

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)

2. REPORT DATE

MAY 1995

3. REPORT TYPE AND DATES COVERED

4. TITLE AND SUBTITLE

Evaluation of A Continuing and Distance Education, And training Teleconference for

5. FUNDING NUMBERS

6. AUTHOR(S)

Ethel Susanne Sherner

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

AFIT Students Attending:

Pennsylvania State University

8. PERFORMING ORGANIZATION
REPORT NUMBER
AFIT/CI/CIA

95-013

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

DEPARTMENT OF THE AIR FORCE
AFIT/CI

2950 P STREET, BDLG 125

WRIGHT-PATTERSON AFB OH 45433-7765

10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
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11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for Public Release IAW AFR 190-1
Distribution Unlimited
BRIAN D. GAUTHIER, MSgt, USAF
Chief Administration

12b. DISTRIBUTION CODE

DTIC
ELECTE
JUN 08 1995

13. ABSTRACT (Maximum 200 words)

19950606 007

DTIC QUALITY INSPECTED 3

14. SUBJECT TERMS

15. NUMBER OF PAGES

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT

18. SECURITY CLASSIFICATION
OF THIS PAGE

19. SECURITY CLASSIFICATION
OF ABSTRACT

20. LIMITATION OF ABSTRACT

The Pennsylvania State University
The Graduate School
Graduate Program in Nutrition

**EVALUATION OF
A
CONTINUING AND DISTANCE EDUCATION
AND TRAINING TELECONFERENCE
FOR PENNSYLVANIA NUTRITIONISTS**

Accession For	
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DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

A Thesis in
Nutrition

by
Ethel Susanne Shearer

Submitted in Partial Fulfillment
of the Requirements
for the Degree of
Master of Science

May 1995

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Teleconference for Pennsylvania Nutritionists
RANK: Captain
BRANCH: USAF
DATE: 1995
PAGES: 141 numbered pages, 152 total pages
DEGREE: Master of Science in Nutrition
INSTITUTION: The Pennsylvania State University

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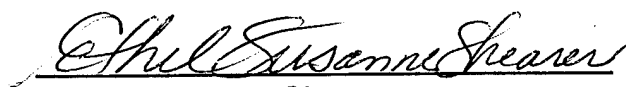
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ABSTRACT

A summative evaluation was performed to assess success of a continuing and distance education program for nutritionists in Pennsylvania.

A one-day teleconference about "communication with clients" was delivered by satellite television broadcast to 20 sites and 574 professionals and paraprofessionals participants from Women, Infants, and Children (WIC), and The Expanded Food and Nutrition Education Program (EFNEP).

The program included: a four member panel of experts who presented on the conference topic of communication; pre-recorded video segments; print materials; question and answer sessions; and facilitated on-site activities.

Pre-conference and post-conference evaluation questionnaires were given to all attendees. Of the 574 eligible to complete these evaluations, 99% (571) completed the pre-conference questionnaire, and 97% (554) completed the post-conference questionnaire. For matched analysis, 546 were used.

The primary outcomes measured were attendee satisfaction and perceptions of effectiveness. Additionally, three types of learner interactions, and learner attitudes were explored.

Mean satisfaction was 7.28 (S.D. 1.71, Range 2-10). Mean perceived effectiveness was 3.34 (S.D. 0.92, Range 1-5). Most participants were satisfied to very satisfied with the conference

and perceived the conference as effective to more effective than conferences where attendees and instructors are face-to-face.

Learner perceptions of interactions with other learners, interactions with instructors, and interaction with program content, were positively related to outcomes. Interaction between learner and instructor was the variable most strongly related to satisfaction ($r=.58$, $p=.0001$) and effectiveness ($r=.42$, $p=.0001$). Learner initial expectations were also related to satisfaction ($r=.42$, $p=.0001$) and perceptions of effectiveness ($r=.35$, $p=.0001$). Those with lower initial expectations had lower satisfaction and lower perceived effectiveness of the conference.

Attitudinal changes in comfort ($r=.17$, $p=.0001$) in a satellite broadcast, and knowledge of communication ($r=.27$, $p=.0001$) were related to satisfaction. Attitudinal changes in knowledge of communication were related to effectiveness ($r=.21$, $p=.0001$).

No differences in satisfaction or ratings of effectiveness were found among work organizations or education levels. This conference appears to have been successful for both professional and paraprofessional attendees. It has potential for future applications for the WIC and EFNEP population, and for other organizations who have both professional and paraprofessional training needs in a geographically dispersed group.

Learner interactions are related to participant satisfaction and perceived effectiveness, and should be an important consideration in designing future distance education programs.

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ACKNOWLEDGMENTS

I am grateful to my adviser, Dr. Claudia Probart, and to the members of my committee, Dr. Cheryl Achterberg and Dr. Peter Cookson, for their help with my research.

I also owe special thanks to members of the project planning team: Judy Heald, Marie Hornbein, Loretta Miller, and Judy Treu. Without their work, there would have been no teleconference to evaluate.

I am grateful, to my parents Wade and Mary, to my brother Dave and Family, and especially to my husband Michael Westman, for love and support. I appreciate the help of Gloria Hsieh and Georgianna Williams, the friendship of Carla Miller, and the financial aid of the United States Air Force.

The sponsorship of the teleconference by the Pennsylvania State University Nutrition Center, the WIC Program, Pennsylvania Department of Health, EFNEP, Pennsylvania State Cooperative Extension, and the financial support of the Howard Heinz Endowment, and Penn State Continuing and Distance Education, are acknowledged.

CHAPTER 1

INTRODUCTION

Providing effective continuing education and training is a challenge faced today by many planners of adult educational programs. It requires not only the consideration of the needs of the adult learners (Knowles, 1980) and their profession, but also the selection of the most effective education and training methods. These issues drive the design, implementation, and evaluation of any program.

One option for program delivery is distance education, where instructors and learners are separated by space or time (Amundsen, 1993; Keegan, 1993; Holmberg, 1989; Moore, 1989; and Schlosser & Anderson, 1994). Media (text, audio, television or computer) and one-way or two-way technologies (Bates, 1993) are used to provide this education or training. But, it often unclear what factors optimize the effectiveness of distance education and for which groups.

Many measures can be used to determine program effectiveness, whether in traditional or distance education programs: satisfaction, job performance, knowledge gain, cost benefits, learner attitudes, goal achievement, or change in productivity (Berk & Rossi, 1990; Coldeway, 1988; Deshler, 1994; Guba & Lincoln, 1981).

