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Client-based field experiences : a summative evaluation of an early stage partnership

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**CLIENT-BASED FIELD EXPERIENCES: A
SUMMATIVE EVALUATION OF AN
EARLY STAGE PARTNERSHIP**

A Thesis

Presented to

The Faculty of the College of Education

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

By

Mary Ellen Ludington-Roach

December, 1995

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**CLIENT-BASED FIELD EXPERIENCES: A
SUMMATIVE EVALUATION OF AN
EARLY PHASE PARTNERSHIP**

by

Mary Ellen Ludington-Roach

A qualitative case study approach was used to investigate the results of a client-based field experience associated with a graduate program in instructional technology (IT). Educational materials were developed by 44 graduate students for a government agency. Summative data came from 42 university students' written questionnaires, eight student interviews and two government agency Project Director interviews. Data was processed by the constant-comparative method of analysis. Four themes emerged, indicative of the early developmental phase of the collaborative partnership: (1) 'real-world' experience was more valued than theoretical classroom learning; (2) students' perceived that through team work and the use of advanced IT strategies they were able to incorporate their breadth of knowledge and skills to develop "fabulous" and useful instructional materials; (3) students valued applying IT principles to 'real-world' needs; and (4) communication methods needed improvement. Overall, participants felt this was a very practical, rewarding experience.

DEDICATION

Dedicated to my beloved husband, David John Roach, my life-companion, and 'My Sister,' Susan Massey Ludington, without whom the past nine months would have been unspeakably difficult to persevere through. To my parents, Evelyn Olive Hoe Ludington and Nelson Amos Ludington, who gave me love and family members to share life with. Also to 'The National Bank of Mary,' my sister, Dorothy Adeline Ludington who supplied extra support and texts when they were sorely needed. Special friends who have given me emotional support, research assistance, kitchen aide and homework help are Shirley A. Foley and Karen Drygas. My love and gratitude to all of you.

Now we may celebrate the successful end of this torturous experience!

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CHAPTER 1

INTRODUCTION

Chapter 1 presents to the reader a vignette to introduce the area of study, the background and significance of the study with the research questions, definitions, assumptions and limitations following.

Vignette

On the first night of class, faces of the graduate students light up with interest, intrigue and motivation as the instructor describes goals and activities planned for the duration of the course: "A government agency will be your 'client.' You will design and develop instructional materials for two government agency educational outreach programs for 4-6th grade visitors to the facility. Your work will have to meet the specific educational goals of the government agency while incorporating the instructional theory and design guidelines taught in class. This 'client-based field experience' will give you exposure to the 'real world' of working for a client as an Instructional Designer who is qualified by graduation from the Instructional Technology Master's Degree program of the university. The joining of forces by the government agency and the university is a step in the development of a partnership to meet the educational goals of both parties." The students voice enthusiasm and desire to start learning under the 'client-based field experience' as outlined.

At the end of the semester the government agency and the university

instructors want to know what the participating graduate students and the client opinions are about the 'client-based field experience'.

Background

The partnership described above was a collaborative effort between students, client and the university. A collaboration is a partnership among parties that agree to work together toward mutually beneficial goals (De Bevoise (1986). Partnerships have been in existence quite some time, with partnerships between universities and schools having been an early form of collaboration (Miel et al., 1952). These partnerships have evolved into collaborative efforts between universities and industries, universities and foundations, universities and teacher organizations, and universities and government agencies (Lieberman, 1986). Partnerships such as these have led to the development of unique field experiences for professional education students. One such partnership between NASA and the United States school system was designed to develop student learning packages for NASA's Young Astronaut Program. The Young Astronaut Program is an appropriate template for client-based partnerships. The nature of the NASA and U.S. school system collaboration is discussed in Chapter Two.

Partnerships between established institutions usually experience long lives. Due to the longevity of partnerships, principles of partnerships have been distilled from experience and reported by De Bevoise (1986). Trubowitz (1986) has detailed eight developmental stages of collaborative relationships

as well as having proposed six tenets for successful collaborative partnerships. Lieberman has another contribution for successful partnerships to benefit from called "Guidelines for Collaborative Work" (1986, p. 31). Each of these sets of guiding tenets are detailed in greater length in Chapter Two.

Field experiences have been in place for many years as a means of linking theoretical 'classroom' work with 'real world' practice. In the business community, apprenticeships have been a vehicle by which novices are inducted into their chosen profession. Journeymen plumbers practice their skills under the supervision of Master Plumbers. Beginning stone cutters practice their craft under the watchful eye of master craftsmen.

The value of the practicum as a way of initiating beginning practitioners into a profession has also been acknowledged in the academic realm. Colleges of Nursing typically use field experiences or clinical experiences as a way of linking classroom theory on patient care to practice (Everston, 1990). Colleges of Education have used student teaching, actually a field experience, as a means of initiating beginning teachers into the classroom (Armstrong, 1989-1990; DelGesso & Smith, 1993, McKay et al., 1994). In fact, current standards set by the National Council for Accreditation of Teacher Education (NCATE) recommend field experiences for education of teachers for public schools (NCATE, 1987), making the place of field experience in teacher education secure as well as substantiating the widely held view that field experiences are essential to the preparation of beginning

teachers. Because of the growing popularity of field experiences, by 1985 70% of the states required field experiences for teachers-in-training prior to their first student teaching field experience (Morris, Pannell, & Houston, 1985). A field experience is defined as "student activity outside the *college* or university, usually at *graduate* or *postgraduate* level" (Page & Thomas, 1977, p. 135).

In the College of Education at a metropolitan state university, field-based experiences in Instructional Technology are referred to as client-based instruction. Operationally defined, client-based instruction is a field-based experience in which the student works for a particular client to design curricular materials under the supervision of an university instructor. Client-based instruction differs from traditional instruction in that the student produces design work for a specific client rather than generic assignments. Additionally, client-based instruction differs from 'real-world' design work in that the student's design work is being directed by a faculty member as part of the curriculum. While the beginnings of a client relationship are established, the student is ultimately responsible to the instructor, rather than the client, for the quality of the design work.

In writing of client-based experiences, Winn (1989) states that application of theory to practice enhances learning. Other authors have pointed out that an advantage of client-based experiences is that students receive "real life" experiences while working within the structure of an

academic program, thus enhancing their ability to integrate instructional design with its delivery (Heinich, 1984).

Overview

This study was designed to contribute to the knowledge base and baseline data that exists on evaluation of field experiences. The study provides information on the assets and liabilities of this specific application of client-based field experience, which can be compared to other, previously published, field experience evaluations so that future collaborative endeavors can be guided by an enlarged empirical data base.

Over the years, field experiences have expanded beyond student teaching apprenticeships into clinical and industrial sites for learning of technical and interpersonal skills, as well as for enhancing the breadth of "real-world" experiences. Students gain experience and are better prepared for work-force performance. Focusing field experiences on learning instructional design that meets client needs matches expectations of graduate students in professional preparation programs. The courses that were evaluated in this study were "Using Instructional Media" and "Graphic Instructional Resources: Design and Production." Where these courses fit in Smith and Sagan's Taxonomy and within the Instructional Technology curriculum is outlined in Appendix A.

Purpose of the Study

The purpose of the current study was to document and evaluate the

experiences of those involved in client-based Instructional Technology classes in the College of Education at a metropolitan state university within the context of an early stage partnership. Specifically, through the use of written questionnaires and oral interviews with participants, this study sought to examine client-based instruction from the viewpoint of the students in the two courses, Practicum students, and the "client" involved in two government agency projects.

One of the government agency projects, the Aerospace Encounter (AE), is housed in the government agency's Research Center and is comprised of several learning stations, each of which provides instruction about aeronautics and space flight through a series of learning activities (NASA, undated). Examples of the upper elementary student learning activities are: (1) design a commercial airliner on a computer, (2) predict the trajectory of a particle of air over the space shuttle, (3) launch an object while sitting in a spinning orbital chair, (4) analyze moon rocks in an isolation box, (5) report to the Johnson Space Center in Houston the temperature within and outside a mock-up of the Freedom Space Station, and (6) run experiments on frogs living on the Freedom Space Station mock-up. The client's goals for university students to develop for use by visiting elementary students at the Aerospace Encounter project are:

- Develop pre-visit and post-visit activities for 4-6 grade students
- Develop the activities into a standardized, teacher-friendly format

- Prepare pre-visit activities for students to maximize their experience at the AE
- Prepare post-visit activities which reinforce and give students a chance to practice what they learned at the AE
- Keeping within the philosophy of the AE, these activities should be as hands-on as possible while being available to the average classroom
- Meet with the AE staff, as teams, for periodic reviews of progress and appropriateness of materials
- Encourage team cooperation and sharing of information, ideas and experiences

The other government agency project is called "Virtual Exploration of Mars" (VEM) and is one of the learning stations at the Aerospace Encounter. At this time, the Virtual Exploration station is not operational as basic software and learning activities are still being developed. The two computers that will be used to deliver the software are located in one corner of the Aerospace Encounter setting. The learning activities associated with the Virtual Exploration of Mars are: (1) orienting to, and working with, three dimensional representations of reality, (2) learning about topographical maps while using a computer to simulate travel around Mars, (3) learning how the computer generates a physical model using physical coordinates, (4) studying and exploring a computer-generated three dimensional model of the Martian

surface, (5) creating a videotape 'flyby' over the computer-generated Martian surface, and (6) building a physical tabletop model of the same Martian site studied and flown by. The goals of the client for the VEM project are:

- Development of computer programs
- Development of audiovisuals for addition to the computer programs
- Development of specified learning activities to be conducted at the virtual reality landing site on Mars
- Development of informational brochures as tri-folds and one-page flyers

Significance of the Study

Research into client-based instruction is needed so that the experiences of students, Practicum students, and clients may be documented. This study should lead to new insights into ways to prepare Instructional Technologists for induction into professional design settings. Understanding the advantages and disadvantages of the client-based field experience for graduate students enrolled in Instructional Technology is necessary to improve the quality of the educational experience afforded students. This study will add to the knowledge base regarding the preparation of professional designers. Finally, information gained from this study may be used in formative and summative evaluation processes used in defining and modifying courses of graduate study.

Research Questions

In order to evaluate client-based instruction in the Instructional Technology Program in the College of Education at a metropolitan state university, the following broad research questions were addressed:

From the students' and Practicum students' perspectives:

- A. What were the advantages and disadvantages of working with a client?
- B. In what ways did working with a client strengthened student understanding of the design principles taught in the courses?
- C. In what ways did working with a client detract from learning in the courses?
- D. Did the students recommend continuation of client-based instruction?
- E. What benefits were received from the collaboration?
- F. What benefits did the client receive from the collaboration?
- G. What new learning would be applicable to their jobs?
- H. What aspects of the collaboration should be retained?
- J. What aspects of the collaboration should be changed?

In addition, from the client's perspective:

- K. What were the strengths of the client-based field experience?
- L. What were disadvantages of working with the university students?

In addition to these broad research questions, other substantive or

working research questions emerged from the study and are addressed later in this paper.

Limitations

All studies are limited in terms of scope of information that is collected. The instruments used allowed the researcher to obtain an "observation window" into the experiences of the participants. In this study, data were collected from all students using a semi-structured questionnaire. A select few of these same students, and the Practicum students, completed a structured interview. Data from the clients were collected using a structured interview format.

In addition to the limitation of data collection, there were limitations in terms of the subjects' recollections of their experiences. Because data were collected at the end of the field-based experience, information about the steps or stages of the process was lost. Certainly, it may be inferred that individuals' perceptions change over time, and that recollections at the end of the experience differ from observation windows undertaken at other points in the experience.

Another limitation is related to the time at which the questionnaires and interviews were conducted. The pencil-and-paper questionnaires were administered at the end of a class period, a time when many students are eager to go home. Thus, answers to the questionnaire may not be as comprehensive as data obtained from the structured interviews. Student

interviews were conducted at the convenience of the interviewees. Client interviews were conducted during the morning working hours. Student and Practicum student interviews were predominantly conducted in the evening or weekend evening hours, times when students could accommodate a 40 minute interview, but may have been differentially alert and attentive as compared to the client's capability. The amount of time required to complete the questionnaire and structured interviews is considered a limitation, too. Questionnaires required about 15 minutes to complete; structured interviews about 40 minutes. Fatigue or distraction may have contributed to the breadth of recall of student, Practicum student, and client impressions about the client-based experience. Further, paper-and-pencil questionnaires were another limitation as answers on these types of questionnaires are not so spontaneous as they are in interviews and do not allow the investigator to probe further for clarification and depth, possibly yielding less complete information than the interviews.

Assumptions

Because the subjects in this study are all adults, it is assumed that they were able to articulate their experiences in the client-based field experience and to verbalize those experiences in various interview formats. Additionally, it is assumed that the subjects were able to recall their experiences and to make observations about those experiences that are both factual and interpretive in nature.

Definitions

In reporting the data in this study, the following terms are used:

1. Client-based instruction was a field-based experience in which the student worked for a particular client to design curricular materials under the supervision of a university instructor. In this study, the client was all personnel involved in the government agency's Aerospace Encounter and Virtual Exploration of Mars projects.
2. Field-based experience was defined by NCATE (1987) as follows:
 - (1) Field-based and clinical experiences are systematically selected to provide opportunities for education students to observe, plan, and practice in a variety of settings appropriate to the professional roles for which they are being prepared.
 - (2) Clinical and field-based experiences provide education students with the skills that allow them to diagnose and solve problems that involve the application of the principles and theories from the knowledge bases of the particular professional program.
 - (3) Field-based and clinical experiences are accompanied by professional supervision and feedback that include attention to instructional plans, characteristics of learners and instructional settings, structured observation of the experiences, and detailed debriefing relative to program goals (NCATE , 1987) .
3. The Aerospace Encounter was defined as the metropolitan state university, College of Education graduate students developing computer and paper-based learning activities for 4-6th grade students to complete before and after their visits to the Aerospace Encounter activities. This term has been presented in the study as "AE."

4. Virtual Exploration of Mars was defined as the metropolitan state university, College of Education graduate students developing software and paper-based learning materials for visiting 4-6th grade students to use to execute a simulated manned landing on Mars while visiting the Aerospace Encounter site. This term has been presented in the study as "VEM."

5. Points of triangulation. The data collection tools administered were a paper-and-pencil questionnaire, one-on-one structured interview, and focus group interview.

The questionnaire was defined in this study as a formalized, summative set of nine paper-and-pencil open-ended questions regarding the advantages, disadvantages, strengths, and weaknesses of client-based instruction as experienced in the AE and VEM projects. 'Formalized' referred to a single, consistently used and applied questionnaire and 'summative' referred to being given at the end of the client-based field experience so all experiences throughout the field experience were reflected in the student's appraisal.

One-on-one interviews were defined as a person-to-person encounter in which the researcher elicited information from a student, Practicum student, or client (Merriam, 1988). The interview was a purposeful conversation, primarily to find out things that could not be observed. The one-on-one interviews consisted of a set of 12 semi-structured questions verbally posed, in person or by phone, by the researcher to one of the

students, Practicum students, or clients. All responses were tape recorded and transcribed.

Focus group interviews were defined as 40 minute meetings of two students who came together with the researcher for a semi-structured discussion which centered on six issues and involved the exchange of opinions, personal reactions, and experiences among members of the group (Brodigan, 1992). Opportunities for expression of all opinions and reaching consensus defined the focus group interviews as well.

6. Participants in the study were graduate students, graduate Practicum students, and the client. All proper names are fictitious. A graduate student was defined as a post-baccalaureate person who was enrolled in the "Using Instructional Media" and/or "Graphic Instructional Resources: Design and Production" class for the Fall 1994 or Spring 1995 semester in the master's level course work.

