STUDENT PERCEPTIONS OF STUDENT-FACULTY INTERACTIONS AND ACADEMIC ACHIEVEMENT IN UNDERGRADUATE DENTAL STUDENTS AT PRINCE OF SONGKLA UNIVERSITY

By

DUANGPORN KERDPON

Doctor of Dental Surgery
Prince of Songkla University
Songkla, Thailand
1989

Master of Dental Science
University of Melbourne
Melbourne, Australia
1995

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
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the Degree of
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Dissertation Approved:

Dr. Adrienne Hyle

Dissertation Adviser

Dr. Edward Harris

Dr. Kenneth Stern

Dr. Kathryn Castle

Dr. A. Gordon Emslie

Dean of the Graduate College

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CHAPTER I

DESIGN OF THE STUDY

The faculty of Dentistry at Prince of Songkla University (PSU) is the only dental faculty in southern Thailand. The first 10 dental students were admitted in 1983 and the number of admissions increased by 10 for each following year until it reached 50 in 1987. The target number of dental students for each academic year was maintained at 50 but was increased to 60 in the academic year of 2005 (it remains at this number to the present). From 1983 to 2007, 25 groups of students were admitted into the dental school. Nineteen classes have graduated during this time period.

The undergraduate dental curriculum is a six-year program, like other dental schools' programs in Thailand. The basic sciences level is presented in years one and two, the preclinical level is in years three and four, and the clinical level is in years five and six. Typically, more female than male students enroll each year. In the academic year 2007, there were 303 students, including 106 males and 197 females (see Table 1). There are 104 faculty positions in the dental school, which includes 34 males and 66 females. The rest of the eight positions are vacant. The faculty are located in six departments namely Conservative Dentistry, Oral Biology, Oral Surgery, Preventive Dentistry, Prosthodontic Dentistry, and Stomatology as well as the Hospital unit.

Table 1

Number of Prince of Songkla University Dental Students in Academic Year 2007

Year	Male (N)	Female (N)	Male: Female	Total
1	18	41	1:2.3	59
2	12	36	1:3.0	48
3	14	39	1:2.8	53
4	26	31	1:1.2	57
5	17	28	1:1.6	45
6	19	22	1:1.2	41
Total	106	197	1:1.9	303

Adapted from the Faculty of Dentistry, Prince of Songkla University. (2007a).

The admission scores of students entering into the dental school at PSU, which is referred to as the Faculty of Dentistry, are high. The students' scores rank the second highest among health science faculties (schools) at PSU following that of the Faculty of Medicine (see Table 2). The ratio of students who apply and who are accepted into the faculty is also high; they range from approximately 8.5:1 to 24.8:1 (see Table 3). Only applicants with high admission scores are accepted; this is done to screen the applicants so only students with good academic backgrounds are admitted. The selection process assists the Dental Faculty administrators to identify students who are most likely to succeed in the program; therefore, academic achievement by the student body can be expected (Heintze, Radeborg, Bengtsson, & Stenlåås, 2004; Sandow, Jones, Peek, Courts, & Watson, 2002). Other researchers have used student graduation rates and performance as criteria for academic achievement (ADEA Commission on Change and Innovation in Dental Education, 2006; Anaya, 2001; Kuh, Kinzie, Schuh, & Whitt, 2005a; Webster, 2001). In this study, high/low Grade Point Average (GPA) serves as the criterion for academic achievement.

Table 2

Admission Scores of Health Science Faculties for Students of Prince of Songkla University in the Academic Year 2002-2006

Faculties	2002 Scores		2003 Scores		2004 Scores		2005 Scores		2006 Scores	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Medicine[a]	573.20	542.97	559.13	526.67	559.24	479.37	566.79	513.42	N/A	N/A
Dentistry	540.49	520.40	527.64	511.55	508.86	487.92	529.04	500.37	7576.10	7044.40
Pharmacy (5 years)	510.68	453.58	493.79	440.51	483.76	433.69	525.37	444.89	7071.30	6579.05
Pharmacy (6 years)	509.02	452.04	484.53	444.49	489.39	438.34	500.17	460.78	7003.95	6405.55
Nurse	425.80	347.46	416.88	321.22	421.20	327.74	435.67	341.84	6974.10	5315.05
Thai Medicine[b]	N/A	N/A	N/A	N/A	N/A	N/A	441.92	322.20	6420.25	5211.55

Note. Total admission score for academic years 2002-2005 is 777.78. Total admission score for the academic year 2006 is 10000.00

[a]Medicine faculties in Thailand have arranged for their own admission since academic year 2006

[b]Thai Medicine faculty have admitted students since academic year 2005

Adapted from Admission Department, Commission on Higher Education, Ministry of Education Thailand (2002, 2003, 2004, 2005, 2006).

Table 3

Number of Students Applied and Expected Student Number Admitted to Health Sciences Faculties of Prince of Songkla University in the Academic Year 2002-2006

Faculties	2002		2003		2004		2005		2006	
	App/Exp	Ratio	App/Exp	Ratio	App/Exp	Ratio	App/Exp	Ratio	App/Exp	Ratio
Medicine[a]	985/130	7.58	659/130	5.07	653/130	5.02	859/180	4.77	N/A	N/A
Dentistry	487/50	9.74	468/50	9.36	426/50	8.52	514/60	8.57	1488/60	24.80
Pharmacy (5 yr)	848/120	7.07	877/120	7.31	1088/120	9.07	1246/130	9.58	3934/130	30.26
Pharmacy (6 yr)	360/30	12.00	346/30	11.53	301/30	10.03	339/30	11.30	872/30	29.07
Nurse	1858/120	15.48	846/120	7.05	1068/120	8.90	1172/200	5.86	4257/140	30.41
Thai Medicine	N/A	N/A	N/A	N/A	N/A	N/A	430/49	8.78	693/40	17.33

Note. App = Apply, Exp = Expect, yr = years.

[a]Medicine faculties in Thailand have arranged for their own admission since academic year 2006

[b]Faculty of Thai Medicine have admitted students since academic year 2005.

Adapted from Admission Department, Prince of Songkla University. (2002, 2003, 2004, 2005, 2006).

Dental schools (worldwide) experience unexpected academic underperformances in terms of students' graduation rates and student performance (professional competency). These unexpected academic outcomes occur even though intense screenings have been completed to identify the students who are most likely to succeed (Lynch, McConnell, & Hannigan, 2006; Pöhlmann, Jonas, Ruf, & Herzer, 2005). The impact of the university's selection process may appear inconsistent or unclear in terms of the students' graduation rates and their professional competency. (Lievans & Coetsier, 2002; Röding, 2001; Pascarella & Terenzini, 2005). The link between rigorous selection processes with graduation rates and students' performances may be better predicted by the variations that exist within the institution; for example, classroom experiences as well as experiences outside the classroom may have a direct and powerful effect on individual students' successes. These factors may have more influence on achievement than institutional factors (Kuh, 2001, 2003; Pascarella, 2001; Pascarella & Terenzini, 2005).

Regardless of the factors that are affecting achievement, PSU students are having difficulty graduating and are exhibiting substandard performance levels. The graduation rate of the dental students is not as good as expected although there is no consistency in completion rates. In fact, the recent trend at PSU shows a continuing decline. Table 4 shows the number of students registered in each academic year, the number of graduates in the expected year (according to the six-year curriculum), and the graduation rates. The reasons for not graduating during the expected timeframe are also presented.

Table 4

Number of Prince of Songkla University (PSU) Dental Students Registered in the Dental School for the Academic Years 1996-2007 and Number of Graduates According to the Six Year Curriculum

Academic year	Register (N)	Graduate (N)	Graduation rate (%)	Resign (N)[a]	Repeat (N)	B.Sc. (N)	Transfer (N)	Retire (N)	Others (N)
1996	48	35	72.92	1	7	5	-	-	-
1997	47	41	87.23	-	3	2	-	1	-
1998	49	45	91.83	2	-	-	1	1	
1999	48	48	100.00	-	-	-	-	-	-
2000	49	47	95.92	-	2	-	-	-	-
2001	49	35	71.43	9	4	-	-	-	1[b]
2002	49	-	-	9	1	-	-	-	-
2003	52	-	-	5	2	1	-	-	-
2004	55	-	-	-	-	1	-	-	-
2005	63	-	-	3	-	-	-	-	-
2006	49	-	-	1	-	-	-	-	-
2007	59	-	-	-	-	-	-	-	-

[a]Resign from Faculty of Dentistry, PSU after being accepted into the Faculties of Medicine in the following year of admission.

[b]The student was murdered.

Adapted from the Faculty of Dentistry, Prince of Songkla University. (2007b).

The students' unsuccessful academic outcomes led to a concern for cost-effectiveness on behalf of the students, their families, and the dental school. Students and their parents have to spend more money to finish the students' plan of study if they must repeat a course or an academic year. Students also lose their opportunities to gain income if they graduate late. In the case of students who did not remain in the program, they lose their investment in the dental school in terms of finance, time, and emotion. In most cases of academic failure, the latter result is expected. The dental school also loses if the number of students in each class is less than the expected number because fixed costs remain the same while the school receives less income from students' registrations.

At the dental school at PSU, the patterns indicating a lack of student academic success are varied. A number of students repeat a year of study. For example, those students who fail the level two criteria are not allowed to pass to year three. Furthermore, some students withdraw from courses or school as well as transfer to other academic departments in nearly every year of the six-year Dentistry plan of study. This occurred within the student body for all years except those who entered in the academic year 1999 (see Table 4). Students who were ineligible for graduation in the Doctor of Dental Surgery (DDS) program created a problem for the faculty. To meet the needs of the ineligible students, a Bachelor of Sciences (BS) degree was established for those who pass the fourth year but cannot graduate in the six-year program.

Pascarella and Terenzini (1998) suggest that studying "conditional" effects impacting academic achievement is meaningful since most existing knowledge on the affect of college on students may be based on samples that may not represent all key student characteristics. When thinking of dental education in Thailand, it must be

remembered that most of the literature on student-faculty interactions and how these interactions affect students was collected in western countries It may be harder to explain student-faculty interaction phenomena within a Thai academic institution because the research data under consideration represents a different set of racial, ethnic, cultural, and socioeconomic criteria (Pau et al., 2007; Rajab, 2001). Therefore, an institutional study of student perceptions of student-faculty interaction at the dental faculty at PSU may provide direct insight into the impact of the interactions on students' academic success in the Thai context.

Problem Statement

Dental schools carefully screen for academic success; they admit only those who are "quality students." Most dental schools are inundated with applications and traditionally use a high level of academic achievement for their selection process (Duguid & Drummond, 2000; Gaengler et al, 2002; Newton, Buck, Thorogood, & Skelly, 2003). Interviews, intelligence quotient tests, spatial ability, manual dexterity, empathy, and social competence are also included in the selection criteria for some dental schools. These screening techniques are administered to help ensure academic achievement in the context of a demanding dental program (Heintze, Radeborg, Bengtsson, & Stenlåås, 2004; Röding & Nordenram, 2005). The variations in the selection methods reflect the philosophy and the structure of the educational system of the individual dental schools (Gaengler et al, 2002). Students who pass this screening process exhibit an improvement in their self-concepts because it affirms their academic excellence and their ability to make future scholarly achievements (Röding & Nordenram, 2005). Approximately two thirds of the dental students who were accepted indicated dentistry was their first career choice (Coombs, 1976; Hallissey,

Hannigan, & Ray, 2000). Acceptance by a dental school is generally a cause for celebration for students (Wexler, 1978).

Despite this intense screening process, some students are not successful. Regardless of different selection methods, some dental students fail to reach the academic achievement standards (Drummond & Duguid, 1997; Lynch et al., 2006). A study of the fourth- and fifth-year dental students from three universities in Germany reported that 17 percent of the students complained about a severe lack of accomplishment in the clinical setting (Pöhlmann et al., 2005). And, Sanders and Lushington (2002) found that *faculty and administration* is predictive of poor student performance in terms of clinical competency and contextual understanding. Little additional research has been found to explain this phenomenon.

Low academic achievement, despite intense admission screening, can be explained best by the lack of what Pascarella and Terenzini (2005) refer to as the essential component of academic success - student-faculty interaction. They emphasize that this component influences intellectual consequences, attitudes, values, aspirations, and various psychosocial outcomes. Interactions with faculty also foster "interpersonal skills, gains in general maturity and personal development" (Pascarella & Terenzini, 2005, p. 613), together with problem-solving and decision-making skills, and student satisfaction (Astin, 1993; Frankin, 1995; Frost, 1991; Thomas & Galambos, 2004).

Student input is generally accepted as a key component in studying educational programs and the collection and review of student perceptions are recognized as meaningful ways to gain insight into student-faculty interactions in the dental school (Henzi, Davis, Jasinevicius, & Hendricson, 2007). Focusing on students may help other stakeholders, including administrators and faculty, understand student

perceptions that best promote student-faculty interactions to foster student achievement.

Purpose of the Study

Through the lens of Pascarella and Terenzini's (2005) general casual model for assessing the effects of differential environments on students and cognitive development (p.57), the study examined student perceptions of student-faculty interactions and their relationship to academic achievement in a dental school. The following objectives served as a guide for the study:

1. describe all forms of student-faculty interactions,
2. describe the relationship of these different forms of student-faculty interactions to academic achievement,
3. describe other realities about student-faculty interactions and their consequences, and
4. assess the usefulness of Pascarella and Terenzini's model (2005) for explaining the phenomena under review.

Theoretical Framework

Pascarella (1985) suggests a general casual model for assessing the effects of a differential college environment on student learning and cognitive development. He indicates that student development "is a function of the direct and indirect effects of five major sets of variables" (Pascarella & Terenzini, 2005, p. 56-57). The variables include student background and precollege experiences/opportunities, the structure and organizational features of the higher education institution, the college or university's environment, the frequency and content of students' interactions with the major socializing agents on campus (the faculty and peers), and the quality of students' efforts. In their last volume of *How college affects students: A third decade*

of research, Pascarella and Terenzini (2005) suggest that Pascarella's model, "although initially designed to explain changes in students' learning and cognitive development, it is equally appropriate for the study of other student outcomes" (Pascarella & Terenzini, 2005, p. 57).

Numerous studies support the philosophy that student-faculty interactions are an important component of a general casual model and have a noted influence on student learning (Kuh & Hu, 2001a; Pascarella, 1980; Pascarella & Terenzini, 1991; Pascarella & Terenzini, 2005). Frequent interactions, close relationships between faculty members and students, faculty concern for student development and students' perceptions of the ways faculty "care about them and about teaching" (Pascarella & Terenzini, 2005, p. 600) are key components of the interaction process that produce positive outcomes on a variety of study dimensions and measurements. Student-faculty interactions have significant positive correlations with a variety of academic attainment outcome including college GPA, degree attainment, graduating with honors, and admission to graduate or professional school (Astin, 1993; Pascarella & Terenzini, 2005).

Student-faculty interaction is the strongest variable associated with college student satisfaction (Astin, 1977; Thomas & Galambos, 2004). Wilson and Gaff (1975) report that faculty who have more contact with students outside the classroom have the "most impact" on the students; those faculty are also described as the most "outstanding" by the students. Replicated national studies also confirmed these findings (Johnson, 1997; Shields, 1994).

Both formal (inside the classroom) and informal (outside the classroom) interactions with the faculty facilitate student learning (Kuh & Hu, 2001a; Pascarella & Terenzini, 2005). However, for the latter, the focus of the interaction may have

more impact on student learning than the frequency of these simple social exchanges. Student-faculty interactions that have an emphasis on academics, or academic-related issues, may be the most important interactions that facilitate student learning (Cabrera, Colbeck, & Terenzini, 2001; Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999; Volkwein, 1991). There is evidence suggesting that informal student-faculty interactions tend to reinforce the intellectual concepts of formal academic experience (Frankin, 1995; Kim, 1996), development of autonomy and independence (Pascarella & Terenzini, 2005), promotion of students' self-value and sense of belonging (Cox & Orehovec, 2007) and increase of academic efforts (Thompson, 2001).

Procedures

To explore the nature of student-faculty interactions, student perceptions of those interactions and their relationships to academic achievement in the dental school, an explanatory qualitative case study was employed. Case study methodology is relevant because it is "the preferred strategy when 'how' or 'why' questions are being posted, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin, 2003, p.1). A qualitative approach is specifically appropriate because it fits with the type of research questions about "people's experiences; inquiry into the meanings people make of their experiences; studying a person in the context of her or his social/interpersonal environment" (Patton, 2002, p. 33). Multiple data collection methods including documentation, participant observations and focus group interviews to triangulate the data (Patton, 2002; Yin, 2003) support this qualitative approach.

The Researcher

Qualitative study emphasizes the researcher familiarity and *insider* status within the studied context (Creswell, 2007; Denzin & Lincoln, 2003; Patton, 2002). The condition can be developed by *prolonged engagement* (Erlandson, Harris, Skipper, & Allen, 1993; Lincoln & Guba, 1985). It supports the investigator to get deep understanding of the situation, and to detect and reduce the investigator's and study groups' distortion. *Persistent observation* is essential for identifying and focusing on contextual factors relevant to the problem (Erlandson et al., 1993; Lincoln & Guba, 1985). Both *prolonged engagement* and *persistent observation* enhance credible findings and interpretations. Lincoln and Guba (1985) conclude that if the former provide scope, the latter provide depth.

I would claim that I have both *prolonged engagement* and *persistent observation*. From my 19 years of working experience as a member of the faculty of dentistry in the dental school, I have seen the research problem and devised and then designed the study based on the relevant contextual factors. Long term engagement in the institution served as a good background to recognize any intended or unintended distortions of the respondents, and helped me to decide what to do with misinformation (Lincoln & Guba, 1985).

The literature review of the theory and relevant issues not only provided me with a good foundation for the study issue (Merriam, 1998) but also assisted me in justifying the research problems (Creswell, 2008). Yin (2003) suggests an important required skill for assessing a case study is that "an investigator must *have a firm grasp on the issues being studied*" (p. 59). This specific case study required an investigator who has both backgrounds in dentistry and student-faculty relationships. Thus, I was the investigator of the project and responsible for the analysis and interpretation of the

data, along with *member checking* used to minimize threats to credibility (Lincoln & Guba, 1985). *Audit trails* were conducted for an independent assessment of *dependability* to enhance the *trustworthiness* of the study.

As a researcher, it is impossible to avoid biases. I have already exhibited a bias by choosing to study the topic of student-faculty interaction. However, I tried to avoid or minimize issues of personal bias through systematic investigation. Students were asked to view me as a researcher (details in Chapter III under heading *Procedures*.). I presented only the purpose of the study to the student participants, and I did not convey any research expectations to them. Analysis by coding and identifying themes was performed and the data emerged from the collected information. A report of the findings was drafted once the main themes had been identified.

I teach only lectures for year four students. Furthermore, I oversee year five and six students during their clinical courses. I also supervise a seminar course for year six students. None of the participants, who were invited based on the selection criteria described, had a pre-determined set of interactions with me. In addition, students were not forced to attend seminar groups in which I was an advisor. I only have academic contact with the year four through six students. I did not know the year one through three students before they were invited to participate in the study.

Participants

Two sets of participants were needed in this study: students and stakeholders. Four students from each class (year 1-6) in academic year 2008 of the Dental Faculty, Prince of Songkla University, were invited to participate in the study. There were males and females in each group. They were stratified according to years 1-6 in the dental curriculum, gender, and good/poor GPA.

Why focus on students? A great deal of literature on student development suggests that the most likely means to enhance the possibility of student success in their higher education is to focus on the student (Kuh et al., 2005a; Pascarella & Terenzini, 2005). The researchers suggest "what students do during college generally matters more to what they learn and whether they persist to graduation than who they are or even where they go to college" (Kuh et al., 2005a, p. 3-4).

Studying students' self-reports of engagement and behaviors is an important and necessary step for assessing the quality of undergraduate education and faculty practices that influence student learning and development (Umbach & Wawrzynski, 2005). It has been widely employed for this purpose in most of the studies. In addition, results of the studies about student-faculty interactions are largely derived from the type of study: focus on student perception (Cotten & Wilson, 2006; Pascarella & Terenzini, 2005).

Care was taken to protect the confidentiality of all participants in this study. I invited students to participate in the focus group individually from a group of students under the study criteria. Thus, it was not known who were selected from the list. I alone assigned coding for students who participated. Unobtrusive observations reported only number, frequency and activities of students and faculty who met by chance in the dental library, PSU. Details of confidentiality were discussed in all groups.

Students and faculty who entered the dental library at PSU during the observation periods were observed. They were casually met and their interactions were recorded in terms of number and categories of interactions. The interactions are common student-faculty interactions in the library that can occur with any students and faculty, thus their confidentiality is protected.

Focusing on student perceptions of student-faculty interactions gives more insight into student experiences. Furthermore, these perceptions provide a representation of the quality of the interactions that exist within the higher institution. They are also useful guidelines to facilitate future teaching strategies/curriculums that would address the perceived needs of students, which may enhance students' achievements. To achieve the goal, a detailed summary of students' perceived needs was established that did not include the comments/opinions of the faculty or administrators; this constituted the first step in the research process. The second step was to assess the views and experiences of the other stakeholders such as administrators and faculty. Steps one and two provided the information needed to reshape classroom and non-classroom experiences by assimilating the perceived needs of the students, the administrators, and the faculty.

