nature or qualities of observable group behaviors in order to learn what it means to be a member of that group. The researcher's job, rather than to describe a stable entity, is to give continually updated accounts of observations on multiple levels of group interactions that occur on both a temporal and continuous basis simultaneously (Patton, 2002).

Qualitative study lends itself to thick narrative description, and it may be intensive given the complexity of group interactions. It takes place on site, in the group's natural environment, and attempts to be non-manipulative of group behaviors. The purpose is to aim for objectivity, while it must take into account the views of the participants (DeWalt & DeWalt, 2002).

Qualitative observational research is naturalistic because it studies a group in its natural setting. Patton (2002) explains, "Naturalistic inquiry is thus contrasted to experimental research where the investigator attempts to completely control the condition of the study" (p. 42).

In order to enable others to make an informed decision about whether to apply the findings of this study to their own research, extensive description of the experiences and identity development of the participants, as well as the definitive exposition of the researcher, are provided.

Dependability and confirmability

Denzin and Lincoln (2005), both dependability and confirmability can be determined through one “properly managed” audit. To establish dependability, the auditor examines the process by which the various stages of the study, including analytic techniques, were conducted. The auditor determines whether this process was applicable to the research undertaken and whether it was applied consistently (Denzin and Lincoln, 2005). To illustrate confirmability, a record of the inquiry process, as well as copies of all taped interviews and discussions, notes from interviews and discussions, and hard copies of all transcriptions have been maintained.

CHAPTER 4

RESULTS

The results obtained from student interviews, observation of student-patient-faculty interactions, patient interviews, and descriptions that typify these relationships in the dental school setting are described in this chapter. These results will be described in the context of the six research questions.

Research Question 1. What are the Characteristics of Oral Health Care Educators–Patients–Students Interactions in the Clinical Learning Environment?

Clinical observations were made during regularly scheduled clinic appointments. Across all observations, the faculty interacted with a student at the beginning and the end of the procedure. However other types of interactions ensued as described below. At times, students called upon the faculty if assistance was needed during the procedure. At other times, faculty were observed walking around the clinic and asking students how they were doing during the clinic period. Some faculty waited for the student to come to them after the student had finished the treatment. Student and patient demographics are described in Table 4-1.

Four styles of interaction emerged from these observations: 1) faculty-centered, 2) student-directed, 3) student–faculty collaborations, and 4) patient-driven. The frequency of each is as follows: faculty-centered (n=192, 58%), student-driven (n= 76, 23%), student–faculty collaborative (n=53, 16%), and patient-driven (n=9, 3%). In the following section each style will be defined and observations that typified each are presented.

Faculty-Centered

Faculty-centered interactions were those where the faculty member told the student what to do and the student completed the procedure without much input. These interactions usually involved patients who already had their treatment plans completed and were scheduled for restorative procedures. During the interactions, the faculty member would look at the treatment

plan and radiographs and tell the student which procedure to complete. The faculty member would answer questions concerning the procedure as needed providing input as an expert in the field.

During these interactions, faculty were usually sought out by the student. After approaching faculty for help, the faculty member treated the patient without giving much feedback to the student during the process. An example of this occurred in prosthodontics, where a student was completing a crown preparation on a tooth and he asked the faculty member to check to see if the margins were okay. The faculty member sat down and modified the preparation. When he was finished, he told the student to go ahead and make the impression since the procedure was now complete. The faculty member did not tell the student what or why the modifications were being done. Thus, this teachable moment was not utilized.

Another example occurred in operative when a student had trouble anesthetizing a lower molar. The student called over the faculty member and told him the problem. The faculty member told the student to get a specific type of anesthesia and then proceeded to inject the patient. The student was not told why a different anesthetic was used or if this was a different procedure being employed.

In another faculty-centered interaction, a junior student treated a patient in the operative clinic. The patient was seated and the faculty member approached and greeted the student. The faculty member looked at the patient's treatment plan and said to the student and patient that they should complete a silver filling on tooth number 19. The faculty member signed the necessary forms for the patient and student to begin; the student began the procedure and called the faculty when the procedure was completed. The faculty member signed the chart notes and the patient was dismissed. The interaction with the student and patient was minimal and cordial. Faculty

input was only in response to the procedure completed. Minimal teaching was performed by the faculty.

In the clinic the teacher must supervise because s/he has responsibility for patient safety as well as treatment. However, the teacher is also expected to address the learning needs of the student simultaneously. Teaching takes more time than supervision.

Student-Driven

Student-driven interactions were those whereby the student would tell the faculty member what s/he was going to do in that clinic. The faculty member would verify that this procedure was needed per the treatment plan, check the patient, and then tell the student to proceed with the procedure. In these interactions, students took the initiative in providing patient care and the faculty member still checked his/her work at the completion of treatment. In these interactions, the faculty members allowed the students to make decisions about the given treatment.

Other interactions included in this category occurred when the students initiated the faculty interaction. In one example, a student asked a faculty member to evaluate a bridge preparation; the faculty member told the student that it looked okay. The student then asked the faculty member to discuss what could be done to make the preparation better.

In a similar example the student prepared the tooth for a large filling and asked the faculty member to evaluate it. The faculty member said it was good, but the student wanted to know what could be done to make it better.

In the operative clinic, a senior student had a patient who needed composite restorations on teeth 8, 9, and 10. The patient was seated and the student brought the faculty members over and told them that s/he planned to place restorations on all three teeth during the same visit. The faculty member checked the plan and told the student to complete those procedures. After the

procedure, the student told the faculty member that the work was ready to be checked. Afterward, the faculty member checked the procedures and said that they were acceptable. The student asked the faculty member, “What could be done to make the aesthetics better?” This led to a discussion concerning the faculty’s experience and expertise. The student reported a positive experience and said that s/he learned advanced aesthetics techniques that day.

During these observations, the faculty member would usually remain in one area of the clinic. To attain the faculty member’s attention, the student would contact the faculty member when s/he needed assistance, or the student would follow the faculty member from operatory to operatory until s/he was next in line to be seen.

Clinical teaching is directed toward increasing autonomy to prepare the student for practice. As seen in the aforementioned examples, autonomous learning included: goal setting by students, use of teachers as guides rather than instructors, and students using self-assessment and reflection. Clinical teaching is designed to promote students taking an active role in their professional education over the course of two years.

Student–Faculty Collaborative

Student–faculty collaborative interactions occurred when students and faculty members examined the treatment plan together and decided which procedure would be completed that day. The procedures completed were clinic dependent. Collaborative interactions occurred mostly in the operative clinic, where there are several procedures listed on a patient’s treatment plan. In periodontics and prosthodontics, the treatment options were limited by the specific nature of the specialty involved. For example, scaling and root planing occurs in periodontics; there is not much choice as to what else can be done. In these interactions, the faculty and student had a dialogue concerning the day’s treatment.

These observations also included ongoing discussions between faculty and students during the treatment process. In one example, the student had a large restoration. The faculty and student discussed what material should be used to fill the tooth. During this discussion, the faculty member asked the student many questions about how and why different materials could be used.

In another example, a student was having trouble anesthetizing a patient. The faculty member and the student discussed reasons why this may have been happening. Then the faculty member demonstrated an alternative technique to anesthetize the patient. The professors asked students questions about the treatment plan and alternative treatment. During one interaction in the periodontics clinic, students reported: “The faculty member fostered learning by listening to me, because he knows that I see the patient clinically more often than he does and we worked together to come up with a treatment plan that was best for the patient.” The student reported that the most important thing about clinical teaching was for “the faculty member to be thorough, not talk down to me, and make sure that I have all of my questions answered.”

Another interaction was described by the student as incorporating “social caring and good conversation.” The student learned from the faculty member’s ideas and experiences. The faculty member helped during the procedure and discussed potential problems. During these observations, the faculty member actively moved around the clinic and went from operatory to operatory to check students’ progress. Interactions were conversational and reciprocal.

Patient-Driven

During the patient-driven interactions the student and faculty member asked the patient what s/he wanted to complete that day. The patient had input and could select from a list of necessary procedures on the treatment plan. What distinguished these interactions from others was the patient’s involvement in the dialogue. In some of the dental clinics, the patient’s wishes

and concerns were taken into consideration when developing a personalized sequenced treatment plan for the patient. However, this category of observation is limited because the faculty member could not deviate from accepted treatment protocols and guidelines.