There is one group of graduate students in the Instructional Technology program, in this study they are called the 'students.' This one group moves through most instructional technology classes as a unit. The sampling of students in EDIT 186 (Using Instructional Media) and EDIT 273 (Graphic Instructional Resources: Design and Production), represent the entire group. Students in EDIT 186 have similar experiences as students in EDIT 273 and the difference between the classes is the focus of their client-based field experiences as defined above.

A Practicum student was defined as a post-baccalaureate person who had completed the Instructional Technology curriculum and was now enrolled in the 'Practicum' course. The client was defined as personnel at the government agency Research Center Aerospace Encounter and Virtual Exploration of Mars exhibits. The interviewed client was defined as the Project Directors for the Aerospace Encounter and Virtual Exploration of Mars exhibits.

Organization of the Study

As field experiences increasingly evolve from academic-based to client-based in nature, new client-based field experiences are needed to accommodate graduate students. The metropolitan state university, College of Education has developed two new client-based field experiences that need to be formally assessed to determine graduate students' evaluation of these experiences in relation to their learning needs. The purposes of the study are to provide a summative evaluation of the two new field experiences as described in this chapter. The paper proceeds with a review of the literature related to field experiences in general, the advantages of client-based field experiences, the role of student evaluation, collaborative partnerships and the summative evaluation model as the study's theoretical framework. Specifics of the method of this study, emphasizing the components of the developed summative questionnaire and the procedure used to establish its content validity, as well as planned analysis of the data and a schedule for the

completion of the study follow. Presentation of results and recommendations arising from the study conclude the thesis.

CHAPTER 2

SUMMARY OF THE LITERATURE

The purpose of this chapter is to review the current literature base as it pertains to an overview, previous studies of client-based field instruction and collaborative partnerships between academic settings and government agencies.

Overview of Client-Based Instruction

Though identified and recommended as a form of field experience relevant to graduate education for prospective teachers as early as 1975 (Smith & Sagan, 1975), client-based instruction has only recently been practiced and is considered a nontraditional form of field experience (Quinn, 1994). Over the years, field experiences have evolved from "apprentice-like experiences" in nineteenth century schools to current "laboratory and clinical experiences" (Cruickshank & Armaline, 1986) to augment and broaden the scope of learning in academic programs. Field experiences have traditionally been used to assist the education student in achieving objectives of the academic program. More recently, however, the sites of the field experiences have identified their own objectives that they would like to have students meet in addition to those of the academic program. When enrolled in a course in which the client's needs are being met under the supervision of, and with grading authority remaining with the academic instructor, the field experience has been called a "client-based" field experience.

The current understanding guiding education curricula at the graduate level is that application of theory to practice enhances learning (Winn, 1989). The application of theory to practice has been facilitated by the use of field experiences. Much literature exists regarding field experiences for graduate education students predominantly in the form of student teaching experiences. The practical experience gained in a field setting rather than an academic setting has contributed greatly to skills development, and has done so more significantly than other aspects of the education experience, according to the Crick Report (National Advisory Council on Education for Industry and Commerce, 1964). The Crick Report examined the efficacy of having graduate students conduct field experiences in various non-academic sites, not just student teaching settings, so that "real life" work experiences were available to them. Students valued the real life working experiences as much as their student teaching experiences and commented that other, non-teaching professional skills, were learned in the field experience. These findings have been confirmed by Smith and Wilson who conducted a major evaluation of how proficiently students learned personal skills, identified by the client as good manners and helpfulness. Personal skills were learned quickly in the non-academic field experiences (Smith & Wilson, 1992).

Smith and Sagan's (1975) taxonomy of field experiences provided a framework for analyzing the nature of the client-based instruction and field experience being evaluated in this study. Smith and Sagan developed a

taxonomy of field experiences for student teaching field experiences. Smith and Sagan's taxonomy is a way to conceptualize gradated field-based experiences for teacher training and evaluate the role of these experiences in effective preparation for teaching from the learner's perspective and as related to the tasks the learner needs to accomplish. The classification schema is based on the assumption that becoming a teacher involves the processes of role orientation, role conceptualization, role learning and commitment, role assumption, and role evaluating. Field experiences should be developed sequentially to assist the teacher trainee to accomplish all these facets of professional competence. "At any stage of the educational press, students should be exposed to some aspect of all five processes. In fact, it is the interaction among them which results in the professional growth of each student" (Smith & Sagan, 1975, p. 91). Students in this study have been exposed to all five processes (or stages) of the taxonomy and in the gradated sequence recommended. Though the data have not been analyzed using this taxonomy, being analyzed instead according to the research questions, it is important to weigh student responses in light of their familiarity with the importance of the evaluation role.

Linkages exist between this taxonomy and client-based field experiences at the graduate level. The instructional technology students were assisted in accomplishing the first process, role orientation, in that they were introduced to the parameters required by the client as well as the academic requirements

for completion of the course, and were oriented to the client's field site. The second process, role conceptualization, was aimed at exploring the ecology of the work environment (the government agency exhibits) and familiarizing the students with the status quo of the Aerospace Encounter (AE) and Virtual Exploration of Mars (VEM) projects as they worked on their assigned tasks to accomplish the educative and client goals. Role learning and commitment is the third process of the taxonomy.

Role learning and commitment is the process in which the many techniques and methods used (in instructional technology) are learned and practiced. Within the conceptual framework developed or developing, the student acquires the skills and knowledge to enable him/her to facilitate the desired learning with particular pupils (the 4th-6th grade students in this instance). As the depth of understanding of theory and practice increases, a commitment to the career, to the profession, and to the teaching (instructional technology) activities should develop (Smith & Sagan, 1975, p. 94).

This third process was accomplished by having students complete instructional materials for specific client needs, such as one or two pre- and post-visit paper-based activities for the AE or a photo novela for one concept being taught in the VEW, such as topography or the four dimensions of space.

The next process is role assumption. Role assumption, actual practice in the designated role, was supported by having the students fulfill the client's product request and receive appraisal of the product's merits. The culminating step in the taxonomy is role evaluation, the process by which the students surveys the total client-based instruction experience--both the classroom theoretical and the field experience--and determines whether the

way s/he implemented the role is the way it should have been acted out and whether s/he should have been in that role at all. To complete this process, these determinations are made simultaneously with the other, but its greatest emphasis comes near the end of the client-based experience. The evaluations conducted with the students contributed to executing this process. All evaluations included a request to reflect on the value of the experience to career goals to ascertain if students had considered their careers as instructional technologists. Smith and Sagan's taxonomy has been used to guide previous evaluations of field experiences (Clarcken, 1993, 1994).

The conceptual model of Smith and Sagan's taxonomy and their model as it relates to the client-based instruction were used to guide the study. As the majority of students were in the middle or final phases of their educational program (Appendix A), comparisons were made to Smith and Sagan's Final Phase Taxonomy of Field Experiences Model. The client-based field experiences focused on the three final competencies, with predominant contributions to the Role Learning and Commitment, Role Assumption, and Role Evaluation stages. Emphasis is denoted in the graphic representation by amplitude under the graph with low amplitude indicating little emphasis and high amplitude indicating high emphasis.

A paucity of information regarding client-based field experiences exists, mandating that the review of the literature be primarily based on knowledge of field experiences in general, existing non-education forms of client-based

instruction in other university settings such as in nursing, agriculture and architecture, and the use of client-based instruction within the instructional technology field. The chapter concludes with a summary of what is and is not known to date about client-based instruction.

Field Experiences

Field experiences are an "educational strategy in which the student is placed at a physical site exterior to the educational institution and given activities to perform that apply and evaluate concepts, generalizations, and theories emphasized in the academic program with respect to their relevance and usefulness in the real world" (Smith & Sagan, 1975, p. 90). Field experiences have many benefits to the student, to colleges of education, and to the client and these have been well documented by McIntyre (1983). The immediate advantages are individualization and enrichment of instruction, in-service education of the client and student to new materials and approaches as cross fertilization of ideas and strategies occurs during goal fulfillment, and cost-effective instructional materials are made available to the client and to the instructor as examples for future participants. Clarification of career goals (Prerost, 1981) and intensifying the sense of purpose to study (Hess et al., 1978) have been cited as well. "Graduates consistently claim to have gathered confidence and independence, experience, flexibility, and creativity through the experiential and personalized processes" (Olszewski, et al., 1991, p. 8). Increased movement of college personnel and

students into client sites can provide many benefits for the pregraduation of students and continuing education of faculty. The long range benefit of a field experience is the education of a professional practitioner who is relevant to the needs of clients beyond the public education system (Cruickshank & Armaline, 1986).

Though some research has questioned the benefits of field experiences to students (Bennie, 1982; Moore, Tullis & Hopkins, 1990; Zeichner, 1980), few disadvantages have been identified. One is that field experience may contribute to continuation of the status quo as the student learns to mimic the field experts rather than bringing in the new ideas learned in the educational program (Beyer, 1984; McIntyre, 1983). This disadvantage does not pertain to client-based field experiences because the student works predominantly away from the field site and is under the constant tutelage of the academic instructor who shares cutting edge ideas. One other disadvantage is that the student might become disenchanted with the chosen field and change careers (McIntyre, 1983). Because evaluations of client-based field experiences in Instructional Technology could not be found in the literature, it is not known if this disadvantage is relevant to client-based field experience.

As field experiences are so important to learning, standards for field experiences that provide graduate education students with the knowledge and skills needed for teaching following graduation were delineated by the

National Council for Accreditation of Teacher Education (NCATE) in 1987 as Category II Criteria for Preparation of Teachers (NCATE, 1987). These standards for student teaching field experiences are in Appendix B. These guidelines indicate that educational programs should provide study and experiences beyond student teaching, even at the basic teacher preparation level, as well as at the graduate level.

To insure standardization of field experiences, NCATE developed Approved Curriculum Guidelines that have implications for graduate student education as well. Field experiences were meant by NCATE to include, but not be limited to, such experiences as "video tapes, simulations, laboratory activities, oral histories, field observations, field participations, and field trips" (NCATE, 1992, P. 113-114). NCATE's "field participation" is very similar to the client-based field experiences evaluated in this study. Experiences that provide students with opportunities to combine theory with practice in ways that assist them to become better practitioners are high quality field experiences, according to NCATE's approved Curriculum Guidelines (NCATE, 1992). The NCATE Approved Curriculum Guidelines specify other criteria for quality field experiences that are relevant to client-based field experiences:

7.0 Programs should provide a well-planned sequence of varied field experiences.

7.1 Opportunities to analyze one's own practice through a variety of data collection techniques (e.g. protocols, tape recordings, study groups, analysis of one's own practice, journal keeping) exist (NCATE, 1992).

The client-based field experiences the graduate students participated in varied from previous field experiences as they were not apprenticeship experiences for teaching nor were they only academically-oriented experiences. Thus, criteria 7.0 was satisfied. Further, the triangulation method followed for gathering data of the students' evaluation of their experiences allowed them to analyze their field practice through one or more techniques: paper-and-pencil questionnaire, one-on-one interview, and focus group discussion, fulfilling criteria 7.1. For the full potential of a field experience to be realized, a comprehensive terminal analysis should be a part of the experience because it contributes to conceptual clarity as to how theory related to real-world practice (Smith, 1970).

Client-Based Instruction in Other University Settings

Client-based instruction is a common teaching strategy in professions such as nursing, clinical psychology, architecture, and environmental engineering. The field of nursing was used as an example of the use of client-based instruction in other university settings for two reasons: first, client-based instruction is so prevalent and important in nursing that opportunities for client-based instruction are required for national accreditation of the academic programs as well as being a prerequisite for advanced practice licensure; and second, the nursing literature was readily available to the

investigator at the university library.

Within the field of nursing, all graduate nursing students complete client-based field experiences as part of their specialty education to become Clinical Nurse Specialists (Benner, 1984; Bartz & Srsic-Stoehr, 1994) and for the academic graduate program to meet national educational standards for nursing (National League of Nursing, 1992). Students must spend a specified number of hours each week in the clinical setting, serving the patients, and completing a patient education/patient care project (Martin & Staus, 1995) that has been designated by the host nursing unit to directly benefit the unit, not the student, nor the academic advisor. These requirements are mandated for national accreditation of the academic program by the National League of Nursing (NLN, 1992), for state licensure of the graduates by the California Board of Registered Nursing (BRN, 1990), to fulfill the mission of nursing (Meleis & Trangenstein, 1994), and to fulfill the National League of Nursing's requirement that students learn to transfer nursing theory into practice (Bonamy et al., 1995; Meleis & Trangenstein, 1994). The most common nursing theory that is addressed by client-based instruction in nursing is Watson's Theory of Human Care in which "an integral part of human care is sharing knowledge and empowering the client with education through teaching strategies that will serve him long after contact with the nurse has ended" (Watson, 1985, p. 28). These academic requirements are met during the clinical courses that take one academic year to complete. Graduate

nursing students spend 16 hours per week in the clinical site being supervised by a preceptor. The field experience is called a preceptorship (Bartz & Srsic-Stoehr, 1994) and contrasts to clinical apprentice-like experiences that pre-service nursing students must have, to sit for state licensure exams. At the graduate level, the graduate nurse student meets with the university instructor on a weekly or bi-weekly basis for guidance on, and on-going evaluation of, the client-based project (Anderson, 1994; Ludington, 1995), making these field experiences and results of the student project pure client-based instruction models. The only difference between these preceptorships and client-based instruction in the education field is that the client in nursing is a nursing unit or its nursing staff who service patients and the client in education may be a pupil or organized unit whose goal is development of teaching technologies to service students.

The effectiveness of client-based instruction projects in nursing has been documented in the nursing literature. One collaborative project was one in which hospital nursing service personnel worked with five faculty members to assist students to analyze results of a clinical research project conducted by the nursing staff through the use of a research roundtable. The client-based project helped enhance the dissemination of the research findings, stressed the relevance of research to practice which helped break down staff nurse resistance to nursing research, and promoted mutual respect for students and staff nurses alike (Janken, Dufault & Yeaw, 1988). Benefits

from other collaborative projects have included collegiality between client staff members, faculty members, and students; provision of care to patients that would not have been available because of financial constraints if the students had not been involved; and increased recruitment of nurses for facilities (Malloy & Donahue, 1989; Tully & Bennett, 1992).

Because patient teaching is a major component of the clinical nurse specialist role, the majority of graduate projects are instructional in nature (Anderson, 1994; Martin & Staus, 1995). For example, tri-folds, informational brochures and computer programs for patients to become exposed to while waiting to be seen are common instructional products of graduate nursing students (Koepke, 1994). The California Sweet Success Program (Maternal & Child Health Branch, 1992) uses all three forms of instructional materials developed by graduate nursing students, and is especially pleased to have an interactive computer program on diabetes management during pregnancy operational in the waiting room at Loma Linda Medical Center Pregnancy Clinic. The computer-assisted instruction on diabetes in education was developed for California following awareness that computer technology had a positive effect on patient learning (Schmidt, Arndt, Gaston & Miller, 1991) and that nurses using computer-assisted instructional programs developed by graduate nursing students for such areas as breast self-exam, cancer facts, diabetes, and stress reduction techniques were very successful (Vargo, 1991). Computer-assisted instruction for patient education by nurses has been found

to assure uniformity of instruction, be cost-efficient, and reduce the time a patient needs with a health professional (Wasson & Anderson, 1994). Indeed, as patients are released from hospitals earlier and earlier, the need for instructional materials produced by nurses that assist patients after discharge, is growing and has been cited as a major need of the future (Wasson & Anderson, 1994). Use of graduate nursing students to develop patient instructional materials, whether for clients in the hospital or those at home, has been a useful and cost-effective method (Fulton & Coulter, 1989). In nursing, future educational materials should more heavily rely on videotapes, closed-circuit television shows, and computer-assisted instruction to individualize the process of learning (Wasson & Anderson, 1994; Sumpmann, 1989).