Data Collection

Creswell (2007) and Yin (2003) suggest using multiple sources of data for case studies. Unobtrusive observations, documentation and focus group interviews were the collection strategies for the study.

Unobtrusive Informal Student-Faculty Observations. Student-faculty interactions were described with careful observation of visual detail and setting influence on the interactions (Creswell, 2008). Because I am also an instructor in the school, my role was participant observer and the interaction between the students and myself were also recorded.

Documentation. Laboratory guidelines booklets and clinical instruction booklets of every subject were collected as evidence of student-faculty relationships or interactions. Letters introducing the dissertation and the need to collect laboratory

guidelines booklets and clinical instruction booklets as part of the study were sent to relevant persons.

Pre-Ethnographic Focus Group Interview. Because focus group interviews require considerable skill to handle a dynamic group process (Patton, 2002), a pre-ethnographic interview was recommended to refine the interview questions and processes (Creswell, 2007). The pre-ethnographic interview was conducted with a group of non-dentistry students.

Focus Group Interviews. Focus group interviews provide high-quality data in qualitative research in which the check and balance of the group process can reduce false or extreme views. Moreover, the group process helps quickly assess the opinions in common or the diversity of opinions among participants (Patton, 2002).

Three focus group interviews were performed. The students signed informed consent documents and group agreements for maintaining confidentiality prior to the focus group processes. Member checking was performed at the end of each focus group process and by sending a document to the participants after the transcription process.

Analysis

The overall analytical technique used was *pattern matching* (Trochim, 1989). *"Pattern matching* is a situation where several pieces of information from the same case may be related to some *theoretical proposition* [italics added]" (Berg, 2009, p. 327). The *theoretical pattern*, which is the expected interrelationship patterns of the *theoretical prepositions* (Yin, 2003), served as the base line for data matching in the next step. *Pattern matching* was used to compare the interrelationships of the empirical finding patterns to the theoretical patterns. Interpretation followed the result of the pattern matching. If the patterns corresponded, it would strengthen the

credibility of the study (Trochim, 1989). If not, this would imply alternative findings related to Pascarella and Terenzini's (2005) perspectives.

Significance of the Study

The results of the study provided insight into student perceptions of student-faculty interactions of the dental school and their effect. Also, for the first time the Thai dental school context was qualitatively documented. Student-faculty interactions and their consequences during the students' six years in the dental school were revealed. According to the literature review, this study was the first that provided direct investigation into the relationship between undergraduate dental students and faculty members. The significance of the study was defined in terms of its affect on theory, practice and research.

Theory

The information gained has the opportunity to add more understanding into Pascarella and Terenzini's (2005) perspectives of student-faculty interactions, particularly in undergraduate dental students. The study tested the usefulness of western theory in a Thai context. If it is deemed by others to have worked successfully, the theory may be employed in multicultural settings which in turn supplement the existing theory.

Practice

Apart from the practical point of employing the theory in diverse global settings, the study provided information that can be applied in alternative ways. The information about the relationship between academic success and student-faulty interactions can be incorporated into the teaching strategy for dental students at PSU and in other dental schools in Thailand. Provided are baseline data for the dental school for a future comparative study. It can be a guide for further research using

other strategic collection methods to gain a more holistic view of the issue. The administrators, instructors, and students will also benefit from the findings through the provision of information for them to revise current policies at the dental school, which will improve the teaching and the development of students.

Research

A single explanatory case study can contribute a significant knowledge base to research (Yin, 2003). Thai educational research, particularly higher education and dentistry, benefits from this study. The case is a study of a typical dental school in Thailand with a six year curriculum. Generally, studies in dental education and dentistry use mostly quantitative methods. Thus, this study introduced both knowledge base and qualitative methods to the disciplines which would apply in other countries as well. More information from qualitative studies was added to previously constructed quantitative based knowledge. Thus the disciplines benefit from the advantages of both types of research.

The study also tested the usefulness of the focus group interview method in a Thai context, particularly in dentistry. The method, developed near the commencing of World War II, has long been used in western countries (Merton, 1987; Morgan, 1988). Using this technique in Thailand requires a transition across different cultures. If it is deemed to have worked well, Thai dental researchers have the potential to benefit from this method.

Summary

The purpose of this study was to explore student-faculty interactions and their relationship to academic success. Student-faculty informal observations, documentation and focus group interviews were the data collection strategies used in the study. Analysis was used to systematically determine themes.

Reporting

Chapter 2 includes a detailed review of the literature. Student-faculty interactions and their affect on undergraduate dental student academic success and student-faculty interactions in dental schools are major topics of the review. Chapter 3 comprises a presentation of methods in greater detail. Data are presented in Chapter 4. Chapter 5 presents the analysis and interpretation through the lens of Pascarella and Terenzini (2005). Chapter 6 presents the conclusion according to the findings of each research question with regard to academic success and the reduction of stress in dental students.

CHAPTER II

REVIEW OF LITERATURE

Student-faculty interactions are essential components that influence student learning (Pascarella & Terenzini, 2005). This chapter reviews Pascarella and Terenzini's perspectives, relevant literature on student-faculty interactions including student-faculty interactions in dental schools, and the affect of interactions on dental students' academic achievements and developments. The review also includes dental school admission processes as well as academic achievement of dental students.

Pascarella and Terenzini's Perspectives

Interactions with faculty are an essential principle among five environments listed by Pascarella (1985) that represent a general casual model to explain college and university students' outcomes through the direct and indirect effects of these five environments (Pascarella & Terenzini, 2005). The five environments are student background and precollege experiences/opportunities, the structure and organizational features of the higher education institution, the college or university's environment, the frequency and content of students' interactions with the major socializing agents on campus (the faculty and peers), and the quality of students' efforts (Pascarella & Terenzini, 2005, p. 56-57). Research has shown that this model is useful for explaining "changes in students' learning and cognitive development" as well as studying other student outcomes (Pascarella & Terenzini, 2005, p. 57).

This conceptual model has been widely used for multi-institutional studies of colleges and universities' impacts on students (Cox & Orehovec, 2007; Kuh & Hu,

1999; Kuh & Hu, 2001a). Student-faculty relationships can have positive outcomes on a variety of study aspects and measurements such as general intellectual development, critical thinking skills, analytical competencies, persistence, and degree completion, independently of other environment characteristics. The student-faculty relationships that contribute to the outcomes stress an emphasis on the key components of the interaction (Pascarella & Terenzini, 2005). The key components are frequent interactions, close relationships between faculty and students, faculty concern for student growth and development, faculty accessibility to students, and students' perceptions "that faculty members care about them and about teaching" (p. 600).

Student-Faculty Interactions

"There is no substitute for spending time interacting with students, whether face to face or electronically" (Kuh, Kinzie, Schuh, Whitt, & Associates, 2005b, p. 80).

> Students learn firsthand to think about and solve practical problems by interacting with faculty members inside and outside of classrooms. Through interactions with students, faculty become role models, mentors, and guides for continuous, lifelong learning. (Kuh, Kinzie, Schuh, & Whitt, 2005a, p. 51)

Research suggests that student-faculty interactions play an important role in determining a variety of outcomes including learning, cognitive and principled moral reasoning development. Student-faculty interactions also promote social self confidence, academic and social integration, leadership ability, self-esteem, problem solving and decision making skills, occupational values, degree aspiration, and student persistence (Astin 1977; Astin 1993; Cox & Orehovec, 2007; Frankin, 1995; Frost, 1991; Pascarella & Terenzini, 2005).

Frost's (1991) research focuses on freshman women and reports a significant relationship between frequency of faculty-student interaction for academic advising

and cognitive outcomes as a measure by critical thinking ability. Using national data in a longitudinal study of freshman students in 1986 as well as a follow-up survey in 1990, Frankin (1995) found that students perceive *student interactions with faculty* to be one of the prominent variables that influences cognitive development.

Astin (1993) reports that student-faculty interactions increase students' degree aspirations. The student-faculty interaction variables of his study were "hours per week spent talking with faculty outside of class, working on professors' research projects, and having class papers critiqued by instructors" (p. 267). Avalos (1996) suggests frequency and quality of student-faculty interactions in terms of out-of-class informal conversations (e.g., working with faculty on a research project and being a guest in a faculty member's house) can have a positive correlation with post-college occupational situations. The correlation persists even when family background, pre-college occupational situation and grades are controlled.

Student-faculty interactions not only promote student learning and development but also provide support for students who engage in negative conditions like marginalized groups such as minorities, women, and gay/lesbian students who experience prejudice and discrimination in classroom and non-classroom environments (Cress, 2008). Findings suggest that strong student-faculty relationships can significantly reduce the impact of a negative campus climate. In the study, student-faculty interactions were defined as "(1) respected (treated like a peer); (2) intellectually challenged; (3) given honest feedback about abilities; (4) discussed coursework; (5) given advice about educational program; (6) provided emotional support/development; (7) encouraged for graduate/professional school; and (8) given letter of recommendation" (p.104).

Research has also shown that both formal and informal interactions enhance students' outcomes. Pascarella and Terenzini (2005), in their meta-analyses of the impact of college on students, indicate that the frequency of non-classroom interactions may not be as important as substantive academic focus. Informal interactions extend and reinforce students' academic experiences, which in turn, have a consistent positive impact on knowledge and academic skill development (Kuh & Hu, 1999; Kuh & Hu, 2001a, Pascarella & Terenzini, 1991).

Cox and Orehovec (2007) suggest every type of interaction can be meaningful for students although not all types of non-classroom interactions result in a positive impact on student outcomes. Personal contacts may not lead to direct student development or persistence but it may serve as a step to further substantial interactions at a later date. Moreover, since faculty members are often regarded as representatives of the institution, students' personal interactions with faculty help the students feel valuable (Cox & Orehovec, 2007). In addition, students' perceptions of faculty as being caring, accessible, and interested in teaching increases students' persistence and degree completion (Jaeger, 2008; McArthur, 2005; Pascarella, Seifert, & Whitt, 2008).

Student-faculty interaction is the strongest variable associated with college student satisfaction (Astin, 1977, 1993). Using student-opinion data, Thomas and Galambos (2004) found that students' satisfaction levels have a strong relationship to classroom interaction with an emphasis on "faculty-preparedness." However, they report no support of the link between "the out-of class availability of instructors" and students' satisfaction. Study findings also suggest a sense of belonging can also play a significant role in students' satisfaction levels. Wilson and Gaff (1975) report that faculty who have more contact with students outside the classroom have the "most

impact" on the students; the faculty are also described as the most "outstanding" by the students. In addition, faculty admit "that advising students is intrinsically rewarding" (Kuh et al., 2005a, p. 214).

It should be emphasized that two important themes arose among new pedagogies (in the third decade of research on how college affects students): "active student engagement in learning and learning in collaboration with faculty and peers" (Pascarella & Terenzini, 2005, p. 602). The faculty's role in the college careers of students studying dentistry is a dominant factor in their success. This is because students' successes rely on both academic knowledge and clinical and laboratory skills; these learning experiences require close or *face-to-face* interaction between students and faculty. Faculty-student interactions may help both alleviate and aggravate stress in dental students during the process of producing *high quality dentists.*

Kuh and Hu (1999) reveal there are two student-faculty interaction items that have a significant positive outcome on senior students' self-reports: they are *talked with a faculty member* and *worked with faculty on a research project*. These interactions have a direct positive effect on students' perceptions of student learning and development.

The College Student Experiences Questionnaire (CSEQ) is a student self-report instrument that uses frequency to assess various aspects of "the quality of student experiences, perceptions of the campus environment, and progress toward important educational goals" (Kuh, 2008, para 1). It has been widely used by several hundred higher education institutions since its development in 1983 (Pace, 1984; Koljatic, & Kuh, 2001). The faculty-student interaction indicators of the CSEQ consist of the 10 items listed (Pace, & Kuh, 1998, p.4):

- Talk with your instructor about information related to a course you were taking (grades, make-up work, assignments, etc.)
- Discussed your academic program or course selection with a faculty member
- Discussed ideas for a term paper or other class project with a faculty member
- Discussed your career plans and ambitions with a faculty member
- Worked harder as a result of feedback from an instructor
- Socialized with a faculty member outside of class (had a snack or soft drink, etc.)
- Participated with other students in a discussion with one or more faculty members outside of class
- Asked your instructor for comments and criticisms about your academic performance
- Worked harder than you thought you could to meet an instructor's expectations and standards
- Worked with a faculty member on a research project

The National Survey of Student Engagement (NSSE) survey is designed to assess the extent of student engagement in effective educational practices which in turn represents the quality of undergraduate education (Kuh, 2001). The five benchmarks of effective educational practices consist of levels of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences and supportive campus environments. Some of the student-faculty items overlapped with those of CSEQ. The NSSE student-faculty items include (NSSE, 2007, p. 1-2):

- Used e-mail to communicate with an instructor
- Discussed grades or assignments with an instructor
- Talked about career plans with a faculty member or advisor
- Discussed ideas from your reading or classes with faculty members outside of class
- Received prompt written or oral feedback from faculty on your academic performance
- Worked harder than you thought you could to meet an instructor's standards or expectations
- Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)

The results from the NSSE database are quite interesting (Kuh, 2001). Most students report positive views of their supportive and responsive campuses. This may be the result of successful welcoming and an affirming environment being created by the institutes. However, the frequency of student-faculty interaction is quite low. First-year students have an average of occasionally (once or twice a month) meeting with their teachers, whereas seniors at doctoral-extensive universities report frequency less than the first group. However, the link between frequency of student-faculty interaction and the student outcomes is not available from the study.

A recent study uses NSSE, cognitive and performance tests, and Grade Point Average (GPA) as measurement instruments (Carini, Kuh, & Kliein, 2008). Carini et al. (2008) report links of student engagement including quality of student-faculty relationship with critical thinking and grades. Findings from the study suggest that the lowest-ability students gain more from quality of relationships and student-faculty interaction concerning coursework than their peers. First-year students benefit more

from high quality relationships with collegiate employees than seniors, whereas the relationship is the reverse for the "receiving high quality academic advising" factor. Institutes have different levels to convert the student engagement such as quality of relationships and student-faculty interaction concerning coursework as measured by critical thinking tests.

Another study using the NSSE database from the 2003 administration investigates student experiences with information technology (IT) and the relationship with a variety of student engagement (Laird & Kuh, 2005). Findings from the study report that IT employed for educational purposes has a strong positive relationship with effective educational practices, particularly student-faculty interactions and active and collaborative learning. The study findings suggest using IT is one indicator to measure the factors. Other studies also support this finding of IT use that promotes student-faculty interactions and study outcome (Kuh & Hu, 2001b; Twigg, 2007).

The Inventory for Student Engagement and Success (ISES) is an evaluation guide to assess the quality of undergraduate education for the Documenting Effective Educational Practice (DEEP) project (Kuh et al., 2005a). Student-faculty interaction factors assess, in the ISES, meaningful substantive interactions , and those which followed the NSSE include: "(1) talking about career plans with a faculty member or advisor; (2) discussion ideas from reading or classes with faculty members outside of class; (3) receiving prompt feedback from faculty on academic performance; (4) working with a faculty member on a research project; (5) working with a faculty member on activities other than coursework (committees, orientation, student-life activities, and so on); (6) discussing grades or assignments with an instructor" (p. 51).

Twenty colleges and universities included in the DEEP project are among those "that meet the criteria for higher than-predicted student engagement and

graduation" analysis based on the NSSE database (Kuh et al., 2005a, p. 14). The project employed qualitative cases studies in these institutions. Faculty and staff members at DEEP institutes have characteristics that support student-faculty interactions such as accessibility to students seeking advice and responsiveness to students' educational needs and career interests. Furthermore, the faculty and staff are supportive of student development in terms of independent thinkers and problem solvers.

The qualitative part of the DEEP project provides evidence to support the importance of accessible and responsive faculty, specifically informing and expecting students to take advantage of faculty office hours. The schools also set the expectation that faculty would answer students' e-mails. Departments provide listservs of the campus events for the students e-mail and students also rely on the source.

One student states that she never changed her college because of "the way that faculty are willing to help students and how they recognize students for trying to make positive change" (Kuh et al., 2005a, p. 209). Student perceptions that faculty care about them, pushes the students toward academic success. As one student states, "we don't want to fail our faculty" (p. 209).

At the DEEP schools, features that promote student-faculty interactions are: the mentors programs; the use of technology to encourage easy and frequent communications among faculty, students and peers; structure for undergraduate research; and scheduling of regular contact times between students and faculty. Other features that support informal interactions are the arrangement of physical facilities to encourage interactions as well as the recruitment of faculty who are receptive to interacting with students outside the classroom. Furthermore, positive incentives

would be offered to faculty members who maintained good communication with students.

Kuh et al. (2005b) reported the results of the DEEP projects. The important results from the participant colleges and universities' data that related to student-faculty interactions are *making time for students* and providing *timely and apt feedback* to support students.

The longitudinal National Study of Student Learning (NSSL) groups 20 measures of "good practices" into eight categories. The categories related to student-faculty relationships are *student-faculty contact*, *prompt feedback*, and *quality of teaching*. Details of each category and constituent items for student-faculty contacts are collected using research scales developed by Pascarella et al., 2006 (p. 260-263). The responses to the following questions regarding faculty and students' communications are rated using a five-item scale from *strongly agree*, *agree*, *not sure*, *disagree*, and *strongly disagree*.

- Quality of non-classroom interactions with faculty: "Since coming to this institution I have developed a close personal relationship with at least one faculty member." "My nonclassroom interactions with faculty have had a positive influence on my personal growth, values and attitudes," and "My nonclassroom interactions with faculty have had a positive influence on my intellectual growth and interest in ideas."
- Faculty interest in teaching and student development: "Few of the faculty members I have had contact with are genuinely interested in students" (code in reverse), "Most of the faculty members I have had contact with are genuinely interested in teaching," and "Most of the

faculty members I have had contact with are genuinely interested in helping students grow in more than just academic areas."

Responses to questions regarding prompt feedback by the faculty to students' communiqués are answered using a four-item scale from *very often*, *often*, *occasionally*, and *never*.

- Instructor feedback to students: "Instructors keep me informed of my level of performance" and "Instructors check to see if I have learned well before going on to new material"

The responses used to assess quality of teaching were collected using a four-item scale from *very often*, *often*, *occasionally*, and *never*.

- Instructional clarity: "Instructors give clear explanations," "Instructors make good use of examples to get across difficult points," and "Instructors interpret abstract ideas and theories clearly."
- Instructional organization/preparation: "Presentation of material is well organized," "Instructors are well prepared for class," and "Class time is used effectively."

Cabrera, Colbeck, and Terenzini (2001) investigated the association between instructional activities and engineering students' self–reported gains in professional competencies. They reported instructor interaction and feedback had a positive and significant outcome on students' group skills, problem-solving skills, and occupational awareness. The list of *instructor interaction and feedback* that were employed in *instructional practice questionnaires* included:

Interaction with instructor as part of the course

Interaction with instructor outside of class

Instructor guides learning, rather than lecturing

Instructor gives *detailed* feedback on work

Instructor gives *frequent* feedback on work. (p. 344)

Cotten and Wilson (2006) suggest general questions for the focus group for the studying of frequency and nature of student-faculty interaction at a mid-sized public research university in the US. It included: "Do you have contact with faculty members outside the classroom? Can you tell us about the types of interactions that you have? For those of you who don't have contact with faculty members outside the classroom, why do you think this is? What are your perceptions of your interactions with faculty outside the classroom? Who initiates interactions outside the classroom? And, why? Do students have an interest in foregoing relationships with faculty? What factors would make it more/less likely that you'd develop relationships outside the classroom with faculty?" (p. 494).

Dental School Student-Faculty Interactions

Victoroff and Hogen (2006) explore characteristics of effective learning experiences and use ineffective learning incidents for comparison. Instructor characteristics of effective learning experiences are *personal qualities, checking-in with students* and *interactive style*. These characteristics are students' expectation of student-faculty interaction, particularly formal interaction. *Personal qualities* include communicating respect to students, working in a collegial manner, communicating expectations clearly to students, having a sense of humor and patience, approachability, open to questions, and willing to give guidance and feedback. *Checking-in with students* would constitute the need for faculty to understand the dynamics inherent in their classrooms. The teachers would need to possess the ability to facilitate classroom-management strategies such as "[The instructor] would ask questions and if you didn't know he would say, ok, we need to review this, let's review it" (Victoroff & Hogen,

2006, p.127). An interactive style often involves two-way communication and facilitation of active learning such as “posed a question to the class to stimulate thought, gave examples that illustrated a concept, encouraged student questions, and provided ample time for discussion . . . used personal stories or clinical cases to stimulate discussion and provoke thought” (Victoroff & Hogen, 2006, p. 127) It also includes the instructor being ready to help in the lab or clinic and being actively involved with the students.