Performance based research in distance education has traditionally been used to evaluate effectiveness, and in most instances, has shown that distance education is as effective as

traditional face-to-face instruction (U.S. Congress, 1989). But, some researchers believe that learner satisfaction is also an appropriate measure of effectiveness (Biner, 1993; Hackman & Walker, 1990; Ritchie & Newby, 1989), and that this satisfaction is impacted by learner perceptions of the interactions which occur in the distance education setting (Fulford & Zhang, 1993; Kruh & Murphy, 1990). Interactions, which occur between the learner and instructor, the learner and program content, and the learner and other learners (Moore, 1989) may impact satisfaction or enjoyment, and consequently, the effectiveness of the education or training (Biner, 1993, 1994; Fulford & Zhang, 1993; Ritchie & Newby, 1989).

For this study, part of an overall evaluation of a teleconferencing program for nutritional professionals and paraprofessionals, an investigation of relationships between participant satisfaction and perceptions of effectiveness, and learner perceptions of interactions which occurred. Additionally, the impact of participant expectations, attitudes, and prior participation in teleconferencing, was explored.

Research appears limited on the use of teleconferencing in nutrition and dietetics profession, although a series of experimental teleconferences were used in the 1970s, to provide continuing education to members of the American Dietetic Association. One goal of these programs was to reach rural, and geographically dispersed members. Although these programs were considered successful, the escalating costs of technology in the 1980s, prevented the continuation of these teleconferences (Hubbard &

McCormick, 1978; Nanberg, 1983; O'Connell, 1978; Simko, Cowell, & Gilbride, 1978; Spears, Moore, & Tuthill, 1973a, 1973b). Since then, however, these technologies have become more affordable and more available (Romiszowski, 1993; U. S. Congress, 1989).

This study provides the opportunity to re-evaluate teleconferencing as a method for delivery of continuing education in nutrition and dietetics, and also allows the potential identification of learner interactions and attitudes that may impact future program design.

CHAPTER 2

RESEARCH HYPOTHESES

Goals of the Research

The research conducted during this teleconference was intended to determine the effectiveness of the conference as measured by learner satisfaction and their perceptions of effectiveness compared to face-to-face instruction, and to explore the relationship of learner perceptions of interactions to these outcomes. Three types of interactions were considered: learner perceived interactions with the instructor, learner perceived interactions with other learners, and learner perceived interaction with the subject content of the conference.

Relationships between satisfaction and perceptions of effectiveness were also explored for learner initial expectations, and for learner attitudes. These attitudes were about: how comfortable they felt in a satellite broadcast, how important it was that the instructor was physically present at their site, how important communication skills were in their work, and how much they felt they knew about the conference topic "communication".

Participant satisfaction and perceptions of effectiveness were also investigated for differences in regards to: prior participation in a satellite broadcast and selected learner characteristics and work characteristics. Additional goals of the broader program

evaluation were to identify topics for future training events and assess quality of the conference.

Hypotheses

To research these issues, one primary hypothesis, and three secondary hypotheses were proposed, and tested in regards to participant satisfaction with the conference, and in regards to perceptions of effectiveness compared to face-to-face instruction.

The primary hypothesis tested was:

Ha1: There is a positive relationship between participant satisfaction and perceived effectiveness compared to face-to-face instruction and interactions. Higher satisfaction and higher perceived effectiveness will result from higher levels of:

Perceived interaction with the instructor (learner-instructor interaction)

Perceived interaction with other learners (learner-learner interaction)

Perceived interaction with content (learner-content interaction)

Secondary hypotheses tested were:

Ha2: There is a positive relationship between participant satisfaction and perceived effectiveness compared to face-to-face instruction and the participant's initial pre-conference expectations. Higher initial pre-conference expectations will result in higher satisfaction and higher perceived effectiveness compared to face-to-face instruction.

Ha3: There is a relationship between participant satisfaction and perceived effectiveness compared to face-to-face instruction and their attitudes. This relationship is positive for comfort in a satellite broadcast, importance of communication skill, and knowledge of the topic. Higher post-conference ratings of comfort, importance of communication skill, and knowledge of the topic, will result in higher satisfaction and higher perceived effectiveness of the conference. This relationship is negative, for the importance of instructor presence. Lower ratings of the importance of the instructor presence, will result in higher satisfaction, and higher perceived effectiveness compared to face-to-face instruction. These attitudes variables are:

How comfortable participants feel in a conference delivered by satellite broadcast

The importance that the instructor is physically present at their conference site

The importance of communication skill in work

How much participants feel they know about the topic,
communication

Ha4: There is a difference between those participants with and without prior participation in a satellite broadcast, in regards to satisfaction and perceived effectiveness compared to face-to-face instruction. Those who have had prior participation in a satellite broadcast, will be more satisfied and will have higher perceived effectiveness than participants without prior participation in a satellite broadcast.

CHAPTER 3

A REVIEW OF THE LITERATURE

Introduction

This study evaluated perceptions of interactions which occurred in a continuing education and training program for adult learners in the field of nutrition. This program was a teleconference, a form of distance education, in which these interactions can play an important role in learner satisfaction and in the effectiveness of the program. For this literature review, it is useful to provide a brief review of adult and continuing professional education. Then, more extensive information will be given on distance education and learner satisfaction and interactions in a distance education environment.

Adult Education and Training

Until World War II most educational research focused on teaching children. Before then, the time span of major cultural change (e.g., technological innovation, change in political and economical systems, massive gains in new knowledge) was greater than the life-span of individuals and what people learned in youth was valid and useful for a lifetime. But, during the twentieth century, knowledge and skills gained at any point became obsolete in

a matter of years, and it became necessary for adults to obtain continued learning (Knowles, 1980).

The teaching strategies being used for children, such as rote memorization, exams, and fact-laden lectures, were resisted by most adults, and led teachers of adults to try techniques which differed from traditional pedagogical models. During the 1960s research began to focus on the internal process of learning in adults (Knowles, 1980). Other fields such as psychology, gerontology, sociology and anthropology also contributed to knowledge about adult learning and increased research in support of a theory of adult learning, andragogy (Knowles, 1980).