Yet, not all the products are adopted because some are simply filed away, some are lost and others determined to be of little value. This is a problem common to nursing and instructional technology. Martin and Staus (1995) have delineated these losses when client-based instructional products in nursing have not been utilized. Facilities then have lost the opportunity to capitalize on data that were already gathered, analyzed, and turned into appropriate educational tools. Staff nurses who worked with the instructors to mentor the graduate students lose interest in playing an active role in future faculty-student projects and students have come to think that their hard work was not viewed as worthwhile. And most important, consumers

have lost because the projects did not result in improved care. (Martin & Staus, 1995, p. 55) .

Client-Based Instruction in Instructional Technology

Client-based instruction is based on the tenet that "practical knowledge involving know-how, insight, and the art of the profession are learned and manifested only through practice" (Harris, 1993, p. 54). Current research within the field of instructional design supports this epistemology. Winn (1989) has suggested that students in instructional design graduate programs might best gain knowledge of professional practice through a real world practicum, rather than by accumulating more courses in the procedures of instructional design. A perceived gap in the education of graduate students in the MA and Ph.D. programs in instructional technology at a large midwestern university prompted the establishment and evaluation of a project in which:

an integration of education and practice occurred through providing students with experience in the world of practice under the close guidance of a faculty member. Students were required to design, produce, implement, and evaluate instruction for a client under the supervision of the instructor (Quinn, 1994, p. 72).

Quinn's study is one of the first evaluations of client-based instruction to appear in the literature.

Quinn conducted and evaluated a curriculum project in which principles of instructional design technology were integrated with real-world experiences in an auto-manufacturing corporate environment. Working in

design teams, nine graduate students served as instructional developers for one semester in three teams of three students each. Each team developed a two-hour instructional unit (one was conflict management, another was listening skills, and the third was health issues concerning use of computers) for presentation by corporate personnel. The instructor selected the client organization, developed a tentative time-line for completion of various phases with the client, clarified client responsibilities, provided weekly feedback, and graded the final products before delivery to the client. The client did not provide subject matter expertise. Each student team was assigned a client representative from the organization.

A questionnaire regarding the value of the instruction and requested suggestions for improvement was completed by students who were also asked to rate their ability to perform skills they included in their instructional products. Clients also answered a questionnaire regarding the value of the client-based instruction process. Results showed that:

both the client organization and design teams expressed confusion concerning their roles in relation to the course instructor. Design teams initially used technical language not readily understood by the client. The lack of guidance in instructional models on the development of appropriate instructional strategies was noted by all teams. Design teams concluded that knowledge of instructional design principles is a necessary but not sufficient preparation for professional activity as instructional developers. By the end of the project, both the client organization and the design teams expressed strong satisfaction with the process and the outcome (Quinn, 1994, p. 71).

Quinn's study evaluated a similarly constructed client-based instruction project that was conducted over a similar length of time with the same structure of small design teams, but with one-third the number of subjects providing evaluations in this study. The evaluation differed in that the questions to the client were not similar to those asked in this study and students were asked not just to evaluate the efficacy of the client-based instruction method but also their own competency in accomplishing the goals of the instructional products they developed. Further, only students and clients evaluated the collaboration in Quinn's manuscript; in the study reported here, Practicum students who were advanced instructional technology students also provided evaluations of the experience. Additionally, only one form of evaluation was used by Quinn; the study being reported here used the triangulation method which should filter out extraneous impressions and yield consensus results. Because of these differences, the results of the investigation reported here were expected to be different.

Davidove and Reiser (1991) examined whether instructional material revised by teachers during the course of client-based instruction field experiences was more effective and adopted more readily than material revised by the client. The study was conducted to address one of the biggest problems facing instructional designers—getting their products adopted, a problem that is similar to the situation that occurs in nursing as discussed

above. Simply providing clients with material that is designed to be responsive to their needs was believed not to be enough to get the client to adopt the material.

In Davidove and Reiser's study, the clients were school teachers who evaluated the acceptability of instructional material in a chapter of a textbook that had been used in previous research and was modified by instructional design students who had been given a list of 94 standards for instructional design (i.e. uses summaries, uses cartoon figures, boldface type emphasizing important information) to use to improve the original material. The list of standard instructional design techniques for optimal development of printed instructional material was developed by Gagne and Briggs (1979) and substituted for the supervision and guidance of an academic program instructor. The client judged the effectiveness and acceptability of the original and design-student revised edition by responding to an Instructional Materials Acceptance Questionnaire. The client was also given the opportunity to revise the students' material and students were given the opportunity to revise their products with input from their instructional technology instructor. The client-revised material was as effective as the designer-revised material and more effective than the original material, but not more acceptable to the client. Further, the design-student revised material was more effective than the original material, probably because the instructional design students focused on attributes of materials that improve

learning that came to them in the list of techniques. This finding suggests that client-based instruction will improve the likelihood of acceptability and effectiveness of instructional materials as long as the instructor's knowledge is available to the student in one form or another.

Early Instructional Technology Partnership

In 1985 the Young Astronaut Program began as a NASA-school-corporate partnership originated by the United States Government to retain science and math teachers in the teaching profession and to bolster student science and mathematical skills (Henderson et al., 1986). Many previous curriculum development projects had been launched to address these problems and, although many high quality materials and efforts had been put forth, all approaches had failed to stimulate the broad-based kind of interest in science and mathematics necessary to produce the educated populace needed for the high tech world. Failure was attributed to four factors. (1) The high quality material was geared toward teachers and students who had already expressed an interest in space study, science, and math, and therefore, assumed a level of sophistication based on pre-existing expertise. (2) Dissemination of materials suffered from lack of marketing funds and expertise. (3) The materials assumed a comprehensive approach involving detailed curriculum reviews, revisions, and retraining of teachers - a cumbersome process that few school districts could embrace. (4) Federal funding was no longer available to support the type of educational effort

mandated by the previous approaches. A new educational program was developed that would include flexible materials that could be used with all students and by teachers to stimulate interest in all subjects, not just science and math. Using the 1984 United States Olympics as a model, private sector financing was achieved to disseminate program materials to all public elementary schools in the nation. The partners developed several educational activities in a form understandable to, and usable by, nonscientific and nonmathematical teachers or parents, avoiding the assumption of any pre-existing expertise. Supplementary materials were provided directly to teachers and students who requested them, eliminating the need for a formal curriculum approval process. Examples of the materials that were developed are calendar posters, curriculum activity packages, curriculum posters, cartoon books (called 'photo novelas' in Instructional Technology) on 'physics of fun' and 'recycling,' and newsletters with puzzles, computer activities, and articles on space. Corporate financial backing guaranteed that all materials were disseminated throughout the United States. Evaluation of the program's outcomes began in 1986 and were hoped to support a 'trickle-up' process of involving more persons in administrative offices, universities, and corporations (Henderson, et al., 1986).

Collaborative Partnerships

Partnerships as the one described above seem difficult to develop without following principles, tenets or guidelines formulated by researchers

and implemented by the founding members of new partnerships intent upon successful endeavors. De Bevoise's 1986 article "distills principles of successful collaborative relationships from the experiences of those involved in the long-term cooperation between the University of Louisville and its School of Education and the Jefferson County (Kentucky) Public Schools"

(p. 10). The distilled principles are:

Principles of Collaboration

1. Collaboration starts with administrative support. For significant collaboration to occur between the staffs of two institutions, top-level institutional support and cooperation is essential.
2. Not everyone is born to be a collaborator. Ideologues with rigid agendas for reform and practitioners who distrust theory and resist change will probably encounter frustration in initiating or responding to a collaborative project.
3. Collaborators need to have realistic expectations.
4. Collaborators should work toward consumer satisfaction.
5. Collaborators should avoid becoming involved in the internal politics of the other institution.
6. Collaboration relies on effective delivery and reception systems (De Bevoise, 1986).

"All partnerships move through different stages of development, and to ignore them is to invite disappointment, frustration and possibly failure" (Trubowitz, 1986, p. 21). The partnership being evaluated in this study is a new partnership, suggesting that the evaluations will reflect its progress through stages 1, 2, 3 and 4. Eight stages in the development of collaborative

partnerships proposed by Trubowitz (1986) are:

Hostility and skepticism - Stage I. "Almost without exception, the initial period in... collaboration(s) is characterized by hostility and/or skepticism" (Trubowitz, 1986, p. 19). Personnel are wary of the arrival on the scene of university big-name experts promoting solutions to practical problems when the expert has not been 'in the trenches' for some while. "The best way to deal with hostility is to listen actively, sincerely, and with empathy" (Trubowitz, 1986, p. 19) to all sides. All members of the partnership want to know that their words have been heard and respected.

Lack of trust - Stage II. Distrust emerges and is not so quickly dissipated as hostility. The goal of the second stage is to gain mutual confidence among the partners. Sharing experiences by exchanging lectures, attending the same parties and in-service programs as equals, are the means to progressing beyond this stage of mistrust. In this way, roles merge and partners communicate out of common experience.

Period of truce - Stage III. Once trust has been confirmed, a period of truce commences. Trubowitz (1986) states: "In this stage, participants withdraw some prior negative judgment as they learn that all members of the partnership are willing to learn and help each other, often by continued sharing of experiences as equals." (p. 20)

Mixed approval - Stage IV. In this stage, partners begin to gain each other's approval and feel enhanced by the other's presence and being a source

of recognition for each of the partners.

Acceptance - Stage V. The acceptance stage is a period of stability that ensues once uncommitted partners are removed and the collaborative effort gains acceptance, perhaps even admiration. It is an era of good feeling and partners see the mutual benefits of collaboration. The idea of dissolution of the partnerships seems unthinkable. This stage is also characterized by inevitable changes in personnel and the potential for loss of direction and commitment that accompanies changes in personnel.

Regression - Stage VI. In the regression stage the original collaborative vision may be blurred. This is a stage in which greater efforts are needed to maintain what has been accomplished. Pessimism and a sense of defeat in identifying fresh energy sources to acculturate new personnel and reinvigorate the enterprise appear. Partnerships can easily flounder at this stage.

Renewal - Stage VII. When a partnership stalls, regular meetings, consulting with experts, and dissemination of newly produced materials serve to forward this period of transfusion, re-ignite interest and involvement in the collaboration. This period is known as the period of transfusion because injection of new ideas and products from outside sources is what is needed to move through the phase.

Continuing progress - VIII. This is a new stage of rekindled enthusiasm and renewed hope. It is a time of forward movement and of

continuing progress as new ideas, new projects and new products for the collaboration are planned to meet the changing conditions encountered by the partnership. Personnel retire or transfer, curriculum mandates are given, and budget support varies from one year to the next, all of these factors demand flexibility.

In addition to principles and stages of development, Trubowitz (1986) and Lieberman (1986) have published versions of guidelines for successful collaborations. Trubowitz's tenets are:

1. Administrative support and encouragement.
2. Sources of power are provided by involving key personnel in the project.
3. Develop University "staffs' ability to avoid a 'We the experts' approach" (Trubowitz, 1986, p. 19) so they are more accessible to the partners.
4. Highly visible and involved staff show the partners they are seriously committed to the project.
5. Awareness of the complexities of implementation and recognition that slow initiation of new programs is wise.
6. Understanding that individual person change is not sufficient to bring about institutional change (Trubowitz, 1986).

According to Lieberman (1986) the guidelines for successful partnerships are:

- Some type of organizational structure is needed to collaborate.

- A small core of people actually work on the collaboration.
- Time for collaboration needs to be allotted.
- Skillful people working together enhance collaborative work.
- Initially, *activities* propel the collaboration, not goals.
- Large super-ordinate goals for collaboration become clearer after people have worked together.
- People often underestimate the amount of energy it takes to work with other people.
- Collaboration with schools demands an understanding of schools as complex social organizations shaped by the realities of specific contexts.
- Ambiguity and flexibility more aptly describe collaborations than certainty and rigidity.
- Conflict in collaborative work is inevitable; it has the potential for productive learning.
- People can participate in collaborative work for different reasons, but they should include wanting to do things together.
- Products created by collaborating create an important sense of pride in collaborative work.
- Shared experiences over time build mutual trust, respect, risk-taking, and commitment (Lieberman, 1986, p. 31).

Conclusions

Because the client-based approach is heavily reliant on the client's role in providing the field experience and participating in the educational process through continuous communication and terminal evaluation, no documented definition and few reports of client-based instruction for

graduate education students could be found in the literature. Quinn (1994) has identified the client-based approach as a recently emerged teaching strategy in instructional technology. Because of its newness, qualitative evaluation of client-based instruction's efficacy is important to establish baseline data of the approach. Data that is comparable to that derived from the extensive knowledge base about field experiences developed for pre-service student teaching will be useful for comparisons. Smith and Sagan's Taxonomy of Field Experiences provided a useful conceptual model for describing the impact on students of the client-based field instruction experience that was implemented at the metropolitan state university, College of Education, Instructional Technology Department in Fall 1994 and Spring 1995.

CHAPTER 3

METHODOLOGY

The purpose of this chapter is to provide an overview of qualitative methodologies, relate the case study approach used as the method for this study and delineate sampling technique, instrumentation and data collection procedures. The chapter closes by outlining plans for data analysis in this study.

Introduction to Qualitative Methodologies and the Case Study Approach

When the purpose of the research is to make observations about individual experiences, feelings, attitudes, perceptions, and thinking using open-ended techniques of inquiry, the research is identified as qualitative (Brodigan, 1992; Charles, 1994). The descriptions and statements obtained by the qualitative method then provide data to satisfy the need to know how things are prior to future decision making, and the need for a broad understanding of the many salient factors contributing to the outcome measure (Lyons, 1991). Qualitative methods are especially important for assessing student impressions of academic and client-based experiences (Lyons, 1991; Moore, Tullis, & Hopkins, 1990) and should incorporate more than one qualitative method to confirm results when a new teaching strategy is being tested.

"A case study is an examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a social group,"

according to Merriam (1988, p. 9) such as the client-based field experience investigated herein. Using the case study approach takes into consideration three additional points raised by Merriam as being central to the decision to choose a nonexperimental research design, e.g. case study approach, as appropriate to the research. (1) The first consideration is the nature of the research questions. Questions posed in this study reflect Yin's specification that "how" and "why" questions are appropriate for case study, history, and experimental designs (Yin, 1984). (2) The second consideration addresses the amount of control the researcher has over manipulation of treatment of the subjects or conditions of the study. In this study the researcher did not control any aspect of the actual client-based field experience for either students or client. (3) The third consideration is the desired end product. The results of the study are a "holistic, intensive description and interpretation of a contemporary phenomenon" as phrased by Merriam (1988, p. 9). By the end product being descriptive in nature, this study fulfills the distinguishing characteristics for being a qualitative case study. Using a qualitative case study approach for the study engendered "the hope... that through the study of a single rather unique case valuable insights would be gained that will suggest ways to help other (client-based field experiences) in the future" (Fraenkel & Wallen, 1990, pp. 370-371).

Within the case study use of more than one assessment tool for confirmation of results is called triangulation (Krueger, 1988). The tools used

for triangulation in this study were questionnaires, one-on-one interviews, and focus group interviews.

The questionnaire was a qualitative tool that was appropriate to the study in many ways. "Questionnaires are used when data less personal in nature is desired, as questionnaires typically do not probe as deeply as interviews and do not permit questioning that could clarify answers or allow respondents to raise concerns" (Charles, 1994, p. 106). Open-ended questions were used, rather than preselected responses, so all important information could be brought to light. Another advantage was that the questionnaires provided data from informants who could not have been interviewed personally due to time constraints. Therefore, the questionnaires were structured to parallel the research questions by calling on the informants to compose either short or long answers to open-ended questions (Charles, 1994, p. 175).