The characteristics described above are relevant to “a positive academic environment” suggests Divaris et al. (2008). The group emphasizes relations and interactions with faculty are the most crucial issues in any educational environment, particularly in dental schools. They conclude that the student-faculty “relation must be based on *mutual respect, understanding and openness*” (Divaris et al., 2008, p. 123) that incorporates *constructive criticism and feedback*. “A positive academic environment” is close to a “humanistic environment” suggested by ADEA Commission on change and Innovation in Dental Education (2006), which advocates the following approach: close professional student-faculty relationships, mentoring, and small group interaction. The “humanistic environment” is a context for the development of the interpersonal skills necessary for learning, for giving respect to patients, which is learned by being respected, and for professional contributions.

Irby’s recommendation for clinical teaching developed from the ambulatory care setting has been widely accepted as a good model for clinical teaching (Irby, 1995; Henzi, Davis, Jasinevicius, & Henricson, 2006). The recommendation, which involves student-faculty relationships, includes providing supplemental collaborative learning opportunities to students such as a morning report where social exchange and formal reflection take place; setting clear and realistic expectations, observing students’ performances and creating specific feedback, mentoring, providing a positive learning

environment, and increasing the frequency and quality of feedback. Most of the groups seem to give convergence recommendation regarding student-faculty relationships in dental schools. The recommendation is derived from the reality of the relationships that exist within dental schools.

Henzi et al. (2005) report findings related to dental student-faculty relationships. They use the Dental Student Learning Environment Survey (DSLES) to investigate dental students' perceptions of dental schools in 619 freshman and junior dental students from 18 dental schools in North America. The DSLES is a dental school version of the Medical Student Learning Environment Survey (MSLES) in which "dentistry" replaces "medicine," and "dentist" replaces "physician," while other parts are identical. Among the seven variables in the survey, *faculty supportiveness* receives a fourth rank in freshmen, while the scores drop to the lowest in juniors. Their two previous DSLES studies in 1990 and 1993 reported scores ranking fourth and fifth for the entire student body, respectively. However, it was ranked first and second, respectively in three of the studies and two of the studies (Feleti & Clark, 1981a, 1981b; Marshall, 1978). These studies employed MSLES in 2000 medical students. Interestingly, it is obvious that medical students feel much more supported by the faculty members than dental students do. No further detail of the dental student-faculty relationship was investigated in DSLES.

The role of faculty is an important factor that contributes to students' success and development in health professional schools (Oandasan & Reeves, 2005). In medical training, faculty are regarded as role models for trainees (Parsell & Bligh, 1998). Professional socialization with faculty can help develop a sense of professional roles in surgical residence learners as well as a sense of belonging as professional community members (Lingard, Reznick, DeVito, & Espin, 2002). This finding is

concordant with the finding of Cox and Orehovec (2007) who suggest personal contact or socialization with the faculty promotes students' sense of belonging and self-value. On the other hand, faculty may initiate unfavorable student development.

The dental school learning environment is dominated by the faculty. It is highly teacher centered with vast authority in the faculty, and this has an affect on increasing one way teacher-to-student communication (Rajab, 2001; Pöhlmann et al., 2005; Vinton, 1978). These faculty factors incorporated with highly programmed activities in the dental school seem to produce significant alterations of students' values (Vinton, 1978). After four years in the dental school, the students place more value on their own interests and goals. Moreover, they give less value to interpersonal skills and communication such as learning with peers (collaborative learning), and close relationships with others.

Sanders and Lushington (2002) studied four factors: *self-efficacy beliefs*, *workload, faculty and administration*, and *performance pressure* and the impact on student poor performance. They report that among these factors, only *faculty and administration* can be used as a predictor of poor student performance in terms of clinical competency and contextual understanding.

Many studies reported evaluation problems created by faculty in the dental school such as criticism about academic or clinical work, differences in opinions between clinical staff concerning treatments, inconsistency of feedback on students' work among instructors (Divaris et al., 2008; Irby, 1995; Victoroff & Hogen, 2006): The last two problems are classified as *lack of faculty calibration* that may affect the valid and reliable evaluation of students (Lacari, Knight, & Guenzel, 2008).

Expectation versus reality of the dental school is another factor that might be associated with the student-faculty relationship. There are significant differences

among students' years of participation for some of these questions (Naidu, Adams, Simeon, & Persad, 2002).

In Thailand, a study was conducted to evaluate dental students' adjustment problems as related to their academic achievements; the study emphasized the importance of student-faculty relationships in dental schools (Benjakul & Cheunarrom, 2000). This group investigated student adjustment problems in two dental schools; one school is in Bangkok, Thailand (Mahidol University [MU]) and the other school is in southern Thailand (Prince of Songkla University [PSU]). Students in year one of the six-year curriculum who registered in 1992 were asked to complete the modified Mooney Problem Checklist Thai version, which was adjusted for the dental students. This checklist included entries such as "need advice from staff concerning their clinical experience," "no time to study or review the previous lessons," and "if there is time, they don't feel the need to study" being the first to third ranked responses in both dental schools, respectively.

Compared to MU students, PSU students have more than a 10 percent greater response rate when providing feedback to statements such as "many unqualified staff" and "unsuitable personality of staff." The study was performed in (approximately) the first decade of the existence of the dental faculty at PSU. However, in 2008, the faculty celebrated its 25th anniversary and qualification of staff was not a problem of the faculty. Furthermore, from this point forward, there will be fewer assessments of the staff members' personalities to promote positive faculty-student relationships.

A recent study used survey questionnaires to evaluate students' responses in the following five dental schools: one from Canada, two from Thailand, and two from Japan (Karibe et al, 2007). The total number of students from Thailand was 122, which includes fifth- and sixth-year students from MU and fourth-year students from

Chiang Mai University (CMU). (The latter is a dental school in Northern Thailand.) There were significant differences in students' responses from the three countries about students': *satisfaction with their dental school life, perceptions of the duration of their dental schools' curriculum* and *quality of teaching and faculty.* More than 60 percent of the Canadian and Thai dental students were satisfied with their dental school life in contrast with only 30 percent of the Japanese students. In all three countries, the students noted the curriculum was the biggest problem in their institutions. Their satisfactory evaluations of the curriculum were reported to be 59 percent, 26.2 percent and 16.1 percent for the Thai, Japanese and Canadian students, respectively.

With respect to the focus of the discontent in the curriculum, *Workload* was an issue for the Thai, *lack of clinical training* for the Canadians, and *frequent change in the curriculum* for Japanese students. Students' perceptions of the duration of their dental schools' curriculums were that it was *too short* for 83.9 percent of Canadian students; 70.5 percent of the Thai and 32.2 percent of the Japanese students felt it was reasonable. Concerning *quality of teaching faculty,* the satisfaction levels were around 75 percent for Thai and Canadian students while only 23.5 percent for the Japanese students.

Dental Schools' Intense Admission Processes

Dental schools carefully screen for high performance students to help ensure the students' success in undergraduate dental programs. Most dental schools receive a vast amount of admission applications; therefore, they traditionally include a high level of academic achievement in their screening process (Drummond & Duguid, 1997; Gaengler et al, 2002).

Approximately 66 to 89 percent of dental students indicated dentistry was their first career choice (Hallissey, Hannigan, & Ray, 2000; Stewart, Drummond, Carson, & Reddick, 2004). Around 71 percent of Thai dental students perceived the *difficulty in entering dental school* to be high while 51.6 percent and 11.5 percent in Canadian and Japanese students, respectively (Karibe et al, 2007). Thus, acceptance by a dental school is generally a cause for celebration for students and their families (Wexler, 1978). This was true 30 years ago as well as today. Dental schools employ a wide variety of measurements in their admission process according to the structure and the philosophies inherent in the individual institutions.

Academic attainment (historical performance, admission scores), interviews, tests of internal intelligence, spatial ability, manual dexterity, empathy, and social competence are also included in the selection criteria for some dental schools to ensure academic achievement in the context of a demanding dental program (Heintze, Radeborg, Bengtsson, & Stenlåås, 2004; Röding, & Nordenram, 2005). However, there are questions and/or inconsistent findings of the predictability of these measurements in relation to students' outcomes.

Traditional admission tests such as a national examination before leaving secondary school or a university entrance seem to have limited value to predict final dental examination results or professional competency (Lynch, McConnell, & Hannigan, 2006; Röding, 2001). However, other research finds that students with higher undergraduate science GPAs and Dental Admission Test scores seem to have higher National Board Examination Part I and Part II outcomes (Sandow, Jones, Peek, Courts, & Watson, 2002). Manual dexterity is regarded as an unreliable determiner; dental students normally show improvement in their manual ability or fine motor skills over the course of their studies (Drummond & Duguid, 1997; Giuliani et al,

2007; Luck, Reitemeier, & Scheuch; 2000). As noted, questions exist regarding the validity, reliability, and predictability of the selection processes' direct correlations with dental student achievement (Gaengler et al, 2002).

Although the question about validity, reliability, and predictability of the selection processes is still inconclusive, dental schools still try to employ a variety of measurements to select students who can successfully complete the strenuous curriculum. Students who pass the intense admission process are regarded as qualified students.

Dental Students' Academic Achievement

Although dental schools employ a variety of measurements to screen and admit quality students, some students do not achieve the academic performance as defined by GPA and/or professional competency. A German study of three dental schools reports that 17 percent of fourth- and fifth-year dental students complained of a severe lack of clinical accomplishment (Pöhlmann, Jonas, Ruf, & Herzer, 2005). Another school in the UK reported 16-32 percent and 2-18 percent of dental students feel inadequately prepared to undertake clinical competency assessments in conservative dentistry and child dental health, respectively (Rolland, Hobson, & Hanwell, 2007). The "clinical competency assessments are an important part of dental curricula-to satisfy national requirements, maintain professionalism and ensure graduates are prepared for independent clinical practice" (p.184). In Thailand, the national competency assessments will be part of the requirement for dental students to obtain their professional licenses; it will be implemented for graduates in the year 2011.

In the UK, the drop-out rate of dental students during 1989 through 1994 was 8.4-16.8 percent, which is about 72-142 dental students (Drummond & Duguid,

1997). These numbers are equivalent to the graduate output of dental students from 2-3 medium size dental schools in the UK. At PSU, the students' graduation rate during 1996 through 2001 was 86.55 percent (Table 4). Thirty-nine students failed to graduate during these six years. The numbers are equivalent to the graduation rate during these years with an average of 35-48 students each year.

Students who were unsuccessful in terms of dropping out, late completions, or transfers to other courses suffered many consequences (Drummond & Duguid, 1997; Fielding, Belfield, & Thomas, 1998). When these events occurred, there were negative impacts sustained by the individual students, the schools, and the dental professionals. The individual students lost their self confidence and/or their desire to continue with their career aspirations. They also forfeited their personal investments including time and money; their graduation dates were also extended. Furthermore, dental schools experienced adverse effects on cost-effectiveness of courses, less funding due to the reduction in the number of students, and a reduction in the schools' rankings. In addition, the dental profession received fewer new dentists in accordance with the manpower plan, which may affect the number and distribution of dentists in rural areas.

The literature reveals that the intense screening process that exists in dental schools may not consistently predict students' achievements in the demanding, standard dental curriculums. It is also "virtually impossible for a college or university to change its institutional type" (Seifert et al., 2008, p 123). However, dental schools can employ practices that foster positive and humanistic learning environments. It is hoped that improvement in student-faculty interactions may enhance effective educational practices. This, in turn, may promote students' academic achievements and developments, particularly in the dental schools where more support is needed for

the students to cultivate the academic knowledge and manual skills needed to acquire professional qualification.

Chapter Summary

Student-faculty interaction is one of five environmental components of Pascarella's casual model to explain university and college students' outcomes (Pascarella & Terenzini, 2005). Long-term studies confirm that student-faculty interaction is an essential component of student learning. In the third decade of studies on how college affects students, it was emphasized that "learning in collaboration with faculty and peers," and "active student engagement in learning" (Pascarella & Terenzini, 2005, p.602) are the two themes that emerged among new pedagogies.

Student-faculty interaction plays a major role in a variety of student outcomes such as social self confidence, academic and social integration, self-esteem, problem solving and decision making skills, degree aspiration, and student persistence and satisfaction (Astin 1993; Cox & Orehovec, 2007; Frankin, 1995; Pascarella & Terenzini, 2005; Thomas and Galambos, 2004). Both classroom and non-classroom interactions promote students' outcomes although substantive academic focus seems to dominate the frequency of outside the classroom interactions (Cox & Orehovec, 2007; Kuh & Hu, 2001a; Pascarella & Terenzini, 2005).

Dental curricula are unlike many other curricula in that they require academic ability and motor skills to meet the professional standards. Students are required to develop professional skills within a short time to achieve laboratory and clinical standards. Student-faculty interaction is very important for the students to experience since learning from faculty is faster and the most effective way for skill development. Studies in dental student learning environments report some issues related with student-faculty interaction that may produce both positive and negative outcomes to

the students such as atmosphere created by the faculty, approachability of staff, faculty supportiveness, feedback from the faculty and personality of the faculty (Benjakul & Cheunarrom, 2000; Divaris et al., 2008; Irby, 1995; Henzi et al., 2005; Victoroff & Hogen, 2006). However, more studies that emphasize student-faculty interactions are needed to confirm and expand the findings.

Dental schools attempt to screen for students with good academic background to ensure they are successful in the very demanding dental curriculum. A variety of measurements for the admission process have been employed such as interviews, historical performance, admission scores, tests of internal intelligence, manual dexterity, spatial ability, empathy, and social competence (Heintze, Radeborg, Bengtsson, & Stenlåås, 2004; Röding, & Nordenram, 2005). However, the validity, reliability, and predictability of the admission processes are still inconclusive.

Dental education researchers disclose that the admission processes of the dental schools may not consistently guarantee student achievement. Some dental students suffer from poor academic achievement in terms of GPA and professional competency (Rolland, Hobson, & Hanwell, 2007; Pöhlmann, Jonas, Ruf, & Herzer, 2005).

As previously stated, the role of student-faculty interaction is more emphasized in dental schools where the best way to develop professional skill is to learn closely face-to-face or hand-to-hand from the faculty. Therefore, understanding the role of student-faculty interaction in a dental school may assist the improvement of academic achievement in dental students.

CHAPTER III

METHODOLOGY

This qualitative, explanatory case study explored student-faculty interactions, students' perceptions of those interactions, and their affect on academic achievement. The data was gathered through a series of open-ended questions for the focus group interviews, review of documents, and unobtrusive observations to triangulate the data (Creswell, 2007; Patton, 2002; Yin, 2003). The Dental Faculty of Prince of Songkla University (PSU) Ethics Committee and Oklahoma State University Institutional Review Board granted permission for the study (Appendixes A and B).

Participants

The present study involved two groups of participants: students and faculty. Students were invited to participate in the focus group interviews. Both students and faculty were observed for student-faculty interaction in the dental library.

Focus Group Participants

The total planned number of participants was four from each class x six classes equals 24 students. They were divided into three focus groups of eight participants each meeting Patton's (2002) recommendation of six to 10 participants who have similar backgrounds in the same group. The years 1-2, 3-4 and 5-6 students were in focus groups 1-3, respectively. Years 1-2 students study most of the basic science, years 3-4 students study the preclinical subjects, and years 5-6 students study the clinical subjects.

The selection of two students from 10 of the highest and 10 of the lowest grade point averages (GPA) of each class was kept confidential, so that the students could not be identified. Faculty did not know which of the students in the top 10 and bottom 10 were selected.

I contacted the students personally and gave them an invitation letter that explained the details of the study; then I discussed with them the procedures and answered their questions one or two weeks prior to the interviews.

The participants were telephoned to confirm their participation a day prior to the interview. One of the students from year three provided notification that he could not attend the focus group; therefore, another student was contacted, and he was willing to participate. One of the year two students was absent on the interview date. Therefore, for year 1-2, seven students were interviewed. This made for a total number of 23 students in the focus group interviews.

The eight students of each of the focus groups two (year 3-4) and three (year 5-6) were interviewed in the first semester, whereas those seven in focus group one (year 1-2) were interviewed in the second semester. As previously noted in chapter I, the selection criteria were students from years 1-6 in the dental curriculum, gender, and good/poor GPA. Therefore, the GPA of the first semester was used as the criterion for the first-year students. (The dental curriculum reports semester GPA for the first-year students, whereas students from second year are assigned a GPA for the year.) The provision of the GPAs of all students in the dental curriculum in academic year 2008, to the researcher was supported by the Vice Dean for Academic Affairs of the Dental School.

The mean and range of the participants' age for years 1-6 were 18.75 (18-19), 20.00 (19-21), 20.75 (20-21), 21.25 (20-22), 22.50 (21-24), and 23.25 (23-24) years,

respectively. The number of males and females was the same in all groups except group 1 (year 1-2); there were three males and four females because one male was absent on the interview date.

Unobtrusive Observation Participants

The participants of the unobtrusive observations were students and faculty who entered the dental library and met by chance during the observation period. The faculty participants also included the researcher because the researcher is also a faculty member. Confidentiality of the participants was protected since the interactions were described in detail about the body language of students and faculty and the library setting that might influence the interaction during the observation period. No direct conversation was recorded.

The observer planned to conduct three observations for an hour each. However, there was no other faculty but the researcher in the library during some sessions. Thus, six observations of approximately 1-2 hours each were performed in the library at the Dental Faculty to be able to record student-faculty interactions for the three sessions.

Focus Group Interviews

Creswell (2007) and Yin (2003) recommend conducting a pre-ethnographic study as a final preparation for data collection. It is useful for 1) developing relevant scope for questions or clarifying the research design, or 2) testing the data collection plan for the possibility of a faithful final plan. Focus group interviews require greater interviewer skills than individual interviews because it is a dynamic group process (Fontana & Frey, 2003). The pre-ethnographic case may be chosen according to accessibility, convenience, and geographic factors (Yin, 2003).

A student group of four, two males and two females, was invited for the pre-ethnographic study. In this focus group interview of approximately 50 minutes, the set of questions prepared for the formal focus group interviews was tested. The order and questions asked in the pre-ethnographic focus group interview provided a good flow and relevant response to the research problem. After the pre-ethnographic interview, a modification was made by assigning codes to every question and subquestion. Since the set of questions was distributed to the participants, applying a code to each question would make an accurate referral to the questions during the interview process. It is recommended to take notes during the interview in case electronic-recording does not work (Creswell, 2007). Thus, coding the questions would shorten the recording time.

Procedures

When I contacted the students, I explained the purpose of the study and emphasized confidentiality with the students. The type of recorder to be employed (tape recorder or video recorder) in the focus group interviews was discussed with the participants. If students in a focus group chose both tape recorder and video recorder, only the tape recorder would be employed. All participants agreed to use a video recorder. The students were informed that the length of each focus group session would be about two hours (Morgan, 1988). They were informed about *member checking*, in which the moderator would summarize the focus groups' opinions for them to correct at the end of each interview. The transcription of the focus group interviews was sent to participants for correction and formal *member checking*.

Investigator distortions can result if the researcher becomes a stranger to the study groups, drawing overreactions from them (Lincoln & Guba, 1985). I am not a stranger to the students, but my position as a lecturer might make them respond in a

way to please me. At the beginning of the focus group, I explained to the participants the objectives of the study without expressing any expectation or any particular biases. In addition, the participating students were informed that by giving naturalistic information, students as a whole will benefit from the study. I asked them to consider me as an investigator not a lecturer so that they could freely express their thoughts about faculty. I emphasized that I was "there to learn from them" (Morgan, 1988, p. 57). The participants signed informed consent forms and group agreements for maintaining confidentiality before the focus group process began (Berg, 2009). Concerning the confidentiality issue, students were asked not to mention any names in the focus group interviews.

There are some limitations of the focus group technique. It may distort individual opinion. Moreover, feelings of no confidentiality among participants may prevent individuals from fully revealing their feelings and perceptions (Berg, 2009). This may happen in employing the focus group in a dental school if the issues are related to the faculty. Dental schools are described as highly teacher-centered with teacher authority (Vinton, 1978). Thus, the students were encouraged to take note of sensitive points or confidential issues that emerged during the conversation that they did not want to reveal in the group. Then they might choose to write a narrative of the issues after the focus group process.

Morgan (1988) suggests the introduction of a few ground rules accompanying the introduction of the topic: "only one person speaking at a time, not carrying on side conversations among neighbors, encouraging everyone to participate with no one dominating" (p. 57). I conveyed this message in a gentle way. The participants then were asked to introduce themselves for the purpose of icebreaking (Morgan, 1988).

Focus group questions. Some questions were adapted from Cotten and Wilson (2006) who studied the frequency and nature of faculty student interaction. In addition, other interesting themes that emerged during the pre-ethnographic interview were explored in detail (Berg, 2009; Creswell 2008, Patton, 2002). The following items guided focus group questions.

- What types of contact with faculty that you have are meaningful to you? In what ways? Possible probes include:
    - What interactions support/promote your studies? In what ways?
    - What interactions support/promote your development? In what ways?
    - In what ways do you think interactions impact you?
    - What is the frequency of contact with faculty?
- Are you interested in making interactions with instructors? Why? Why not?
- What factors would make it more/less likely that you would develop relationships with faculty?

To avoid question biases, I asked the above more open-ended questions first. If there were points to clarify or elaborate, I used the following subsquestions.

Subsquestion 1: *Student-faculty interaction inside the classroom.*

- Do you have contact with the instructors inside the class (lecture, laboratory, field work, or clinic)? And what is the frequency of the contact?
- Can you explain the types of contact you have inside the class?
- Who initiates contact inside the class?