Knowles, sometimes known as the "father of adult education", defined andragogy as "the art and science of helping adults learn, in contrast to pedagogy as the art and science of teaching children" (p. 43, 1980). He made four crucial assumptions about adults learners which are different than the basic assumptions of pedagogy. As individuals mature, he assumed that:

- 1) " their self-concept moves from one of being a dependent personality toward being a self-directed human being;
- 2) they accumulate a growing reservoir of experience that becomes an increasingly rich resource for learning;
- 3) their readiness to learn becomes oriented increasingly to the developmental task of their social roles; and
- 4) their time perspective changes from one of postponed application of knowledge to immediacy of application, and

accordingly, their orientation toward learning shifts from one of subject-centeredness to one of performance-centeredness" (p. 44-45).

In addition, Knowles believed that education is more than a transmission of what is known, and that it is a lifelong process of continuing inquiry and learning. "And so the most important learning of all--for both children and adults--is learning how to learn, the skills of self-directed inquiry" (Knowles, 1980, p. 41). His assumptions that education is a lifelong process, and that adults are self-directed, are ready to learn, have an immediate need for the education, and take life experiences to the learning environment, are important in design and implementation of adult programs. Adults may be more motivated to learn, often prefer more control in a learning situation, and want to gain knowledge which they feel is relevant to them. Adult education programs are varied and can include: part-time study at educational institutions; basic education and literacy; minorities' programs; correctional education; cultural programs; staff development; education for elders; rural development; health education; continuing professional education, and distance education (Knox, 1993).

Continuing Professional Education

One type of education and training that adults participate in, is continuing professional education. Cervero (cited in Knox, 1993)

estimated that 15% to 28% of the U.S. work force are professionals. Central to the definition of a professional is the idea that there is not only a systematic way of preparing for a field of practice, but also a way to maintain proficiency when knowledge and practice are constantly changing. Continued education allows this progression from novice to expert. It assumes that part of continued learning is self-directed and supplements the formal education supplied by schools and the non-formal education received in the workplace or from professional organizations (Knox, 1993).

This continuing professional education is closely associated not only with role performance, but with the organizational and societal context in which it occurs. External changes like career transitions, economics, supply and demand for professionals, and societal expectations (which can influence licensure and malpractice legislations) can impact planning of continuing education (Houle, cited in Knox, 1993). In fact, it was external changes during the 1960s and 1970s that spurred the development of our current continuing education programs, as society began to expect higher levels of professional competency (Houle, 1980).

Although many fields have mandatory continuing professional education requirements for a minimum number of hours every few years, the specific activity to meet those requirements is usually selected by the professional. Typical providers of continuing professional education are educational institutions, professional associations, employers, and independent providers or consulting firms (Knox, 1993). Examples of professional fields in the United

States that require continuing education are engineering, law, library science, nursing, pharmacology, physicians, social work, and teaching (Knox, 1993), as well as nutrition and dietetics.

Continuing Education for Nutritionists

One group of adults who require continuing education and training to maintain competencies, are those who work in the field of nutrition. Most literature on continuing education for nutritionists is about education for the professionals, and not the paraprofessional members of this population, because it is typically the professional members who must get continuing education to maintain their credentials. The American Dietetic Association, a key professional organization of those who provide dietetics and nutritional health care in the United States, recognizes the public's right to quality health care. Registered Dietitians (RDs) and Dietetic Technicians, Registered (DTRs) complete certified university and hospital-based education programs, and must pass a national standardized examination.

In 1969, a voluntary program of registration was begun to assure continuing competency of dietitians by requiring evidence of self-improvement. ADA's credentialing agency, the Commission on Dietetic Registration, administered the program. In 1986, a similar program was begun for technicians, who must get 50 hours of approved continuing professional education over a five-year certification period. The RD continuing education is now required

instead of voluntary, and must reach 75 hours of approved continuing professional education over a five-year certification period ("President's Page," 1989).

An intent of these continuing education requirements is to help professionals in the field of nutrition maintain competency in their work. To help nutritionists meet these requirements, the ADA develops or sponsors a variety of continuing education opportunities. Some of these events are traditional, face-to-face education or training events, and others are offered through a variety of delivery methods, such as print materials, audio-cassettes, and video-tapes.

In the 1970s, the ADA experimented with another delivery method, satellite delivery. One focus of the program was to reach ADA members in small cities or rural areas. Poor access to continuing education events, or inability to pay the expense of traveling to face-to-face seminars, made this type of program attractive to rural residents. Called "Stardate", an acronym for "Satellite Technology Applied to Registered Dietitians' Avenues of Training and Education", these experimental workshops covered financial management and nutritional assessment. The programs the ADA developed were two to three hours in length, and included a live broadcast of a panel of experts via one-way video, a two-way audio question and answer session between the panel and participants, and pretaped video segments. ADA's focus on the evaluation was participant satisfaction with the program, comparison to conventional local CE programs, attendance at future programs, willingness to travel, and cost (Nanberg, 1983). The broadcasts were

considered successful, but were discontinued because of rising costs of technology in the 1980s (Hubbard & McCormick, 1973; Nanberg, 1983; O'Connell, 1973; Simko, Cowell & Gilbride, 1973a, 1973b).

These satellite television broadcasts, were a form of distance education, and were not meant to completely replace traditional, face-to-face meetings. But, they were simply another delivery system or tool to provide continuing education. Advantages of satellite televised broadcasts include: a wide distribution; a dispersed audience can see top level experts without having to travel; attendance can be higher and allow more people to get the information personally; personnel in rural or remote areas have access to better education and training; and satellite programs can provide timely information (Nanberg, 1983).

Distance Education

Distance education is one delivery method for providing continuing professional education in addition to traditional, face-to-face education. Distance education originated with correspondence courses (Holmberg, 1989), but now can include many other instructional media, such as television, computer, etc. Distance education assumes the separation of the learner and teacher either by space or time, and that some form of media or technology is used to provide the interaction which would normally occur in a face-to-face environment (Holmberg,, 1989; Keegan,

1993; Moore, 1989). Many adults prefer distance education because it fits preferred learning styles, allows more independence and control of the learning situation, and increases their access to educational opportunities. Adults are increasingly participating in educational programs as society has begun to accept the place of continued learning throughout life. Many of these adult programs are offered through distance education, and use a variety of media and technology (Knox, 1993).