A good example of this type of interaction follows. A junior student in the operative clinic had a patient who had lost a filling in a front tooth. The patient told the student that s/he wanted to have that tooth filled that day. The student told the faculty member about the patient's request and was allowed to complete the procedure for that day. While the patient had other restoration needs, this tooth was filled first per the patient's request.

Research Question 2. How are Oral Health Care Educators–Patients–Students Interactions Perceived by the Student?

Students were interviewed about the faculty's interaction with their patients (Table 4-2). The interactions were classified into four major categories based on the students' descriptions and described by terms used by the students. These four categories consisted of none, minimal, good, and excessive. About 3% (n=10) of the students stated that the faculty did not interact with their patient and described interaction as nonexistent, or without communication entirely. About 10% (n=33) reported that the faculty did not interact well with the patient and describes the interaction as "minimal or very cursory," "did not talk much," and "could have been more friendly and professional." Approximately 8% (n=27) of the students reported that the faculty interacted with the patient. They described faculty members' actions in these interactions as "very talkative, too much conversation, left patient confused, and spent too much time talking about extraneous material." The majority of the students 79% (n=261) reported that the interaction was good. Representative descriptions of good interactions included: "explained step-by-step to the patient..."; "paid attention to the patient and the patient's feelings..." and "was friendly and courteous with the patient..."

Students reported that faculty interaction with their patients were positive; however, they also stated that a certain amount of interaction that is acceptable. For example, students indicated that they wanted the faculty to explain to the patient when a procedure was complex. Students reported that the faculty should be cordial to the patient, explain what is necessary, and help as needed depending on the students' level of expertise. Tangential and too much conversation were viewed as counter productive because the amount of available clinical time is limited. Students also reported that they perceived aloofness or quick interactions as unfriendly and unprofessional.

Students were asked to describe the type of faculty interactions with them. The interactions were categorized into two main as described by the students: good or poor. The majority of the student 85% (n=281) described the faculty interaction as good. Representative examples of these interactions included: "...the faculty was kind and generous...; and "...they handled problems appropriately..." In addition, 15% (n=49) of the students described interactions as poor when faculty: "...did not spend enough time with me...; "they were aloof..."; "...they were too busy..."; "...not much interaction...;" and "...could have been more patient with me and less demeaning..."

Students explained that they wanted the faculty to interact with them concerning patient treatment and that when they did interactions were easy. Faculty members that did not spend much time with a particular student may have been due to the number of patients in the clinic and the complexity of procedures on a given day, causing the amount of time available for supervision to fluctuate. Different procedures among faculty members on the same clinic caused difficulties for students.

Students reported that inconsistent feedback was a common occurrence in the dental school clinics. They described situations in which two instructors would look at the same work performed by the students and each would give different feedback. The following three examples depict students' frustrations with lack of instructor calibration:

"A big problem is inconsistent feedback and instructions."

"Inconsistency of instructors. One will start a case with you and suggest their philosophy, then another teacher changes the way you do things; a waste of time."

"Different instructors tell me to do different things even though the treatment has already been approved by another licensed and practicing dentist."

Students also wrote about their appreciation for faculty members who they perceived to be knowledgeable and eager to help. They frequently described how fortunate they felt to work with faculty who had a firm understanding of clinical skills and the ability to communicate these skills at the students' level of understanding. The following written responses are representative:

"Instructors encouraged me to try new procedures, become more independent, and expand my abilities."

"Faculty bring their clinical experience, share the different ways of restoring a lesion, allow you to ask multiple questions as to the pros and cons."

"Instructors give positive feedback and never belittle me. They share clinical advice and patient management."

"The faculty are very committed to educating us."

In addition students reported situations where instructors communicated respect to students and worked in a collegial manner, such that students felt confident that the instructor "was there supporting you." Approachability, openness to questions, and willingness to give

guidance and feedback were characteristics of faculty that students considered to be important. Instructors who displayed these characteristics were able to motivate students. Enthusiasm for the subject matter, patience, and a sense of humor were personal qualities displayed by instructors in positive learning incidents. Perceived instructor commitment was also reported as important.

Students were asked what they learned during their clinical session. The responses were varied and ranged from "nothing"—"I've done this procedure many times," to "I learned a new technique today." Their response seemed to correspond with the student's year and the clinic assignment. For example, senior students described treatment in the periodontal and operative clinics as routine procedures that they had already done, whereas juniors reported that they were learning new things in these clinics. Senior students reported learning new techniques in prosthodontics. Students did not comment on requirements or competencies. Many students considered a clinical session as a poor learning experience if they did not get a requirement or competency completed. Where the dental clinics strive to provide comprehensive patient care, the education requirement fosters students that must meet various competences for graduation. Thus, there is a tension between the goals of patient care and students' educational need.

When asked how faculty fostered their learning, students reported that during routine procedures faculty fostered learning about 65% (n=215) of the time, however 35% (n=116) reported that faculty did not foster learning. Senior students reported than faculty fostered their learning (40%, n=67) of the time, while junior students (80%, n=130) reported that faculty fostered their learning twice as much of the time.

Descriptions of how faculty fostered (facilitated) learning included responses such as "telling (me) what to do...;" "giving verbal expressions;" "...helping to build my confidence...;"

"...giving me different perspectives and opinions concerning the treatment...;" "teaching me a new method;" "...demonstrating and reinforcing what was given in lectures...;" and "...giving real world experience and allowing me to do the procedure myself and coming back and making suggestions for improvements..."

Instructors, who engaged the students, were eager to help, and were actively involved with the students, were seen as faculty who facilitated student learning. Instructors who facilitated learning in the clinic frequently shared with students "tips" and "tricks" from their own clinical experience. Students perceived their sharing of knowledge to be valuable because it was written and available in textbooks and often helped them understand a concept more deeply or learn how to complete a procedure successfully.

Students' written comments included more frequent descriptions of exceptional learning experiences than negative ones. Overall students reported that their learning experiences were positive, 90% (n=297), while 10% (n=33) reported that particular faculty's teaching skills and traits inhibited their learning. Representative examples of students' comments follow.

"It all depends on your faculty coverage. Some people make you feel comfortable; some make you feel very uncomfortable and then it becomes more difficult to perform to a high level."

"Certain instructors are great, extremely helpful and provide positive feedback."

"My clinical experiences are predictable based on which instructor will be in the clinic."

Negative learning experiences were often characterized by a lack of communication between the instructor and students and/or problems with the organization or presentation of the material. For example, communication problems occurred when the instructor was perceived as unapproachable, uninterested in the students' learning, or discouraged questions. At times, instructors failed to determine students' prior level of knowledge about a topic, and

used terminology that was unfamiliar and confusing to the students. Unclear directions about tasks to be completed and lack of timely and/or constructive feedback were also problems reported by students.

Students viewed their interactions with knowledgeable faculty members as a highlight of their education, but a high percentage described situations in which they felt their progress in the clinic was hindered either because too few faculty were assigned to clinic or because faculty “wandered off” and could not be located when they were needed to supervise patient care, evaluate work, or sign off on paperwork. One of the most frequently written comments made by students was that lack of clinical faculty made it difficult for them to attend to patients in a timely manner. Students who wanted the best possible care for their patients and to meet the educational expectations of the various clinical departments were frustrated by this occurrence. The following four examples illustrate student’s experiences with the lack of faculty coverage:

“There was not enough faculty coverage on the floor at all times.”

“Prolonged waiting for instruction and assistance... This is the most recurrent and frustrating aspect of my dental education in clinic.”

“Some (not all) faculty fail to be efficient as clinical instructors—talking on their cell, and so forth. Is this the proper way to spend clinic time? That time should be dedicated to teaching and helping students.”

“Instructors are not available in a timely manner. I feel this is a HUGE problem in my clinical education.”