- For those who do not have contact with instructors inside the class, why do you think this is happening?

Subsquestion 2: *Student-faculty interaction outside the classroom.*

- Do you have contact with the instructors outside the class? And what is the frequency of the contact?
- Can you explain the types of contact you have outside the class?
- Who initiates contact outside the class?
- For those who do not have contact with instructors outside the class, why do you think is this is happening?

The interview itself. It is suggested that using open-ended questions for an interview can provide a better indication of students' experiences and perceptions not constrained by researcher's perspectives (Creswell, 2007; Rubin & Rubin, 2005). Although a set of open-ended questions guided the interview, I was flexible with respect to the interviewees' conversations (Creswell, 2008; Morgan, 1988; Yin, 2003). Participants were encouraged to take their turn during the group discussion (Creswell, 2008), particularly those who had different opinions (Rubin & Rubin, 2005). I brought these points together to provide a complete picture, which increased the credibility of the findings (Rubin & Rubin, 2005). To reduce bias, I avoided using leading questions or comments in the focus group process (Yin, 2003). I employed probes or subquestions if there were issues to be clarified or topics that needed elaboration (Creswell, 2008).

At the end of the interview, I presented my summary of the group discussion to the participants for *member checking*. Concerning *trust*, I assured the students that confidentiality would be maintained. I thanked the students for their time and sincere expressions during the focus groups. Interaction among participants in focus groups

helped provide a check and balance of the data to reduce the false extreme views that threaten credibility (Erlandson et al., 1993; Lincoln & Guba, 1985; Patton, 2002). In addition, focus group interviews can reveal socially-constructed, actual, and existentially meaningful answers or solutions (Berg, 2009; Patton, 2002).

Each interview was conducted in a conference room where microphones, video recorders and meeting tables were available. All the interviews were performed on Saturday to make certain no classes were scheduled for the students and to ensure there would be fewer faculty and students using the facilities. Interview duration of the focus groups 1-3 were 1.40, 2.30, and 1.30 hours, respectively. The students expressed their opinions freely and naturally in a relaxed atmosphere. Some students smiled/laughed or nodded their heads to express their agreement when other participants presented their opinions. This feature was present in all focus group interviews. Social interaction such as facial expressions of the students related to what their friends presented, group agreement, or different opinions could be seen throughout the interview process. There was a narrative from a focus group two student.

I transcribed the video tapes from each interview word by word. Grammatical errors, exclamations, pauses, and body language such as a laugh, a nodded head, or a raised or lowered voice were also noted (Creswell, 2008; Rubin & Rubin, 2005). The students were assigned numerical coding for confidentiality. The transcriptions were in Thai to preserve the integrity of their meanings and were conducted away from my office to avoid possible confidentiality issues.

Written summaries were sent to the students for correction after transcriptions were completed. Few minor corrections of misinterpreted words were made. Some students helped to complete inaudible words. One student from Group One made an

additional comment to her friend. Review of transcripts and progress through the interview protocol revealed clear points from each focus group.

Documents

Documents were solicited by sending a letter to the Vice Dean for Academic Affairs who collected information from each department and prepared the clinical instruction booklets for year 5-6 students. Letters were also sent to the heads of each department explaining the present dissertation and asking them for their available laboratory guideline booklets and clinical instruction booklets provided for the students in the academic year 2008. Most of the clinical instructions of each subject are included in the clinical instruction booklets collected and prepared by the Vice Dean for Academic Affairs, however, some parts were distributed by the department(s).

Seven laboratory guideline booklets and nine clinical instruction booklets constituting the available number of booklets distributed in the academic year 2008 were received. Some departments provided detailed laboratory instructions together with the lectures and they distributed the material session by session. Thus, there was no separate instruction booklet in these subjects. For each of the laboratory guidelines booklets and clinical instruction booklets, a document summary form (see Appendix C) was composed with the name or description of the document, an explanation of its significance, and a brief summary of contents (Miles & Huberman, 1994). Documents reflect little about interactions; however, they provide points to discuss with students such as teacher behavior in the classroom, and whether they use the quality of organization of document to determine level of interactions with faculty.

Observations

I performed six 1-2 hours observations in the dental library of PSU in an effort to discover and record informal student-faculty interactions for three sessions. There were

no student-faculty interactions in some sessions because the faculty (other than the observer) did not enter the dental library during observation times. Approximately 2-3 faculty, including the observer, and 7-25 students were in each of the three observations The interactions observed confirmed what the students explained in focus group interviews.

The library setting

The library of the Dental Faculty, PSU was located at one end of the fifth floor of the administration and department building. There was an entrance to enter the computer unit and the dental library from the elevator or stairs on the other end of the building. In addition, there was a corridor from the entrance where the computer unit was situated on the right and left side of the corridor. The dental library was at the end of the corridor. Therefore, the atmosphere of the library was very quiet. The library size was 14 x 36 meters with windows on both sides. From the library entrance on the right side, there were five reading areas that accommodated up to eight persons separated by partitions. The next area on the right was the journal shelves. Reading tables for one person each was situated along the wall to the right end of the library. Between the single reading tables and journal shelves, were two rows of tables (for four persons), with four tables in each row.

On the left side of the entrance was a book issue counter. Next to the counter, by the windows, were two rows of computer facilities. The computers were situated back to back on the right and left side of each row. Parallel to the computer facilities beside the corridor was a showcase of head and neck anatomy. There were three rows of tables that seat four people next to the computer facilities and the showcase. Further back, next to this area, were four rows of two book shelves. Three reading

tables for one person each were between the book shelf and the windows. In the left corner of the library was 4 x 6 meters library office with clear windows.

The observation details, written in the observation field notes, include observation time (beginning and finishing times), student-faculty interaction details, field setting, and atmosphere. The details of interaction such as body language and frequency and duration of interactions were noted. The handwritten raw data field notes, which might be sketchy and contain private abbreviations, were then converted into "write-up" field notes (Miles & Huberman, 1994). Missing content that could come out during the process was carefully considered before including in the "write-up" field notes to avoid bias (Miles & Huberman (1994).

Audit trail

An *audit trail* was prepared for the trackability of the materials and processed to determine *dependability* and *confirmability* of the study, which will lead to *trustworthiness* (Patton, 2002). The audit trail included (Adapted from Lincoln & Guba, 1985, pp. 319-320):

1. Raw data

- Laboratory guidelines booklets and clinical instruction booklets
- Observation notes
- Audiotapes or videotapes
- Interview guide and notes
- Narrative (s) (If the respondents prefer to supplement narratives to focus group interviews.)
- Interview records and notes (if other stakeholders' interviews are indicated.).

2. Data reduction and analysis products

- Write-ups of documentation notes
- Condensed notes
- Transcribed records
- Unitized information (on 3x5 cards).

3. Data reconstruction and synthesis products

- Themes, definitions, and relationships
- Findings and conclusions (interpretations and inferences)
- A final report in connection with the relevant literature review and an integration of concepts and interpretations.

4. Process notes (journal)

- Methodological notes
- Trustworthiness notes
- Audit trail notes.

5. Materials relating to intentions and dispositions

- Inquiry proposal, personal notes.

6. Instrument development information

- Documentation format
- Observation format
- Pre-ethnographic forms
- Informed consent forms
- Group agreement forms for maintaining confidentiality
- Schedules.

Analysis

I carefully evaluated the "write-up" observation field notes, document summary forms, and transcripts of focus group interviews to consider the fundamental messages. Then I coded the transcripts and condensed the codes into themes. I employed inductive coding because it was more open and sensitive to the context than pre-coding (Miles & Huberman, 1994). I wrote *marginal remarks*, ideas and key concepts that emerged during the reading for coding (Creswell, 2008). It is a useful tool to "suggest new interpretations, leads connections with other parts of the data and… point (s) toward analytic work" (Miles & Huberman, 1994, p.65).

Findings from the three collection methods were analyzed. The analytical technique used was pattern matching (Trochim, 1989). The collection of theoretical propositions was employed as an analytical strategy for the case study (Yin, 2003). According to Pascarella and Terenzini (2005), the guiding theoretical propositions that served as the baseline for data matching of the case study include:

- classroom/non-classroom interactions
- factors that promote academic achievement and student development outcomes:
    - "close relationships" between faculty members and students,
    - "frequent interactions,"
    - "faculty concern for student growth and development,"
    - "accessibility," and
    - students' perceptions of faculty "care about them and about teaching" (p.600)

The interrelationships of the empirical finding patterns to the theoretical patterns were then compared.

Chapter Summary

In this study I collected data about students' perceptions of student-faculty interactions and their effect on academic achievement. This collection strategy was performed by three focus group interviews that included 23 participants from all student classes of the dental curriculum. Seven laboratory guideline booklets and nine clinical instruction booklets available for the academic year were read and analyzed. Informal student-faculty interactions were observed in the dental library of PSU. Data were analyzed by pattern matching through the lens of Pascarella and Terenzini's (2005) model explaining changes in students' learning and cognitive development and are presented in Chapter V.

CHAPTER IV

DATA PRESENTATION

This study documented student-faculty interactions, student perceptions of the interactions, and their relationship to academic achievement in the dental school at Prince of Songkla University (PSU). Data were collected from focus group interviews of a stratified purposeful sampling of students from all six classes of the dental curriculum were accomplished, observations of student-faculty interactions in the dental library at the Faculty of Dentistry, PSU, and a review of clinical instruction booklets and laboratory instruction booklets. The findings of each source of qualitative data confirm, expand, or provide additional information to other collection strategies. The study findings are presented in the following topics: students concern to have interaction with faculty, classroom/non-classroom interactions, student-faculty interactions and academic achievement, and different findings between high and low grade point average (GPA) students.

For confidentiality of the participant students, the study findings reported only year and high or low grade point average (GPA) of the students when their comments were quoted. The number represents the year, 1 to 6, of the student and H or L is for high or low GPA. For example, 1H means a high GPA year one student.

According to focus group interviews, there were 126, 130, 120, and 136 responses by male, female, high, and low GPA students, respectively. Questions/responses to clarify the questions/meanings in the same point of each

participant were not counted. More responses about biases from some lecturers by the low GPA group might be responsible for more responses counted of this group.

The students were encouraged to present their thoughts，particularly their different opinions. The study employed informal member checking at the end of each interview and formal member checking by sending written transcripts to the students. Thus each comment of the focus groups was regarded as group opinions. In the case where students had different opinions, if an opinion was reported; the other opinions were also presented.

Students Concern to Have Interaction with Faculty

Most of the students perceived that having interactions with faculty was important and could not be avoided. Achieving professional learning was the major interest of the students. They regarded faculty as resource persons and wanted to learn from faculty experiences, to have individual teaching and instruction, to achieve emotional rapport, to be more confident when working with patients and to have good scores on subjective evaluations (of laboratory or clinical work). Students were especially concerned with maintaining positive relationships with their professors. A third year student shared that “I concern to have interactions with faculty. When I have learning problems, I wanted to consult them.” (3H)

A first-year student said:

> Studying dentistry does not depend on taking lectures note, reading and then having examinations. I think there are many situations that we require close academic nurture such as laboratory or clinical works. We need experience to be able to treat and be responsible for patients. We require not only theoretical knowledge but dedicated teaching to develop clinical

> experiences are very important and we cannot be successful without the latter. (1L)

Another student, from year five stated that:

> Faculty are resource persons. Knowledge as well as instructions from their experiences will foster our improvement. Thus, interaction with faculty is important so we don't feel lonely when thinking or working. We feel more confident when faculty are with us to discuss their agreement or disagreement with our plans to treat patients. (5L)

A sixth-year student shared, "I think as students we cannot avoid interacting with faculty. So I would like to have very positive interactions with faculty. We need suggestions from faculty" (6L).

Observations and focus group interviews found the same thing; students want to please faculty. One student in the observation waited for a faculty member who stopped to change her shoes; the professor changed into slippers that were provided for use in the fifth floor at the outer entrance to the computer unit and the dental library. The student held the door for the faculty member while she changed her shoes until the faculty walked through the entrance. Then the faculty walked to the library while the student went into the computer unit at one side of the corridor to the library. It is common for students, who have arrived first, to enter the building without waiting for faculty members who are lingering in the doorway because they are preoccupied with other issues. Another student admitted that he tried to strike up a conversation with a faculty member during a chance meeting that took place at a university badminton court. Then he had more confidence to interact with the faculty in the class.

The students viewed that their interactions with faculty could be used as experiences to develop professional interaction with their patients. A second-year student stated that

> I am interested in interactions with faculty. Interaction is needed in the labs and clinics. Apart from knowledge gained, we listen to faculty members' experiences because it will be useful information for when we receive our future professional work. We interact with faculty as an exercise to interact with others such as patients. (2L)

I asked the student to explain what she meant by having interactions with faculty as an exercise to interact with patients. She replied, "I meant having conversation, getting access to others, and learning how to interact with others."

Factors that determine student-faculty interaction

Accessibility, student and faculty characteristics, and student impression/perception of the faculty affect student-faculty interaction. These factors determine classroom/non-classroom interactions. Factors related to accessibility include time left in the classroom for asking questions, discussion for lecture classes, and matching time between students and faculty for non-classroom interactions. Most of the staff in the school are dentists who work in private clinics in the evening or on the weekends; therefore, they have less time to meet with students after office hours. During office hours, students and faculty have tight schedules. Time to meet each other face-to-face is also a problem. Students regard that faculty who remain after class, laboratory or clinical sessions, are more accessible. Here is an example from a sixth-year student, "Some faculty provide opportunities for us to meet with them; they remain in the clinics after clinical sessions. When they finish their clinics, we can consult with them regarding our patient cases or discuss other issues" (6L).

In addition, student characteristics affect student-faculty interactions. Enthusiastic students are more likely to ask questions than those who are not. The personal characteristics of faculty are also factors that students determine influence the quality of interactions. Faculty who are friendly, have a sense of humor, cultivate an emotional rapport with the student, provide positive feedback, show interest in student well being, prepare well for class, are open to student opinions, show no bias to students, provide relaxing atmospheres when teaching and show concern for patients are the faculty with which students like to interact. Faculty members' professional experiences and ability to teach from experiences are also important factors that students consider crucial for promoting interaction, which is essential to academic development.

Personal impressions/perceptions or experiences with the faculty are the most important factors for students in determining levels of interaction with faculty. Surprisingly, a first year student stated similar opinions with a group of students from year five:

> There are many levels to interact with faculty when we meet by chance such as walking past each other. The first level, when we meet faculty, we *Sawasdee* [*Sawasdee* is the word in Thai that people say to greet each other, like saying Hello] and then walk away fast. The second level, when we meet faculty, we *Sawasdee* and walk away at normal speed. The third level, when we meet faculty, we *Sawasdee* and begin to talk with them. (1L)

The student expanded "if the faculty have easy-going characters, students will keep conversations going. However, in the case of faculty who intimidate students, faculty will dominate the conversations." Another student shared his interaction in

class with a faculty member who intimidates saying “We are afraid to ask questions. When faculty ask ‘Do you understand?’ We don’t feel comfortable responding candidly. We will say ‘I do (or we do) understand’ even if we don’t.” (1H)

In some instruction booklets, in the preface, it was written that if there were some mistakes or any suggestions for the improvement of the booklets, people could feel free to inform the faculty. This would indicate, in my view, that the faculty were open to and encouraged student interaction. However, when I asked students, “What do you think about this?” The students responded,

> We never make a comment to the faculty, we are afraid to comment. To contact faculty we need to inform the department secretary first. There are many steps and processes to meet faculty. We think that with the process we better not comment about anything particularly with small issues. (5H)

Student perceptions of the faculty from other students’ experiences are also an important factor to determine interaction with faculty. A first-year student who has not contacted many faculty stated that

> I heard about faculty characteristics from senior students. Sometimes we have not learned the subjects, may be in year 4, 5, 6 that we will learn the subjects. Senior students told us that the faculty are very strict and are perfectionist. We are afraid of the faculty even when we know only faculty names, and have not yet learnt with them. We feel cool [In Thai “cool” means feeling uncomfortable and afraid] even we walk past the faculty because there are so many stories told about them. (1L)

If impressions from other students are different from the students’ direct experience, students will use the latter to determine when they will have their next interaction with the faculty. A third-year student commented that

> I have heard from senior students that the faculty was serious, frightening and so on. However, in the first session the faculty taught, our perception was opposite to what senior students informed. The faculty was good thus we adjusted out perceptions about that faculty. Then that faculty becomes wanted by many student groups in the laboratory. (3H)

Students' impressions of faculty characteristics determine their decisions as to whether they feel comfortable interacting with the faculty. A fourth-year student shared that, "Some faculty are irritable. We don't want to ask them questions. We are afraid of their negative responses" (4H).

Students confirmed that direct experiences and first impressions with faculty are the most important factors to determine interaction with faculty. They also have more weight than faculty characteristics that prevent interactions. A third-year student mentioned that

> There was an instructor that I was afraid of from his outside character. When I first studied with him, I went to consult him about my laboratory work asking, "Is that OK for this work?" At this point, the professor appeared to relax and look less serious. He replied "You should do it like this. There is error here.…" He then gave other instructions. It was like the instructor wanted students to respect staff and did not want the students to play too much. However, when we approached him, the faculty gave positive interactions. I think it is the same for other faculty if we approach them too. (3L)

More examples of factors that determine student-faculty interaction are presented in following relevant topics. Student-faculty interactions are classified into classroom/non-classroom interactions

Interactions

Classroom interactions are the major student-faculty interactions in the dental school. This is because the dental curriculum requires face-to-face or individual teaching for students to develop professional skills and for patient safety. Students from all classes perceived a lack of non-classroom interactions. They expected to have more non-classroom interactions in the dental school.

Classroom Interactions

Interview data indicated that according to the dental curriculum, there are many student-faculty classroom interactions opportunities. Year 1-2 students who are in the basic sciences level have less frequent classroom interactions than year 3-4 and year 5-6 students who are in preclinical and clinical levels, respectively. Year 3-4 students have more laboratory sessions and many step checks to complete each assignment. Year 5-6 students in the clinical level also have many step checks with faculty to complete each patient's dental work. They also discuss their cases with faculty prior to beginning each clinical session. Most of their clinical assignments such as treatment plans, case reports, case conferences, and seminars also provide opportunities for the students to interact with instructors.

Lectures are a major teaching strategy in year 1-2. There are fewer interactions in most of the lecture classes for all student levels. Lack of time tends to be a major factor preventing classroom interactions.

Students understood that faculty needed to cover their content within a given schedule. Therefore, they had less time to interact with students for questions and discussions in their lecture sessions. Most of the lectures were one-way communication and the students also had tight schedules. When a lecturer finished his/her class, he/she had to leave the class for another lecturer. Students admitted that

sometimes they were too tired to ask questions because they had been studying all day (or half a day) or they were hungry. A student from year 2 said, “I rarely ask questions because most lecturers leave after finishing teaching. There is very little time for questions. When we finished lecture classes we are so tired because we study from 8 a.m.-12 p.m.” (2H) Another student from year 4 commented,

> If a teacher finished teaching at 12 p.m. or in the evening, both the students and teacher are tired. Sometimes I want to ask questions, but I am not sure whether the teacher wants to leave. My other 58 friends in class may be hungry; how will they feel if I ask a question? (4L)

Students found that they can use laboratory time to have interaction with faculty. The student then shared that

> If we have questions, we ask them when we submit our work to faculty in the laboratory. We prepare a list of questions first to ask in the laboratory. Sometimes it is not questions about laboratory work. We have a chance to meet with faculty at that point so we ask, ask, and ask. Timing in the lab is like a *golden period*. (4L)

Other factors such as faculty and student characteristics, faculty to student ratio, and impression of the faculty from experiences from their friends or students from other classes, and direct experiences with the faculty also effect interactions with faculty. One student mentioned,

> I think the character of both faculty and students affect the interactions. There are some students who frequently discuss, ask questions, or interact with faculty, while there are some students who rarely initiate interaction with the faculty. If faculty have serious or quiet characteristics, students may be scared and avoid interactions. (2L)

A fourth year student commented that “I would like to have interaction with faculty who have a lot of experiences. I want to learn from their expertise. Then I will not miss these points. However, sometimes some faculty begin interactions with unpleasant words. So then we don’t want to have interaction with the faculty” (4H).

Students commented about faculty-to-student ratios: “If there are small faculty to student ratios such as 1:60, there will be less student-faculty interactions. However, in small group teaching we will have more interactions with faculty.” (1L) Small group teaching is one among many teaching strategies that promotes student development. More detail will be discussed in the topic teaching strategies that promote student development.

Non-classroom Interactions

Most non-classroom interactions were academic or *substantive interaction* such as making an appointment with faculty for comments-feedback about work, and other interactions related to the course. There is a lack of other non-classroom interaction with faculty, which includes *out-of class contacts* such as having coffee, dining together, and consultations to discuss personal problems. Students admitted they had less opportunity to had non-classroom interaction, particularly *out-of class contact* with faculty. They believed that faculty are busy, and they did not want to disturb faculty.