Distance Education Media and Technology

At the end of the 1980s, most distance education was print-based, for example correspondence courses, but that changed with rapid advancements in telecommunication technologies which have made technology more available, and cheaper (Bates , 1993; Romiszowski, 1993). Bates (1993) believed that technology would become increasingly important to distance education because of wider accessibility to students, lowering technological delivery costs, increasingly user-friendly easier technology, the gaining pedagogical power of technology, and the increasing societal and political pressures to use technology.

"The successful distance education institutions wil [sic] be those that systematically adapt to and embrace these trends; these can perhaps be best identified as third-generation distance teaching institutions (the first being primarily correspondence schools, and the second, large, autonomous, institutions using a wider variety of

media)", and effectiveness will depend more on how technologies are used rather than whether they are used (Bates, 1993, p. 214).

Bates believed that technology would have an increasing presence in education, and that its effectiveness would depend on the appropriate use of these technologies. He distinguished clearly between media and technology. Media, he defined as the generic form of communication used to present knowledge, and cited text (a mainstay of correspondence study), audio, television and computing as the four most important in distance education. Technology, refers to the one-way or two-way communication which can occur. For example, television (the media) can be delivered by broadcast (one-way technology) or by interactive compressed video (two-way technology); or audio could be delivered by cassette (one-way) or by telephone tutoring or audioconferencing (two-way). He concludes that, "The significance of two-way technologies is that they allow for interaction between learners and instructors and tutors, and perhaps even more significantly, in some cases amongst distance learners themselves" (Bates, 1993, p. 215).

Researchers also discuss media and technology in distance education in terms of the type of communication which occurs, and the degree of independence it allows the learner (Barker, Frisbie, & Patrick, 1989; Garrison, 1985, 1990; Romiszowski, 1993) . Correspondence study, the original form of distance education, provided primarily one-way communication and was a highly independent form of learning. Telecommunications, the next development in distance education, included audio and video

technologies which allowed for two-way communication. These two-way communications allow for interactions between learners and instructors and learners and other learners, but may reduce independence because these two-way interactions are often a scheduled event. The third development in distance education is the impact of the advancements in computer technology, which will not only allow spontaneous interactions between learner and instructors and learners and other learners, but also maintain a high level of learner independence (Garrison, 1985).

Distance Education Theory

Distance education is difficult to define, as evidenced by conflicting views in the literature. Some propose that distance education is a discipline in its own right, others believe it is a separate and distinct field of the education discipline, and still others believe there is nothing uniquely associated with distance education. But, there is agreement that the definitive characteristic is the separation of teacher and learner (Amundsen, 1993).

Distance education theories are many, and discuss such topics as: the transactional distance between the learner and teacher; learner autonomy and independence; learner interactions; and communication theory and control. Common to these theories, are the influence of adult education and the focus on the learner, and the general theme of communication and interactions.

Learner Interactions in Distance Education

Learner interactions are heavily discussed in the literature as researchers and theorists search for ways to "bridge" the distance of the separation of the learner and instructor. There is agreement that interaction is essential for learning, and that interactions in distance education differ from those that occur in a traditional face-to-face classroom (Garrison, 1989, 1990, 1993; Moore, 1989; Kruh & Murphy, 1990).

Moore (1989; 1993), in an effort to describe and clarify terms often used in distance education, such as "distance," "independence," and "interaction," suggested distinctions between three types of interaction that occur in distance education and labeled these as learner-content, learner-instructor, and learner-learner interactions. While interactions are important in traditional education, they are especially important because of the separation of the learner and instructor which may prevent normal interactions, such as facial expressions or spontaneous discussions or questions, from occurring.

The first type of interaction is that which occurs between the learner and the subject content, an interaction which Moore calls a defining characteristic of education. "Without it there cannot be education, since it is the process of intellectually interacting with content that results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind" (Moore, 1989, p.2). He believed this type of interaction is at

least partly involved in what Holmberg (cited in Moore, 1989) called the 'internal didactic conversation' when learners 'talk to themselves' about the information and ideas they encounter. This interaction changes the way a learner thinks, and new information is incorporated into what is already known.

The next type of interaction is that which occurs between the learner and the subject expert, or someone acting as an instructor. In this interaction, the instructor not only plans and presents the program, but is available to provide feedback and encouragement, stimulate motivation and interest, teach application of the knowledge, and evaluate student progress. This interaction allows the learner to draw on the experience of the instructor, and the instructor plays a key role in assessing the learner's application of new knowledge (Moore, 1989).

The third type of interaction Moore discussed was the interaction which occurs between learners and other learners, either "alone or in group settings, with or without the presence of the real-time presence of the instructor" (p. 4). He believed that learner-learner interactions are an extremely valuable and essential resource for learning. Learner-learner interaction is discussed frequently by many in distance education (Bates, 1993; Garrison, 1990; Moore, 1989). They believe that the growth of telecommunications and the increase in interactive, two-way technologies, will allow learner-learner interactions that could not be provided by earlier, one-way technologies, and see this learner-

learner interaction as an opportunity to further improve effectiveness of distance education programs.

Moore (1989) believed that educators need to organize programs for maximum effectiveness of interaction, by providing the type of interaction that is most suitable for the various teaching tasks of different subject areas and for learners in different stages of development. He cites the main weakness of many distance education programs as their commitment to only one type of medium, which may allow for only one kind of interaction.

While correspondence gives superior learner-content interaction and good, though slow, learner-instructor interaction, it gives no learner-learner interaction. The teleconference group is excellent for learner-learner interactions, and for some types of instructor-learner interaction, but is frequently misused for instructor presentations that could be done better by print or recorded media.

In short, it is vitally important that distance educators in all media do more to plan for all three kinds of interaction, and use the expertise of educators and communications specialists in both traditional media--printed, broadcast, or recorded--and newer teleconference media" (p. 6).

Garrison highlights the importance of interaction by his belief that education, whether at a distance or not, is dependent on two-way communication. "In an educational experience, information must be shared, critically analyzed, and applied in order to become knowledge. Meeting the demands of an educational transaction at a distance is dependent upon communication technologies which provide frequent and regular interaction between teacher and student as well as student and student" (Garrison, 1990, p. 13-14). He focuses on those interactions between the learners and instructors and the learners and other learners.