The interview technique also was appropriate to this study because it "permitted the researcher to pose questions and when necessary probe, or otherwise follow up to obtain clearer responses in greater depth" (Charles, 1994, p. 106). Interviews are useful when an emphasis on elucidation and identification of perceptions of school, learning, and applicability of activities is desired (Newsom-Stewart & Sutphin, 1994). So, one-on-one interviews were conducted to obtain useful information in a short amount of time. The structured interview is used when a large sample is to be surveyed,

hypotheses tested, or when quantification of results is important (Merriam, 1988). As this study had neither a large sample nor hypotheses, a semi-structured interview format was incorporated. In the semi-structured interview, certain information was desired from all the respondents, mandating that the interviews be guided by a list of questions to be explored (Merriam, 1988), but neither the exact wording nor order of the questions was established ahead of time. This format allowed the researcher to respond to the situation at hand, to the emerging view of the respondent, and to new ideas on the topic. Interviews are very common in case study research such as this one (Merriam, 1988). This study was a case study, as one collaborative partnership, rather than more than one, was evaluated.

Focus group interviewing was the third qualitative tool used. As an interactive method of conducting qualitative research, it enabled the researcher to meet with small numbers of individuals drawn from a population that was appropriate to the particular interest, in this investigation all who shared the common experience of participating in the metropolitan state university/government agency client-based field experience during the 1994-1995 academic year, and have those individuals come to a consensus by validating and comparing one's own experiences to those of others, so representation of the entire group was more likely (Brotherson, 1992, 1994). The focus group research method differs from the questionnaires and one-on-one interviews in its primary characteristic of

being a group discussion:

While the discussion centers on issues which are of interest to the researcher, it involves the exchange of opinions, personal reactions and experiences among members of the group. Group discussion substitutes for the directive questioning which is part of most other qualitative approaches. In focus groups, the atmosphere is permissive, and the interviewer sanctions the expression of all kinds of opinions about the matter at hand. The important assumption is that information produced under these circumstances will be richer, more complete, and more revealing than that which can be obtained in a series of individual interviews (Brodigan, 1992, p. 1).

Reasons for Use of Qualitative Case Study Method in this Study

The qualitative method was chosen because it was the best method to explore descriptors of participants' feelings and thoughts "that cannot easily be described numerically" (Charles, 1994, p. 21). Also, the qualitative method was chosen because baseline data on client-based instruction was needed. In keeping with the common, but not universal, notion about the purpose and principle virtue of the qualitative method of research, the intent of this study was to provide data upon which hypotheses could be generated for future study.

The use of more than one qualitative method was planned to provide information about the complexity of the client-based field experience. In cases such as this study, in which an issue is studied using more than one qualitative technique in order to establish confirmation of a finding and to broaden the researcher's understanding as well as the breadth and depth of findings, the approach is known as triangulation (Krueger, 1988). According

to Greene and associates (1989), mixed methods of data collection are also appropriate when it is desired to use the results of one method to discover new frameworks or perspectives of the other. During this study, mixed methods helped achieve this goal as the qualitative interview questions were developed to enhance and add depth to the paper-and-pencil questionnaire questions. The triangulation approach is increasingly being adopted for educational research using case study qualitative designs because the personal perspective yielded by this design may be flawed by distortion or exaggeration. "The major way to detect and correct distortion," according to Whyte (1982), "is by comparing an informant's account with the accounts given by other informants" (p. 116). Triangulation facilitates the process of checking for distortion. Triangulation's use, however, is limited by the obvious problem of what to do if assessments from the various sources are inconsistent (Smith & Wilson, 1992).

A case study approach was selected because only one client-based field experience was being evaluated (Merriam, 1988). To optimize the data available for this case study, multiple perspectives on the issue were obtained from different participatory levels of the client-based field experience: students, Practicum students, and the clients.

Method

This case study investigated the experiences of students, Practicum students, and clients engaged in the metropolitan state university /

government agency Aerospace Encounter and Virtual Exploration of Mars projects. Interviews, questionnaires and focus group data were used to obtain insights into the experiences of the participants. It was believed that the experience of the participants was best told through their own words, through their own reflections on their experience, and with their own emphasis on important aspects of the experience to evaluate.

Sample

The student sample was located in the Instructional Technology Department of the College of Education at a metropolitan state university. The client sample was located at the governmental agency. A convenience sampling method (Charles, 1994) was used in that every student and Practicum student who participated in the Aerospace Encounter and/or Virtual Exploration of Mars client-based field experience was recruited as a subject for the questionnaires and one-on-one interviews. The two government agency clients were selected by convenience sampling also. Convenience sampling is a non-probability sampling technique that uses groups of subjects that are available because of their enrollment in the selected courses. Students who were in the focus-groups or one-on-one interviews were selected by placing all class enrollee's names in a hat and individual name slips randomly removed from the hat with replacement after each choice to insure equal opportunity of being chosen for focus group or one-on-one interviews.

No students participated in Aerospace Encounter (AE) in Fall 1994. The sample size of the student group who participated in AE in Spring 1995 was 15; nine of these completed the questionnaire. Sixteen students participated in Virtual Exploration of Mars (VEM) in Fall 1994 and all of them returned completed questionnaires. Twenty-two students participated in VEM in Spring 1995; 17 completed the questionnaire. Hence, the number of students evaluating the Aerospace Encounter experience was nine; the number of students who evaluated the Virtual Exploration of Mars experience was 33. Both participating Practicum students completed one-on-one interviews, one for AE and the other for VEM. Two clients from the government agency were interviewed, one who managed AE and the other who managed VEM. There were two students in the AE focus group interview, two students in the VEM focus group interview session, two AE students who participated in one-on-one interviews and two VEM students were also interviewed in the one-on-one interview format.

Subject Criteria

The only criterion for participation as subjects was that students met the definition of graduate student as used in this study. The criterion for the government agency client was that the person be the Project Director/Manager of either the Aerospace Encounter or Virtual Exploration of Mars client-based field experience project.

Instruments

Qualitative data on the experience of participants in client-based instruction were collected using the instruments described below:

The paper-and-pencil questionnaire, entitled "Student/Intern Reflections of Client-Based Projects" was composed of nine questions deemed essential to evaluate critical aspects of the experience (Appendix C).

Advantages and disadvantages of working with a client, ways in which working with a client reinforced understanding of design principles taught in class or detracted from classroom learning, benefits of the experience to the student and the client, what new learning occurred that could be applied in a job, as well as recommendations to the instructor about future use of client-based field experiences were enumerated on the questionnaire.

One-on-one interviews were conducted with students, Practicum students and the client. The one-on-one interview for students and Practicum students, entitled "Structured Interview for Students/Interns: Reflections on Client-Based Projects" (Appendix C) was composed of a semi-structured interview schedule that provided an introduction to the issues being addressed, a question regarding the interviewee's role, questions regarding aspects of the client-based experience that should or should not be retained or changed, and the questions constituting the paper-and-pencil questionnaire described above. The one-on-one interview for the client was called "Structured Interview for Clients: Reflections on Client-based Projects"

(Appendix C). This interview schedule included an introduction to the issues being addressed, transitions from one topic to another, opportunities for probing, a question regarding the interviewee's role, goals and objectives for AE or VEM and the graduate students, questions regarding advantages, disadvantages, strengths and weaknesses of the client-based experience, elements of the metropolitan state university/government agency collaboration that should or should not be retained or changed, and perceived benefits to the client and the metropolitan state university students.

The focus group interview, entitled "Focus Group Interview" (Appendix C), provided an introduction and a list of the issues for discussion by group members so that a consensus of opinion could be reached based on the members' common body of experience. The issues for discussion were advantages and disadvantages of client-based field instruction, benefits to the student and client of client-based field instruction, influence of the experience on student learning and application of knowledge as part of the graduate courses, and thoughts about implementation of the client-based field experience. Focus group interviews have been used previously as the means of evaluation by students (Lyons, 1991) and employees (Cotroneo, 1991) of their situation, expectations, and the conditions of their academic or business careers.

Procedure for Data Collection

Data was collected using three formats: paper-and-pencil questionnaire,

one-on-one interviews in person or by telephone, and focus group interviews. All data were collected within two weeks of each other, beginning as soon as all academic requirements of the client-based instruction class were completed and before any of the participants had received feedback from any of the other participants, clients, or instructor.

Procedure for Questionnaire

The questionnaire, written by Dr. Robertta Barba, was administered at the metropolitan state university at the end of the class period in which students submitted the last of their instructional design required assignments. Either the researcher or the class instructor was present to answer any questions raised about the questionnaire, but no questions were posed. Students were given one hour to complete the questionnaire; all were completed within 15 minutes. Answers to the questionnaire were amassed and reviewed for content within each of the questionnaire categories.

Procedure for One-on-One Interview

The list of students in the Aerospace Encounter (AE) and Virtual Exploration of Mars (VEM) experiences was provided to the researcher who put each student's name into a hat. The names were randomly pulled from the hat, with replacement after each name was pulled to insure equal opportunity for being chosen for interviews. Two names were selected for each experience. The students were contacted by telephone and all agreed to participate in telephone interviews. The interviews were conducted at a time

convenient to each student and required approximately 40 minutes apiece to complete. All students had agreed to having the interviews audiotaped.

Only two clients were available for interviews and both agreed to audio-taped telephone interviews that were conducted during the week of May 1, 1995 during regular government agency office hours.

Procedure for Focus Group

A six component process to guide focus group research developed by Brotherson (1994) was followed in administering the focus group interviews. First, the focus group issues were developed and approved by the chair of the thesis committee. Second, two participants were selected by randomly drawing their names from a hat with replacement after each name was pulled to insure equal opportunity for being chosen for interviews. Participants were contacted by telephone. All who were asked to participate agreed to do so. Third, the verbatim protocol for conducting the focus group interviews was developed and approved by the thesis chair. Fourth, the focus groups were conducted during the week following the completion of all client-based instruction requirements. The focus groups met at the metropolitan state university, College of Education and met for 40 minutes. All discussion was tape recorded and comments were transcribed. The fifth step, to analyze data, and sixth step, to report the findings, are presented in the following chapters of this thesis.

Data Analysis

Open-ended responses to the paper-and-pencil questionnaire and structured interviews were first amassed as written by respondents, according to the categories of responses into which they should be channeled. Focus group comments were transcribed and these notes were then reviewed to identify relevant material—that analysis of focus group data prescribed by Brodigan (1992). Responses that did not fit the preselected categories were then categorized according to themes that emerged from the response content, using the logico-inductive analysis process (Charles, 1994, p. 118). The researcher did her best to be objective and impartial as well as depict contexts as realistically as possible. The data have been presented in an organized manner, using verbal depictions and quotes according to group. Interview and focus group recordings were transcribed and the procedure recommended by Merriam (1988) for analysis of tape recorded qualitative data was followed. Merriam's procedure is:

the researcher listens to the tape, taking notes on important statements or ideas expressed by the informant. Words or phrases or entire sentences are quoted exactly. These notes are coded to the tape counter so the exact location of such words can be accessed quickly at a later time. Tape position is recorded to the left of the words or phrases. In a column to the far right is a space for the researcher to add her own observations about what was said. The data on the interview log are then coded according to emerging themes or categories for further data analysis (p. 84).

The data were then analyzed for commonalities, differences, and emerging patterns and trends. The constant comparative method of analysis

(Glaser & Strauss, 1975), used by many others conducting case study qualitative research (Goodman, 1985; Clarken, 1994), was used to discover relationships and distinctions among the questionnaire data. The principle of thematic consistency with other studies was also used in this study. That is, studies related to identifying students' and client's perceptions of field-based experiences were referenced and connections to those studies were addressed. Application of the thematic consistency principle may or may not support the claims made in this qualitative study.

The absolute number of similar responses, percentages, and predominance of any response have been reported as appropriate to reveal how typical the response was within a group (Merriam, 1988), and where appropriate, between groups as a source of comparison to and confirmation with data from another group. The data from the focus groups was used only in triangulation with student questionnaires and student one-on-one interviews as advised by Brodigan (1992).

CHAPTER 4

SUMMARY OF FINDINGS

The purpose of this chapter is to present the results of the case study where questionnaires, one-on-one interviews and focus group interviews were used to analyze the client-based field experience. Consensus between respondents will be presented as well as divergent opinions within each data collection item.

Overview of Case Study Data Collection

Data were collected from several sources: students in three courses (EDIT 273 in Fall 1994 (n=16) EDIT 186 in Spring 1995 (n=17) EDIT 273 in Spring 1995 (n=9) who completed written questionnaires; two students in a Practicum course, hereafter called Practicum students, who completed one-on-one interviews; four students who participated in two focus group interviews; and two government agency clients who were interviewed one-on-one. Data were collected in three formats: written questionnaires, one-on-one interviews, and focus group sessions.

Written questionnaires were collected from the EDIT 273, Graphic Instructional Resources Design and Production, Fall 1994 (n=16), EDIT 186, Using Instructional Media, Spring 1995 (n=17) and EDIT 273, Graphic Instructional Resources Design and Production, Spring 1995 (n=9) classes. Four one-on-one interviews were conducted with students enrolled in EDIT 186 Spring 1995, Virtual Exploration of Mars (VEM) project (n=2) and EDIT

273 Spring 1995, Aerospace Encounter (AE) project (n=2). Two focus groups of two students each representing EDIT 186 Spring 1995, (VEM) and EDIT 273 Spring 1995, (AE) were used as data sources and two EDIT 242 Spring 1995, Practicum students were also interviewed. Two government agency employees were interviewed in one-on-one settings to delineate the client perspective.

The questions posed in each of the formats were similar except for some additional questions presented to the government agency clients. Results are reported according to the question posed and reflect all responses from each subject. For example, several advantages of client-based instruction could have been listed by one student; in this case each advantage was tallied as one response. The frequency of responses has been clearly differentiated from the frequency of subjects responding in similar/dissimilar manner. Only those items which reflect consensus of the focus group members have been analyzed in this report.

Data analysis from the questionnaires, one-on-one interviews, and focus group interviews revealed patterns and themes in the open-ended items. Responses on the nine questions from the questionnaire, 12 questions for the one-on-one interviews, and six discussion issues for the focus groups were coded systematically according to each respondent's answers. Data were analyzed for commonalities, differences, and emerging patterns and themes. The use of three sources of information, questionnaires, one-on-one

interviews and focus group interviews made triangulation possible. The principle of thematic consistency with other studies, with referencing and connections to previous work identified, was used to determine if the findings from the present study support or fail to support claims of previous researchers of client-centered field experiences.

Student Evaluation of the Client-Based Field Experience

Students' and Practicum students' answers are reported below with consensus and divergent responses noted.

Research Question A.

What were the advantages and disadvantages of working with a client?

A total of 13 different advantages were noted across all respondents.

The greatest diversity in response, seven different responses, came from the written questionnaires completed by students. The most common advantage was having a real-world experience in which to apply design principles and in which to encounter the client's expectations. Students commented: "I really enjoyed working with a client." "Things were not step-by-step textbook perfect, so I learned to improvise and develop a product that was useful." "This was a great experience working with team members and learning from them in high-pressure real-world situations." While this response was typical of students, neither of the Practicum students acknowledged this advantage.

Many students reported that they derived satisfaction from providing

the client with a useful instructional product. Four students and one focus group listed "working for (the government agency) as a client because (the government agency) has clout" as an advantage. "Having worked for a real-world client looks good on my resume" and "the product looks good as part of my portfolio" were advantages identified by students in each class and by one focus group. Other advantages nominally recognized were "opened new areas of work, knowledge, or experience for me," "made me feel worthwhile," "made me improve my communication skills," "reinforced existing skills," "learned group dynamics," "improved my organizational and time management skills," "team work was an advantage," and "gave me incentive to produce marketable products." One focus group stated that learning new software and having opportunities for networking were clearly advantages to client-based field instruction.