A fourth-year student’s opinion regarding “out-of class contact” with faculty was,

> We have to submit our laboratory works out of class. However, other than lab work, I think there are many among my peers who do not contact faculty. They do not have anything to contact them about, so they have no out-of-class contact. (3H)

Another fourth-year student commented that the students were aware that, “Each instructor is required to complete a lot of job duties; I know they are very busy.” (4L)

From observations, it was clear that there were opportunities to interact, but few occurred at more than a superficial level. Most of the interactions were social exchanges such as the students who walked past faculty and had eye contact with each other or those who met face-to-face by chance. In this case, most students showed respect by *wai-ing* faculty and faculty will then *wai* back. *Wai* in Thai culture is the action where one greets another and shows respect to them by putting his/her hands together at about the chest area and then putting their head down. And, the accessibility (eye contact, friendliness) of the faculty was the key to interactions.

In one observation, three students went to the book shelves, but they were in different aisles than the faculty who were already there. Another student at the book shelves was a sixth-year student. While the faculty and three students were at the book shelves, there was an interaction between the students. Two students came to chat and held each others’ hands. The faculty walked passed the two students during the time at the book shelves, but there was no student-faculty interaction. They did not have any eye contact or make any facial acknowledgment. One of the students that the faculty walked past was a sixth-year student; therefore, they should have known each other. The faculty may not have known the other two students because they were not clinical-level students.

Students perceived that non-classroom interaction was important. They believed that it would enhance classroom or formal interaction. If they have *out-of class contact with faculty,* they had more confidence to interact with faculty for academic purposes. One student stated, “I would like to have close or personal contact

with faculty. I feel more certain in class or have more confidence to ask questions." (1H)

If students have *out-of-class contacts*, most converse with their academic advisors or their assembly advisors. There are two formal arrangements for students to meet with their advisors or faculty, and advisors and staff are expected to participate in these occasions. The first one is the meetings between first-year students and their parents with students' academic advisors during advisor sessions at the beginning of the first semester. The second meeting is on *Wai Kru Day.* The first arrangement is only once when students enter the school. The second one is arranged every year.

In Thailand, there is a day each year where students show formal respect to their teachers; this is *Wai Kru Day* (*Kru* means teacher in Thai.). In the dental school, there will be no class for half a day in the morning for this activity. All students, both undergraduates and graduate, are expected to participate at the ceremony. Two representatives, male and female students, from each class present their trays of flowers, candles, and joss sticks to faculty who are in the ceremony. This is followed by all students in the class giving a necklace of flowers to a teacher who sits in front of them. The teachers then bless the students. After the formal ceremony, students are free to go to faculty rooms and give flowers or gifts to their favorite teachers. Then academic advisors have lunch with their advisees. Most of the students admitted that they enjoy this activity on *Wai Kru Day* and look forward to having lunch with their advisors.

Surprisingly, many students admitted that they had no faculty with whom they had close relationships within the school. If they did, most were their advisors followed by assembly advisors. Some had close relationships with their academic

advisors and had *out-of class contact with* their advisors such as being invited to have dinner at faculty members' houses or at restaurants or having faculty mobile phone numbers. Students who worked for student assemblies in the school had more of a chance to contact assembly advisors out of class. On the other hand, some students admitted that they could not remember their advisor's names because their advisors never joined activities arranged for faculty to meet with students such as *Wai Kru Day*. A third year students shared that:

> Until now, some of my friends haven't known their academic advisors. I don't know whether they ever met each other. In every occasion that advisors were supposed to participate, they never participated. I asked my friends "How about your advisor?" They replied "I don't know. I don't even remember his/her face." I think this point is important to increase student-faculty interactions. (3H)

Some students stated that their academic advisors first met them and invited them for dinner when they were in year four. In the school, under normal circumstances, each student is assigned the same academic advisor from year one until graduation.

Students who rarely met their academic advisors understood that they had less chance to meet each other and yet they still consulted their advisors if they had problems. One student expressed that:

> I am not suffering because many of my friends also rarely meet with their advisors. The advisors may have a lot of work to do. I don't mind about that. If I have a big problem, I will go to meet my advisor. (4L)

Another student shared:

> For me, not meeting with my advisor does not mean that my advisor not concerned about us. I think they follow what is happening with their advisees, but they just don't have a chance to meet with us. (4L)

As previously mentioned, students were aware of the lack of *out-of class contact with faculty* although it was students' preferences that these personal contacts be initiated. They wanted the faculty/dental school to provide more opportunities for them to interact with faculty. Thus, students suggested increasing the type of interactions as follows:

- Increase activities that students and faculty who have similar interests can enjoy together such as sports, taking photos, planting the forest, etc.
- Increase student-faculty interactions by means of information technology (IT) such as Web board and e-mail
- Arrange a schedule for students to meet with their advisors

Faculty Personal Behaviors/Characteristics That Promote Student Development

Faculty behaviors/characteristics that promote student learning and/or development as well as student satisfaction were found in multiple areas: positive feedback, respect, accessibility, a sense of humor, emotional rapport, interest in student well being, close follow up on student works and progress, showing interesting to know individual students, showing willingness to teach, and showing expectations of student works.

Positive feedback is an important factor that promotes student development, it helps students spend more effort on their work and try to keep high standards or do even better. Positive feedback assists the students to learn and develop from mistakes. A fifth-year student admitted:

> When I have hard work, sometimes I don't know what to do. When faculty said 'you need to prepare more,' I don't feel so good but I performed better when faculty praised me for improving. I felt better and tried to keep doing good work. (5L)

A fourth-year student shared her experiences:

> I am a left-handed person. I could not use a handpiece with my right hand. I did not recognize that I carried the handpiece wrong. When I was in the lab, an instructor saw me and said "you carry it wrong." Then he taught me how to carry the handpiece. From this point on, I carried it properly. The faculty said 'very good.' I was very impressed with his concern for my progress. Anyone could do this, but he praised me. He wanted to see my development and said that "it's good, do it again." I think the positive feedback works for me better than negative feedback or punishment. (4L)

In contrast to positive feedback, negative feedback provides reverse outcomes to the students. A fifth-year student shared his experiences about negative feedback:

> When I receive negative feedback, I have stress and feel depressed all day. If it occurs in the morning, in the afternoon I don't want to treat patients, don't want to have interaction with others, and don't want to have lunch. (5L)

Another fifth year student commented about negative feedback when responding to a question at the end of the focus group interview. "Do you have any messages to the faculty?" that:

> I think it depends on faculty characteristics to interact with students. I am ok, if the faculty do not have close interaction with students. However, if they do not provide positive feedback, please do not give us negative

> feedback. When we work, it's hard and we are under pressure. If faculty put more pressure on us, we will get worse. (5H)

Respecting students, treating students like colleagues, and being professional senior colleagues who teach juniors or treating students in a way that they feel like the faculty are older brothers and sisters (which is a very positive thing), are expected faculty character. Inasmuch, students feel more confident to interact with faculty and have a chance to learn more. As elaborated by a sixth-year student:

> Student-faculty interaction that is important for student learning encourages close relationships. It means no discrimination, no ego issues, like I am a professor, you are student. If the interaction is like being an older brother or sister who teaches the younger, then it is a good interaction, and we are more comfortable to talk with faculty. (6H)

Another fifth-year student commented that, "I would like to have the interaction like we [student and faculty] are in the same profession. Then we feel like we have friends or professional colleagues. This makes us want to learn." (5L)

Another factor that promotes student learning is providing accessibility for students. A third-year student admitted, "I am happy with faculty who allow good access. These professors are approachable and easy to talk to regarding academic and professional suggestions. We develop close relationships, but we, as students, maintain the proper respect for the professors." (3H)

Cultivating emotional rapport was another factor that promoted student development. Students were under pressure when they erred and sometimes they do not know how to solve the problem. Emotional support from faculty helped students calm down and learn from mistakes. It empowered them to have the willpower to learn. A fifth-year student admitted that:

> I like faculty who do not blame the students when they make mistakes. They teach us, "Do you know the cause of the mistake?" They allow us to think for a while. If we cannot answer, they will tell us how we can alleviate the problem and avoid this situation in the future. They suggest from their experiences, "I used to make these same mistakes, and I think you are making good progress." I like faculty who provide positive feedback like this. They also have soft and warm intonations in their voices – this makes their comments come across as non-threatening. (5L)

Another student mentioned that, "I want faculty to have sympathy for us, especially when we work. Like to know they understand what we are going through and that they are willing to help us" (6L).

Students had good impressions of faculty who were interested in student well being. This factor also affected student satisfaction. A fourth-year student shared her experience that:

> I have positive interactions with faculty who show concern for students and students' feelings. Last year I was very stressed while studying. When I walked past one professor, *sawasdee* like usual and just said that "I am very stressed." The professor stopped walking and turned her face back to me. And she asked "What's wrong? Would you like to speak with me? Are you having problems? I replied, "I am still OK, but if I start to feel worse, I will come visit with you. Thank you so much." I felt very good. I was also impressed with the professor's concern for me personally. (4L)

Students needed close follow up on their work and progress. Therefore, they had more confidence to work; they did not feel like they were working/studying alone, and they worked faster. A sixth-year student admitted that:

> I would like the faculty to come and observe us at our dental unit, particularly during difficult clinical works. I would like them to ask us how we feel we are progressing and if we are having any problems. When faculty members are sitting at their desks, we are reluctant to go and tell them that we are encountering some problems. Different faculty do not react the same way to interruptions. [In clinical settings, normally, faculty members sit at their desks and wait for students to invite them for step checks after completing each step. Some students are afraid to invite faculty when they cannot complete a step. They are afraid to receive negative feedback.] (6H)

Showing interest in getting to know individual students was another factor that supported student learning. When students felt faculty wanted to know them as individuals, the students wanted to learn more from the faculty. A second-year student admitted:

> I feel good when a faculty member wants to converse with me as well as one-on-one with other students in the class. Then we want to learn more with the faculty because we have good impressions of them. (2H)

Faculty who showed a willingness to teach also received good impressions from students. A sixth-year student commented:

> I like faculty who are willing to teach me. Sometimes, I don't know, but I feel I think too much. I get the feeling that some faculty teach only because it's their responsibility. Some faculty take teaching seriously and continue their lectures until students understand. We can perceive which faculty are there to teach. (6H)

Another student shared:

> There are some faculty who are devoted to teaching. I worked and discussed cases with him and know that he is a good consultant. When I have problems, I talk with him. He devoted to not only teaching us but also the concerns for our patients. (6L)

Students expressed that they know which instructors are willing to teach. The following is an example from a third-year student; the student noted, “I have a very good impression with one instructor… He is very concerned with student progress and has an intention to teach. I am very impressed.” I asked the student, “How did you classify that the lecturer had a willingness to teach? The student replied, “I can perceive which lecturers have a willingness to teach” (3L).

Students had positive reactions to faculty who expressed their expectation to the students. They worked harder than they expected to please faculty. They had more confidence when they got success through hard work. A sixth-year student said, “I found that I developed when faculty expressed high expectations for me. Faculty show their expectations in our reports. They wanted to see good works from us. We worked hard to gain the respect of our faculty.” (6H) A fifth-year student shared his experience, “I had been assigned some hard clinical work, but I was not confident that I could do it. A faculty member said, ‘I believe you can do it.’ I tried to do the work, and I got it. Unbelievable! (5L)

Teaching Strategies That Promote Student Learning

Teaching strategies that promoted student development and subject acquisition included small group teaching and problem based learning, lectures using two-way communication, demonstration of techniques, preparation of students for the use of technical terms, concise and precise documentation or communication, ability to show linkage from theory to clinical practice and to other subjects, and creating a relaxed

learning atmosphere. Students admitted that they liked small group teaching or problem based learning environments that had small numbers of students in the study group. Students perceived they had close relationships with faculty. They felt more comfortable to ask questions and had better accessibility to the faculty than in a larger class. Faculty were able to pay attention to all students in the group. The students thus had better understanding of the course materials. They also gained more experience in social interaction with faculty and their peers in small groups as well as problem based learning. A second-year student stated that:

> I have an experience; we were divided into small groups to practice reading papers. There were about 7-8 students in a group. I feel that I gained much from this learning method. In small groups, we understand more. When we didn't understand, we were able to ask our instructor more questions. I gained more knowledge from the learning experience. (2L)

The student then expounded upon why she liked small group teaching:

> We had better access to an instructor because it was a small group. The instructor could pay attention to every student in the group. The instructor could explain our questions more because of the smaller number of students in the group. On the presentation date, faculty also helped us answer the questions of other faculty. (2L)

A fourth-year student admitted, "problem based learning and small group learning provide us with broader views rather than viewing situations from one perspective. This provides us opportunity to consider more than one point." (4L) I asked him, "Do you mean to think about more points for learning or to consider more learning aspects?" The student then noted that:

> At the time, I meant for knowledge acquisition in learning. It can also apply for daily life, about judging people. Suppose people do something, if we consider the act in perspective, we can understand them more and why they participated in the action. We understand relationships with others more. (4L)

For the lecture classes, students would like faculty to ask questions for them to answer rather than giving lectures that are one-way communications. They described the latter as boring. Students from year 1-4 were also confused with the technical terms that faculty used in classes. This made them less efficient learners. They also commented about the huge content of the lectures. A fifth-year student admitted that:

> In personal instruction-based courses, I like faculty who ask students questions…not just lecture, lecture, lecture. Faculty should ask questions such as "Do you understand?" Or faculty could ask questions for students in the classes to answer. I think this makes the classes less boring. (5H)

A third-year student elaborated that:

> I think faculty members should carefully consider what "terms" they use with us; we have less knowledge of some of the terms, especially technical terms and dental jargon. I don't know if the faculty can explain these terms in Thai. They may be familiar with the terms, but they cannot explain these terms to us in a way we can fully understand them. We don't understand, we asked many times, but we don't understand. It affects our learning. (3H)

A fourth-year student shared that, "technical terms make less efficient learning. And the amount of content, for example, we learn could cover the galaxy. If we study seven subjects, it's galaxy plus 7. It's too much." (4L)

Students from every class emphasized the importance of demonstration. Students admitted that it is hard for them to imagine how to do skill works to get the expected outcome. They have difficulty performing professional skills even though they have knowledge or guidelines. Demonstrations and teaching techniques for students to be able to perform professional skills are needed. A fourth-year student stated that:

> We would like to have demonstrations in the lab. We don't understand when we read only lab directions. From my experience, I tried filling an amalgam Class II, many times… I did not pass, did not pass, did not pass. At last, an instructor showed me how to do it. I got a lot more knowledge from this one-on-one teaching. Better than repeating my attempts at fillings, and they are still wrong. (4H)

A fifth-year student expressed:

> When I do some clinical work and faculty tell me, "It's not OK, here is too much, here is less." Then the instructor demonstrates to us, so we have a clear picture of how it should be done. When we have similar cases, we now know how to do it right. I feel that I gain more knowledge and learning development this way. (5L)

Observations and focus group interviews found that students needed concise and precise documentations or communication. One of the clinical instruction booklets included a pledge of honor for the dental profession. I asked students how they felt about seeing the pledge included in the booklet. Some students did not read it previously although they had a booklet. However, when they read the pledge, they said it felt good to read it. They suggested that it should be printed on the back cover of the document, so it would be easier for the students to notice. The booklet is 211

pages. Some students also commented that they liked one of the clinical instruction booklets because it was concise and precise. This booklet allowed them to know what they should do.

A well-prepared laboratory instruction booklet, in terms of content, provided organization and laboratory steps that demonstrated, through photographs, useful information to the students. They admitted that they could read only the booklet to prepare for their clinical sessions. However, regardless of the well-prepared content in the laboratory booklet or clinical guidelines, personal student interactions with the faculty based on their past experiences were also essential.

Students stated they had more understanding when faculty were able to show the links from theory to clinical practice and to other subjects. This assisted them in their development of logical thought to improve their cognition.

A relaxed learning atmosphere was particularly important for the students, especially those who studied for long periods of time. One student elaborated that:

> In addition, casual conversations in a relaxed atmosphere with faculty also stimulated students' desires to learn. We have more confidence to ask and answer questions. However, if faculty are very strict, we must be still and quiet, cannot have nonacademic talk with faculty, we have stress. It is like we are compressed in a small space. This makes us feel uncomfortable when we study. (1H)

Students noted that when a professor had a good sense of humor, it promoted student learning. Students were more relaxed and able to tolerate studying hard and having an increase in their willingness to learn. A sixth-year student stated, "Some faculty have a sense of humor. This makes for a more relaxed atmosphere in the class. Students are more willing to listen." (6H) A fifth-year student commented that, "I like

light-hearted lecture atmospheres, particularly in the long studying sessions such as those that last four hours or more. Some subjects also have afternoon sessions. We feel better when we are allowed some relaxation time in the classroom." (5L)

A third-year student commented, "During the lecture break, some faculty members related humorous anecdotes. They wanted us to be relaxed, and I like this positive classroom setting." (3H) Another third-year student confirmed the first one:

> Like [the first student's name] said, when faculty make us happy, we then study better. We have more motivation to learn…if we are happy, and some of the faculty make us happy. I believe we will learn better. We are more ready to learn. (3L)

Different Findings between High and Low GPA Students

There were three different findings between high and low GPA students. These included responses to intimidating faculty, complaint about negative impression or bias towards students, and asking question or interaction after class.

Some of high GPA students insisted that they still interacted with intimidating faculty whom they were afraid of because they thought it would help their learning. A student replied to the question "Do you still want to meet an instructor who likes to criticize students' works?" with "I still want to meet the instructor. Criticism today may lead to our better improvement in the future." (2H)

On the other hand, low GPA students tried to avoid direct or face-to-face contact with the instructors who tended to provide criticism. One student replied, "For me, when I meet with those instructors, sometimes I move to another queue to have step check for my work with another instructor." (2L)

Interestingly, the study found that most of the low GPA students complained about negative impressions or biases towards other students with low grades. There was no complaint from those with high GPAs. A fourth-year student commented:

> I don't want faculty to decide to have interactions with students from examination scores…. For example, after getting examination scores, the instructor then talked with students who had high grades and high scores. Those of us who had lower grades and scores were ignored. We had less active learning due to the faculty judgments. (4L)

A third-year student shared her opinion, "Some faculty do not base their interactions with students on their scores, but some do. Many faculty members consider students' scores to be an important issue. Then they decide that the students are not academically superior" (3L). In another discussion about faculty biases toward students with low scores, the same students stated, "I would like to support what [others students' names] said about faculty biases. They do appear to show biases. I don't want faculty to be prejudice against us, however" (3L).

Another student elaborated:

> In the laboratory, I sat with my friends. We did not look serious or like diligent students. Therefore, the instructors did not come to see our work or discuss procedures with us. I thought the instructors might think we were not interested in interacting with them. Instead, when we didn't know, we were eager to learn. When we were in this situation, we felt reluctant to interact with faculty. We were afraid that faculty might not want to interact with us. If we received negative reactions, from feeling not so good, we will get down. The major issue in our life now was studying. Therefore, being ignored affected not only that subject but also other

> subjects. We became depressed about our courses and studying. We could loose everything. It could affect everything. (4L)

A first-year student shared:

> Some lecturers created a poor classroom atmosphere. They had negative impressions of some students. When we have a negative image, it is likely that we cannot talk with the faculty… this situation makes us feel negatively toward the subject and the lecturer. (1L)

I asked the student to describe "a negative image." And the student responded, "When a student made a mistake the faculty reminds the student about the mistake all the time, even though it was finished" (1L).

Another issue where high GPA and low GPA students reacted differently was asking questions or interactions after class. High GPA students tended to follow faculty after class to ask questions; fewer low GPA students consulted after class with professors. Low GPA students did not want to ask questions because they were afraid that faculty might ask them back and they could not answer.

Chapter Summary

This chapter presented findings from three sources of data collection: focus group interviews, observations, and documents. Dental students at PSU are interested and willing to have interactions with faculty. They believed that classroom interactions would play a major role in facilitating student-faculty interactions. However, students perceived a lack of non-classroom interactions and would like to increase both frequency and quality of such interactions. They believed that non-classroom interactions would enhance classroom interactions as well.

Respect, sense of humor, emotional rapport, positive feedback, interest in student well being and academic progress, willingness to teach, and showing

expectation to students were key factors of faculty characteristics facilitating student development. Small group teaching, problem based learning, lecture in two-way communication, demonstration and teaching organization were reported to promote student learning outcomes. High GPA students tended to approach faculty more than those with low GPA. The latter group complained of negative biases from some faculty. Analysis of these findings will be presented in the next chapter.

CHAPTER V

ANALYSIS

The theoretical lens of Pascarella and Terenzini's (2005) interaction with faculty in their "general casual model for assessing the effects of differential environments on students and cognitive development" (p. 57) was used to analyze the study findings. The purpose was to provide insight into student perceptions of student-faculty interactions and their relationship to academic achievement in a dental school, Prince of Songkla University (PSU).

Analysis employed Pascarella and Terenzini's (2005) student-faculty interactions model in terms of classroom/non-classroom interactions. Factors that promote academic achievement and student development outcomes are: "close relationships" between faculty members and students, "frequent interactions," "faculty concern for student growth and development," "accessibility," and students' perceptions of faculty "care about them and about teaching" (Pascarella & Terenzini, 2005, p.600). These issues served as guidelines for pattern matching. Other important issues explained by Pascarella and Terenzini, 2005 and other findings that may be additional or reverse to their suggestion are also discussed. To cover all of the issues described above, the chapter presents the following topics: classroom/non-classroom interactions and student development outcomes: faculty behaviors that promote students' acquisition of course subject matter, factors that promote student development outcomes, and academic attainment outcomes.