Distance Education Research and Evaluation

The literature provides a wealth of research on distance education programs for all age groups and all types of media and delivery technology. Much of this research discusses evaluations, which are often conducted to assess quality and effectiveness of educational programs. Evaluation can be done for program improvement or for accountability of dollars spent (formatively), or assessment of outcome (summatively), and may focus on knowledge gain, attitude or value change, skill development, cost effectiveness, satisfaction, or program planning process improvements. Evaluation can focus on both expected (objectives) and unexpected results, can gather either quantitative or qualitative data through interview, questionnaire, or observation, and can be from the learner or educator perspective. (Guba & Lincoln, 1981;

Steele, 1988). Determination of the type of evaluation to be done, and the purposes of the evaluation, are important early in the program planning process (Berk & Rossi, 1990; Deshler, 1994; Guba & Lincoln, 1981; Steele 1988).

Gooler (cited in Tovar, 1989) does not believe that evaluations of distance education programs are different from other traditional education, but feels there are unique characteristics which can be used to evaluate programs: the nature of learners, the motivation of participants, the modes of delivery, and the learner separation from the source of the information. Other characteristics of learners which may predict success are: motivation (Wlodkowski, 1990), satisfaction (Biner, 1993; Hackman & Walker, 1990), and learner perceptions of interactions (Kruh & Murphy, 1990; Fulford & Zhang, 1993, 1994; Hackman & Walker, 1990; Ritchie & Newby, 1989).

Biner (1993, 1994), in his work to develop a valid evaluation instrument to measure student attitudes, believed that assessing participant reactions to programs should be done before any assessment of learning outcomes. Although positive reactions do not guarantee learning has occurred, he believed that negative reactions can certainly reduce program support and negatively affect learning. He felt that any evaluation should begin by looking at student attitudes and opinions. Hackman & Walker (1990) held similar views. They questioned the use of student grades as the sole measure of outcome in university televised instruction, and believed that the only reasonable basis for evaluation was student perceptions and satisfaction since it is the student who ultimately decides if the

distance education experience is worthwhile, and continues the program.

Factors which underlie student satisfaction in televised courses (Biner, 1993), are those with: the instruction or instructor, the technology, and the course management or coordination, instruction/instructor aspects, technological aspects, and course management or coordination. He used these factors in developing questionnaires in televised course. These factors, or dimensions are similar to those identified earlier by Harrison, et al., (1991), who were also researching components to use in assessing the effectiveness of distance education. Biner (1994) further investigated these factors and identified an additional four factors which he feels underlie student satisfaction: at-site personnel, promptness of material delivery, support services, and out of class communication with instructor. These researchers strongly support the use of satisfaction as a measure of evaluation.

Key to this learner satisfaction, appears to be the amount, or perception of the amount and types of interactions which occur. Some studies use Moore's (1989) three types of interactions as the conceptual framework (Fulford & Zhang, 1993; Garrison, 1990) or have adapted these three types of interactions for their research.

Fulford and Zhang (1993) used Moore's (1989) concept of three types of interaction in their research on perceptions of interaction with interactive television. In traditional classrooms, those with high levels of interaction have been shown to have higher levels of achievement. Learners less actively engaged in instruction, can be

less motivated and become distracted. Fulford and Zhang researched personal interaction, overall interaction, and satisfaction, and found that the perceived overall interaction, was a better predictor of satisfaction, than student perceptions of personal interaction.

In a study by Ritchie and Newby (1989), the amount and type of interaction did not impact overall performance, but those with less interaction reported less enjoyment which can impact attitude and student motivation. Student interaction with instructors correlated with satisfaction, in work by Hackman and Walker (1990), who believed that instructional designs should try to facilitate some sense of contact and intimacy with the instructors.

Kruh & Murphy (1990) in their research specifically on interaction in teleconferencing, believed there are four types of interaction which vary slightly from Moore's interaction model. They believe there is interaction with the presenter, interaction with others at the local site, interaction with other learners at other sites, and vicarious interaction, which they describe as the interaction which occurs silently as learners reflect on the comments or questions asked by other learners. Fulford and Zhang (1994) hint at this vicarious interaction when they indicate that every student does not have to publicly participate or interact, to enjoy satisfaction from the interactions which are occurring.

Hillman, Willis and Gunawardena (1994) propose an additional interaction to Moore's model (1989). They term this interaction ""learner-interface interaction" and believe it is the process of

interacting with the technology or media to obtain the content of the instruction. Without the appropriate skills to use the delivery system, the learner cannot fully interact with either the instructor, content, or with other learners. Learners must be put at ease with the technology (Ritchie & Newby cited in Hillman, Willis and Gunawardena, 1994) to facilitate interaction.

Interactions are important in any learning environment, but especially in a distance education setting where learners and instructors are separated. Often, the distance education environment becomes a passive experience for the learner, and some feel that unless the learner is active, or "interacting", education and learning does not occur. Quality distance education is dependent upon interaction and participation of the learners, just as in face-to-face instruction, (Kruh & Murphy, 1990). The telecommunication and computer technologies used in distance education programs, allow for learner-learner and learner-instructor interactions which were not possible with the earlier correspondence based distance programs. It is essential to purposefully design for these interaction when developing distance education programs, and despite far reaching technology, remain focused on the needs of the individual learner (Davis & Elliott, 1989).

Summary

This literature review has provided in brief, adult education theory which stresses the importance of focusing on the needs of the learners (Knowles, 1980). One example of an adult education

program is continuing education (Knox, 1993) which can be provided through delivery methods known as distance education. Distance education assumes the separation in space or time, of the learner from instructor or content expert (Keegan, 1993; Holmberg, 1989). Distance education includes not only correspondence study, but also newer telecommunications and computer technologies which have become increasingly available and affordable. Advantages these new technologies have over correspondence studies, are their abilities to provide for two-way communication, and increased interaction for the learner (Bates, 1993; Garrison, 1985). The interactions which occur in the distance education environment, help to keep the learner actively involved in the program, and consequently may help to improve satisfaction (Biner, 1993; Hackman & Walker, 1990; Ritchie & Newby, 1989), attitudes, and positively impact learning (Fulford & Zhang, 1993; Kruh & Murphy, 1990; Hackman & Walker, 1990). One framework for evaluating these interactions, is a model for learner interactions with the learner, with the content, and with the instructor (Moore, 1989).