When students reported positive learning experiences, they described the educators’ focus and efficiency. In these instances, students reported that information and instruction were presented in a clear, concise, and easily understood format. Goals for the session were made

clear, and instructors were organized. Instructors focused on the topic at hand and avoided what the students termed “tangents.” In these experiences, instructors acted as guides for students, led them through a large quantity of information, pointed out the most important details, and helped students to grasp essential concepts. Positive learning experiences were also high in relevance, that is, instructors communicated and students could clearly see how what they were learning related to specific patient treatment needs as well as to problems the students would encounter in the future.

Some of the students' clinical learning experiences involved learning from peers. Many students reported that opportunities to observe and assist senior students in the clinic were valuable and eased the transition from lab to clinic.

Students also reported that prompt, informative, and sometimes critical feedback was necessary for development of their clinical skills. However, many students described situations in which feedback messages were delivered in a manner that was abrupt and rude, embarrassing, and condescending, especially when criticisms were communicated in open areas of the clinic where other students, patients, and faculty members could hear the conversation. Three representative examples follow:

“The faculty were downright rude to me and extremely critical.”

“At times I feel unsure about asking questions for fear of being ridiculed. I wish I could be more open about not knowing something without being scared of insulting comments.”

“Instructors try to make us students feel stupid in front of our patients.”

Students were asked to identify the most important thing about clinical teaching. Their responses emerged as four categories: faculty characteristics (65%, n=215), student characteristics (15%, n=50), patient interaction (12%, n=40), and characteristic of the learning

experience (8%, n=26). The majority of their responses reflected how faculty characteristics impacted their learning experience, whereby the faculty took the onus for teaching...

Representative examples follow. "...patient friendly faculty who are not condescending...;" "...faculty giving helpful and practical hints and tips...;" "...faculty should not just tell you what to do...;" "...faculty should be supportive and faculty has to respect the students and patients..."

Students taking the onus for their learning reflected how they thought about their education include, "...want constructive criticism to better myself...;" want real world and practical advice; want to understand better to make my skills better; "...want to progress through the curriculum, educate my patients, and provide quality care for them..."; "...being able to speak with the faculty one-on-one about the patient and to get constructive criticism after a procedure is completed...;" "...getting help at having freedom to make decisions; and students should be prepared for clinic and provide quality care to their patient..."

Students also reported that the most important thing about clinical teaching was having positive experiences and opportunities to work with patients. Interactions with patients helped dental students increase their confidence when performing new skills. The following quotes illustrate this theme:

"One positive experience was being able to give comprehensive care to my patients and being involved in every step of the way—from treatment planning to carrying out treatment."

"I have a well-rounded patient pool with diverse needs and responsibilities."

"I enjoy working with my patients and formulating a treatment plan suitable for each individual."

Students offered characteristics of their learning experiences. They described intentions as "...hands-on learning...;" "...explaining, showing, and letting the students do the work...;" "...learning experience and skill in a compassionate clear manner..."

A last theme that evolved from the student interviews concerned the large amount of "legwork" that they were required to perform while working in the clinic. This work involved tracking down patients, completing paperwork, scheduling appointments, and performing other clinic tasks that students felt should be accomplished by support staff. These issues take away from providing patient care and required concentration on administrative activities that interfere with students' chair time with patients and accomplishment of educational tasks required by the clinical departments. The following written responses are representative of the students' experiences with administrative activities:

"Too many hoops and hurdles. New things thrown at us constantly. Bombarded with paperwork."

"Considerably more time spent 'jumping through hoops' than actually practicing dentistry."

"The paperwork, calling patients and often harassing them to come in, and the amount of lab work. I know that some of this is needed, but it takes away from time that could be utilized working on patients, trying to meet requirements."

Students reported that the paperwork and administrative issues concerning patient care were sometimes overwhelming. Administrative issues, such as scheduling patients and calling them to confirm appointments, are an important part of patient care education. Although students might dislike doing these tasks they are developing essential patient management skills for use in dental practice.

Research Question 3. How are Oral Health Care Educators–Patients–Students Interactions Perceived by the Patient?

An overwhelming majority of the patients 99% (n=327) described the faculty interaction with them as positive and used descriptors such as “great, exceeded expectations, fantastic, excellent, beautiful, professional, and nice.” Three patients described the faculty patient interaction as poor. One patient said: “The interaction was “poor, as the first doctor told the student the wrong thing to do and the second doctor corrected him.” Another patient stated the interaction was “...poor and I felt that the faculty member did not really speak to me.” Patients' descriptions of student interaction were unanimously favorable (Table 4-3).

Patient description of the faculty student interaction fell into two major categories: good and “could be better.” The majority of patients 97% (n=320) described the interaction between the student and faculty as good, using terms such as: "...Good communication, professional, they were nice to each other...," "top-of-the-line work together," "...faculty questions student and answered students' questions and communicated greatly;" "this faculty member was better than the last time." Ten patients (3%) described the interaction between the faculty and student as “could be better” as depicted by the following statements. "...there really was not much interaction; the work was checked at the end..." More patients described the faculty–student interaction in a negative light than the faculty–patient interaction. Two of the patients reported a negative response to both interactions.

Patients were asked to identify who explained the treatment plans to them. Their responses fell into three categories: the student, student/faculty, and faculty. Most of the patients (92%, n=304) stated that the student described the necessary treatment, 6 % (n=20) stated that the student and faculty explained their necessary treatment, and 2 % (n=7) reported that the faculty member explained the treatment to the patient and student. In the last instance, the faculty

member explained the treatment to the student and patient in situations that required a specialty consult because plans are typically too complex for the attending student.

Patients stated that the main reason that they came to the dental clinic was financial (85%, n=281), because of a recommendation (7%, n=23), they had a problem or bad experience with a private dentist (4%, n=13), they wanted to receive expert advice (2%, n=7), or to improve dental health (2%, n=6). When asked what could be done to make their treatment better, the vast majority of patients (95%, n=314) said that the treatment was fine and nothing was needed to make it better. The remaining patients who gave recommendations for improvement asked: for evening hours; appointments that were efficient and flexible; lower fees; and less time between visits. Some patients commented that the students shouldn't be in charge of scheduling and collecting fees.

Patient's perceptions were predominately positive, and provided no findings that could be used to revise or enhance clinical education. Patients seemed satisfied if they are treated fairly, felt no discomfort, were charged a reasonable fee, and had a good relationship with their student dentist.

Research Question 4. How do the Student and Patient Perspectives of the Oral Health Educators-Students-Patients Interaction Compare?

Responses to questions involving faculty interaction with the patient and faculty interaction with the student were compared. Overall, patients' descriptions of their interactions with the faculty were more positive than the students' responses. The student would typically say that the interaction was okay while the patient described it as excellent. When the student reported that the faculty member was very friendly and spent much time addressing the patient's concerns, the patient's response was that the faculty member asked a lot of questions and it was comfortable. One student reported that the interaction was professional, and the patient reported

that it was a “beautiful, professional, and nice experience” and that the interaction was very comfortable.

Comparison of Observations and Interviews

Observations where students reported a negative interaction were mostly categorized into the faculty-centered style. Students reported this kind of interaction as less favorable. The student-directed- and patient-input-style encounters were reported as mostly positive by the students. The student–faculty collaboration style received no negative reports by the students or patients.

Student reports of condescending faculty input were not corroborated by the observations in all cases. For example, 15% (n=49) of the students reported poor interactions with the faculty and condescending behavior by the faculty. Eight interactions that students described as “condescending” behavior by the faculty member were instances in which the student came to clinic unprepared for the clinical procedure. As a result, the faculty member appeared to the observer as annoyed with the student. While the situation could have been handled differently, the researcher did not observe belittling of the student in front of the patient.

The other seven cases involve two non-American female faculty members. The students perceived one faculty member’s demeanor as condescending. The student reported the faculty member's pointed critique was too harsh. At times, students reported particular faculty as condescending when the observer perceived them as really stern.

Research Question 5. How does the Clinical Specialty Influence the Type of Interaction between the Oral Health Educators-Students-Patients?

A comparison of interactions across different clinics provided insight into the procedures involved in each clinic. The information from interview and observations were assessed to describe the influence of the clinical specialty on the educators-students-patients interaction.