Student Perceptions of Student-Faculty Interactions

In the third decade of research on how college affects students, Pascarella and Terenzini (2005) conclude "Two important themes woven through many of these new pedagogies concern active student engagement in learning and learning in collaboration with faculty and peers" (p. 602). The study findings on dental student perception of student-faculty interactions and their relationship to academic achievement confirmed the latter conclusion of the positive impact of positive interaction with faculty. This issue is particularly important in studying dentistry.

Students wanted to have positive interaction with faculty. They wanted support from academic and emotional rapport. As noted earlier in chapter IV, a fifth-year student admitted:

> Faculty are resource persons. Knowledge as well as instructions from their experiences will foster our improvement. Thus, interaction with faculty is important so we don't feel lonely when thinking or working. We feel more confident when faculty are with us to discuss their agreement or disagreement with our plans to treat patients. (5L)

This student then shared, "Every interaction with faculty affects students, depend on positive or negative interaction. We are dental students who require learning in collaboration with faculty. Therefore, every interaction impacts us" (5L).

Another example from a first-year student elaborated:

> We need experience to be able to treat and be responsible for patients. We require not only theoretical knowledge but dedicated teaching to develop clinical experiences is very important and we cannot be successful without the latter. (1L)

A sixth-year student shared, “I would like faculty to be kind and understand students. And acknowledge that each student has different knowledge and skill. We need support” (6H).

At the end of each focus group interview students were asked whether they had any messages for the faculty. One of the last words from students to the faculty was “I would like faculty to think about their experiences when they were dental students. What they experienced that was good for them, please extend these experiences to us. But what they found non-impressive, please do not repeat it with us” (3H).

Classroom/Non-classroom Interactions

The present study clearly demonstrated that most student-faculty interactions took place in the formal classroom environment of lecture classes, laboratories, and clinics. As presented in chapter IV, most students’ comments were about formal classroom interactions. Students also admitted the lack of non-classroom interaction in the dental school.

According to Pascarella and Terenzini (2005):

> The weight of evidence suggests that student-faculty non-classroom interactions that tend to reinforce or extend the intellectual ethos of the classroom or formal academic experience or that focus on issues of student development can have positive effects on dimensions of general cognitive development such as postformal reasoning, analytical ability, and critical thinking skills (p.209).

Most non-classroom interactions in the dental school were related to academic experiences. A fourth-year student admitted, “We have to submit our laboratory work out of class. However, if we do not include the lab time with instructors, I think there

are many among my peers who do not contact faculty." (3H) From this point of view, non-classroom interaction in the dental school supported academic formal classroom acquisition of knowledge and skill. Therefore, this should influence general cognitive and skill development. Although, it is not clear which type is affected.

Another aspect of non-classroom interaction, social contact, also influences student learning.

> Nonclassroom interactions with peers and faculty that extend and reinforce what happens in one's academic experience appear to have the most consistent positive impact.… Not all types of social or extracurricular involvement have positive effects on learning, however. Intercollegiate athletic participation, particularly for men in revenue-producing sports (that is football and basketball), appear to have an inhibiting influence. (Pascarella & Terenzini, 2005, p. 149)

Social extracurricular involvement in the present study can be classified into three groups: Having dinner with faculty, most were academic advisors; having sports in a public court, talking with faculty when they met by chance; and consulting faculty who were their assembly consultant. Students who experienced each type admitted that they had more confidence to contact faculty in the classroom setting. They also felt more rapport.

Pascarella and Terenzini (2005) posit that relationships between class size and student learning are still ambiguous. The pre-1990 findings suggest that class size has no impact on student learning. Evidence from post-1990 research suggests that class size has a reverse impact with acquisition of subject knowledge. However, there is little evidence to support the negative impact of class size "at least in the field of economics" (p. 609). There are varieties of pedagogical approaches including small

group learning that show average improvement of subject matter knowledge when compared to "traditional" methods. It is a consistent finding although the definition of "traditional" method is subjective.

Through focus group interviews, the present study found that small group learning, problem based learning, and individual or face-to-face learning improved the quality of dental student learning of both subject matter knowledge and professional skills. Therefore, this finding of dental students supported the relationship of small class size and knowledge acquisition postulated by Pascarella and Terenzini (2005).

In addition, it can be explained that the improvement of subject matter knowledge in small group learning tends to be the result of an increasing student-faculty interaction in the pedagogical approach. A fourth-year student admitted:

> For me, I like small group learning and problem-based learning. Small group learning and problem base learning enhance student-faculty interaction. It's small group, so I feel more comfortable to ask questions than in a bigger class. It reduces concern for other students in a big class. Problem base learning motivates students' curiousness. Faculty asked for alternative thinking. "You don't view only one point, but you think about other possibilities." This assists our development. (4L)

And, a second-year student admitted that, "The … subject assigned many of the small group learning. We had interactions with faculty, then we understood the subject knowledge more. When we have questions we always ask faculty" (3H).

A fifth-year student mentioned individual teaching within the clinical setting:

> I would like to have close supervision from faculty in clinics, particularly on difficult cases. There may be some other techniques to approach the cases rather than what we have learned from lectures. If faculty made

> suggestions regarding the cases, our clinical work would be more efficient. (5H)

In focus group interviews, students admitted that some did not have interactions with faculty except when they were directly asked. I asked the students: "Are there any differences of those who have no interactions in lecture classes when there are in the problem bases learning?" Student admitted that "they changed, they talked" (4L).

Student Development Outcomes: Faculty Behaviors that Promote Students' Acquisition of Course Subject Matter

According to Pascarella and Terenzini (2005)

> Teacher behavior is an important influence on students' acquisition of course subject matter. Such factors as teacher preparation and organization, clarity, availability and helpfulness, quality and frequency of teacher feedback, and concern for and rapport with students continued to have significant, positive correlations with student mastery of course content (p.612).

The study findings are in agreement with Pascarella and Terenzini (2005) about the affect of such teacher behavior on students' acquisition of course subject matter. Teacher preparation and organization is defined as "Presentation of material is well organized," "Instructors are well prepared for class," and "Class time is used effectively" (Pascarella et al., 2006, p. 263). "Presentation of material is well organized" is relevant to *concise and precise documentation/communication* of the study.

Students of years 4 and 5 discussed about well-organized laboratory instruction booklets that:

> The laboratory booklets are well organized. Their content is in appropriate order, and the laboratories steps are demonstrated through photographs or written document that allows us to imagine how to do the lab. I like those which provide photographs because it is easy to follow the steps. Diagram that show relations with tooth anatomy and label for the angle and how deep of the preparation we need to do. It's better than numerical writings of how deep we need to do and the angle of the preparation bur required. It's hard to imagine the relation to tooth anatomy. (4L)

And, a fifth-year student admitted that, "I can also use the well-prepared laboratory instruction booklets to prepare for clinical session. I use such a booklet for a relevant clinical work. One booklet is enough for clinical preparation. I don't need to read another book" (5H).

"Instructors are well prepared for class" was another issue that promoted student cognitive learning. A third-year student presented a good example:

> An instructor provided us a document as a song for us to remember.… After teaching, the instructor asked us to sing a song. He tried to help us remember. I think it's a technique among techniques that assist student learning. I sang the song many times and I remember it well. I don't need to try to remember. (3H)

Many of his friends in the focus group agreed that they had a good impression and were satisfied with the instructor, and they could remember the information well.

The present study provided no direct evidence to show the link between "Class time is used effectively" and student mastery of course content. However, the following comments of the above students may be an example to show that students were happy to learn in an extra-class if an instructor taught them effectively.

> It was about an hour for this lecture, which was not enough for teaching. The instructor could teach all the content, but students would not understand. It's like the instructor tried to make students understand since he taught in class. He needed more time; he arranged for out-of schedule teaching. At the extra class teaching, he prepared photos for us for more understanding and gave opportunities for students to answer questions. We had interactions with faculty; we presented our opinions. I think presenting opinions is one way that allows an instructor to know whether students understand or not. (3H)

Instructional clarity is defined as "Instructors give clear explanations," "Instructors make good use of examples to get across difficult points," and "Instructors interpret abstract ideas and theories clearly" (Pascarella et al., 2006, p. 263). The study findings support instruction clarity and student gain in subject matter knowledge.

Students' comments about a *well-organized laboratory booklet* above also show the importance of "Instructors give clear explanations" and "instructors make good use of examples to get across difficult points" in terms of written documents. *Make good use of photos in the teaching class* that the third-year student commented above is also an example of "Instructors give clear explanations" and "instructors make good use of examples to get across difficult points."

The study's findings clearly show that *demonstration* and *teaching from professional experiences* were important for "instructors make good use of examples to get across difficult points." Students of every focus group emphasized their need for demonstration both in laboratory and clinical settings. A fifth-year student admitted that:

> In the lab, if faculty showed a demonstration at the beginning of the lab, we would have more understanding rather than reading from laboratory booklets and then doing the lab work and submit the assignments to faculty. When I read the instruction booklet, I could not imagine and did not know how to make it exactly as in the booklet. (5H)

A fourth-year student admitted:

> I want faculty to demonstrate the lab rather than just tell us how to do a procedure. We never have experiences. Therefore, we must repeat the steps when we do it wrong. We found it is hard to do the lab assignments without demonstrations. (4H)

Students needed demonstrations, but they did not want faculty to complete their work for them, especially when the students were working on uncommon patient cases. They wanted demonstrations in the clinical cases and then they wanted to practice the rest by themselves to learn how they could do it themselves.

Another fifth-year student added an opinion about demonstrations:

> For the technique that we need to learn, if the instructor demonstrates the method, then allows us to do the rest, I think it would be better. Sometimes, instructors demonstrate and help to complete the work. Some cases are rare cases, we don't know if we do them by ourselves if we will get the same outcome as the instructor. We may not have an opportunity to do it again. (5H)

One of the fifth-year-students showed his satisfaction related to *teaching from professional experiences* that "From my experience in clinical setting, I needed to do… [he mentioned one difficult clinical step] and instructor teach me a convenience

technique to do it so I have another technique that will facilitate … [the clinical step]" (5H).

Faculty professional experience is also a factor that students determined had an effect on students' successes. Professional experiences of faculty or being an expert was another factor that attracts student to interact with faculty. A fourth-year student stated that, "I would like to have interaction with faculty who have a lot of experiences. I want to learn from their expertise. Then I will not miss these points" (4H).

"Instructors interpret abstract ideas and theories clearly" is consistent with above ideas that students mentioned about well-prepared laboratory booklets that would assist them to imagine from abstract ideas. Students stated they had better understanding when faculty showed them the links from theory to clinical practice and to other subjects. It is a way to interpret and clarify abstract ideas. A second-year student shared that:

> We don't know exactly about the details of each subject. There was a lecturer that I was very impressed with. He outlined a subject and explained about the links between each topic to other knowledge and clinical practice. Then he asked whether we understood. It was very useful. (2H)

Another second -year student added, "We are clear about the points to learn, we know objectives and usefulness, and we understand" (2H).

When it comes to "Instruction clarity," the present study related to the use of technical terms. First-to third-year students complained that they did not understand technical terms that instructors used in the lectures. Thus, faculty who teach first-to third-year students or when the technical terms are used for the first time in the

student groups, should prepare the students prior to using the technical terms in classes. As suggested by the students, this may be done by providing them documentation or education media such as Computer-Aided Instruction (CAI) of technical terms and their definitions. Diagrams or the use of photos to make clarification of technical terms would also contribute to lecture clarity. Fourth year students found that translation of technical terms into Thai words in written documents confused them. They preferred the use of technical terms in English in their document:

The present study found availability and helpfulness of the faculty to be factors that influenced study acquisition of subject knowledge. *Accessibility* and *close follow up on student works or progress* of the present study are comparable to "availability" stated by Pascarella and Terenzini (2005). A fifth-year student expressed:

> Sometimes there are some instructors who are not available in the clinics. They go outside clinics and do not leave their contact number. We cannot make progress on our work because we need faculty for a step check. We need to pass a step check prior to going to another step. If possible, I would like faculty to leave their contact numbers if they want to go outside the clinics, so we can contact them for a step check. (5H)

A sixth-year student had a different opinion that:

> For some works, we want instructors to provide suggestions not for step checks. We are reluctant to call them or make them come to the clinic for small suggestions. I would like faculty to be available in clinics so we can have better communication. (6H)

The "helpfulness of the faculty" is comparable to *demonstration and teaching from professional experiences* and *willingness to teach.* The above discussion shows how students feel *demonstration and teaching from professional experiences* are helpful for them. Another aspect is that faculty should have the *willingness to teach*. It helps students want to learn; therefore, they can gain more from the subject. A third-year student said:

> I have a very good impression with one instructor. In one session that he taught, he continued to teach 20 minutes after the class was supposed to finish and made me late for the following session, but I still felt good. I think from what the instructor prepared, he wanted us to gain from experience most of our capability. He is very concerned with student progress and has an intention to teach. I am very impressed. (3L)

Another third-year student commented:

> Instructor X shows more willingness to teach us than most instructors I have met. He taught his topic, and he prepared us for the examinations of other instructors. He showed us photos and explained how to analyze them….It motivated our enthusiasm to learn. (3H)

Pascarella et al. (2006) defined feedback as, "Instructors keep me informed of my level of performance" and "Instructors check to see if I have learned well before going on to new material" (p. 262). Studying dentistry includes both items in the curriculum such as step checks for laboratory and clinical works. Students are informed of their level of performance and they must get standard outcomes for each step prior to the process of beginning another step. Therefore, they gain both knowledge and skill through receiving the feedback, which is similar to the information presented by Pascarella et al. (2006).

This study found one of the most important issues about feedback was that *positive feedback* assisted students in learning much better than negative feedback. *Positive feedback* in this situation referred to showing positive expectations to students. Furthermore, positive feedback provided *emotional rapport* when a student failed to grasp an important point. The feedback assisted student learning and established or restored confidence. A fifth-year student admitted that:

> In a clinical setting, I like the instructors who found our mistakes and they didn't blame us in front of our patients. They called us outside dental units and talked and made suggestions to us. We learned and developed from our mistakes that instructors suggested – they did not blame us. (5L)

As noted previously in chapter IV, here is an example from another fifth-year student about negative feedback:

> When I receive negative feedback, I have stress and feel depressed all day. If it occurs in the morning, in the afternoon I don't want to treat patients, don't want to have interaction with others, and don't want to have lunch. (5L)

The student further expounded that "sometimes it's like that. I have stress all day and cannot do anything. Sit and worry by myself." However, the student admitted that mild amounts of academic pressure by the faculty can motivate students to study more to show that they are capable.

> When I work, sometimes the instructor said "Do you have only this knowledge? Do you think you can treat patients?" They said it like they were condemning me. I felt like Why don't I know? Why am I being chastised for such a small issue? Next time, I must do it to erase their contempt. (5L)

The findings about the consequences of positive and negative feedback described above may in part explain Pascarella and Terenzini's (2005) suggestion: "Not all studies find the frequency of contact between students and faculty outside of class positively related to persistence, but most do" (p.417). The study did not aim to investigate the direct relationship of student-faculty interaction and persistence. However, it is possible that students who received negative feedback and failed to cope with it may fail in other subjects that may influence their persistence. The following example is a reminder from a low GPA fourth-year student talking about her awareness before having interaction with some faculty:

> In the laboratory, I sat with my friends. We did not look serious or like diligent students. Therefore, the instructors did not come to see our work or discuss procedures with us. I thought the instructors might think we were not interested in interacting with them. Instead, when we didn't know, we were eager to learn. When we were in this situation, we felt reluctant to interact with faculty. We were afraid that faculty might not want to interact with us. If we received negative reactions, from feeling not so good, we will get down. The major issue in our life now was studying. Therefore, being ignored affected not only that subject but also other subjects. We became depressed about our courses and studying. We could loose everything. It could affect everything. (4L)

Past experiences of positive or negative feedback are factors that students consider before asking for support from faculty. A sixth-year student mentioned, "When we consulted faculty, some provided positive responses and support us. However, for some faculty, they felt like we were burdening them with all of our

difficult issues, which made them feel obligated to fix our problems. So next time we tried to avoid consulting them" (6L).

The findings of the present study support Pascarella and Terenzini (2005) who suggest that "concern for and rapport with students" has positive impact on student mastery of subject content. An example for *provide emotional rapport* of the present study is mentioned above. Examples of faculty concern can be seen in *willingness to teach* the topic described above. Rapport with students is also discussed in the *positive feedback* topic.

In this study I found that students worked harder than they thought or put most of their effort into meeting faculty expectations when faculty informed them of their standards or expectations in a positive way. This finding agrees with a student-faculty interaction benchmark of The National Survey of Student Engagement (NSSE) survey (NSSE, 2007, p. 2) that "worked harder than you thought you could to meet an instructor's standards or expectations." The finding of the present study expanded the benchmark that faculty convey their expectations in *a positive manner* to get the outcome.

As previously presented, a fifth-year student shared his experiences, "I had been assigned some hard clinical work, but I was not confident that I could do it. A faculty member said, 'I believe you can do it.' I tried to do the work, and I got it. Unbelievable! (5L)

Factors that Promote Student Development Outcome

Pascarella and Terenzini (2005, p. 600) suggest that:

> Replicated evidence also suggests that critical thinking, analytic competencies, and general intellectual development thrive in college environments that emphasize close relationships and frequent interaction

between faculty and students as well as faculty concern about student growth and development.

In the dental school at PSU, academic advisors were faculty with whom most of the students admitted they had close relationships. Generally, students are assigned the same academic advisors from their first-year until graduation. The interactions with their academic advisors were meaningful to them. A second-year student admitted that, “Academic advisors have close relationships with students, more than other faculty. There are many issues to cover in their advice.” A first-year student stated that:

> I think faculty interaction that has a profound effect on me is interaction with my academic advisor. When he makes suggestions to me such as telling me good study techniques, I use and apply them. I trust his suggestions very much…it is useful for me and practical. (1H)

The focus of the dental school curriculum is on face-to-face or individual teaching, particularly for senior students; this renders frequent substantive academic interactions. The study was a qualitative study and did not have exact criteria like survey questions to directly investigate for critical thinking, analytic competencies, and general intellectual development. However, students seemed to gain knowledge from the development outcome mentioned above during their six-year curriculum as shown in their quotes regarding examples of close relationships and frequent academic interactions. More studies are needed to confirm the finding in dental education.

The study found that “close relationship” and “faculty concern about student growth and development” were related to student satisfaction and their sense of belonging. Faculty are considered to be representatives of the institution and personal

contact with professors make the students feel valuable (Cox & Orehovec, 2007). Thus, good impressions of, and satisfaction with, the faculty will lead to feelings that students are members of the school; they have faculty whom they regard as their mentors. The sixth-year student said "every student has 'a teacher in their heart.' They are the faculty who students perceived were concerned for and were close to students. And the faculty are the ones they think about when they need suggestions" (6L). This will support more student-faculty interactions. An example of faculty concern about student growth and development was from a first-year student who shared that:

> I have a good impression of [one of school administers], but I haven't studied with him. One day I was playing music; he came into the music room [the music room is close to administers' parking area] and he asked, "Can you play music? What type of musical instruments can you play?" something like this. I felt good that he came over to meet me, and he was concerned about students and wanted to understand us. (1L)

Faculty show respect to student was another finding linked to student satisfaction and increased the chance of good student-faculty interactions. The interactions then influenced a variety of students' learning experiences.

Academic Attainment Outcome

"College GPA," "degree attainment," "graduation with honors," and "enrollment in graduate professional schools have positive correlations with student-faculty interactions" (Pascarella & Terenzini, 2005, p.418). The present study was qualitative and could not show direct correlation between student-faculty interaction and college GPA. It was not data collected from graduate students; therefore, there was no evidence to support the last three outcomes as revised by Pascarella and

Terenzini, (2005). However, it is likely that the last three outcomes may be the consequences of high GPA.

The findings about different interactions/reactions to faculty in high and low GPA students were quite interesting and may in part explain Pascarella and Terenzini's (2005) suggestion above. High GPA students kept interactions with intimidating faculty whereas the low GPA students tended to avoid those faculty. By doing this, low GPA students reduced their opportunities to learn from those faculty. Then, they receive less diversity of faculty experiences while studying in the school. This may affect their GPA. Another finding was high GPA students were more likely to follow faculty after class to ask questions, and this may affect their GPA. The first-year student who had a good GPA elaborated:

> After class, I usually follow lecturers to ask questions. If I have questions, I will ask lecturers after class. Therefore, the faculty can remember me, and I feel closer to faculty. Then I have more confidence to contact them when they pay attention to me. (1H)

Chapter Summary

Analysis of the data address three objectives that served as a guide for the study: to describe all forms of student-faculty interactions; to describe the relationship of these different forms of student-faculty interactions to academic achievement; and to describe other realities about student-faculty interactions and their consequences.