Responses from the two Practicum students yielded few advantages. In fact, one Practicum student "saw no advantage. Working with a client is a step you're supposed to be ready to take as a graduate student" and the other noted only that client-based instruction "looked good on [her] resume" and "improved [her] organizational skills."

Disadvantages were identified by each group yielding a total of 15 disadvantages. The majority of disadvantages were delineated by the students and related mostly to the client rather than the academic portion of the field experience. The leading disadvantage was "inadequate communication with,

and feedback from, the client" (EDIT 273 Fall 1994 n = 3; EDIT 273 Spring 1995 n=11; EDIT 186 Spring 1995 n=3), followed by "lack of clearly established client objectives" (EDIT 273 Fall 1994 n = 1, EDIT 273 Spring 1995 n = 7; EDIT 186 Spring 1995 n = 2). The majority of questionnaires revealed difficulties that related to the government agency client, such as "client would not give up-front information," "client not ready for students," "unavailability of client setting and personnel during evening hours when working students were able to visit," "inadequate number of physical contacts with the client," "client does not understand academic goals and how long it takes to produce professional work," "client changed goal midway through experience," "client disorganized," and "client disinterested." Consensus across all formats was reached on the lack of client awareness of students' goals, objectives, capabilities (n=18) and the hectic deadlines and time constraints imposed by the client and student work schedules (n=11) as disadvantages of the client-based field experience. The frequency of any one of these disadvantages was by one-to-seven students, a frequency that was similar across all three courses and within the one-on-one interview and focus group students for this question, suggesting continuing common problems that will need to be addressed to enhance future field experiences for students. One student's comments reflected the consensus of the written questionnaires, one-on-one interviews, and focus groups data: "The client changed their mind at the last minute. They did a terrible job! Everything they could do wrong they did!"

They didn't think through what they wanted! They didn't know what they wanted until we gave it to them and then they didn't want it any more! They gave us objectives, then they changed their mind and gave us different objectives" (Student C, one-on-one interview).

Both Practicum students reported similar difficulties as the students' consensus, but one was able to put the drawback into a forgiving context by rationalizing that the disadvantage was part of the "real-world experience": "The disadvantage was strictly that I was not able to count on meetings that were scheduled with the client. They were not being carried through. The government agency people did not return phone calls and so forth, but I've heard that's part of the cycle out in the real world and I will run into that with any client."

Research Question B.

In what ways did working with a client strengthen student understanding of the design principles taught in the course?

Across the three courses, 12 students listed "real-world application of design principles reinforced learning" and nine listed "the importance of communication with the client" as methods by which understanding of design principles were strengthened, making them the leading strategies. Having to convey ideas to the client and learning the importance of presentation skills (i.e. "I learned a lot about graphic presentations," "I learned graphics and use this in my presentations now") and being forced to

learn more to meet the client's needs were ways that strengthened understanding of design principles noted by all students across all courses and revealed in all three data collection formats--indicating consensus. "Team work" and "the press of clarifying objectives" were learning strategies according to students in EDIT 273 Fall 1994 and EDIT 186 Spring 1995, but not in EDIT 273 Spring 1995. Four questionnaire responses from EDIT 273 Spring 1995 students differed from all others in that the responses to the questions were "don't know of any way," or "in no way"--the only students who could not identify any method that fostered stronger understanding.

Research Question C.

In what ways did working with a client detract from learning in the course?

Two common responses appeared in the data, each representing 50% frequency of response within each data collection format. One response was that working with a client did *not* detract from learning and the other finding was that time constraints detracted from the learning. One student commented "there was not enough time to do the project, plus do all the other assignments in the class. The other assignments took a lot of time away from the pre- and post-(government agency) visit learning activities." Half of the students attributed time constraint problems to other courses and personal commitments and half attributed the problem to poor communication with the client. Students frequently noted that the client did

not welcome visits from the students for on-going clarification and appraisal, and did not clearly communicate their needs and changed their objectives late in the semester, making the students feel rushed to accommodate the client's altered goals and meet academic deadlines.

Research Question D.

Did the students recommend continuation of client-based instruction?

The subjects addressed this issue in question #5 (Appendix C) on the questionnaire form and as one of the inquiries during one-on-one interviews and in focus groups. Forty-two students responded affirmatively, 3 negatively and 5 inconclusively to the discrete question. Exploration of the reasons they gave revealed consensus as to why client-based instruction should continue. Almost every student who responded positively to the question cited having 'real-world' experience was invaluable to them and that it taught them how to adapt textbook principles and processes to 'real-world' needs. All of those who believed that client-based instruction should not be incorporated in the future based their decision on inadequate structure regarding the projects and poor communication between student and Practicum student, between Practicum student and client, and between student and client. "Clearer objectives," "clearly set deadlines," "an understanding of who provides project materials," and "more availability of the client, especially in evenings" were commonly shared reasons for discontinuing use of client-based instruction.

Research Question E.

What benefits were received from the collaboration?

This question yielded the greatest number of responses with 18 benefits being identified across all student respondents with the predominant benefits derived from working with 'real-world clients' and producing products of use to 'real-world clients' that would really be used, rather than just produced for class work or constructed without intent to apply. Benefits related to working with real world clients were "gained experience in working with real world client," "learned ways to communicate with client," "applied what we learned to a real world project," "saw instructional technology put to use in real world situations," "having the experience of doing a project that the 'real world' can use," "it felt good doing something I had some hope of someone actually using," "made professional business contacts," "became aware of government's unique, budget-constrained requirements," and "what we did for this client was not traditional education, so I learned that instructional technology is flexible and what we've learned can be applied to different situations. There is a different approach with the client and I learned how to deal with something different than what we learned in the classroom." Focus group respondents concurred, stating "Having made a real product and being able to put it in my portfolio is a benefit," and "we made an impressive product--by any standard!" One student explained: "In another class I'm taking we're also doing kind of a project, but its not 'real-world' based. It's so

much more boring to me and is so much less a learning experience. I mean I can hardly get myself to work on it! But the government agency project? Real people are going to see it and comment on it and it isn't just a pretend project! This has me totally motivated so that I can hardly tear myself away from it to do other things I have to do. The government agency project is more exciting because it is a real project."

Even some of the difficulties encountered in meeting the client's needs were identified as benefits by some students. For example, one student responded "there was even a benefit in learning about some of the pitfalls of working with a client, like their unavailability and their changing their minds a lot," and "when the client doesn't really know what you can do for them, you have to learn to communicate well with them and teach them. That was a benefit to me because I really learned how to communicate clearly, and then I gained confidence in what I know." Another student replied, "Client-centered experiences make a lot of sense, you (as a student) get a snapshot of what industry is."

The procedural steps in producing a 'real-world' product were the second most commonly identified benefits to students. "Learning to communicate precisely about the product" and "when you produce something for someone, I learned to be very clear on what they want," "clear product presentation," "experiencing how to begin and complete a project," and "knowing their requirements and deadlines kept us grounded and rooted

in reality—a real benefit after years of school."

A third commonality was the benefit of having produced a product for, and having had an experience with, such a prestigious and well recognized institution as the government agency, to put on the student's resume'. One focus group related: "The fact that it is (this special) government agency, a name that is recognized widely by everybody, we think is the simple *number one* benefit of the experience." Two other commonalities were the additional learning that took place once the field experience was begun and having an opportunity to work within a team. Many students and Practicum students commented similarly to the following quote: "the experience focused my career goals because I had to learn to take physics, math, and vocabulary skills and apply them to this product and that was not an easy thing to do." As to working with teams of colleagues, one student related "one of the benefits is that we (students) got to work with ideas of many people. We got to see how we work with someone else's ideas, not just coming up with a project all by yourself. I think working together in teams is good. Even when it doesn't work out well, it is a learning experience... because even unpleasant things are a benefit when you experience them like we did." The sentiments about working in teams were reiterated by both of the clients as well.

The clients identified the diversity of ideas generated by the students as benefits to them, as well as the usefulness of the products that they received.

Research Question F.

What benefits did the client receive from the collaboration?

A total of five benefits were enumerated across all subjects and across all formats of data collection. Eighty-seven percent of all students identified the client receiving an "impressive," "sophisticated," "easy to use," "professional looking" instructional package as a benefit. Students commented that the client "received a broader material base to be integrated into the government agency activities than they (the client) could have gotten themselves." "Free labor," "access to sophisticated computer knowledge and packages," "exposure to a different perspective—especially physics and interactive activities for school kids developed by accomplished teachers," and "an opportunity to preview potential applicants" were benefits that have been listed in descending order of their frequency. Consensus was obtained on the belief that the client received stimulating educational packages to use at very low cost to them. One student commented in a one-on-one interview, "(The government agency) got things they wouldn't have been able to do themselves, or would have taken them a lot of time, energy and money to do on their own." Consensus was also obtained on the reflection that the government agency received a considerable amount of work, productivity and labor out of the students. One-on-one and focus group interviewees reiterated the benefits listed in the questionnaires.

The clients' responses were similar to those of the students. Both of

the clients noted the breadth of experiences and skills of the participating students as the main benefit to them, saying "one benefit is that we have the students who are teachers and have experience working with different curriculae bringing their own backgrounds to the pre- and post- (government agency visit) activities." The following quote of one client mirrors the comments of the other as well, and summarizes the benefits to the client as identified by the clients: "We get better activities and the benefit of fresh ideas, different points of view, and, of course, the actual work they do on the activities. They are in a nice format, ready to go!"

Research Question G.

What new learning would be applicable to their jobs?

A total of 14 different answers were given in response to this question with consensus between all students obtained on four, the same four that had the greatest frequency of response. The most frequent response was that students learned all the steps in the process of producing a product from original planning, development, preliminary feedback and testing, modification, and final presentation of the product and how to manage a product from start to finish. The remaining three areas of learning related to specific portions of the process, such as knowledge about various product formats, i.e. "graphic formats," "CD-interactive formats," knowledge of the "importance of visual presentation of material," or "learning how to make the visual presentation interesting and captivating to (fourth through sixth

grade) students," and knowledge of "communication and its importance in producing the product that the client really wants." Both Practicum students commented that the most significant learning for them was "communication skills and the people management skills." The need for on-going communication was identified by all groups of students as well. For example, one student wrote, "I learned that I should have presented everything I was doing before I moved a further dramatic step," and another, "I should have explained at the beginning how the client could help me produce what they needed and conducted more frequent consultations with them." These four common themes were accompanied by answers such as "how to work with teams," "learned that creativity can be fun," "learned how much patience is needed," "working with time constraints is something I'll need in my job," and "assess the competency of key people of the project for optimal efficiency." All of these responses address the use of design and instruction principles that are taught in instructional technology courses.

Questions Posed to Students and Clients in One-on-One Interviews

Three questions were posed only to the students and clients who participated in one-on-one interviews. Triangulation between the students enrolled in the classes, the Practicum students, and the clients was completed and the commonalities or lack of commonalities in the data from these three sources are reported here for each question.

Research Question H.

What aspects of the collaboration should be retained?

The overwhelming response was the "real-world experience" should be retained and that having the students actually visit the client's site was an important aspect to be retained. One other finding was evident: the two Practicum students and both clients advocated retaining the Practicum student as liaison but none of the course students recommended it. Analysis of student remarks showed that many disappointments were associated with the Practicum students, such as "our person (Practicum student) did not stay in touch with (the government agency) and did not take the project management lead," and "the project manager (Practicum student) didn't take the lead in getting the team going." Other students noted: "I never saw the Practicum student," "I don't know what the Practicum student did during this entire process! We tried to get some information from her but it was just as frustrating as dealing directly with (the government agency)! It seemed like she didn't have a clear read on what (the government agency) wanted." One other student wrote "We asked our Practicum student for things we needed to do the project. We did it in writing. She came back to class the next week but for our particular group, we didn't get the materials that we requested!" These data provide the first indication that the value of the Practicum student as a liaison for the client-based experience might be questionable.

Research Question J.

What aspects of the collaboration should be changed?

A total of 17 recommendations were made across all the groups sampled (the two focus groups of two students each, the two Practicum students, the two clients and the four students who completed one-on-one interviews). Each recommendation was recognized by at least three of the groups and most were mentioned by all. The leading area in which change was recommended was communication. For example, respondents noted that "more communication between (the government agency) client and the instructional technology students" and "more communication between (the government agency) client and the Practicum students," and "more direction from (the government agency)" with "clear goals and objectives from the client" were needed changes. Within the communication theme, respondents also cited "getting better information on the big picture," "shorter response time from the client," "more feedback and review of early drafts by the client," and "being told how our project fits into (the government agency's) overall goals and objectives is needed.

Other needed changes were "closer supervision by the Practicum students," "having a chance to see the children use our product," "having nighttime meetings (with the client) that all instructional technology students could get to," "earlier presentation of product to client," "have instructor assist the Practicum students to fulfill their jobs," and "work on the

products with upper level instructional technology students only" (Appendix A). One focus group member aptly identified additional aspects of the field experience that were lacking and could be considered as arenas in which change might be indicated: "I wanted more clarity on the project activities. I wanted to look at some of the actual activities that the students were going to be involved in at the different stations, try them out and then develop complimentary pre-instructional activities. I wanted to get some first hand perspective on what the kids would be doing at (the government agency, Aerospace Encounter). I wanted to ask the staff some questions about what their goals were for the kids who were going through the activities and I just wanted to see if there were any materials we could incorporate in the pre-instructional activity book. But I never got the chance for any of this!"

Additional comments were forthcoming in response to the following question.

Other Thoughts

Do you have any other thoughts, comments, feelings, or experiences you would like to share about the client-based field experience?

Other than comments that fitted categories discussed above, only two comments were made that will be reported here. The first was that access to the government agency site was restricted and required special clearance, especially after the Oklahoma City bombing when military bases in the U.S.A. went to DEFCON 4 Level of Readiness. Limited access to the government

agency site was identified by students as a deterrent to visiting the client. The second was that several students identified that the 1994-1995 client-based field experiences was a first attempt at developing a collaborative partnership with this specific division of the government agency. The partnership might have experienced problems that can be worked out during future developmental stages of the collaboration: "You know, we were the first group to work with the government agency and hopefully, (our experience) will help strengthen the program and the relationships that need to be set up in order for the experience to be successful."

Questions Posed Only to the Client

In addition to questions that were asked of students, the clients were asked two questions. The viewpoints of each of the two clients are reported here.

Research Question K.

What were the strengths of the client-based field experience?

The first client listed many, such as "the product that we would eventually get," "the students' eagerness to please and do what the client wants," "the instructor is a strength. I very much respect and admire her." The second client concurred that the students' enthusiasm and the product are strengths of the experience. "The students' products show good ideas and they have cute little things (illustrations) on them. We have benefitted from their knowledge."

Research Question L.

What were disadvantages of working with the university students?

One client remarked extensively on problems related to the client centered experience. "There were problems. Something was missing. Part of it was communication and part of it may have been the expectations of the students and what they thought we wanted. It seems there were several different understandings of what was going on. There wasn't very much communication going on. Clearly something did not work this time. What we're getting from the students is just not up to the standards of what I had in mind. One group did a good job, the others did not. Some of the groups didn't turn anything in! We did not get a consistent format and the students did not coordinate with themselves and those two groups gave us stuff that we can't use. We were asking for them (the university students) to create activities and they weren't well put out. They did not expand a thing! They weren't developed the way we really need them for a teacher to have. So, if we're going to use them we are going to have to do a lot of work with them."