Interactions in the periodontal clinic were unanimously favorable. Students reported positive experiences with the faculty and their learning experiences. The operative clinic interactions were mostly positive. There were a few negative interactions that typically involved two specific faculty members. The prosthodontics clinic interactions were also mostly positive, but several negative interactions were reported. Senior dental students reported more negative interactions with faculty. Patient interviews did not report that their interactions were different by the clinics where they were treated.

Research Question 6. From the Student’s Perspective, What are the Elements of an “Ideal” Clinical Teaching/Learning Experience?

Data from the interviews and observations was compiled to provide the students’ perspectives of an “ideal” clinical teaching/learning experience. Dental students made a number of significant comments concerning student attributes, characteristics of teaching/learning and desirable characteristics of clinical teachers. These comments pertained solely to clinical teaching. Nevertheless, themes common to other teaching environments, such as feedback, demonstration, integration of theory with practice, and student autonomy, were described by the dental students. The findings were categorized as student attributes, characteristics of teaching/learning, and desirable characteristics of clinical teachers.

Student Attributes

Dental students reported that their level of confidence was important and that their relationship with the clinical faculty affected their learning experience. Confidence in providing oral health care for patients is considered important as an educational outcome (Talwar, et al., 2005). Among medical students, increased confidence has been associated with increased clinical competence, though the relationship between the two is not well understood (Barrows, 2003). Confidence cannot be directly measured, but self-reports of student perceived confidence

is commonplace (Frank, et al., 1997). Some students reported feelings of uncertainty when they are treating patients; they were not completely confident with what they are doing. This was reflected in some survey comments, such as “when you have messed up beyond belief...” and “When I do procedures, I get quite scared of doing things wrong.”

Need for support. Perhaps, because of uncertainty concerning patient treatment, these students preferred to be supervised by a supportive teacher. Student comments included the following: “Yes, I do a filling but I’m not always sure … [that] I’ve removed all the caries. It’s nice to have someone when you’re doing it saying ‘okay’ and maybe talk you through it step by step...” and “…nice to be reassured instead of the faculty expecting you to fail...”

Student autonomy and student self-assessment. Because clinical faculty are legally responsible for the patient’s well-being, there is a tendency in dental student clinical practice towards faculty-led clinical decision-making. All clinical teachers have had occasion to take over students’ work to protect the patient. Many students in this study experienced this interaction as an infringement of their autonomy, and it appeared to cause some resentment. For example:

“We’re supposed to be diagnosticians as well, not just technicians. If they say ‘do this, do that’ then we get into the habit of going ‘okay,’ rather than thinking carefully and thinking ‘Why, specifically am I using this material?’”

In this context it seems reasonable to suggest that student clinical activity needs to be directed towards increasing autonomy in order to prepare the student for practice.

However, it also seems important to teach students how to assess their own clinical work. Researchers have reported that self-assessment promotes learning and is at the heart of the

educational process within professional education (Croft, et al., 2005; McCunniff & Holmes, 1999).

Students also made a number of comments about their autonomy: “I think options are important. I was doing a filling last week and I was going to line it, then one clinician explained the options to me, gave me three options, and then asked me to choose. So I chose with my limited knowledge and that’s what I used, and he didn’t mind which one I did. And that was constructive because he gave me the options and left the decision to me, rather than deciding and not giving me the reason why.”

Characteristics of Teaching/Learning

Communication/discussion, feedback, demonstration and the integration of knowledge and skills were characteristics of the teaching and learning process that students frequently described as important.

Communication/discussion. Several times students discussed faculty and staff communication with students, not student communication with patients. They placed an emphasis on willingness to discuss rather than on ability to communicate, which the students appear to take for granted. The following comments illustrate this point. “...briefing helps. Dr. X is very good. He asks us about our treatment beforehand...;” and “...there are some that will say it to you in such a tone, volume and in such a nasty way that you’re not going to ask them again.”

Feedback. Students reported that the quality and the emotional tone of feedback were important. Comments that indicate the powerful role that feedback plays and how important feedback is coming from clinical teachers follow. As one student commented, “...even the smallest word or the shortest sentence can make a difference.”

The data indicate that most feedback consisted of faculty members reassuring students that their work was "fine." Most of the feedback students received was positive. Feedback is generally recognized as important to student learning, because it provides students with understanding (Berk, Close, & Weyant, 1998). Feedback that is perceived to be negative or unkind may affect self-efficacy and motivation (Lawrence, 2003). Mager (1997) provides a useful way of understanding feedback in clinical teaching by identifying it as adequacy, diagnostic, or corrective. Adequacy feedback provides information on the efficacy of the clinical outcome; diagnostic feedback provides confirmation of the shortcomings in the clinical outcome, while corrective feedback suggests action to be taken to ameliorate those shortcomings.

From these interviews, students viewed feedback as very powerful. "Encouragement definitely reduces your anxiety." One student reported being motivated by an instructor's feedback. When he said, 'You've got to improve on this.' [I] felt like going back to your patient and doing it really well, and instead of 'He's really put me down; I just want you to go now and book another appointment,' you really want to strive to do better."

Students seemed to appreciate feedback that was accurate, comprehensive, systematic, and stated in a positive manner. Given the importance of feedback, perhaps dental clinical teachers should be encouraged to offer feedback that is comprehensive, structured, and provides both diagnostic and corrective information. Perhaps the use of a standardized feedback form would provide dental teachers with a rubric for organizing their feedback.

Demonstration. Students described how demonstration aided their ability to learn procedures. Demonstration is considered a significant factor in influencing learning psychomotor skills (Clark, Oyen, & Feil, 2001), and ought to be a common feature of dental student clinical practice. When clinical teachers make demonstration a regular practice, it helps students learn

new procedures, even though it does take significant time. Demonstration needs careful managing. The knowledge underlying demonstration is often tacit and invisible to the student (O’Shea & Parsons, 1999), and it needs to be clearly communicated during the demonstration.

Students were unanimous when they suggested that demonstration was a good teaching method for dental procedures. They lamented the fact that faculty were generally unwilling to sit down and demonstrate, but found it useful when they did. “Some [faculty] will actually do part of the prep for you. That’s when you actually gain, when you see what a 1.5 mm shoulder looks like.” None of the students suggested that faculty do their work for them. They just appeared to want short demonstrations: “He gave a little two-second demonstration, [saying] ‘that’s what I’d like...’” Yet, students felt ambivalent about teachers taking over from them. “If you think you are doing nicely then it’s a bit upsetting...” If a faculty takes over a procedure, students typically worry that such action will have a negative impact on their patient relationship.

Integration of knowledge and skill. During interviews, a number of students complained that the theoretical teaching they received was non-contextual and that they received no help in linking it with practice. As one student commented, “People tell us, ‘get on with it, you studied it two years ago, you should know this.’” Nevertheless, when the student does not have the experiences that help them assimilate content information, they reported that faculty appeared to be reluctant to help them see the theory to practice relationship.

While it is the responsibility of the clinical teacher to facilitate learning within clinical activity, perhaps dental curriculum could be restructured so that there is integration between knowledge, attitudes, and skills (Levinson, 1999) and that the clinical learning environment becomes a ‘convergence’ of academic and practical understanding.

The difficulty of such integration has already been mentioned in the literature review, and it was interesting to see it occupied a significant place in student opinion. Some students pointing out the difficulty they had learning theory because theory had not been taught in a contextual manner: "When they do it [teach] in a class room [it is] miles away from the patient. There is nothing to reinforce it." Effective learning should involve opportunities not just to hear or learn new information, but to apply that information immediately in a hands-on situation. This aspect of instruction is lacking in dental education when the first two years are spent in the classroom and the last two years are in the clinic. Topics taught out of context might not be used in clinic for a year.

Students also regretted that they had not been given any assistance with integration. "There seems to be this theory that if they lead us too much, we're not going to learn anything, you should remember every facet of it." While integrating theory and practice into a learning process, it should also be integrated into teaching orientation. There seemed to be some reluctance among clinical teachers to engage in this area of teaching because they perceived it as "spoonfeeding". Although learning is the student's responsibility, some students have not had the experiences that allow them to link information to be able to link information with experience, or they had not had the same clinical experiences.