Pascarella and Terenzini (2005) conclude that learning in collaboration with faculty is one among two important themes that arise in new pedagogies. This is especially true for studying dentistry where development of knowledge and skill require academic nurturing from experienced faculty. An additional finding from the

study was not only student-faculty interaction, but also *positive* interactions affect *positive* student learning and development.

According to Pascarella and Terenzini (2005), two forms of student-faculty interactions, classroom and non-classroom, are relevant to classify and analyze learning consequence. As suggested in other educational disciplines, classroom interaction plays an important role for student learning and development. It is important for the dental students to develop knowledge and skills to meet professional standards. The study found that one-on–one student faculty interaction was required to achieve learning outcomes in dentistry.

The study findings agreed with Pascarella and Terenzini (2005) that non-classroom interaction focusing on academic learning supports student learning development. However, social extracurricular interactions were also required by the dental students. They believed that it supported close relationships with faculty and enhance their confidence to interact with faculty. Thus, interactions enhanced academic learning. This is the additional issue to that of Pascarella and Terenzini (2005).

The study found positive influences as perceived by the students while playing sports such as volleyball and badminton with faculty enhanced classroom interaction. This is the reverse of the information suggested by Pascarella and Terenzini (2005) that intercollegiate participation, particularly football and basketball, tend to inhibit the interaction. Culture differences and type of sports may explain this finding.

Pascarella and Terenzini (2005) suggest there are teacher behaviors that influence student mastery of course subject matter. It is useful for grouping *suspected faculty behaviors that promote dental student learning* as perceived by the students in

the present study into relevant categories as discussed in this chapter. The suspected behaviors were also related to student satisfactions.

The present study found that high GPA students tended to have more interaction with faculty than did their low GPA counterparts. This finding is relevant to a positive correlation between college GPA and student-faculty interactions (Pascarella & Terenzini, 2005).

The next chapter provides a summary of the study, findings, and conclusions. In addition, recommendations for further study and implications for research, theory, and practice, and discussion are presented.

CHAPTER VI

SUMMARY, FINDINGS, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS, AND DISCUSSION

This explanatory qualitative case study examined student perceptions of student-faculty interactions and their relationship to academic achievement in the dental school at Prince of Songkla University (PSU) through the lens of Pascarella and Terenzini's (2005) student-faculty interactions model. A summary of the study, findings, conclusions and implications for research, theory, and practice are presented. Recommendations for further study are followed and finally, a discussion is shared.

Study Summary

Dental schools recruit qualified students through a variety of high-standard admissions to ensure student achievement. However, some students fail to achieve the academic standards. I decided to study student perceptions because there is evidence that a focus on students is the most likely means to foster student achievement in their higher education (Kuh et al., 2005a; Pascarella & Terenzini, 2005). Therefore, the purpose of the present study was to reveal student perceptions of student-faculty interactions and their relationship to academic achievement in a dental school. Pascarella and Terenzini's (2005) general casual model for assessing the effects of differential environments on students and cognitive development (p. 57) seemed to explain the findings through its essential component of student-faculty interactions.

The literature review provided Pascarella and Terenzini's (2005) perspective on student-faculty interaction. Long-term evidence support that faculty-student interaction is important for student development and achievement in higher education (Cabrera, Colbeck, & Terenzini, 2001; Carini, Kuh, & Kliein, 2008; Kuh et al., 2005b; Pascarella et al., 2006; Pascarella & Terenzini, 2005). The relevant literature on student-faculty interactions, including the interactions in dental schools, and their influence on student academic success and development, were also presented. Dental school intense admission processes and academic achievement of dental students were reviewed to give background for the study.

Focus group interviews, laboratory and clinical instruction booklets, and unobtrusive observations in the dental library were used to collect data. Four representatives of high and low grade point average (GPA) students of both genders from each class of the six year dental curriculum were invited for three focus group interviews. One student was absent on the date of the interview; therefore, the total number of student participants in the focus groups was 23. Seven laboratory guideline booklets and nine clinical instruction booklets available for academic year 2008 were reviewed and included in the study. Faculty other than the observer did not enter the dental library at PSU during some observation sessions. Therefore, six 1-2 hour informal observations were conducted in the library until I could record student-faculty interactions in three sessions. Approximately 7-25 students and 2-3 faculty, including the observer, were in each of the three observations.

A pre-ethnographic study of a focus group interview to test the relevance of the interview questions and to make the researcher familiar with the focus group process was conducted prior to the three focus group interviews. All participants of the focus group interviews agreed to the use of video recorders during the interviews.

Confidentiality of the focus group participants was ensured by assigning a number to each participant. I transcribed the video tape away from my office to avoid possible confidentiality issues. Students in the focus group were asked to write narrative at the end of the interviews if there were sensitive or confidential issues they were reluctant to share in the focus group.

Organization and analysis of the data using pattern matching was performed (Trochim, 1989). All sources of data collection methods were compared to triangulate the findings. The three means of data collection methods confirmed or expanded each finding.

Study Findings

Students were very concerned with maintaining positive student-faculty interaction with their professors. Interaction with faculty was an important constituent for them to reach their goal of professional learning achievement, the learning from faculty professional experiences, particularly individual teaching as well as to get academic support and emotional rapport during their studies in the school. In addition, they wanted to gain a good score, particularly in subjective evaluations. They wished to have close relationships with faculty. They wanted to have close supervision from faculty in clinics, particularly on difficult cases.

Most student-faculty interactions were classroom interactions, guided by the dental curriculum. Most non-classroom interactions were related to academic issues. Students perceived a lack of both classroom and social non-classroom interactions. They perceived that faculty needed to cover all of the content in class leading to less time for interaction. They wanted more activities to support social interactions. They believed that interaction with faculty would enhance academic contact, and they felt more confident to interact with faculty in the classes.

Students perceived barriers to interact in their classes. Tight schedules for classes led to one-way communication in most of the lectures. Students also admitted that they had less time to ask questions after class. Or, they were too tired to ask questions after studying for half a day or for all day. Since the students did not want to inconvenience other students or the professor by asking questions, the students often were reluctant to ask questions after the lecture was concluded. However, they could provide questions and ask in the laboratory time instead. Thai culture may explain these findings.

Apart from academic interaction that occupied a major part of non-classroom interaction, students spent most of out-of-class contacts with their academic advisors or their assembly advisors. Some students admitted that they had no close interaction with any of the faculty in the school. However, if they had a problem, they contacted their academic advisors. Although they were not close to their academic advisors, some had their advisors' mobile phone numbers; some believed they could get the phone number from their friends who had the same advisor. They believe that their academic advisors were busy and did not have opportunities to meet with them. Those who had close relationships with their academic advisors showed respect to the advisors and accepted their roles as mentors.

Students tended to have superficial social interactions with faculty if there were opportunities to interact. Accessibility, characteristics of both faculty and students, and impressions of the faculty were influential factors determining interaction with their faculty. Students admitted that there were three levels of interactions with the faculty when they met by chance (depending on the impression of the faculty). When they met faculty, they greeted them, in the first level they "walk away fast," in the second level they "walk away at normal speed," and in the third

level, they “begin to talk with” faculty. Students gave clues to distinguish faculty in the first and second level of interaction. Some assumed a major role in the conversation when they met by chance. Also when faculty asked for students’ questions in class, no students admitted that they had questions although they did.

Students mentioned their good impressions of *Wai Kru Day*. This is a formal arrangement for students to show respect and acknowledgement to faculty, and for faculty to bless the students (details on p. 65). After the formal ceremony, students give flowers or gifts to their favorite faculty. Most advisees also give flowers or gifts to their advisors. Also, the students have lunch with their advisors. They admitted that having lunch with their advisor was a good time for them to relate the experiences they had while participating in the program, which allowed the faculty to monitor their progress. They expected to have more and regular activities like this.

Students reported various aspects of faculty personal behaviors/characteristics that promoted student learning and development including positive feedback, respect, accessibility, a sense of humor, emotional rapport, interest in student well being, close follow up on student works and progress, showing interesting to know individual students, showing willingness to teach, and showing expectations of student assignments. All of these aspects contributed to student satisfaction.

Teaching strategies that promoted student learning were demonstration of techniques, small group learning, problem based learning, lectures using two-way communication, preparation of students for the use of technical terms, concise and precise documentation or communication, ability to show linkage from theory to clinical practice and to other subjects, and creating a relaxed learning atmosphere. Demonstration of techniques was emphasized as an important means in studying dentistry and is required of the students in every levels of the curriculum.

High GPA students reported three differences from their peers with low GPAs. The high GPA group interacted with intimidating faculty whereas the low GPA group tried to avoid direct interaction because they were afraid of criticism from faculty. Low GPA students complained of negative impressions or biases from some faculty whereas there was no complaint from the high GPA group. High GPA students were more likely than those with low GPAs to follow faculty after classes to ask questions. The low GPA students admitted that they did not ask questions because they were afraid the professors would ask them back and they could not provide an answer. The differences may contribute to levels of academic achievement.

Conclusions

This study was the first to apply Pascarella and Terenzini's (2005) theoretical model in Thai dental education. It was also one among few dental studies that focused only on student-faculty interactions and might be the only eastern study. Most studies in dental education have a broader focus in general aspects of student learning experiences (Henzi et al., 2005; Karibe et al, 2007; Sanders & Lushington, 2002; Victoroff & Hogen, 2006). This study was one among few qualitative dental studies as well. Several conclusions can be drawn from the study.

From the study findings, I can conclude that student-faculty interaction is an important factor contributing to student academic achievement and development, particularly in undergraduate dental students. It also determines students' satisfaction. Therefore, administrators, faculty, and students should modify student-faculty interactions that take place in their dental schools in order to improve student learning outcomes.

Faculty personal behaviors/characteristics and teaching strategies that promote student learning and development, such as positive feedback and demonstrations take

on major roles for student achievement and professional development. Strategies to enhance these factors in dental schools are needed. On the contrary, factors that produce opposite outcomes particularly negative feedback and faculty negative impression or biases toward students should be diminished.

Next, three different discrepancies of student-faculty interactions were reported between high and low GPA students. The discrepancies were reactions to intimidating faculty, complaints about biases from some faculty and tendency to follow faculty to ask questions after classes. It can be concluded that the discrepancies may be in part responsible for their different GPA levels. Positive student-faculty interactions would reduce the gap.

The students emphasized the importance of student-faculty interaction for their academic achievements and professional development; they noted these interactions are a necessary part of the dental curriculum. Therefore, I can conclude that Pascarella and Terenzini's (2005) theoretical lens about the essential role of "learning in collaboration with faculty" (p. 602) is an useful tool to understand dental school education where professional skill cannot be achieved without nurturing and face-to face interaction with faculty.

This case study confirmed the usefulness of western theory in Thai context. It also offered insight into the necessary elements inherent in student learning; the main component in student learning appeared to be *student-faculty interaction*. The case study helped to reveal information difficult to get in any other way. The scope, focus, and study design of the case study provided important findings for the dental school at PSU and Thai dental education. Berg (2009) suggested "When case studies are properly undertaken, they should not only fit the specific individual group, or event studied, but also generally provide understanding about similar individuals, groups,

and events (p. 330).” Thus, eastern dental education and international education may benefit from the Thai study which was based on more than two decades of knowledge of western theory. Significance of the case study is discussed next.

Implications for Research, Theory and Practice

Pascarella and Terenzini’s (2005) casual model to study student-faculty interactions was used with dental students for the first time. The findings and conclusions provide a knowledge base of student-faculty interaction in Thai dental students. Student perceptions of the interactions were clear.

Research

The purpose of the study was to assess student perceptions of student-faculty interactions and their relationship to academic achievement in a dental school. The study broadened the research base of how Thai dental students perceive their professors. It also analyzed factors of student-faculty interaction that appeared to affect student achievement. The difference in student-faculty interaction of high and low GPA students was also documented.

The study also tested the usefulness of focus group interviews with Thai dental students. Cultural issues surrounding the reality that Thai students tend to be quiet in classes may inhibit the success of focus group interviews. However, focus group interviews appeared to work well for this study. As previously noted in chapter III, participant students expressed their opinions, facial expression, body language and social interaction naturally and in a relaxed manner. They listened to each other and took turns presenting their comments or experiences. Confirming confidentiality and explicit instructions of focus group processes may contribute to the successful focus group interview (Berg, 2009; Morgan, 1988). Thus, the method was practical to use

for qualitative study in Thai student context, if the process guidelines and recommendations were followed.

Theory

The study tested the usefulness of the western theory in Thai context. The findings support the capability of the Pascarella and Terenzini (2005) model, particularly its essential part: student-faculty interactions influence student achievement. The theory had been used in many disciplines but not directly applied to dental education. Pascarella and Terenzini's (2005) notion of student-faculty interaction worked well to explain its relationship with student achievement. Thus, the study supported and confirmed the usefulness of the theory in studying in the discipline and may prove helpful in other educational research where close professional training is required for student academic achievement.

The findings of the study have two important points to add to the knowledge base of the theory. First, not only frequency and detail of feedback (Cabrera, Colbeck, & Terenzini, 2001; Pascarella et al., 2006; Pascarella & Terenzini, 2005) but also and particularly important *positive* feedback enhanced student learning, at least in the field of dentistry. If faculty provided only feedback in a negative manner such as blaming students when they made a mistake or laughing at students when they could not answer a question, the affect on student development and achievement may be reversed. Second, social non-classroom interaction does not appear to have a profound effect on student learning like *substantive* or academic interaction (Pascarella & Terenzini, 2005). The study found that it influenced and supported classroom interaction and was needed by students. The findings are in agreement with Cox and Orehovec (2007) who suggest an additional issue to that of Pascarella & Terenzini (2005) that:

> While our findings confirm the value of functional interaction, they also indicate that incidental contacts, personal interactions, and mentoring can be meaningful to students. Even the most fleeting out-of class interactions with faculty members (i.e., incidental contact) can help students overcome the professional distance implicit in a classroom setting. Moreover, incidental contact, though often unintentional and superficial, can serve as stepping stone to more substantial interactions later (p. 359-360).

The present study and Cox and Orehovec (2007) used the qualitative research method for the investigations. This may be a benefit as an additional finding to Pascarella and Terenzini (2005). The theoretical perspective of the latter mostly comes from meta-analysis of quantitative data. Thus, the out-of-class contacts support classroom learning. All types are required by the students to increase such activity for them to have more contact with faculty out of class.

Pascarella and Terenzini (2005) suggest:

> Not all types of social or extracurricular involvement have positive effects on learning, however. Intercollegiate athletic participation, particularly for men in revenue-producing sports (that is football and basketball), appear to have an inhibiting influence (p. 149).

The present study did not find a preventive role of interaction in athletic participation because it is rare for students and faculty to have that type of participation. However, a student who plays badminton with faculty admitted the positive effect. Cultural issues may explain the finding.

Practice

When faculty tried to cover all of the content in their classes, little, if any, time remained for interactions such as asking questions or discussion. The lack of

time also made the lecture more one-way communication which students found boring or had difficulty following the lecturers. Training the lecturers on the teaching tips for *how to make lecturers more effective* should be arranged. The lecturers needed to know how they could manage their content to meet student learning capacity and how to improve their teaching strategies (McKeachie & Svinicki, 2006), which could provide more time for interaction in the class and promote two-way communication. Students admitted that two-way communications promoted their learning.

The study's finding that faculty personal behaviors/characteristics promoted student development, particularly the result of positive and negative feedback, should also inform the faculty to improve quality of teaching. "Feedback from student perceptions on specific behaviors resulted in greater improvement than perceptions on more general characteristics" (Pascarella & Terenzini, 2005, p.119). Moreover, if it is accompanied by *competent consultation*, the greatest gains in quality of teaching can be expected. The study supplied the information for the first part. The arrangement for effective teaching instruction for the faculty by the dental school would fulfill the second part.

Students documented the lack of out-of-class interaction with faculty. They found that such contact enhanced their confidence to have classroom interaction. They wanted to have more opportunities to contact faculty. Dental school arrangement of a regular schedule throughout the academic year for advisors or clinical advisors to have lunch with their advisees is possible. Using information technologies to increase student-faculty interactions can be done and should be promoted as a culture for interaction in the school where matching times between student and faculty is still a problem. Social out-of-class interactions may prove very helpful, but further research

is needed to confirm this theory. And if indicated, such social out-of-class interactions should be considered to remain within the boundaries of student-faculty relationships.

Recommendations for further study

Several opportunities for further study are related to the present study. First, according to Pascarella and Terenzini (2005, p. 418), academic attainment outcomes shown to have positive correlation with student-faculty interaction includes "college GPA," "degree attainment," "graduation with honors," and "enrollment in graduate professional schools." This study revealed three different aspects in student-faculty interaction between high and low GPA students. Further studies focusing on this issue would confirm and expand the findings.

Second, in this study, I found that non-classroom interaction supported classroom interaction. However, part of the development outcome, which was affected included general cognitive and skill development was not clear. Further study may answer the question and provide more insight into the impact of non-classroom interaction.

Third, the finding that the fourth-year student did not ask questions at the end of lecture because he was concerned that his classmates may get hungry or faculty may have something to do might be different from those in western countries. Cultural issues may be responsible for the finding. Multicultural studies of student-faculty interaction may answer this question as well as reveal other aspects of cultural issues. If this is the case, cultural context should be considered before applying policy to improve student-faculty interaction that will affect academic outcome.

Finally, the study employed qualitative methods, thus the exact aspect of student development such as critical thinking, analytic competencies, and general intellectual development could not be reported. Applying criteria in a quantitative

study, like survey data, would make the classification of the development outcomes possible.

Discussion

It is likely that student-faculty interactions, as perceived by students, played a greater role in students' dental educations than in other disciplines. This may be because both knowledge and skill need to be developed during their higher education to meet professional standards. Students who are working with patients also need academic mentoring and close follow up information from faculty.

Dental schools should consider enhancing student-faculty interactions to increase students' academic achievements since other factors that affect academic achievement (e.g. structural/organizational characteristics of the institution, student background, institutional environment, and quality of student effort) are not as easy to improve (Pascarella & Terenzini, 2005). And, some factors need a lot of resources to make improvements possible. Student-faculty interaction also influences student effort.

In performing this study, I had direct experiences and information showing the value of student-faculty interactions. Thus, I tried to enhance my interaction with students, particularly those who attended my courses. I paid attention to individual students, tried to-facilitate two-way communication in my lecture classes, promoted a relaxed classroom atmosphere, showed the link of theories or abstract ideas with clinical experiences, etc. I did this because I thought this was the way I could improve student academic achievement; I did not expect other results.

PSU has an online instructor evaluation system at the end of each semester for students to evaluate their instructors. It is a 17 item checklist rubric score with an open space for students to comment at the end of the questionnaire. The instructor

who is evaluated does not know the names of the students who evaluated them, and the report is a summary of the evaluation. Surprisingly, when the evaluation results from students who enrolled in three courses that I taught in second semester of 2008 came in, I found many positive comments about my teaching.

The following are some of the comments from different students from three different courses “Your teaching was very good. I was never sleepy in your class,” “You are very thoughtful, interested in your students’ learning and good at relating knowledge to your students,” “You are concerned about your students to gain as much knowledge as they can. You understand us and concern for our well being. Thank you for making me feel that there was a good place to study in this school,” and “You are thoughtful, kind, and I understood what you taught.” Kuh et al. (2005a) suggests that interaction with students “is intrinsically rewarding” and this is the case.

My experience is a good example for dental schools to support and enhance positive student-faculty interaction. This can be done by informing the faculty of the value of student-faculty interactions and facilitating the faculty with better teaching techniques to employ. When they receive a positive response from the students, this process will lead to progress in dental schools. Thus, it is more likely that dental schools will increase student achievement and the students’ academic and social experiences at their institutions will be more memorable ones.

REFERENCES

ADEA Commission on Change and Innovation in Dental Education (2006). The dental education environment. *Journal of Dental Education, 70,* 1265-1270.

Admission Department, Commission on Higher Education, Ministry of Education Thailand. (2002). *Admission to higher institution data for the academic year 2002*. Bangkok: Arrun Printing.

Admission Department, Commission on Higher Education, Ministry of Education Thailand. (2003). *Admission to higher institution data for the academic year 2003*. Bangkok: Arrun Printing.

Admission Department, Commission on Higher Education, Ministry of Education Thailand. (2004). *Admission to higher institution data for the academic year 2004*. Bangkok: Arrun Printing.

Admission Department, Commission on Higher Education, Ministry of Education Thailand. (2005). *Admission to higher institution data for the academic year 2005*. Bangkok: Chunpim Printing.

Admission Department, Commission on Higher Education, Ministry of Education Thailand. (2006). *Admission to higher institution data for the academic year 2006*. Bangkok: Arrun Printing.

Admission Department, Prince of Songkla University. (2002). *Admission to Prince of Songkla University data for the academic year 2002*. Songkla: Prince of Songkla University.

Admission Department, Prince of Songkla University. (2003). Admission to Prince of Songkla University data for the academic year 2003. Songkla: Prince of Songkla University.

Admission Department, Prince of Songkla University (2004). *Admission to Prince of Songkla University data for the academic year 2004*. Songkla: Prince of Songkla University.

Admission Department, Prince of Songkla University. (2005). *Admission to Prince of Songkla University data for the academic year 2005*. Songkla: Prince of Songkla University.