"The students did not picture that there was any partnership between us and them. I got no interaction and none of the students showed us anything ahead of time of what they were doing and when I talked to them there was reluctance to show us. It's clear that you want some sort of interaction so the product produced is of value to the person you're designing it for, but there just wasn't interaction with the students."

"(Another weakness was that) we weren't completely clear on what the assignment of the students was either. We did not know what their expectations were or what (the professor's) expectations were of the class. Communication was such a big weakness and the apparent lack of understanding of 'partnership' was so big it is hard to see what else there might be as a weakness."

The other client stated, "There were some problems in working with team personnel... better communication. And we need to see the products under development to give feedback and we didn't have a chance to do that."

Clearly the client appeared to be asking for a different concept of evaluation, the type done by an instructor, than the type conducted in this study. The client sees an instructor evaluation as part of the process of developing a product, whereas the students saw the client's evaluation as being instrumental in the development of the product.

CHAPTER 5

DISCUSSION

The purpose of this chapter is to convey the areas in which consensus was reached on the basis of triangulation of the student questionnaires, student focus groups and one-on-one interviews, and consensus between the two clients. The chapter concludes with suggestions for future research.

Commonalities with Responses to Individual Questions

Responses to the nine questions from the questionnaires, the 11 questions in the one-on-one interviews, and six issues for the focus groups were coded systematically according to each respondents' answers. The use of three epistemological sources--the questionnaires, one-on-one, and focus group interviews--made triangulation possible. Data were analyzed for commonalities, differences, emerging patterns, and themes. The first method of analysis was to examine the responses to each question; similarities in responses were present in most but not all questions and are presented in those specifically discussed below. Second, all sources of data were considered to filter common themes. Four common themes were identified. Discrepant cases were also examined systematically and commonalities have been reported in the results. The principle of thematic consistency with other studies, with referencing and connections to previous work identified, was used to determine if the findings from the present study support, or fail to support, claims of previous researchers of client-based field experiences.

Research Question A.

What were the advantages and disadvantages of working with a client?

The findings from this question support the belief that client-based instruction and client-based field experiences offer opportunities for "real-world" application of academic learning. One student summarized this tenet aptly by writing, "working with a client is an excellent way to connect theories with real life practice." This belief was succinctly articulated by Quinn who stated: "Practice knowledge involving know how, insight, and the art of the profession are learned and manifested best through practice" (1994, p. 72).

The positive regard students and client's had for the client-based field experiences also supports Clarken's findings that "Field experiences serve as a vehicle to connect philosophy, theory, knowledge base and values to practice" (1994, p. 2) and "Clinical and field-based experiences can be the vehicle for translating pedagogical knowledge into practice. One often hears from both teacher practitioners and students in practica settings that what one learns on-the-job is the 'real' knowledge as opposed to what one learns in college."

(Clarken, 1993, p. 3). Student and client evaluations identified the very same value of client-based field experiences as Smith and Sagan (1975) reported:

The problem is not in the amount of theoretical training but rather how to assure the operational use of these critical concepts. One answer to the problem may be in professional field experiences where concepts, generalizations, or theories emphasized in the professional sequence are evaluated with respect to their relevance and usefulness in the real world. While avoiding mere technical craftsmanship, professional field experiences can help make

theoretical knowledge more functional... a well-balanced program of teacher education should be a blend of theoretical and the experiential... It is essential that more theory, not less, be included in the professional sequence and that these concepts be clinically and analytically experienced through field experiences and situational analysis (p. 90).

One student's comments reinforced Smith and Sagan's views:

"Practical experience enhanced learning and allowed for application of theory" (Fall 1994, subject #14).

The majority of responses regarding disadvantages of working with a client enumerated numerous communication and contact problems with the client. Students and Practicum students alike wanted more telephone and personal contact with the client and voiced the need for more clarification and stability in the client's needs and objectives. A second problem with the client-based experience was a perceived lack of understanding on the client's part of what the academic goals and products were to be. For example, one student commented that the client had "unrealistic expectations. The client was at first opposed to new ideas, but over time we (the students) gained more, but still unsatisfactory, understanding of how to work together."

Difficulties integrating and coordinating client and academic goals are to be expected and have been identified as an area of concern in creating a successful field experience. Smith and Sagan (1975) paraphrased Dickson's (1963) work when they stated: "Field experiences often run into difficulties because cooperating teachers and administrators have needed more orientation and preplanning than originally thought necessary to provide

adequate laboratory arrangements" (Smith & Sagan, 1975, p. 90). The problem can be most readily corrected by improved communication and more frequent student/client and client/instructor contact throughout the academic session. Communication should be documented and agreements mutually derived and noted. The National Council for Accreditation of Teacher Education (NCATE, Appendix B) 9th Standard for Clinical and Field-Based Experiences relates: "The roles and responsibilities of education students, college-based supervisors and field-based supervisors who participate in field-based and clinical experiences are delineated and noted in negotiated written agreements" (NCATE, 1987).

Research Question B.

In what ways did working with a client strengthen student understanding of the design principles taught in the course?

Consensus was achieved that "real-world application of design principles reinforces learning," a finding that is not surprising as this is commonly acknowledged as a major rationale for the use of client-based field experiences (Clarcken, 1993, 1994; Smith & Sagan, 1975). Students perceived and articulated this advantage, and identified verbal and visual communication skills as major methods that enhanced their understanding. Verbal and visual communication skills are integral components of instructional technology and the recognition of their role in strengthening understanding of design principles reinforces the appropriateness of the

strategies taught to these students prior to and concomitant with their client-based field experience. Continuing emphasis on opportunities for application within the real world and additional experiences for achieving effective verbal and visual communication are critical to the success of client-based field experiences.

Four of the 16 student respondents in the EDIT 273 Fall 1994 Virtual Exploration of Mars (VEM) project did not list any method(s) that strengthened their understanding of the design principles taught in the course. As they specifically wrote that they knew of no method, nor could think of any, which would have aided them, it seems the situation could be due to a nomenclature problem, a basic difference in the course, or a difference in the VEM field experience in contrast to the Aerospace Encounter experience. Naming and clearly identifying the methods being incorporated in the course to strengthen understanding of design principles would facilitate student identification of effective and ineffective methods during the evaluation phase. No doubt all students underwent the field experience and communicated with the client through various media, but some EDIT 273 Spring 1995 VEM students did not understand that those activities were indeed strategies that could enhance their own learning as well as serving the purposes of the client. Lanier and Little (1986) have found in their studies that preparation of the learners on how to learn from the field experience influences the value the students placed on the experience. They concluded

that "the value of field experience is dependent on prospective teachers being properly prepared to learn from it" (p. 551). Clarken remarked: "If learners do not have the knowledge base, skills or disposition needed to learn from practical experience, then the experience may not result in any real value" (1994, p. 2).

The remarks of the EDIT 273 Fall 1994 course students and those of Spring 1995 suggest a difference over time in the teaching method of the course as both courses used the same syllabus and were taught by the same instructor. Differences were also registered between the remarks of students in the EDIT 273 Spring 1995 Virtual Exploration of Mars experience and those of the other Spring 1995 client-based course, EDIT 186, which incorporated the Aerospace Encounter experience, even though both courses were taught by the same instructor. These data suggest that the differences may have been due to the different field experiences.

Research Question D.

Did the students recommend continuation of client-based instruction?

The majority response was affirmative, with rationale being that real-world experiences were valuable and taught the students how to adapt to the work place, as well as how to develop practical learning materials answering the needs of a client. These findings support all previous studies discussed under review of Research Question A.

Research Question E.

What benefits were received from the collaboration?

The overwhelming benefit to the students and the clients was a "real-world experience with production of materials that would be used with (4-6 grade) students." This finding is not surprising when one considers previous research that found the primary reasons for choosing teaching as a career included altruistic, service-oriented goals (Brookhart & Freeman, 1992), Richards (1960) and Fox (1961) suggested that teaching is selected as a career by persons who want to help children and who have a desire to impart knowledge to children, a finding that was confirmed by Powell and Weaver (1993). Further, procedural management and team work were recognized as benefits by all concerned.

Research Question F.

What benefits did the client receive from the collaboration?

Consensus was obtained by all respondents. Students and clients alike identified the exceptional qualities of the pre- and post-visit government agency activities learning packages as the major benefit. The breadth of skills and background knowledge brought to the products and the perspective of experienced teachers were identified as additional benefits to the client. As most publications report findings of teaching field-based experiences, no confirming documentation of the value of the student's teaching product could be found.

Research Question G.

What new learning would be applicable to their jobs?

The common response that students learned all the steps involved in working with a client and the development of instructional packages reinforces the appropriateness of Smith and Sagan's Final Phase Taxonomy of Field Experiences model, in that students learned their role, fulfilled the commitment made to the client by assuming the role of product developers, and evaluated their performance and outcome of the experience.

General Themes

Four themes emerged from the data, answering the research questions that guided this study. These themes identify the advantages and disadvantages of client-based field experience instruction as experienced by graduate students, graduate Practicum students and clients in the metropolitan state university, Instructional Technology-Government Agency collaboration during the 1994-1995 academic year.

The first theme was that real life experience was valued more highly than theoretical or classroom-based learning opportunities. This value supports previous research as discussed under Research Question A and is a valid expectation of client-based field experience.

The second theme was that production of learning materials that would be readily used and the production of learning packages that incorporated the students' breadth of knowledge and unique abilities were

major assets of the client-based field experience. It was not just the development of useful educational materials, but also that, because of team work and advanced instructional technology strategies, the materials the students produced were perceived by all as very high quality and impressive, "fabulous" materials.

The third theme was the value of applying instructional technology design principles to an industry or institution's needs rather than simply producing assignments as part of a course's requirements for a grade or credit toward a degree. Suitability for immediate application was an asset identified by all and reinforced the findings of Smith and Sagan (1975) and Clarken (1993, 1994). Students, Practicum students, and clients all assigned high relevance of, value in, and need for the products made for the client as a result of the client-based instructional technology field experience.

A fourth theme was the lack of communication on all levels between students/Practicum students, Practicum students/client, and client/student. Communication was identified as a problem that some students even perceived that the client did not collaborate with the students to achieve the client's own objectives. The need for improved communication has been addressed in the discussion of Research Question B and is the key to strengthening the existing collaborative partnership. Regular meetings, written objectives, and a written time line for achievement of all phases of the partnership's activities within each academic grading period are needed to

correct the communication deficiencies noted by respondents.

The themes that emerged in these results appear to be reiterations of the tenets of collaborative work as formulated by Lieberman (1986, p. 7). The tenets that were reinforced by these findings are:

1. "Some type of organizational structure is needed to collaborate."

Students had the organizational structure from the courses, but lacked sufficient organizational structure from the client. Stronger organizational configurations are needed to bolster the partnership. An organizational chart of responsibilities for completion of the collaborative goal, and a communication tree may be helpful in providing the organizational structure needed.

2. "Time for collaboration needs to be allotted." Students often commented that more frequent contact with the client was needed, indicating that time allotments were not adequate. Perhaps the course objectives could be spaced across two semesters, or else the number or complexity of the products reduced to more accurately suit one semester's effort.

3. "Skillful people working together enhance collaborative work."

Both students and clients identified the strengths of having many different talented people working on the same projects. Students suggested one method that could be used to assure that this tenet is met: that a list of the unique strengths of each student be circulated to all involved parties so that the contributions of each could be more fully tapped. Thereby groups could

be formulated to include students with diverse skills so the whole group represented the breadth of compatible skills needed to successfully fulfill the partnership goals.

4. "Initially, *activities* propel the collaboration, not goals." In the collaborative instructional technology project being evaluated in this study, the activities propelled the students from start to finish, supporting the possibility that the collaboration was in the early stages of development. A clear delineation of the activities with a schematic representation of how each activity was a foundation for later activities would be helpful in getting students to recognize ultimate goals rather than mediating activities. It is interesting to note that the students expressed pleasure in developing the curriculum materials, a finding that is reassuring because it will support future collaborative efforts between schools, universities and government agencies. The unique approach that was evaluated in this study should be encouraged as public educational personnel may be unaccustomed to and skeptical of educational materials developed by scientists rather than educators.

5. "Ambiguity and flexibility more aptly describe collaborations than certainty and rigidity." For students who are still within the main body of their course work, certainty, clarity and unwavering rigidity in course requirements appear to be desired, but were not present through all aspects of the collaboration. Students commented that the client often changed the

goals and was unclear as to the desired product. These characteristics of the collaboration, no doubt, contributed to the student's overall evaluation and suggest that the students were novices in participation in collaborative projects. Faculty should prepare students for the eventuality of change even within one semester's work, and students should be oriented to view the change, and maintaining flexibility as part of the process. Both of the Practicum students mentioned that change always occurred when working with real-world clients, and that it did not disturb them. It appears therefore that the Practicum students had grown professionally to the point where they could accept change and make adaptations to it as part of the partnership process, in contrast to the less experienced students who viewed change as a deterrent to productivity. Anticipatory guidance to novices in client-based field experiences appears to be needed in future collaborations.

6. "Products created by collaborating create an important sense of pride in collaborative work." Many students commented on their feelings of pride in the high quality products they produced, a sentiment echoed by the clients and supporting this tenet of collaboration. Therefore, the actual production of a product, in addition to the primary goal of learning, should be retained as an objective or final goal in partnership activities. The power of this element for enhancing student and client satisfaction should not be underestimated and could be strengthened by having students retain copies of their products and having the client provide feedback six months later as to the effective

usefulness of the products with the designated ultimate users: 4-6th grade visitors to the Aerospace Encounter and Virtual Exploration of Mars site.

The results were diverse in many aspects between the students and the client, but the diversity in opinion can be embraced with less hesitancy when one considers that the collaborative effort is often viewed through different lenses by each of the participants (De Bevoise, 1986). Also, the finding that the client was focused on the product and the students were focused on completion of the products to fulfill course requirements and feedback to enhance academic performance indicates that two different goals existed in the partnership. In fact, the possibility for four different goals exists as students, instructor, client, and consumer all have objectives that need to be met in a partnership such as the one evaluated here. For one participant to claim that the other was not meeting the goals of the partnership is typical of an early developmental stage of partnership, rather than a critique of the participant. Developing an effective partnership includes defining common goals; common goals will be reaffirmed as the partnership continues along its developmental trajectory. All indicators show that the client-based field experience partnership was evaluated at the Mixed Approval stage of development and has four more stages to complete to reach maturation. Now that the stage of development the partnership is in is known, the steps to master each of the remaining phases that have been previously discussed can be undertaken to cement the future of the collaboration.

The results of this study also provide suggestions for framing new partnerships within graduate education curricula. Prospective endeavors should ensure that all tenets and principles of collaboration can be followed. Early and documented mutual agreements between all involved partners need to be generated and disseminated to all. Regular and reliable communication needs to be instituted so the commitment of each partner is known to the others. Partners that cannot endorse the activities, goals, and time-line for the partnership should be filtered out before it begins, and evaluations should be conducted during and after each collaborative effort. Active evaluative feedback may actually hasten progress through the developmental stages of successful partnerships. The first two stages of the development can be accomplished before involvement of students by the major partners who provide continuity to the collaborative effort: the university instructor and the client. Having these two parties in agreement on basic elements, the principles of collaboration and all activities, goals, and modes of communication is generic to the success of future projects.

Recommendations for Future Research

Several recommendations for future research have been derived from the findings of this investigation. They may be separated into three areas for further study; one focusing on the process by which students learn, a second focused upon actual product development and evaluation. Some of the recommendations for future study are a combination by their very nature and

complexity and are listed together in the third section below. The recommendations extend beyond the limitations delineated in Chapter One of the study.

Process Related Recommendations

1. Evaluate the actual transfer of product development skills learned in this collaboration to the student's post-graduate positions. Knowing the prevalence of actual transfer of these skills into other client-based settings and their long term application by students will support continued efforts to provide labor-intensive client-based field experiences. The findings of these evaluations will be generic to refining client-based field experiences to use optimal teaching and learning strategies.