Understanding the limits of student knowledge

Students appeared concerned that they did not have identical clinical experience. In a learning environment driven by patient need it is difficult to ensure identical student experience. Several students mentioned that faculty often assumed that they have had exactly the same experience: "There should be a lack of assumption by clinicians that you're going to be good at something simply because of the year you're in or because you're confident about other things."

Respecting the student/patient relationship. A number of comments reflected students' anxiety about the triangular relationship between student, patient, and teacher: "It's a learning environment but you don't want to be made to look like an idiot in front of your patients." The teacher will often need to correct the student in some aspect of the procedure s/he is carrying out, but students appear to see this as damaging: "[They] turn up in front of your patient and say 'you are doing it wrong.' Then the patient loses confidence in you," some students reported that they prefer that corrective instruction take place away from the patient: "It's good if they take you aside from the patient, otherwise the patient is sitting there with her mouth open wondering what's going on." As supervisors, there are times when faculty need to intervene and take over the procedure from the student; however, students regarded this with ambivalence because while they considered it to be useful, they also saw it as potentially damaging. The way faculty act is important here. "There are ways and means of doing things, rather than 'Get out of the way, you are doing that wrong.' "...if the faculty takes over the task, the student needs to know why."

Desirable Characteristics of the Clinical Teacher

The students reported several characteristics that they felt were desirable for clinical faculty. Students preferred faculty who were professional and competent in their field, approachable, and possessed a love for teaching. They also considered punctuality important because they wanted to use their time efficiently. Students also reported that the faculty member should be available in the clinic when the patient and student needed their help and visible in the clinic when questions arose concerning patient treatment. Students preferred to be evaluated with consistency so that when criticism was given, it was consistent for each and every student. Students preferred faculty members who understood the limits of their knowledge and did not speak above their level of comprehension. The students reported that faculty should have respect for the student–patient relationship, treat the patient and student professionally, and not

undermine this relationship.

Professional competence. The knowledge and clinical competence of the faculty member is crucial to the quality of teaching in all clinical teaching settings. Students reported that although they were taught by specialists in dental fields, some of the faculty did not have an appropriate level of general competence to provide support or foresight to provide comprehensive patient care. These comments run counter to the basic philosophy of the dental school. The school is based on a specialist model which means that each specialty is taught in a specific clinic. Another model of dental education is the generalist approach where the clinical teaching is supervised and taught by general dentists with general practice experience. The following professional competencies emerged from analysis of data in this study.

Approachable personality. Some students seemed fearful of particular faculty and reported how their teaching styles impacted their learning unfavorably; for example, “If you are scared, you are less likely to ask, and are not going to learn.” One student reported that he preferred to ask a colleague rather than go to certain faculty because then s/he “[didn’t] feel stupid asking questions.”

Punctuality. Students liked to discuss patient treatment matters with their faculty before patients arrived. They reported feeling displeased when faculty do not arrive in time for this: “Clinicians should be in clinic at a reasonable time for the 8:30 session so they’ve actually got time to spend with students to go through what they’re planning on doing.”

Availability. Students appreciated the close presence of their teacher for two reasons. First students did not want to take time looking for the faculty. As one student stated, “There’s nothing worse than putting a matrix band in place, getting moisture control and then you’ve got to go and find a clinician.” Another reason was the psychological reassurance of seeing the

faculty nearby. Another student reported that, “What is really beneficial as well, I’ve noticed that Dr. X doesn’t disappear like some clinicians like to do.” Students’ comments indicated that at times they feel there was an insufficient number of faculty in the clinic. Absence or unavailability of faculty contributed to losing chairside time and an insufficient amount of time spent with each student that interfered with learning. As one student stated, “The trouble with this is, sometimes in clinic, there might be 2–3 clinicians on if we’re lucky and the amount of time that the clinician has to spend with you, even though he might only have 6 students, I just don’t think they have time; they might have time to do this if you’re lucky.”

Consistency. Students also reported the difficulties that arise when faculty disagreed over treatment plans. “I have had a treatment plan that has changed every single time I have brought my patient in clinic. We don’t get much further, it is all that continued debate about what we’re going to do.” Students also reported feeling without support when faculty criticized each other. One student reported, “It is quite hard for us when some clinicians frown on other clinicians’ opinions and we’re left thinking well now what.”

Table 4-1. Student and patient demographics

Group	N	Gender	Ethnicity
Class of 2006*	168	50% Male (n=84) 50% Female (n=84)	70% Caucasian (n=118) 18% Hispanic (n=30) 8% Asian (n=13) 4% African American (n=7)
Class of 2007**	162	60% Male(n=97) 40% Female (n=65)	72% Caucasian (n=117) 14% Hispanic (n=23) 11% Asian (n=18) 3% African American (n=5)
Patients***	330	50% Male(n=166) 50% Female(n=164)	60% Caucasian(n=198) 17% African American (n=56) 15% Hispanic (n=50) 5% Asian (n=17) 3% unknown (n=9)

Age *Male- 24 to 34 yo, Female-24-32 yo **Male-23 to 35 yo, Female-24 to 29 yo

***Male-19-82 yo, Female-20-84 yo

Table 4-2. Student interview responses

Interview Topic	Response
Faculty interaction with patient	3% (n=10) No interact with patient 10% (n=33) Did not interact well 8% (n=27) Excessive interaction 79% (n=261) Very good interaction
Faculty interaction with student	85% (n=281) Positive interaction 15% (n=49) Negative interaction
What you learned	Varied from “Nothing, I've done this procedure many times” to “I learned a new technique today.”
How faculty fostered learning	Class of 2006 40% (n=67) Reported that faculty fostered learning Class of 2007. 80% (n=130) Reported that faculty fostered learning (90%, n=297), Positive reports of learning experience 10% (n=33) Negative reports of faculty teaching skills and traits
Make learning experience better	
Importance of clinical teaching	65% (n=215) Faculty characteristics 15% (n=50) Student characteristics 12% (n=40) Patient interaction 8% (n=26) Characteristic of the learning experience

Table 4-3. Patient interview responses

Interview Topic	Response
Faculty interaction with patient	99% (n=327) Positive 1% (n=3) Negative manner
Student interaction	Unanimously favorable
Faculty–Student Interaction	97% (n=320) Good communication 3% (n=10) Could be better
Who explained treatment	92% (n=304) Student 6% (n=20) Student and faculty 2% (n=6) Faculty explained
Main reason for coming to college	85 % (n=281) Financial 7% (n=23) Recommendation 4% (n=13) Problem or bad experience with a private dentist 2% (n=7) Expert advice 2% (n=6) Improve my dental health
Make care better	95% (n=314) Treatment was fine nothing needed to make it better 5% (n=16) Evening hours, appointments efficient and flexible, lowering time between visits, students shouldn't be in charge of scheduling and collecting fees

CHAPTER 5 CONCLUSION

Characterization of Healthcare Educator–Patient–Student Communication

Four major styles of communication interactions emerged from the observation/interview data: faculty centered, student directed, student–faculty collaboration, and patient-driven.

Faculty-centered

Faculty-centered interactions resulted when faculty instructed students what to complete at the appointment, when telling students where modifications were needed in the treatment, or when faculty completed a procedure without involving the student. These interactions are based on the expert model. When the faculty told the student what to do or made modifications, the student reported both kinds of interactions as negative because they did not feel involved in the learning process. Students reported that they would rather be shown what to do and then do it than have the faculty member do it for them.

Student-directed

During student-directed interactions either students told the faculty member what procedure they were doing or students sought out the faculty member when they needed assistance. In these instances, faculty usually allowed the student to perform the treatment with supervision. For the most part, the students reported these learning experiences as positive. The observations showed that these opportunities were limited and student–patient interaction was minimal.

In this interaction the student's learning process was primary. The faculty member would usually stay in one place during the clinical procedure. The faculty member interacted with the student and patient but at the initiative of the student.

Student–Faculty Collaborations

In student–faculty collaboration, the student and faculty decided together what would be done at that appointment. During these types of interactions, the faculty member approached the student at different phases of the treatment and offered suggestions and pointers. The faculty member looked for teachable moments and interacted with the student and patient during the treatment. The students and patients reported this style of interaction was positive. Faculty–student collaborations promoted an open, collegial atmosphere; students reported that these types of interactions fostered their learning.