Admission Department, Prince of Songkla University. (2006). *Admission to Prince of Songkla University data for the academic year 2006*. Songkla: Prince of Songkla University.

Anaya, G. (2001). Correlates of performance on the MCAT: An examination of the influence of college environments and experiences on student learning. *Advances in Health Sciences Education, 6,* 179-191.

Astin, A. W. (1977). *Four critical years*. San Francisco: Jossey-Bass.

Astin, A. W. (1993). *What matter in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Avalos, J (1996). *The effects of time-to-degree completion, stopping out, transferring, and reasons for leaving college on students' long-term retention, educational aspirations, occupational prestige, and income*. Unpublished doctoral dissertation, University of California at Los Angeles.

Benjakul, P., & Cheunarrom, C. (2000). Student adjustment problems in two dental schools in Thailand. *Journal of Dental Education, 64,* 365-369.

Berg, B. L. (2009). *Qualitative research methods for the social sciences* (7th ed.). Boston: Allyn and Bacon.

Cabrera, A. F., Colbeck, C. L., & Terenzini, P. T. (2001). Developing performance indicators for assessing classroom teaching practices and student learning: The case of engineering. *Research in Higher Education, 42,* 327-351.

Cabrera, A., Nora, A., Terenzini, P., Pascarella, E., & Hagedorn, L. (1999). Campus racial climate and the adjustment of students to college: A comparison between White students and African-American students. *Journal of Higher Education, 70,* 134-160.

Carini, R. M., Kuh, G. D., Kliein, S. P. (2008). Student engagement and student learning: testing the linkages. *Research in Higher Education, 47,* 1-31.

Coombs, J. A. (1976). Factors associated with career choice among women dental students. *Journal of Dental Education, 40,* 123-129.

Cotton, S. R., & Wilson, B. (2006). Student-faculty interactions: Dynamics and determinants. *Higher Education, 51,* 487-519.

Cox. B. E., & Orehovec, E. (2007). Faculty-student interaction outside the classroom: A typology from a residential college. *The Review of Higher Education, 30,* 343-362.

Cress, C. C. (2008). Creating inclusive learning communities: the role of student-faculty relationships in mitigating negative campus climate. *Learning Inquiry, 2,* 95-111.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson.

Denzin, N. K., & Lincoln, Y. S. (2003). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of qualitative inquiry* (pp. 1-44). Thousand Oaks, CA: Sage Publications.

Denzin, N. K., & Lincoln, Y. S. (2005). *The Sage handbook of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Divaris, K., Barlow, P. J., Chendea, S. A., Cheong, W. S., Dounis, A.,& Dragan, I. F., et al. (2008). The academic environment: The students' perspective. *European Journal of Dental Education, 12*(Suppl. 1), 120-130.

Drummond, J. R., & Duguid, R. (1997). Student drop-out from UK dental schools. *British Dental Journal, 182,* 347-349.

Duguid, R., & Drummond, J. R. (2000). The admission of students to UK dental schools-recent trends (1983-1998). *European Journal of Dental Education, 4,* 71-76.

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. A. (1993). *Doing naturalistic inquiry: A guide to methods*. Newbury Park, CA: Sage Publications.

Faculty of Dentistry, Prince of Songkla University (2007a) [Undergraduate dental students demographic in academic year 2007]. Unpublished raw data.

Faculty of Dentistry, Prince of Songkla University (2007b). [Undergraduate dental students registered through academic years 1996-2007 and their academic performance]. Unpublished raw data.

Feleti, G. I., & Clark, R. M. (1981a). Construct validity of a learning environment survey for medical schools. *Education Psychology Measurement, 41,* 875-882.

Feleti, G. I., & Clark, R. M. (1981b). Review of the psychometric properties of the medical school learning environment. *Survey Medical Education, 15,* 92-96.

Fielding, A., Belfield, C. R., & Thomas, H. R. (1998). The consequences of drop-outs on the cost-effectiveness of 16-19 colleges. *Oxford Review of Education, 24,* 487-511.

Fontana, A., & Frey, J. H. (2003) The interview: From structured questions to negotiated text. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative materials* (pp. 61-106). Thousand Oaks, CA: Sage Publications.

Frankin, M. (1995). The effects of differential college environments on academic learning and student perceptions of cognitive development. *Research in Higher Education, 36,* 127-153.

Frost , S. (1991). Fostering the critical thinking of college women through academic advising and faculty contact. *Journal of College Student Development, 32,* 359-366.

Gaengler, P., de Vries, J., Akota, I., Balciuuniene, I., Berthold, P., Gajewska, M. et al, (2002). Student selection and the influence of their clinical and academic environment on learning. *European Journal of Dental Education, 6*(Suppl. 3), 8-26.

Giuliani, M., Lajolo, C., Clemente, L., Querqui, A., Viotti, R., & Boari, A., et al. (2007). Is manual dexterity essential in the selection of dental students? *British Dental Journal , 203,* 149-155.

Hallissey, J., Hannigan, A., & Ray, N. (2000). Reasons for choosing dentistry as a career – a survey of dental students attending a dental school in Ireland during 1998-99. *European Journal of Dental Education, 4*, 77-81.

Heintze, U., Radeborg, K., Bengtsson,H., & Stenlåås, A. (2004). Assessment and evaluation of individual prerequisites for dental education. *European Journal of Dental Education, 8,* 152-160.

Henzi, D., Davis, E., Jasinevicius, R., & Hendricson, W. (2007). In the students' own words: What are the strengths and weakness of the dental school curriculum? *Journal of Dental Education, 71,* 632-645.

Henzi, D., Davis, E., Jasinevicius, R., & Hendricson, W. (2006). North American dental students' perspectives about their clinical education. *Journal of Dental Education, 70,* 361-377.

Henzi, D., Davis, E., Jasinevicius, R., Hendricson, W., Clintron, L., & Isaacs, M. (2005). Appraisal of the dental school learning environment: The students' view. *Journal of Dental Education, 69,* 1137-1147.

Irby, D. M. (1995). Teaching and learning in ambulatory care settings: A thematic review of the literature. *Academic Medicine, 70,* 898-931.

Jaeger, A.J. (2008). Contingent Faculty and *Student* Outcomes. *Academe, 94,* 42-43.

Johnson, (1997). Commuter college students: What factors determine who will persist and who will drop out? *College Student Journal, 31,* 323-332.

Karibe, H., Suzuki, A., Sekimoto, T., Srithavaj, T., Iamaroon, A., Warita, S, Kawakami, T., et al. (2007). Cross-cultural comparison of the attitudes of dental students in three countries. *Journal of Dental Education, 71,* 1457-1466.

Kim, H. (1996, May). *Why student leave or stay: A land-grant research I university experience*. Paper presented at the meeting of the Association for Institutional Research, Albuquerque, NM.

Koljatic, M. & Kuh, G. (2001). A longitudinal assessment of college student engagement in good practices in undergraduate education. *Higher Education, 42*, 351-371.

Kuh, G. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change, 33,* 10-17, 66.

Kuh, G. (2003). What we're learning about student engagement from NSSE. *Change, 35*, 24-32.

Kuh, G. (2008). *The College Student Experiences Questionnaire Assessment Program.* Retrieved May, 17, 2008, from http://cseq.iub.edu.html

Kuh, G., & Hu, S. (1999, November). *Is more better? Student-faculty interaction revisited*. Paper presented at the meeting of the Association for the Study of Higher Education. San Antonio, TX.

Kuh, G., & Hu, S. (2001a). The effects of student- faculty interaction in the 1990s. *Review of Higher Education, 24,* 309-332.

Kuh, G., & Hu, S. (2001b). The relationship between computer and information technology use, student learning, and other college experiences. *Journal of College Student Development, 42,* 217-232.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J (2005a). *Assessing conditions to enhance educational effectiveness: The inventory for student engagement and success. A companion volume to student success in college: Creating conditions that mater*. San Francisco: Jossey-Bass.

Kuh, G. D., Kinzie, J., Schuh, J. H., Whitt, E. J., & associates. (2005b). *Student success in college: Creating conditions that matter*. San Francisco: Jossey-Bass.

Lacari, F. W., Knight, G. W. & Guenzel, P.J. (2008). Designing evaluation forms to facilitate student learning. *Journal of Dental Education, 72,* 48-58.

Laird, T. F. N. & Kuh, G. D. (2005). Student experiences with information technology and their relationship to other aspects of student engagement. *Research in Higher Education, 46,* 211-233.

Lievans, F., & Coetsier, P. (2002). Situational tests in student selection: An examination of predictive validity, adverse impact and construct validity. *International Journal of Selection and Assessment, 10,* 245-257.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage Publications.

Lingard, L., Reznick, R., DeVito, I., & Espin, S. (2002). Forming professional identities on the health care team: Discursive constructions on the 'other' in the operating room. *Medical Education, 36,* 728-734.

Luck, O., Reitemeier, B., & Scheuch, K. (2000). Testing of fine motor skills in dental students. *European Journal of Dental Education, 4, 10-14.*

Lynch, C. D., McConnell, R. J., & Hannigan, A. (2006). Dental school admissions in Ireland: Can current selection criteria predict success? *European Journal of Dental Education, 10,* 73-79.

Marshall, R. E. (1978). Measuring the medical school learning environment. *Journal of Medical Education, 53,* 98-104.

McArthur, R.C. (2005). Faculty-Based Advising: An Important Factor in Community College Retention. *Community College Review, 32,* 1-20.

McKeachie, W., & Svinicki M. (2006). How to make lectures more effective. In *McKeachie's teaching tips* (12nd ed., pp.57-63). Boston: Houghton Mifflin Company.

Merriam, S. B. (1998). *Qualitative research and case study applications in education.* San Francisco: Jossey-Bass Publishers.

Merton, R. K. (1987). The focused interview and focus groups: Continuities and discontinuities. *Public Opinion Quarterly, 51,* 550-556.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: A sourcebook of new methods* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Morgan, D. L. (1988). *Focus groups as qualitative research.* [Qualitative research methods series 16]. Newbury Park, CA: Sage Publications.

Naidu, R. S., Adams, J. S., Simeon, D., & Persad, S. (2002). Sources of stress and psychological disturbance among dental schools in the West Indies. *Journal Dental Education, 66,* 1021-1030.

National Survey of Student Engagement (2007). *National Survey of Student Engagement 2008: The College Student Report*. Retrieved May, 17, 2008, from http://nsse.iub.edu/pdf/NSSE2008_US_English_Web.pdf.

Newton, J. T., Buck, D., Thorogood, N., & Skelly, A. M. (2003). Admission as a dental student to the former UMDS and its relationship to socio-demographic characteristics. *British Dental Journal, 195,* 211-217.

Oandasan, I. & Reeves, S. (2005). Key elements for interprofessional education. Part 1: The learner, the educator and the learning context. *Journal of Interprofessional Care, 2005, 19*(Suppl. 1), 21-38.

Pace, C. R. (1984). *Measuring the Quality* of *College Student Experiences.* Los Angeles, University of California, Higher Education Research Institute.

Pace, C. R. & Kuh, G. (1998). *College Student Experiences Questionnaire.* (4th ed.). Bloomington, IN: Indiana University Center for Postsecondary Research and Planning School of Education. Retrieved May, 17, 2008, from http://cseq.iub.edu/pdf/cseq_whole.pdf.

Parsell, G., & Bligh, J. (1998). Interprofessional learning. *Postgraduate Medical Journal, 74,* 89-95.

Pascarella, E. (1980). Student-faculty informal contact and college outcomes. *Review of Educational Research, 50,* 545-595.

Pascarella, E. (1985). College environment influences on learning and cognitive development: A critical review and synthesis. In J. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 1). New York: Agathon.

Pascarella, E. (2001). Identifying excellence in undergraduate education: Are we evenclose? *Change, 33,* 19-33.

Pascarella, E., Cruce, T., Umbach, P. D., Wolniak, G. C., Kuh, G. D., Carini, R. M., et al. (2006). Institutional selectivity and good practices in undergraduate education: How strong is the link? *The Journal of Higher Education, 77,* 251-285.

Pascarella, E., Seifert, T. A., & Whitt, E. J. (2008). Effective instruction and college student persistence: Some new evidence. *New directions for teaching and learning, 2008,* 55-70.

Pascarella, E., & Terenzini, P. (1991). *How college affect students: Findings and insights from twenty years of research.* San Francisco: Jossey-Bass.

Pascarella, E. T., & Terenzini, P. T. (1998). Studying college students in the 21 st century: Meeting new challenges. *Review of Higher Education, 21,* 151-165.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco: Jossey-Bass.

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Pau, A., Rowland, M. L., Naidoo, S., AbdulKadir, R., Makrynika, E., Moraru, R., et al. (2007). Emotional intelligence and perceived stress in dental undergraduates: A multinational survey. *Dental Education, 71,* 197-204.

Pöhlmann, K., Jonas, I., Ruf, S., & Herzer, W. (2005). Stress, burnout and health in the clinical period of dental education. *European Journal of Dental Education, 9,* 78-84.

Rajab, L. D. (2001). Perceived sources of stress among dental students at the University of Jordan. *Journal of Dental Education, 65,* 232-241.

Röding, K. (2001). Professional competence in final-year dental undergraduates: assessment of students admitted by individualized selection and through traditional modes. *European Journal of Dental Education, 5,* 12-16.

Röding, K., & Nordenram, G. (2005). Students' perceived experience of university admission based on tests and interviews. *European Journal of Dental Education, 9,* 171-179.

Rolland, S., Hobson, R., & Hanwell, S. (2007). Clinical competency exercises: Some student perceptions. *European Journal of Dental Education, 11,* 184-191.

Rubin, H. J., & Rubin, I. S. (2005). Qualitative interviewing: *The art of hearing data* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Sanders, A. E., & Lushington, K. (2002). Effect of perceived stress on student performance in dental school. *Journal of Dental Education, 66,* 75-81.

Sandow, P. L., Jones, A. C., Peek, C. W., Courts, F. J., & Watson, R. E. (2002). Correlation of admission criteria with dental school performance and attrition. *Journal of Dental Education, 66,* 385-392.

Seifert, T. A., Goodman, K. M., Lindsay, N., Jorgensen, J. D., Wolniak, G. C., Pascarella, E. T., et al. (2008). The effects of liberal arts experiences on liberal arts outcomes. *Research in Higher Education, 49,* 107-125.

Shields, N. (1994). Retentions, academic success, and progress among adult, returning students: A comparison of the effects of institutional and external factors. *NACADA Journal, 14,* 13-24.

Stewart, F. M. J., Drummond, J. R., Carson, L., & Reddick, G. H. (2004). The future of the profession - A survey of dental school applicants. *British Dental Journal, 197,* 569-573.

Thomas, E.H., & Galambos, N. (2004). What satisfies students? Mining student-opinion data with regression and decision tree analysis. *Research in Higher Education, 45,* 251-269.

Thompson, M. (2001). Informal student-faculty interactions: Its relationship to educational gains in science and mathematics among community college students. *Community College Review, 29,* 35-57.

Trochim, W. (1989). Outcome pattern matching and program theory. *Evaluation and Program Planning, 12,* 355-366.

Twigg, C. A. (2007). A changing picture: Changing college courses can also change the course of lives. *Lumina Foundation Focus*. Retrieved May, 20, 2008, from http://www.luminafoundation.org/publications/focus_archive/winter_2007/new-methods-in-missouri.html.

Umbach, P. D., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education, 46*, 153-184.

Victoroff, K.Z., & Hogen, S. (2006). Students' perceptions of effective learning experiences in dental school: A qualitative study using a critical incident technique. *Journal of Dental Education, 70*, 124-132

Vinton, J. C. (1978). A four-year longitudinal study of the impact on learning structure on dental student lifestyles values. *Journal of Dental Education, 42*, 2561-256.

Volkwein, J. (1991, November). *Improved measures of academic and social integration and their association with ten educational outcomes.* Paper presented at the meeting of the Association for the Study of Higher Education, Boston.

Webster, T. (2001). A principal component analysis of the U.S. News & World Report tier rankings of colleges and universities. *Economics of Education Review, 20,* 235-344.

Wexler, M. (1978). Mental health and dental education. *Journal of Dental Education, 42*, 74-77.

Wilson, R. C., & Gaff, J. G. (1975). *College professors and their impact on students.* New York: Wiley.

Yin, R. K. (2003). *Case study research: design and methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

APPENDIX A

Faculty of Dentistry, Prince of Songkla University Ethics Approval

Documentary Proof of Ethical Clearance

The Ethics Committee, Faculty of Dentistry, Prince of Songkla University

The Project Entitled : Student perceptions of student-faculty interactions and academic achievement in undergraduate dental students at Prince of Songkla University.

Principle investigator : Assoc.Prof.Duangporn Kerdpon
Department of Stomatology, Faculty of Dentistry,
Prince of Songkla University.

Approved by the Ethic Committee, Faculty of Dentistry, Prince of Songkla University

Date of approval : 18 June 2008

(Assoc.Prof.Thongchai Nuntanaranont)
Chairman of Committee

(Asst.Prof.Suthipong Chowanadisai)

(Asst.Prof.Sareeya Srisintorn)

(Asst.Prof.Suwanna Jitpukdeebodintra)

(Asst.Prof.Surapong Vongvatcharanon)

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APPENDIX B

Institutional Review Board Approval

Oklahoma State University Institutional Review Board

Date:	Monday, June 23, 2008
IRB Application No	ED0892
Proposal Title:	Student Perceptions of Student-Faculty Interactions and Academic Achievement in Undergraduate Dental Students at Prince of Songkla University
Reviewed and Processed as:	Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 6/22/2009

Principal Investigator(s):

Duangporn Kerdpon
90 S. Univ. Place #7
Stillwater, OK 74078

Adrienne Hyle
325D Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

[X] The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

APPENDIX C

Document Summary Form

Document Summary Form

Document Number:

Date:

Name or description of document:

Significance or importance of document:

Brief summary of contents:

Points to be quoted

Page……Line……..

Quoted

VITA

Duangporn Kerdpon

Candidate for the Degree of

Doctor of Education

Thesis: STUDENT PERCEPTIONS OF STUDENT-FACULTY INTERACTIONS AND ACADEMIC ACHIEVEMENT IN UNDERGRADUATE DENTAL STUDENTS AT PRINCE OF SONGKLA UNIVERSITY

Major Field: Applied Educational Studies

Biographical:

Personal Data: Born in Phuket, Thailand, on October 26, 1964, daughter of Pichai and Suda Kerdpon.

Education: Graduated High School from Phuket Wittayalai, Phuket, Thailand in March, 1983; received Doctor of Dental Sciences from Prince of Songkla University, Songkla, Thailand, in May 1989; received Master of Dental Sciences from University of Melbourne, Melbourne, Australia, in December, 1995. Completed the requirements for the Doctor of Education in Applied Educational Studies at Oklahoma State University, Stillwater, Oklahoma in July, 2009.

Experience: Lecturer, Faculty of Dentistry Prince of Songkla University, Thailand, in 1989; Assistant Professor in 1999; Diplomate (Thai Board of Oral Diagnostic Science) from Dental Council of Thailand, Bangkok, Thailand, in 2000; Associate Professor in Oral Medicine, in 2003-present; Vice Dean for Postgraduate Education Affairs, Faculty of Dentistry, Prince of Songkla University, February, 2004-October, 2006; President of Prince of Songkla University Dental Alumni Association, 2000-2002; Member of Thai Board of Oral Diagnostic Science Committees, 2002-present; Member of Thailand Royal College of Dental Surgeon Committees, 2004-2006.

Professional Memberships: Dental Council of Thailand
Thailand Royal College of Dental Surgeon
Oral Disease Group of Thailand

Name: Duangporn Kerdpon Date of Degree: July, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: STUDENT PERCEPTIONS OF STUDENT-FACULTY INTERACTIONS AND ACADEMIC ACHIEVEMENT IN UNDERGRADUATE DENTAL STUDENTS AT PRINCE OF SONGKLA UNIVERSITY

Pages in Study: 136 Candidate for the Degree of Doctor of Education

Scope and Method of Study: The purpose of this qualitative case study was to examine student perceptions of student-faculty interactions and their relationship to academic achievement in a dental school. Pascarella and Terenzini's (2005) lens of student-faculty interaction was used as the theoretical perspective of the study. Focus group interviews, review of laboratory and clinical instruction booklets, and unobtrusive observations in the dental library were conducted for gathering data.

Findings and Conclusions: Students are very concerned about maintaining positive student-faculty interaction with their professors. Classroom interaction is the major type of interaction. Academic interaction took major part of non-classroom interaction whereas there was a lack of social-non-classroom interaction. Most non-classroom interaction is academic interaction. Students perceived a lack of social-contact with faculty. They would like to increase such activity because they believe that social interactions support their classroom interactions. The study findings emphasized that positive feedback is the most important aspect of faculty personal behaviors/characteristics that promote student learning and development. Demonstration is the most necessary element among teaching strategies that promote student professional learning. It can be concluded that student-faculty interaction is the essential element for dental students' achievement and professional development. The present study supports the usefulness of Western theory in studying Thai dental education.

ADVISER'S APPROVAL: Dr. Adrienne Hyle