The field of nutrition has used distance education media and technology as a means to provide continuing education, however few articles specifically discuss teleconferencing, a method of distance education delivery which provides one-way video and two-way audio communications. Experimental teleconferences were held in the 1970s (Nanberg, 1983), and were considered successful, but were discontinued because of the rising costs of technology at that time. This study and evaluation of a one-day teleconference for nutritional

professionals and paraprofessionals, provides an opportunity to re-evaluate teleconferencing and its potential for use with nutrition and dietetics personnel. Additionally, it allows consideration of the research in distance education literature which clearly stresses the importance of learner interactions in a distance education environment, and the impact of those interactions on satisfaction and perceptions of effectiveness. Evaluation of the interactions in this program may provide insight to the success of this conference, and provide information on interactions which will contribute to better program design in future teleconferences.

CHAPTER 4

METHODS

Description of Participants and Study Sites

Approval of the study was obtained from the Office of Human Compliance at The Pennsylvania State University and from Women, Infants, and Children (WIC), and the Expanded Food and Nutrition Education Program (EFNEP) project coordinators. Participation in the study was voluntary; informed consent forms were included in the conference information packets (Appendix A). The subjects for this study are those WIC and EFNEP participants and guests from across Pennsylvania, who attended the one-day teleconference, "Building Communication Bridges in Family Nutrition Programs." WIC and EFNEP administrators and conference planners were responsible for participant recruitment, and organized all conference pre-registrations and site assignments. The conference was held during the participant's normal work days. For some participants, attendance at this training was required by their work organization and some participants did not have a choice of conference sites.

Description of the Program

This one-day teleconference, "Building Communication Bridges in Family Nutrition Programs," was offered in May 1994 as continuing education and training to both professional and paraprofessional nutritionists of WIC and EFNEP in Pennsylvania.

This conference was developed jointly by faculty and staff at The Pennsylvania State University, and representatives from WIC and EFNEP. The topic selected was "communication". A multidisciplinary program planning team included university nutrition, communication, and technology experts.

The conference, a live satellite broadcast, included one-way video and two-way audio segments, and was scheduled to be broadcast from University Park, Pennsylvania to 21 downlink sites throughout the Commonwealth (Appendix B).

The six-hour conference included a four-member panel of experts, telephone call-in question and answer sessions, printed materials, pre-recorded videos and vignettes that demonstrated positive and negative communication messages, a video on food-labeling, and facilitated on-site group activities. The agenda (Appendix C) included a morning introduction and a panel discussion about effective communication which used a four step communication process model (Appendix D). After this, two-way audio was provided when participants could relay questions to panel members during the telephone question and answer segments. The afternoon session included local group discussions and on-site

facilitated group activities, followed by a final telephone question and answer session and a summary and evaluation. The total "uplink" time for the conference, when participants were viewing the satellite broadcast or were communicating with panel members during the questions and answers sessions, was approximately three hours. When sites were not "uplinked" and receiving the broadcast, participants were involved in facilitated local site group activities which had been scheduled for one hour and a half in the afternoon portion of the agenda. The remainder of the six-hour conference was dedicated to the introduction, scheduled breaks, and the summary and evaluation.

Facilitators

Facilitators, members of the WIC and EFNEP staff, were recruited to help with delivery of the teleconference. The instructional model used in this conference included local facilitators to support learner-learner interaction through small group activity. Facilitators were recruited by their organization (WIC or EFNEP) and assigned to specific conference sites. Not all facilitators were volunteers for this conference. Each site had at least one facilitator, and all facilitators (36) were from the WIC and EFNEP staff. Some, but not all, had facilitated educational activities before. A one-day facilitator training session was held one month in advance of the conference. During the conference, facilitators were responsible for minimizing technological problems and for

facilitating the on-site group activities. Additionally, they collected the participant evaluation questionnaires, the group activity sheets, the conference registrations lists, and completed a brief 14 item self-administered post-conference facilitator questionnaire. Facilitators returned all these items to conference planners by mail, for evaluation.

Study Procedures

All participants received both pre-conference and post-conference evaluation questionnaires when they arrived at their conference sites. These questionnaires were included in the conference information packets which contained the program agenda, group activity worksheets, and note-taking aides. Contents of the information packet, except for the questionnaires and informed consent form, were developed by the multidisciplinary program planning team.

Time was scheduled into the program agenda to allow participants to complete the self-administered pre-conference questionnaires before the morning introduction portion of the broadcast. Site facilitators collected these questionnaires before the conference began. Time was also scheduled for participants to complete the self-administered post-conference questionnaires during the summary and evaluation portion of the agenda. Facilitators collected these questionnaires also.

Study Instruments

All questionnaires were designed using Dillman's (1978) Total Design Method, and were assembled in booklet form. Questions were assessed for face validity by the project planning team. Questionnaires were pre-tested for clarity and understanding with university graduate students with professional nutrition backgrounds. A group of office personnel similar in education levels to conference paraprofessional participants was also used to test participant surveys. Based on the input from all groups, slight changes were made to wording and sequencing.

Participant pre-conference questionnaires were printed on green paper, and post-conference questionnaires were printed on yellow paper to allow for easy identification. Both questionnaires were pre-coded with identification and site number which allowed for matched analysis, but maintained confidentiality in accordance with Office of Human Compliance guidelines. Participant pre-conference questionnaires included 21 questions (Appendix E), and contained quantitative, scaled, and qualitative responses. The post-conference questionnaire included 34 questions (Appendix F), and contained quantitative, scaled, and qualitative responses.

These questions solicited input on participant characteristics: work organization (WIC or EFNEP), length of employment, amount of client contact (direct contact versus administration), rurality of work community (rural or urban), amount of travel time to reach the conference, convenience of travel to the conference, participant's

reason for attending training, advance information received on the conference, prior participation in educational activities, year of birth, education level, job satisfaction, gender, race and conference site.

As part of the broader program evaluation, conference aspects investigated were: sound and video quality, physical facility quality, seating and equipment quality, registration, directions and advance information, local host effectiveness, conference print materials, overall conference quality, site learning environment, conference impact on increasing communication skills, conference impact on meeting learning objectives, and participant selection of educational activities for use in future conferences.

Research Variables

To investigate the research hypotheses which focus on satisfaction and perceptions of effectiveness compared to face-to-face instruction, variables representing learner perceptions of three types of interactions, participant expectations, participant's prior participation in a satellite broadcast, and participant reported attitudes, were used. These variables included Likert-type scaled items, and semantic differential 1-3, and 1-5 scaled items as well ordinal and categorical items. Chronbach coefficient alphas were calculated as a measure of internal consistency for variables which

were formed by the combination of two or more questionnaire items. The source of the variable is identified as the pre-conference questionnaire or the post-conference questionnaire. The questionnaires are included as Appendices E and F.