Patient-driven

During patient-driven interactions, the patient decided what procedure would be done that day. Typically, the student explained to the faculty member what the patient desired for that particular day. A faculty member interacted with the student and patient during treatment to insure that the treatment was necessary and correct, but the patient had more input as to what was done.

Student Perspective of Triad Relationship

Student responses indicating what was most important about clinical teaching were classified into three major categories: faculty characteristics, student characteristics, and characteristics of the learning experience. The majority of the responses were the faculty characteristics and their impact on the learning experience. The faculty characteristics were characterized by traits of the faculty and placed the onus for learning on the faculty.

The majority of the students placed the importance of clinical teaching on the faculty members. The observations showed that students preferred faculty–student collaboration in clinical teaching. The students preferred faculty members who were more interactive and

involved in the learning and treatment process. They expressed a dislike for faculty members who were dominating and completed the treatment for them.

Students also reported that student characteristics were important to clinical teaching. They stated that they wanted to learn to become better clinical dentists and wanted constructive criticism. Students also reported a preference for a hands-on (demonstrative), active approach to learning.

Patient Perspective of Triad Relationship

Patients are essential to clinical teaching. The majority of patient responses were positive. The patients wanted faculty to have oversight of their care and they did not feel negatively when the faculty took over a procedure instead of a student.

As described in a study by Grimaudo and Behar-Horenstein (2004) it was evident that patients related quality dental care to many different factors and that the age, gender, or ethnicity of the patient influenced their impressions. General themes that were apparent were that the perceived technical skill of the student was less important than the empathy students showed towards patients. Overall, the information gathered in this study from patient interviews and observation provided little new information or suggestions to change clinical teaching.

Influence of Clinical Specialty on Interaction

Students and patients did not report major differences in faculty/patient interactions within the Operative, Oral Health Maintenance, Periodontics, and Prosthodontics clinics. The procedures in Periodontics such as root planning and scaling were reported as routine by students. The students had only favorable remarks about this clinic. Students commented favorably about Oral Health Maintenance and reported some concerns with specific faculty in Operative. Most of the unfavorable remarks concerning faculty were reported in the Prosthodontics clinic, where the students perform the most complex and time-consuming

procedures. Faculty members spend large amounts of time with some students, while other students must wait. This is out of necessity since the faculty must ensure that the procedures are done correctly and of a high quality. Most of the procedures are completed at the end of the clinical curriculum when students are scrambling to graduate. It is at this specific time, when most senior students reported that they felt junior students were unprepared and took away from their clinical time with faculty.

Students described a number of characteristics of the clinical teacher that were both desirable and undesirable. Students generally expressed a desire for their teachers to use teaching behavior such as demonstration, feedback, and a willingness to talk about treatment. As noted above, the adequacy of such teaching is generally disputed by the students.

Students also reported that it is important to have a faculty member constantly available in the clinic. This need is influenced by time constraints such as fixed-length appointment times and need for reassurance. The need for teacher availability also prompted comments about teacher-student ratios. Students also expressed a desire for increased autonomy. While this may be a desirable outcome of clinical practice, it is possible that faculty may see this as an impediment with ensuring patient safety. Also, experiences suggests that increasing student autonomy takes time, which may not be available in a busy clinical session with current faculty to student ratios.

Students also described the importance of teacher competence. Certainly, knowledge allows the clinical teacher to explain concepts to the student, and competent demonstration may lead to better student performance, but students appeared to link competence more with psychological support. Students gained confidence from knowing that whoever is backing them up has the knowledge.

Of all the teacher characteristics described, it is apparent that students view a positive relationship with the teacher as most important to them. In interviews, words such as *approachable*, *friendly*, *understanding*, and *helpful* were used. But students also used words such as *domineering*, *authoritarian*, *condescending*, *sarcastic*, and *patronizing*. Student comments elaborated that point: “There are some that will say it to you in such a tone, volume, and in such a nasty way that you’re not going to ask them again,” or “If you are scared, you are less likely to ask, and are not going to learn.”

Student Perspective of an “Ideal” Clinical Teaching/Learning Experience

Based on the findings of this study, a descriptive model of clinical teaching based on student preference is proposed. The student–teacher- patient triad is at the center of the model, and the overall environment is the clinic. The student brings to the environment his/her basic preclinical knowledge and level of confidence. The student feels a level of confidence which can be affected by faculty interaction. The student relationship with the clinical teacher is important and the student will learn more efficiently if this relationship is viewed as positive by the student. Good rapport and respect between the three members of the triad is essential. The student wants the faculty member to have respect for the student–patient relationship, as this relationship is the basis for clinical care.

Desirable characteristics of the clinical teacher are professional competence, punctuality (so that the student is able to use the allotted clinical time), availability during clinic and after for questions and concerns, consistency with treatment and evaluation, and practicality concerning clinical matters.

The teaching and learning technique preferred by the student is demonstration. As the student brings background knowledge, the faculty member shows them how to do the procedure, and then the faculty member lets the student do it. The students view feedback as very

important. Students appreciate feedback which is accurate, comprehensive, and systematic, and which is provided in a positive emotional environment. In clinical learning, the faculty should help students integrate knowledge and skill by combining theory into practice. The triad and interactions should lead to quality care for the patient.

Other factors that are important are student autonomy and student self-assessment. These two factors help the student to become a better practitioner. The outcome of the triad teaching-learning interactions that lead to quality patient care should be clinical competence. This model is only valid under the circumstances presented and within the context of this study.

Several key characteristics of positive learning experiences were identified by students in this study. Instructor personal qualities such as approachability, enthusiasm, commitment, and willingness to give guidance and feedback contributed to effective learning experiences and the specific instructor skills. Particular characteristics of the learning process also contribute to effective learning experiences. These included a focus on the big picture, modeling and demonstrations, opportunities to apply new knowledge, availability of high-quality feedback, learning opportunities that were focused, specific, and relevant, and the opportunity for learning with and from peers.

These results are consistent with principles of adult learning. For example, adult learners want their learning to be relevant to their learning goals, which parallels our “focus on the big picture” and “relevance” themes. Adults learn best in a supportive environment in which they can experiment with new behaviors and skills, which parallels our “instructor characteristics,” “opportunity to apply new knowledge,” and “culture of the learning environment” themes. Finally, adult learners need and want feedback, which parallels our “high-quality feed-back” theme.

These results are also consistent with experiential learning theory as described by Kolb (1984), in which both active experimentation, which parallels an “opportunity to apply new knowledge” theme, and reflective observation, which parallels our “modeling and demonstrations” theme, are integral components of the learning cycle. Learning style assessments of incoming students should be performed to determine the variety of learning styles represented within the student body. Some students favor active experimentation, the “hands-on” opportunity to try things out for themselves, while others favor reflective observation, the opportunity to observe a faculty member or senior student demonstrate a behavior, skill, or procedure. Instructors may want to provide a variety of modes of learning in order to meet the needs of learners with varied learning preferences.

Theoretical Implications of this Study Summary of Findings

Clinical experiences in dental school encompass a wide variety of learning opportunities. Findings from this study demonstrate that students viewed their clinical education as a positive experience with some exceptions.

Clinical instructors did not rely heavily on questioning strategies to guide or stimulate student thinking, rarely asked students to reflect on performance or to self-assess, and often employed less-than-ideal strategies for providing feedback. In particular, the results suggested that many clinical instructors could enhance their technique for providing feedback with emphasis on improving delivery of the message based on the traditional communication heuristic: “It’s not what you say, but how you say it.”

Dental students did not perceive that they gained as much from the overall clinical setting as they did from the interactions with individual clinical instructors. Many dental students saw

the clinical environment as being inefficient and characterized by non-productive down time that was devoted to noneducational tasks in order to “make the system work.”

Students described the impact of faculty shortages on the quality of the educational program, either “real” coverage shortages (not enough faculty on staff) or “availability” shortages (faculty could not be found when needed). Students preferred more opportunity to work in a variety of patient care settings, not just the dental school clinic, and preferred to work more consistently with a core of instructors rather than interacting with different faculty every day.