2. Evaluate the university instructor's perceptions of the experience. As the motivating force for continuing the university's participation in the partnership, knowing how the program meets the objectives of the instructor and the administrative mandates influencing the instructor's functions, it is generic that this person's feedback be obtained so alterations can be made to enhance the educational partnership experience. Change in a key person such as the university instructor can slow development of existing and future partnerships, jeopardizing the benefits to all involved. Both the university and client must be satisfied for the partnership to endure.

3. Clarify the different standards for communication with the Instructional Technology (IT) students as voiced by the two Project Directors

at the government agency. One director desired 'contact only through the Practicum student.' The other director wanted frequent verbal contact with the IT students directly in addition to contact through the Practicum student. She wanted IT students coming out to the facility to show products under the various stages of development, and voiced willingness for contact after the official 5 o'clock closure of business.

4. Replicate this evaluative study when communication concerns have been addressed by clarifying goals, roles and ensuring more frequent contacts between students, Practicum students, and clients.

5. Duplicate this study when an authorized communication system has been clarified. As the two clients were in an established hierarchical system, the supervisory client (who did not want contact except through the Practicum student) seems to have blocked transmission to the university personnel of the 'open-door policy' of the underling towards student contact. This situation created confusion in the authorized communication systems to be used.

6. Characteristics and influences of the Practicum students need to be evaluated. The two Practicum students in this study had very different project leadership skills and manners which affected the students' interaction with the client and the instructional materials developed.

7. Availability of Practicum students for student interaction may be another area for further research. During this study one of the Practicum

students went on a two-week vacation in the middle of the semester and was not available to either the students or the client.

8. Personal feelings of involvement, motivation, competence and success in developing the learning materials may have been influencing factors in this study and should be investigated further.

9. Personal/Impersonal atmosphere. A failure of the client and student to have 'team identities' with which to interact. Nothing was given to either the students or clients to form a partnership connection with. Each party was only dealing with a faceless name or exhibit name. Investigation of the formation of the partnership identity should be conducted.

10. Clarify IT student roles in the university/government agency 'collaborative partnership' so they develop a personal sense of being an contributing partner of the 'partnership'.

Product Related Recommendations

11. Evaluate the products that are produced in instructional technology collaborations by the consumer of the products: the 4-6th grade students and classroom teachers. Because all parties involved in the collaboration placed such high value on the products, the efficacy and usefulness of the products merits investigation so that product goals more fully reflect use-effectiveness as well as student and client values.

12. Conduct further case study evaluations incorporating the 4-6th grade classroom teachers and their students, the ultimate recipients of the

instructional materials produced. Do the materials cover important content? Is the learning easy and fun with any specific product? Is knowledge gained from any specific activity transferable to other areas of science or math? What are the students' conceptions about space, Mars and aerospace environments? Have the materials generated enthusiasm and further interest? Have the pre-visit materials been well accepted and are they effective in fostering learning at the government agency's center for student activities?

Process and Product Related Recommendations

13. Determine the specific Instructional Technology (IT) classes each student had experienced before enrolling in EDIT 186 (Using Instructional Media) and/or EDIT 273 (Graphic Instructional Resources: Design and Production). Where each student was in the sequence of classes was likely a factor in the skills each team member had to contribute to the team's effort.

14. Determine any previous business, job, or training each student had experienced before enrollment in EDIT 186 and/or EDIT 273.

15. Determine previous student experience or training in team building prior to enrollment in EDIT 186 and/or EDIT 273.

16. Investigate the composition of the development teams within each class. How is the resulting product reflective of the range of subject matter background knowledge, hardware/software usage skills, team leadership/management and other skills, represented within the makeup of a team?

Conclusion

A review of the literature revealed many anticipated advantages of client-based field experiences. The findings of this study confirm that many of those benefits were acknowledged by graduate students and clients who participated in the newly developed metropolitan state university-government agency client-based field experience, and consisted mainly of having a 'real-world' experience and producing useful and sophisticated instructional tools. The need for improved communication was identified and appears to be of central importance in determining the quality of the experience and success of the partnership. Those who have been involved in collaborative work know that while the idea is very attractive, the reality is far more difficult and complex than initially expected as people need to learn to work together and take responsibility for their own actions in the collaboration (Oakes et al., 1985).

The ultimate judge of any academic field experience is the student. One student wrote a comment that summarizes all the results: "I feel somehow that this [client-based field experience] has been a golden moment in my education" (Focus Group Member #1).

REFERENCES

REFERENCES

Anderson, C. A. (1994). Advanced practice: The options. Nursing Outlook, 42(6), 253-254.

Armstrong, D. G. (1989-1990). Early field experiences: Some key questions. The Teacher Educator, 25(3), 2-7.

Barba, R. H. (1995). Personal communication. April 15, 1995.

Bartz, C., Srsic-Stoehr, K. M. (1994). Nurses' views on preceptorship programs and preceptor and preceptee experiences. Journal of Nursing Staff Development, 10 (3), 153-158.

Benner, P. (1984). From Novice to Expert. Menlo Park, CA: Addison-Wesley Publishing Company.

Bennie, W. A. (1982). Field-based teacher education: A reconsideration. The Teacher Educator, 17(4), 19-24.

Beyer, L. E. (1984). Field experience, ideology, and the development of critical reflectivity. Journal of Teacher Education, 35(3), 36-41.

Board of Registered Nursing (BRN), (1990). Qualifications and Requirements for Academic Preparation of Nursing Professionals. Sacramento, CA: BRN.

Bonamy, C., Schultz, P., Graham, K. & Hampton, M. (1995). The use of theory-based nursing practice in the Department of Veteran's Affairs Medical Centers. Journals of Nursing Staff Development, 11(1), 27-30.

Brodigan, D. L. (1992). Focus Group Interviews: Applications for Institutional Research. Association for Institutional Research Professional File, #43, 1-6. ERIC document #342325.

Brookhart, S. M., Freeman, D. J. (1992). Characteristics of entering teaching candidates. Review of Educational Research, 62(1), 37-60.

Brothers, T. (Ed.). (1992). School Reform: Business, Education & Government as Partners. New York: The Conference Board. Report #1011.

Brotherson, M. J. (1992). Quality design of focus groups in early childhood special education research. Journal of Early Intervention, 16(4), 334-342.

Brotherson, M. J. (1994). Interactive focus group interviewing: A qualitative research method in early intervention. Topics in Early Childhood Special Education, 14(1), 101-118.

Charles, C. M. (1994). Introduction to Educational Research, 2nd Ed., White Plains, NY: Longman Publishers.

Clarcken, R. H. (1993). Clinical and field-based experiences to prepare teachers for wholistic practice. Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA. April 12-16, 1993). ERIC document #360300.

Clarcken, R. H. (1994). Education of teachers in field settings: A case study. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA. April 4-8, 1994) ERIC document #369753.

Cotroneo, K. J. (1991). Employee Productivity: What Followers Need from Managers. A Report from the HJC Corporate College. Hagerstown, MD: Hagerstown Junior College Publishing.

Cruickshank, D. R. & Armaline, W. D. (1986). Field experiences in teacher education: Considerations and recommendations. Journal of Teacher Education, May/June, 34-40.

Davidove, E. A. & Reiser, R. A. (1991). Comparative acceptability and effectiveness of teacher-revised and designer-revised instruction. Educational Technology Research and Development, 39(2), 29-28.

De Bevoise, W. (1986). Collaboration: Some principles of bridgework. Educational Leadership, 43(5): 9-12.

Dickson, G. E. (1963). Developing a more balanced and unified field experience for teacher education programs. Changes in Teacher Education, Eighteenth National TEPS Conference, Colombus, OH, 439-454.

DelGesso, D. D. & Smith, M. P. (1993). The undergraduate student teaching experience: Perspectives of student teachers, cooperating teachers, and student teacher supervisors. Unpublished paper. Available from D. DelGesso, Temple University, College of Education, Philadelphia, PA.

Everston, C. (1990). Bridging knowledge and action through clinical experiences. In D. Dill et al. (Ed.), What Teachers Need to Know, San Francisco: Jossey-Bass, 94-109.

Fox, R. B. (1961). Factors influencing the career choice of prospective teachers. J. Teacher Education, 12, 427-432.

Fraenkel, J. R., Wallen, N. E., (1990). How to Design and Evaluate Research in Education. New York: McGraw-Hill Publishing Company.

Fulton, M. L. & Coulter, S. J. (1989). Alternative means of patient education. Nursing Management, 20(11), 58-60.

Gagne, R. M. & Briggs, L. J. (1979). Principles of Instructional Design (2nd ed.). New York: Holt, Rinehart and Winston.

Glaser, B. & Strauss, A. L. (1975). The Discovery of Grounded Theory: Strategies for Qualitative Research, Chicago: Adline.

Goodlad, J. I. (1990). Teachers for our Nation's Schools. San Francisco, CA: Jossey-Bass Publishers.

Goodman, J. (1985). What students learn from early field experiences: A case study and critical analysis. Journal of Teacher Education, Nov./Dec. 1985, 42-48.

Greene, J. C., Caracelli, V. J. & Graham, W. (1989). Toward a conceptual framework for mixed-method evaluation designs. Educational Evaluation and Policy Analysis, 11(3), 255-274.

Harris, I. (1993). New expectations for professional competence. In Curry, L., Wergin, J. F., & Associates (1993). Educating Professional: Responding to New Expectations for Competence and Accountability. San Francisco: Jossey-Bass.

Heinich, R. (1984). The proper study of educational technology. Educational Communication and Technology Journal, 32, 67-87.

Henderson, L. J., Rhodes, L. A., Joels, K., Kunz, D., (1986). Doing well by doing good. Educational Leadership, 43(5), 42-45.

Hess, A., Harrison, A., Fink, R., Lilliston, L., Aponic, J. & Korn, J. (1978). Critical issues in undergraduate training in various community settings. Teaching of Psychology, 5, 81-86.

Janken, J. K., Dufault, M. A. & Yeaw, E. M. S. (1988). Research round tables: Increasing student/staff nurse awareness of the relevancy of research to practice. Journal of Professional Nursing, 4, 186-191.

Krueger, R. A. (1988). Focus Groups: A Practical Guide for Applied Research. Newberry Park, CA: Sage Publications.

Lanier, J. E., Little, J. W. (1986). Research on teacher education. In M. C. Wittrock (Ed.) Handbook of Research on Teaching (3rd ed., pp. 527-569) New York: Macmillan Publishing Co.

Lieberman, A., (1986). Collaborative work. Educational Leadership, 43(5): 4-8.

Ludington, S. M. (1995). Personal communication with UCLA's Director of Maternal-Child Health Nursing and Midwifery. April 14, 1995.

Lyons, L. (1991). The integration of qualitative and quantitative research in a longitudinal retention study. AIR 1991 Annual Forum Paper, Paper presented at the Annual Forum of the Association for Institutional Research (31st, San Francisco, CA, May 26-29, 1991). ERIC document #336034.

Malloy, C. & Donahue, F. T. (1989). Collaborative projects between nursing education and nursing service settings: A case study. Nursing Education Today, 9, 368-377.

Martin, L. & Staus, R. (1995). Making the most of nursing student projects: A collaborative pain management project. Journal of Nursing Staff Development, 11(1), 55-58.

Maternal & Child Health Branch (1992). Sweet Success: California Diabetes and Pregnancy Program. Guidelines for Care. Sacramento: Maternal & Child Health Branch, Dept. of Health Services, State of California. Available through Education Programs Associates, Inc., 1 West Campbell Ave., Bldg. D., Campbell, CA 95008, (408) 374-3720.

McIntyre, D. J. (1983). Field experiences in teacher education from student to teacher. Washington, D.C.: ERIC Clearing House on Teacher Education.

McKay, J. W., Bernstein, M. & Robinson, M. (1994). IFEP as a tool for infusing community service agencies in preservice teacher preparation. Paper presented at Annual Meeting of the Association of Teacher Educators (Atlanta, GA: Feb. 12-16, 1994). ERIC document #368706.

Meleis, A. I. & Trangenstein, P. A. (1994). Facilitating transitions: Redefinition of the nursing mission. Nursing Outlook, 42(6), 255-259.

Merriam, S. B. (1988). Conducting effective interviews. In Merriam, S.B. Case Study in Education. A Qualitative Approach, San Francisco: Jossey-Bass, Inc. Publishers.

Miel, A., et al. Cooperative Procedures in Learning. New York: Bureau of Publications. Teachers College. 1952.

Moore, K., Tullis, R. & Hopkins, S. (1990). Field experiences: Expectations versus reality. The Teacher Educator, 26(1), 15-22.

Morris, J. E., Pannell, S. K. & Houston, B. (1985). Standards for professional laboratory and field experiences: Review and recommendations. Action in Teacher Education, 7(3), 73-78.

National Advisory Council on Education for Industry and Commerce. (1964). A Higher Award in Business Studies. Report of the Advisory Subcommittee on a Higher Award in Business Studies (The Crick Report). HMSO.

NASA (National Aeronautics and Space Administration) Ames Research Center (Undated). Aerospace Encounter: Teacher Guide. Mt. View, CA: NASA Ames Research Center.

National Council for Accreditation of Teacher Education, (1987). NCATE Standards, Procedures, and Policies for the Accreditation of Professional Education Units, Washington, D.C.: NCATE.

National Council for Accreditation of Teacher Education. (1992, March). NCATE Approved Curriculum Guidelines, Washington, D.C.: NCATE.

National League of Nursing (NLN). (1992). Accreditation Criteria for Colleges and Schools of Nursing. Kansas City, MO: NLN.

Newsom-Stewart, M. & Sutphin, D. (1994). A Conceptual Analysis of a Technology Preparation Program in Agriculture in Selected Schools in New York State. Qualitative Study Project Report 1993-1994. ERIC document #366780.

Oakes, J., et al. Collaborative Inquiry: A Congenial Paradigm in a Cantankerous World. Chicago: American Educational Research Association. 1985.

Olszewski, W., William, R., Hoffbauer, D. & Borchardt, E. (1991). Attention to climate: A case study of two decades of personalized and field-based teacher preparation. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association. (Chicago, IL, Oct. 16-19, 1991) ERIC document #339692.

Page, G. T. & Thomas, J. B. (1977). International Dictionary of Education. London: Kogan Page, New York: Nichols Publishing Company.

Powell, K., Weaver E. (1993). Perception of Characteristics of Candidates in Two Teacher Education Programs: Field Based Teacher Preparation Programs. ERIC document #355223.

Prerost, F. J. (1981). The feasibility of undergraduate field experiences in child psychology. Teaching of Psychology, 8, 19-22.

Prerost, F. J. (1993). Assessing student progress in field experience: Factors influencing positive outcomes. ERIC document #372059.

Quinn, J. (1994). Connecting education and practice in an instructional design graduate program. Educational Technology Research and Development, 42(3), 71-82.

Richards, R. (1960). Prospective students' attitudes toward teaching. J. Teacher Education, 11, 375-380.

Schmidt, S. M., Arndt, M. J., Gaston, S. & Miller, B. J. (1991). The effectiveness of computer-managed instruction versus traditional classes on achievement outcomes. Computers in Nursing, 9(4), 159-163.

Schon, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. San Francisco, CA: Jossey-Bass Publishers.

Smith, C. L., & Sagan, E. L. (1975). A Taxonomy for planning field experiences. Peabody Journal of Education, 58, 89-96.

Smith, D., & Wilson, H. (1992). The development and assessment of personal transferable skills during work-based placements. Assessment and Evaluation in Higher Education, 17(3), 195-208.