Relationships between variables were investigated using analysis of variance, Chi-square, and regression. Analysis of variance and Chi-square were employed for categorical data. Pearson's correlation coefficients were used to evaluate relationships among ordinal and scaled data which were treated as continuous variables: *Satisfaction*, perceptions of *Effectiveness*, *Expectations*, *Interaction with Learners*, *Interaction with Instructor*, *Educational Materials*, and *Time and Content*.

Dependent Variables

The variable *Satisfaction*, was formed from two Likert-type five-point scaled items ($\alpha=0.88$).

* How would you describe your overall impression of today's conference (1=it will be boring, 5=it will be exciting)? (Post-conference Question 29)

* How satisfied are you with what you learned today (1=very dissatisfied, 5=very satisfied)? (Post-conference Question 30)

The variable perceptions of *Effectiveness*, which measured participant perceptions of effectiveness compared to face-to-face instruction, used one Likert-type five-point scaled item.

* How would you compare the effectiveness of this satellite conference to those where all participants and instructor/presenters are physically present at the same site (1=less effective, 5=more effective)? (Post-conference Question 28)

Independent Variables

The variable *Interaction with Instructor*, was formed from two items which used a three-point scale to compel a forced choice (1=very little, 2=somewhat, 3=a great deal) ($\alpha=0.66$).

* How much did presenters help you feel involved in the conference? (Post-conference Question 7)

* How much did presenters add to what you learned? (Post-conference Question 8)

The variable perceived *Interaction with Learners* was formed from three items which used a three-point scale to compel a forced choice (1=very little, 2=somewhat, 3= a great deal) ($\alpha=0.71$).

* How much did you participate with others at your site? (Post-conference Question 9)

* How much did your participation with others at your site add to your learning? (Post-conference Question 10)

*How much did these (the discussion sessions/group activities) add to your learning? (Post-conference Question 11)

Two variables were used to solicit perceptions of learner interactions with the content of the conference, *Educational Materials*, and *Time and Content*.

The content interaction variable *Educational Materials* was formed from three questionnaire items which used a three-point scale to compel a forced choice response (1=very little, 2=somewhat, 3=a great deal) ($\alpha=0.75$).

- * How much did these (the video on food labeling) add to your learning? (Post-conference Question 12)

- * How much did these (the conference printed materials) add to your learning? (Post-conference Question 13)

- * How much did these (the communication film clips) add to your learning? (Post-conference Question 14)

The content interaction variable *Time and Content* was formed from two items which used a five-point scale to compel a forced choice (1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4= agree, 5=strongly agree) ($\alpha=0.69$).

- * Enough time was spent on the topic. (Post-conference Question 15)

- * Content was not too easy or too hard. (Post-conference Question 16)

The variable *Expectations* was formed from two items which used a Likert-type five-point scaled response ($\alpha=0.77$).

* Which of the following best describes your overall expectations for this satellite conference on communication? (1=it will be boring, 5=it will be exciting). (Pre-conference Question 19)

* Which of the following best describes your expectations on how much you will learn today about communication? (1= I will learn very little, 5=I will learn a great deal). (Pre-conference Question 20)

Participant attitudes were solicited about their comfort in a satellite broadcast, the importance of instructor physical presence at their site, the importance of communication skill in work, and their knowledge of the topic, communication. Items on pre-conference and post-conference questionnaires asked about these participant attitudes. The change in these attitudes from the start of the conference, to the end, were used for analysis.

The attitude change variable *Comfort in a Satellite Broadcast*, was formed from:

* How comfortable do you feel right now in a conference delivered by satellite broadcast (1=very uncomfortable, 2=uncomfortable, 3=neither uncomfortable nor comfortable, 4=comfortable, 5=very comfortable)? (Pre-conference Question 9 and Post-conference Question 22)

The attitude change variable *Importance of Instructor Presence*, was formed from:

* How important is it to you as a learner that the instructor/presenter be physically present at your conference site (1=very unimportant, 2=unimportant, 3=neither unimportant or important, 4=important, 5=very important)? (Pre-conference Question 11 and Post-conference Question 23)

The attitude change variable, *Importance of Communication Skill* in work, was formed from:

* How important are communication skills in your work (1=very unimportant, 2=unimportant, 3=neither unimportant nor important, 4=important, 5=very important)? (Pre-conference Question 12 and Post-conference Question 24)

The attitude change variable, *Knowledge of Communication*, was formed from:

* How much do you feel you now know about the conference topic, communication (1=very little, 2=somewhat, 3=a great deal)? (Pre-conference Question 13 and Post-conference Question 25)

Learner Characteristic Variables

Learner characteristic variables were used to describe the subject population and included their age based on reported year of birth, their education level (professionals versus paraprofessionals), their gender, and racial identification.

Age (Pre-conference Question 14)

Education Level (Pre-conference Question 15)

Gender (Pre-conference Question 16)

Race (Pre-conference Question 18)

Learner Work Characteristic Variables

Work characteristics were also obtained, to allow for evaluation of differences between the members of WIC and EFNEP, among those worked in direct client contact and those who worked in administration, and those who did both, and between those who worked in rural versus urban communities.

Work Organization (Pre-conference Question 1)

Amount of Client Contact (Pre-conference Question 3)

Rurality of Work Community (Pre-conference Question 4)

Additional Variables

Additional variables which were used in analysis were those which evaluated the participant's reason for attending the training, and their prior participation in a satellite conference. Site location was not a questionnaire item, but was a means of identification of participants, and was treated as a variable to identify any site differences.

Reason for Attending Training (Pre-conference Question 7)

Prior Participation in a satellite broadcast (Pre-conference Question 10)

Participant Conference Attendance Site (Pre-coded and included on the back of participant questionnaire forms)

Qualitative Input

In addition to the close-ended items described, participant questionnaires contained several open-ended items to solicit input on topics for future conferences, and the most and least helpful parts of the conference (Pre-Conference Question 21 and Post-Conference Questions 31 - 34). The questionnaires are included Appendices E and F.