Many of the ideas discussed above, such as demonstration, feedback, and positive affirmation are fundamental to role modeling. The idea of the dental clinical teacher as a role model was discussed by Chapnick and Chapnick (1999). Mentoring and role modeling are an accepted part of medical educational literature, but the idea seems to be relatively neglected in dental education. Appropriate role modeling could help dental students learn the knowledge, skills, and attitudes appropriate to independent clinical practice.

The characteristics of positive learning experiences presented here may provide insights for instructors who wish to increase the effectiveness of their teaching and their students’ learning. For example, instructors may be able to quickly and relatively easily implement changes in how they give feedback to students, or in the extent to which their classroom sessions are interactive in nature, and the frequency with which they “check-in” with the class. Instructors within the same institution may not be aware of effective and/or innovative teaching strategies used by their colleagues. One easy approach to faculty development may be to provide a forum for faculty to share their “best practices” for teaching.

Many effective learning experiences happen outside the formal curriculum. For example, studying with peers and working with senior students in the clinic are not necessarily formal curricular activities, yet they were valuable for the students. Curriculum planners should consider how to best capitalize on these effective modes of learning.

Findings from this study were compared with the key concepts of studies on teaching and learning in health care environments (Table 5-1). There are characteristics of the clinical teachers that students perceive as favorable when determining teacher effectiveness. According to Chambers, Geissberger and Lekinu (2004), characteristics identified by the students were: expert, enthusiastic, judicial, and good soldier. These characteristics were not confirmed by the present study. This study agreed with the findings of Fugill (2005) where characteristics of effective clinical teachers identified by students were: competent, approachable, practical and consistent.

Effective clinical teachers provide accurate comprehensive feedback to students in a positive environment (Berk et al 1998, Mager 1997). The present study confirms this concept and agrees with Croft, et al. (2005) and McCuniff and Holmes (1999) that effective clinical teachers allow students to have autonomy depending on their clinical level and encourage self assessment and evaluation

Chapnick and Chapnick (1999) stated that effective clinical teachers are role models to students and the students in this study reported that they look up to clinical faculty and view them as role models. Levinson (1999) and Manague, et al., (2001) concluded that effective clinical teachers integrate knowledge and skill by incorporating the basic sciences into the clinical process and contextualizing dental education. The students in the present study confirm this concept

Clark, et al. (2001) and O’Shea and Parsons (1999) reported effective clinical learning includes demonstration. This study confirms this concept and students reported that they prefer to see and then do. The students also prefer faculty that are flexible in clinic and allow the student to complete the assigned tasks. This is not in agreement with Biddle (1996), Cunningham, et al. (1999), Ende, et al. (1995) and Hiron and Velleman (1993). In those studies, students preferred faculty that provided strict clinical supervision and completed tasks for the student.

This study agrees with Fugill (2005), Kilminster, et al. (2002), and James, et al. (2001) as students prefer faculty that act as facilitators. This study also confirms Chambers (1998) and McGrath (2005) which reports that students prefer faculty that respect the student/patient relationship and do not undermine the student in the presence of the patient. Students in this study preferred open discussion and communication with faculty and preferred an active role in the learning process which confirms findings by Chambers (1998), Fugill (2005) and Henzi, et al. (2006). The students in this study did not report that they treated patients based on requirements which was reported by Chambers (1998) and McGath (2005) but stated that they want to provide comprehensive care and do what is best for their patients regardless of requirements which confirms reports by Manague, et al. (2001) and Henzi, et al. (2007).

Future Research

Future research should investigate clinical teaching from the faculty member’s perspective. The model that emerged from such a study could be proposed and compared to the model from this study. The model from this study could be used to develop a curriculum in a specific clinical discipline and determine the effectiveness of this curriculum in clinical teaching. The same could be done for the faculty perspective model, and comparisons could be made in order

to develop a curriculum for clinical teaching based on the data from several different perspectives.

Although this study is limited in scope and scale, it raises important issues that require further study and perhaps changes in teaching practices in dental schools. One recommendation would be to examine dental student clinical practice from the clinical teachers' perspective, perhaps using a semi-structured interview technique.

Teaching and learning interactions between student and clinical teacher are also worth further study to document more precisely some of the issues surrounding communication, demonstration, feedback, and integration. Such a study could be carried out using structured observation and/or videotaping but would need to be designed carefully because of patient confidentiality issues and concerns about the intrusiveness of videotaping. A study of this type may also provide further understanding of the patient–student–teacher triangular relationship. Other possible avenues for study include similar descriptive studies in other clinics or other dental schools that could be conducted for the purposes of comparison and generalization.

The findings from this study showed that many of the clinical teachers are appreciated by students. Nevertheless, there is room for improvement in clinical teaching. A more student-centered approach to the balance between teaching and supervision should be encouraged and better use made of both demonstration and feedback.

Finally, clinical teachers should be aware of their power, that their “smallest word or ... shortest sentence can make a difference.” Walsh (2000 p. 21) pointed out that:

The evident desire of students to be treated more like peers...conflicts with the reality that [teachers] know more about the subject at hand[,]...bear the burden of evaluating students[,]...and generally manifest far greater commitment to the learning process.

The importance of cultivating a positive relationship between student and teacher has been evident throughout this study, is recognized as important to student learning, and needs greater attention. Perhaps a way to further mutual understanding could be through the concept of building an “alliance” between student and teacher (Tiberius, et al., 2002). The key features of this alliance are mutual respect, shared responsibility for learning, effective communication and feedback, cooperation, willingness to negotiate conflict, and a sense of security.