Smith, E. B. (1993) A Guide to Professional Excellence in Clinical Field Experiences, Bulletin (861-24488) Washington, D.C.: Association of Teacher Educators). P. 15.

Sumpmann, M. (1989). An Education center for patient's high-tech learning needs. Patient Education & Counseling, 13(3), 309-323.

Trubowitz, S., (1986). Stages in the development of school-college collaboration. Educational Leadership, 43(5): 18-21.

Tully, M. & Bennett, K. (1992). Extending community health nursing services: The student learning center. Journal of Nursing Administration, 22(3), 38-42.

Vargo, G. (1991). Computer-assisted patient education in the ambulatory care setting. Computers in Nursing, 9(5), 168-169.

Wasson, J. (1985). Nursing: Human Science and Human Care, N.Y.: Appleton-Century-Crofts, p. 74-75.

Wasson, J., Anderson, M. A. (1994). Hospital-patient education: current status and future trends. Journal of Nursing Staff Development, 10(3), 147-151.

Watson, J. (1985). Nursing: Human Science and Human Care: A Theory of Nursing. Norwalk, CT: Appleton-Century-Crofts.

Webb, E. T. & others (1966). Unobtrusive measures: Nonreactive Research in the Social Sciences. Skokie, IL: Rand McNally.

Whyte, W. F. (1982). "Interviewing in Field Research." In R. G. Burgess (ed.), Field Research: A Source Book and Field Manual (pp. 112-121). London: Allen & Unwin.

Winn, W. (1989). Toward a rationale and theoretical basis for educational technology. Educational Technology Research and Development, 37(1), 35-46.

Yin, R. K., (1984). Case Study Research: Designs and Methods. Newbury Park, CA: Sage.

Zeichner, K. (1980). Myths and realities: Field-based experience in pre-service teacher education. Journal of Teacher Education, 31(6), 45-55.

APPENDIXES

Appendix A:

Progression through Instructional Technology Curriculum According to Smith and Sagan's Taxonomy of Field Experiences.

Phase 1: Role Orientation

"It is here that the student is first introduced to the realm of theories and experienced relating to teaching. This process is intended to inform the student what lies ahead. Requirements of the program of preparation are explained, and orientation visits to schools are featured... An overview is presented of course work required in both the professional and subject matter areas." (Smith and Sagan, 1975, p. 93)

- EDIT 186 Using Instructional Media (Prerequisite)
Selection, utilization, and evaluation of instructional media in adult learning configurations. Analysis of communication and learning theories. Design and production of teaching and learning materials.

- EDIT 200 Instructional Technology: Professional Aspects (Prerequisite)
Provides an overview of the Instructional Technology field. Considers applications in all levels of education, school and public libraries, industry and business, nursing and the medical field, and public and social service agencies. Explores job opportunities, professional associations, and literature of the profession.

Phase 2: Role Conceptualization

In this phase Smith and Sagan denote that: "Early field experiences correlated with the objectives and concepts of social and psychological foundations should be aimed at exploring the ecology of the school and the interrelationships among people with assigned tasks in accomplishing the educative process." (1975. p. 93)

- EDIT 226 Instructional Design Seminar (Required)
Problems in systematically applying educational media technology to instruction and learning. Includes selecting appropriate modes of instruction based on clearly defined objectives, organization of instructional configurations, and media implementation.

Phase 3: Role Learning and Commitment

"This is the process in which the many techniques and methods used (in teaching) are learned and practiced. within the conceptual framework developed or developing, the student acquire the skills and knowledge to enable him to facilitate the desired learning with particular pupils. As the depth of understanding of theory and practice increases, a commitment to the career, to the profession, and to the teaching activities should develop. The student becomes more confident that this is "what I really want to do"... This phase of the program should provide a variety of field experiences in which the students can apply the latest concepts and methodologies of instruction in scaled-down teaching situations." (Smith and Sagan, 1975. p. 94)

- EDIT 185 Designing Self-Paced Learning (Required)
Survey of programmed self-paced learning and research in the field. Examination and evaluation of programs. Productions of linear and branching self-paced learning materials.

- EDIT 187 Instructional Strategies for Teachers and Trainers
(Supporting Elective)
Examination of techniques for improving lectures, presentations, discussions, self-paced learning, evaluating competency, and instructor-trainee relationships.

- EDIT 190 Instructional Applications of Hypermedia (Supporting Elective)
Authoring interactive instructional training hypermedia software. Applying basic instructional design principles in the production of hypermedia programs.

- EDIT 227 Advanced Instructional Design Seminar (Concentration)
Provides knowledge for developing in-depth competencies relating to elements of instructional design process, personnel working relations, and measuring instructional program results. Requires practical applications of instructional design procedures.

- EDIT 241 Emerging Technologies for Educators (Supporting Elective)
Systematic review of results of research studies in techniques of designing, selecting, producing, using, and evaluating the use of curriculum materials and instructional media in teaching; research studies in mass communication media; procedures applicable to setting up small-scale evaluative studies of curriculum, materials and media programs within schools.

- EDIT 273 Graphic Instructional Resources: Design and Production
(Concentration)
Application of communication theory and learning principles to design of graphic instructional materials to improve individual and group learning. Includes design, production, evaluation, and preparation of necessary utilization and study materials and guides.
- EDIT 274 Instructional Videotape Recording (Concentration)
Planning and designing of instructional videotape program modules for autoinstructional and group learning. Application of learning principles to instructional television with emphasis on constructing, implementing, and evaluating instructional objectives in a video format.
- EDIT 278 Instructional Interactive Video (Concentration)
Application of instructional design, video production, and computer theory to the production of instructional interactive video. Emphasis on production and examination of interactive video instruction as a training and educational medium.
- EDIT 285 Administering Distance Learning Via Telecommunications
(Supporting Elective)
Interactive distance learning models for education and training. Logistics and economics for satellite, ITFS, microwave, fiber optic, cable, twisted pair and compressed video. Teleconferencing. Legislation and FCC regulations. Support systems: courier, fax, voice mail, computers. Evaluation instruments. Visits to operating distance learning sites.

Phase 4: Role Assumption

The latter part of the program should include experiences which help one to assume the role of (the professional instructional designer) teacher... Student teaching (a form of Practicum) is the culminating field experience in most teacher education programs..." (Smith and Sagan, 1975. p. 94)

- EDLD 221 Research Seminar in Education (Required)
The role of research in education and society; procedures in selection and evaluation of research projects; techniques of research data analysis.

EDIT 270 Instructional Technology Seminar (Required)
Provides opportunities for independent research within a seminar setting on problems dealing with curricular applications of instructional materials and technology. Includes systems approach to analysis and evaluation of successful applications and programs.

or:

EDIT 299 Master's Thesis (Required)
Supervised thesis or project work.

EDIT 242 Practicum in Instructional Technology (Required)
Supervised professional administrative and non teaching experiences in approved cooperating agencies. Student is responsible for planning, carrying out, and reporting on projects assigned. Includes seminar sessions. To be taken final semester of course work.

Phase 5: Role Evaluation

"This process occurs simultaneously with the others, but its greatest emphasis comes near the end of the preparation program when a student surveys his total training experiences--both theoretical and experiential--and determines whether this is how the role should be acted out, or, at the extreme, should he be in this role at all. At this stage the student identifies areas in which his teaching (professional) behaviors need to be revised or areas in which the overall role of the teacher(instructional designer) needs to be modified.... Evaluation and revision will hopefully continue through the (instructional designer's) teacher's career." (Smith and Sagan, 1975. p. 95)

Appendix B

National Council for Accreditation of Teacher Education Standards for Field Experiences, Category II Standards.

NCATE Standards II. A: Clinical and Field-Based Experiences

Standard II. A: Clinical and Field -Based Experiences

The unit makes certain that clinical and field-based experiences in the professional education curriculum are designed to prepare student to work effectively in specific education roles.

Criteria for Compliance

- (1) Field-based and clinical experiences are systematically selected to provide opportunities for education students to observe, plan, and practice in a variety of settings appropriate to the professional roles for which they are being prepared.
- (2) Clinical and field-based experiences provide education students with the skills that allow them to diagnose and solve problems that involve the application of the principles and theories from the knowledge bases of the particular professional program.
- (3) Field-based and clinical experiences are accompanied by professional supervision and feedback that include attention to instructional plans, characteristics of learners and instructional settings, structured observation of the experiences, and detailed debriefing relative to program goals.
- (4) Education students participate in field-based and/or clinical experiences with culturally diverse and exceptional populations.
- (5) Field-based and clinical experiences are sequenced to enable education students to develop the skills that will enable them to assume full responsibility for classroom instruction or other professional roles in schools.
- (6) The student teaching experience is direct, substantial, and full-day for at least 10 weeks. [NOTE: This criterion applies to the basic unit only.
- (7) Three-member teams of the college-based supervisor, field-based supervisor, and education student have a well-defined charge to support a successful experience as the education student assumes full-time responsibility in the school setting.

- (8) Sites are carefully selected for all field experiences, including cooperating schools and other professional internship locations, so that students are prided experiences consistent with the goals of the unit's programs.
- (9) The roles and responsibilities of education students, college-based supervisors and field-based supervisors who participate in field-based and clinical experiences are delineated in negotiated written agreements.

Appendix C

STUDENT/INTERN REFLECTIONS ON CLIENT-BASED PROJECTS (Questionnaire)

Directions: During this semester, you have been assigned to work with a client as part of your course work for (professor's name). Please take a few moments and reflect on that part of the course and provide some feedback regarding your experience.

1. From your perspective, what were the advantages of working with a client?
2. From your perspective, what were the disadvantages of working with a client?
3. In what ways did working with a client strengthen your understanding of the design principles taught in the course?
4. In what ways did working with a client detract from your learning in the course?
5. Would you recommend that the instructor continue to use client-based field experience in future courses? Why or why not?
6. What benefits, if any, do you feel that you received from the experience?
7. What benefits, if any, do you feel the client received from the experience?
8. From this experience, what new learning will you be able to apply in your job?
9. Do you have any further thoughts, comments, feelings or experiences you would like to contribute about the client-based field experience with (the government agency)?

**STRUCTURED INTERVIEW FOR STUDENTS/INTERNS:
REFLECTIONS ON CLIENT-BASED PROJECTS**

ALL STUDENTS BEING SURVEYED ARE MEMBERS OF (THE
(PROFESSOR'S) CLASSES

Read by Researcher to Interviewee:

"Thank you for agreeing to interview as part of my study into reflections on client-based projects. I want you to know that your responses will be kept confidential and your name will not be used during any recorded or transcribe portion of the interview. Therefore, the answers you provide cannot be linked to you in any way. I will present the questions, one at a time. As you think through your answers, please think aloud. Tell me all of your thoughts. If you remain silent for a long period of time, I may ask you to describe what you are thinking, or encourage you to answer. At times, I may ask probing questions to clarify my understanding. There are no risks associated with participation in this study nor are there any benefits to you as a student except perhaps to better know your own feelings about the client-based project. You have the right not to answer any questions. In this case, please just tell me that you don't want to answer that particular question. Do you understand the procedure? YES NO

In order for me to concentrate on your answers, I'd like to tape record this session. Do I have your permission to audio-tape this interview?" YES NO

1. Would you please tell me your role in the collaboration with (the government agency)?
2. What benefits, if any, do you feel you received from this experience?
3. What benefits, if any, do you feel the client received from the experience?
4. From your perspective, what were the advantages of working with a client?
5. From your perspective, again, what were the disadvantages of working with a client?
6. In what ways did working with a client strengthen your understanding of the design principles taught in the course?

7. In what ways did working with a client detract from your learning in the course?
8. From this experience, what new learning will you be able to apply in your job?
9. Would you recommend that the instructor continue to use client-based instruction in future courses? Why or why not?
10. What aspects, if any, of the collaboration with (the government agency), do you think should be retained?
11. What aspects, if any, of the collaboration with (the government agency), do you think should be changed?
12. Do you have any other thoughts, comments, feelings, or experiences you would like to share about the client-based field experience?

**STRUCTURED INTERVIEW FOR CLIENTS:
REFLECTIONS ON CLIENT-BASED PROJECTS**

Directions: Contact client by telephone or for a face-to-face meeting.

S= denotes subject talking
R= denotes researcher talking
...= denotes periods of subject silence
()= denotes actions by the subject

R: "Thank you for agreeing to interview as part of my study into reflections on client-based projects. I want you to know that your responses will be kept confidential and your name will not be used during any recorded or transcribed portion of the interview. Therefore, the answers you provide cannot be linked to you in any way. I will present questions, one at a time. As you think through your answers, please think aloud. Tell me all of your thoughts. If you remain silent for a long period of time, I may ask you to describe what you are thinking, or encourage you to answer. At times, I may ask probing questions to clarify my understanding. You have the right not to answer any questions. In this case, please just tell me that you don't want to answer that particular question. Do you understand the procedure?"

YES NO

R: In order for me to concentrate on your answers to my questions, I'd like to tape record them. Do I have your permission to audio-tape this interview?

YES NO

R: I would like to start with the questions now. The first two questions are aimed at background information. The first question is: Please explain to me your role in the Aerospace Encounter/Virtual Exploration of Mars project.

R: Now, would you please tell me what your goals and objectives are for the Aerospace Encounter/Virtual Exploration of Mars project?

R: What are your particular goals and objectives for (the metropolitan state university) students?

R: Thank you. Now I would like to focus on your perceptions as a client. The next question is: What are the benefits, if any, to you as the client of working with (the metropolitan state university) students?

R: What do you perceive as the disadvantages, if any, to you as the client of working with (the metropolitan state university) students?

R: What do you perceive as the strengths, if any, of the client-based field experience?

R: What do you perceive as the weaknesses, if any, of the client-based field experience?

R: Thank you. Now I would like to shift the focus to your impressions of working with (the metropolitan state university) and its' students. What do you perceive are the benefits, if any, to the students who are working on the (Aerospace Encounter/Virtual Exploration of Mars) project?

R: What aspects, if any, of the collaboration with (the metropolitan state university) do you think should be retained?

R: What aspects, if any, of the collaboration with (the metropolitan state university) do you think should be changed?

R: Do you have any other thoughts, comments, experiences, or feelings that you would like to share with me about the client-based project with (the metropolitan state university)?

FOCUS GROUP INTERVIEW

ALL INTERVIEWED STUDENTS ARE MEMBERS OF (THE PROFESSOR'S) CLASSES

Researcher's Introductory Remarks: "Thank you for agreeing to be part of this focus group interview. It will be part of my study into client-based field experiences. I want you to know that your responses will be kept confidential and your name will not be used in any report of the interview. In this way, your anonymity will be preserved. There are no risks associated with participation in this study nor are there any benefits to you as a student except perhaps to better know your own feelings about the client-based project.

The discussion will center on issues rather than being constrained along narrow questions. As you discuss the issues raised, please share your individual experiences, feelings, attitudes, perceptions and thinking. Group discussion is very important to the process of a focus group. So, the exchange of opinions, personal reactions, and experiences among members of this group are very important.

You have the right not to participate in any part of the discussion if you don't wish to. The discussion will be audio-taped and several issues will be open to discussion. You will have about 5 minutes to discuss each issue and the entire focus group session should not require over forty minutes of time.

The issues are related to your common body of experience, which is participation in the client-based field experiences in the Aerospace Encounter or Virtual Exploration of Mars group. Before the discussion begins, please introduce yourselves to each other and relate which government agency project you were involved in so everyone gets a feeling of the common bodies of experience.

The issues for discussion are:

- Any advantages/benefits of client-based field instruction
- Any disadvantages of client-based field instruction
- Any influence of the experience on student's learning and application of knowledge
- Benefits for the client from the experience
- Client-based field experiences as part of graduate courses
- Implementation of the client-based field experience