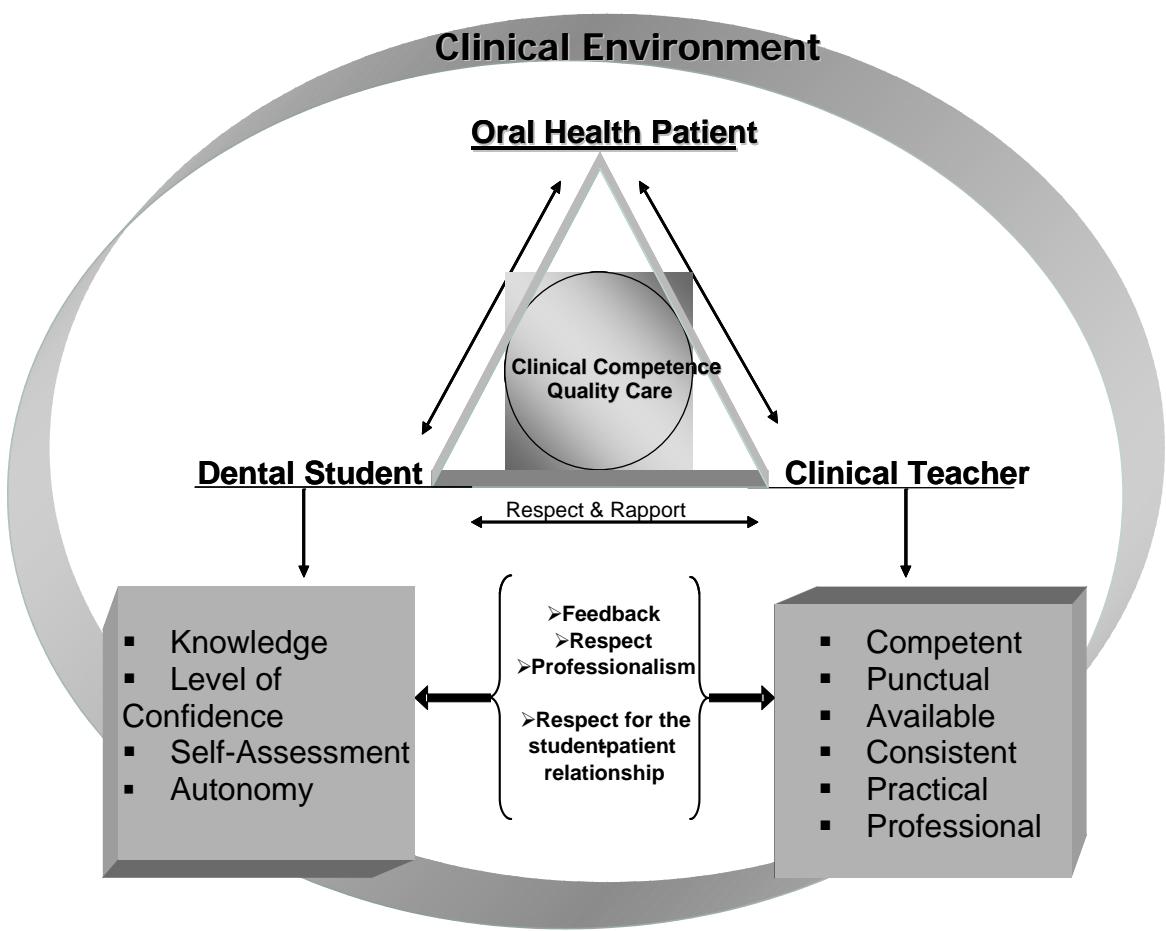


Figure 5-1: Descriptive model of clinical teaching based on student preference

Table 5-1. Findings of study based on theoretical framework/perspective

Key Points of Theory	Findings	Theory confirmed or refuted
<i>Characteristics of Effective Clinical Teachers</i>		
There are characteristics that students perceive as favorable when determining teacher effectiveness	Chambers, Geissberger, and Lekinu, 2004 The characteristics identified by students were: expert, enthusiastic, judicial and good soldier. Fugill, 2005 The characteristics identified by students were: competent, approachable, practical and consistent	Refuted Confirmed
Providing feedback	Berk, et al., 1998; Mager, 1997 Effective clinical teachers provide accurate comprehensive feedback to students in a positive environment	Confirmed
Role modeling	Chapnick & Chapnick, 1999 Effective Clinical teachers are role models to students	Confirmed
<i>Learning Environment</i>		
Demonstration	Clark, et al., 2001; O’Shea & Parsons, 1999 Effective Clinical learning includes demonstration. Students like to see and then do.	Confirmed
Integration of knowledge and skill	Levinson, 1999; Manague, et al., 2001 Effective Clinical teachers integrate knowledge and skill. They incorporate the basic sciences into the clinical process and contextualize dental education	Confirmed
Supervisor	Biddle, 1996; Cunningham, et al., 1999; Ende, et al., 1999; Hiron & Velleman, 1993 Students prefer faculty that provide strict clinical supervision and complete tasks for the student	Refuted
Student/patient relationship	Fugill, 2005; Kilminster, et al., 2002; James, et al., 2001 Students prefer that the faculty act as facilitators and allow them to complete patient procedures Chambers, 1998; McGrath, 2005 Student prefer faculty that respect the student/patient relationship and do not undermine the student in the presence of the patient	Confirmed Confirmed

Table 5-1--Continued

Key Points of Theory	Findings	Theory confirmed or refuted
Student autonomy and self assessment	Croft, et al., 2005; McCuniff & Holmes, 1999 Effective clinical teachers allow student autonomy depending on their clinical level and encourage self assessment and evaluation	Confirmed
Communication/discussion	Chambers, 1998; Fugill, 2005; Henzi, et al., 2006 Students prefer open discussion and communication with faculty. They want an active role in the process	Confirmed
Requirements	Chambers, 1998; McGrath, 2005 Students claim that requirements drive their clinical experience. Manague, et al., 2001; Henzi, et al., 2007 Students want to provide comprehensive care and do what is best for their patients regardless of requirements	Refuted

□

APPENDIX A
INFORMED CONSENT

Protocol Title: Qualitative description of Clinical Dental Teaching

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study: The purpose of this study is to identify and describe the faculty-student-patient interactions that characterize communications in the dental education clinic setting.

What you will be asked to do in the study: You will not be asked to do anything specific. Your interactions/conversations with the dental student and faculty member will be observed. You and the student will be asked a few questions about your treatment at the end of the appointment.

Time required: 1–1.5 hour. This will be during a regularly scheduled dental appointment and will not affect the length of the appointment.

Risks and benefits: There are no risks or benefits. The results will help us to better educate future dental students.

Compensation: You will not be paid for participation.

Confidentiality: Your identity will be kept confidential to the extent provided by law. Your information will be assigned a code number. Your name and chart number will not be recorded on any of the observation information. Your name will not be used in any reports.

Voluntary participation: Your participation in this study is completely voluntary. There is no penalty for not participating. This will have no effect on your status as a dental patient or your treatment.

Right to withdraw from the study: You have the right to withdraw from the study at any time without consequence.

Whom to contact if you have questions about the study:

Dr Nicholas J. Grimaudo, Associate Professor, University of Florida, College of Dentistry, 352-392-0348, grimaudo@dental.ufl.edu.

Whom to contact about your rights as a research participant in the study:

UFIRB Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; 352-392-0433.

Agreement:

I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Participant (Patient): _____ Date: _____

Participant(Student): _____ Date: _____

Principal Investigator: _____ Date: _____

APPENDIX B
PATIENT INTERVIEW PROTOCOL

- 1) What dental work was done today?
- 2) How did the faculty interact with you?
- 3) How did the student interact with you?
- 4) How did the faculty and student interact with each other?
- 5) Who explained the treatment to you?
- 6) What further dental treatment do you need?
- 7) What are your main reasons for coming to the dental college?
- 8) What could be done to make your care better?
- 9) Please include any additional feelings/responses concerning today's appointment?

APPENDIX C
STUDENT INTERVIEW PROTOCOL

- 1) What procedure(s) were you doing today?
- 2) How do you feel the faculty interacted with your patient?
- 3) How do you feel the faculty interacted with you?
- 4) What did you learn today?
- 5) Describe how the faculty fostered (facilitated) your learning?
- 6) What could the faculty have done to make your learning experience better?
- 7) What is most important to you about Clinical teaching?
- 8) Please include any additional feelings/responses concerning today's clinical interaction?

APPENDIX D
CLINIC OBSERVATION SCHEDULE GRID

Monday	Tuesday	Wednesday	Thursday	Friday
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Month 1

Operative	OHMC	Prosothodontics		Periodontics
Periodontics	Operative	OHMC		Prosthodontics
OHMC	Prosthodontic	Periodontics		Operative
Prosthodontics	Periodontics	Operative		OHMC

Month 2

Periodontics	Prosthodontics	OHMC		Operative
Operative	OHMC	Prosthodontics		Periodontics
OHMC	Prosthodontics	Operative	Periodontics	
Prosthodontics	OHMC	Periodontics		Operative

Month 3

Operative	OHMC	Prosthodontics		Periodontics
Periodontics	Operative	OHMC		Prosthodontics
OHMC	Prosthodontics	Periodontics		Operative
Prosthodontics	Periodontics	Operative		OHMC

Month 4

Periodontics	Prosthodontics	OHMC		Operative
Operative	OHMC	Prosthodontics		Periodontics
OHMC	Prosthodontics	Operative	Periodontics	
Prosthodontics	OHMC	Periodontics		Operative

Month 5

Operative	OHMC	Prosthodontics		Periodontics
Periodontics	Operative	OHMC		Prosthodontics
OHMC	Prosthodontics	Periodontics		Operative
Prosthodontics	Periodontics	Operative		OHMC

Month 6

Periodontics	Prosthodontics	OHMC		Operative
Operative	OHMC	Prosthodontics		Periodontics
OHMC	Prosothodontics	Operative	Periodontics	
Prosthodontics	OHMC	Periodontics		Operative

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BIOGRAPHICAL SKETCH

Nicholas J. Grimaudo grew up in Oceanside, New York. He graduated in 1976 from Adelphi University with a Bachelor of Science in biology and received his DMD from the University of Florida, College of Dentistry in 1980. Nicholas was in private practice in Inverness, Florida from 1980 to 1992. He returned to the University of Florida to earn a master's degree in materials science and engineering in 1992 and a master's degree in oral biology from the College of Medicine in 1995. Nicholas became an assistant professor in the Department of Biomaterials at the College of Dentistry in 1995. He is currently an associate professor in the Department of Operative Dentistry.