Statistical Analysis

These data were analyzed using the Statistical Analysis System (SAS) System software. Significance was set at the $p < .05$ level. In addition to the use of descriptive statistics, the following methods of data analysis were used to test the hypotheses:

Responses to the four attitude change variables *Comfort in a Satellite Broadcast*, *Importance of Instructor Presence*, *Importance of Communication Skill*, and *Knowledge of Communication*, were treated as continuous data, and mean values were obtained. Paired t-tests were used to determine whether, in regard to these four variables, significant differences existed between pre-conference and post-conference ratings. Change scores were used in further analysis.

CHAPTER 5

RESULTS

Description of Participants

There were 574 participants in the study, consisting of WIC and EFNEP professional and paraprofessional staff, and guests, who attended the teleconference on communication. One site could not participate because of technical problems, so only 20 of the scheduled 21 sites, received the broadcast.

A total of 571 pre-conference forms and 554 post-conference forms were received, representing a 99% and 97% return rate, respectively, of the 574 participant population. Pre-conference respondents were approximately 83% WIC, 14% EFNEP/Cooperative Extension, and 1% other. Two percent did not answer the question about work organization.

Participants who submitted pre-conference and post-conference evaluations were matched by participant identification and site number to allow for analysis of the attitude change variables. Those participants (n=546) were then used in further analysis and represented 95% of the total participant population.

Characteristics of this participant population are listed in Table 5.1. Most participants (82.6%) worked for WIC, had been employed 5 years or less (59.5%), worked in an urban community

Table 5.1. Description of learner work characteristics, learner characteristics, reason for attending training, and conference attendance site (n=546).

Characteristics	No.	Percent
Work Organizations		
WIC	451	82.6
EFNEP/Cooperative Extension	80	14.7
Other	6	1.1
No Response	9	1.6
Amount of Client Contact		
Direct Client Contact	408	74.7
Administration	24	4.4
Both	90	16.5
Other	9	1.6
No Response	15	2.7
Rurality of Work Community		
Rural	193	35.3
Urban	303	55.2
No Response	50	9.2
Age (based on Year of Birth)		
<25	62	11.3
26 to 30	68	12.5
31 to 40	175	32.0
41 to 50	120	22.0
>50	79	14.5
No Response	42	7.7
Education Level		
<12 Years	3	.5
12 Years or Equivalent	141	25.8
13 to 14 Years	147	26.9
15 to 16 Years	143	26.2
>16 Years	100	18.3
No Response	12	2.2
Gender		
Female	517	94.7
Male	12	2.2
No Response	17	3.1

Table 5.1. Continued. Description of learner work characteristics, learner characteristics, reason for attending training, and conference attendance site (n=546).

Characteristics	No.	Percent
Race		
Black/African American	124	22.7
Latino/Hispanic American	39	7.1
American Indian/Native American	11	2.0
White	335	61.4
Asian American/Pacific Islander	7	1.3
Other	10	1.8
No Response	20	3.7
Reason for Attending Training		
Did not want to, required	98	17.9
Wanted to, required	349	63.9
Wanted to, not required	88	16.1
No response	9	2.0
Conference Attendance Site		
1 Behrend	17	3.1
2 Mercer	28	5.1
3 Smethport	8	1.5
4 Pittsburgh	29	5.3
5 McKeesport	33	6.0
6 Fayette	32	5.9
7 Cambria	37	6.8
8 University Park	27	4.9
9 Harrisburg	31	5.7
10 Lancaster	37	6.8
11 Franklin	22	4.0
12 Worthington-Scranton	24	4.4
14 Columbia	22	4.0
15 Allentown	28	5.1
16 Norristown	13	2.4
17 Bucks County	13	2.4
18 Delaware	24	4.4
19 Temple	75	13.7
20 Philadelphia	26	4.8
21 Media	20	3.7

Note: Site 13 did not participate.

(55.2%), and worked directly with clients (74.7%). Some, (17.9%), did not want to attend but were required to.

The age of participants, based on reported year of birth, ranged from 19 to 73, with most participants between the ages of 23 and 46. About one quarter of participants had 12 years of education or less (26.3%), similar to percentages of those who had 13 to 14 years (26.9%), and 15 to 16 years (26.2%). Those with greater than 16 years of education, were the smallest category (18.3%). Most were women (517) compared to men (12). Because of the small number of males in the study, gender was excluded from further analysis. The races of participants included Whites (61.4%), Blacks (22.7%), Latinos (7.1%), American Indians (2.0%), Asian Americans (1.8%), and others.

Description of Outcome

The research was intended to measure effectiveness through participant satisfaction and their perceptions of effectiveness compared to face-to-face instruction. Relationships of the interactions which occur in a distance education environment, between learners and the instructor, learners and other learners, and the learners and the content of the course, were explored in regards to satisfaction and perceptions of effectiveness. Attitudes about comfort in a satellite broadcast, the importance of instructor presence, the importance of communication skills in work, and knowledge of communication were solicited on both pre-conference

and post-conference evaluations. The relationship of expectations to satisfaction and effectiveness was researched, as well as any differences in satisfaction and perceptions of effectiveness between those with and without prior participation in a satellite conference.

The relationship between the dependent variables, *Satisfaction* and perceptions of *Effectiveness*, and independent variables *Interaction with Instructor*, *Interaction with Learners*, interaction with *Educational Materials* and *Time and Content*, *Expectations*, *Comfort in a Satellite Broadcast*, *Importance of Instructor Presence*, *Importance of Communication Skill*, *Knowledge of Communication*, and *Prior Participation*, are explored. For categorical variables, Analysis of Variance was employed. For continuous variables, correlations were employed.

Overall Mean Ratings

Mean values of the variables for *Satisfaction* and perceptions of *Effectiveness* are included in Table 5.2. Mean overall *Satisfaction* was 7.28, (S.D. 1.71), Range 2 to 10. Mean ratings of *Effectiveness* was 3.34, (S.D. 0.92), Range 1 to 5.

Analysis of Variance for *Satisfaction* and *Effectiveness*

A series of one-way Analysis of Variance were used to investigate participant characteristics in regard to *Satisfaction* and their perceptions of *Effectiveness* compared to face-to-face

Table 5.2 Mean values of learner satisfaction, perceptions of effectiveness, learner perceptions of interaction with the instructors, with other learners, with the content, and participant initial expectations.

	N	Mean	S.D.	Range	
				Low	High
Satisfaction	533	7.28	1.71	2-10	
Effectiveness	529	3.34	0.92	1-5	
Interaction with Learners	528	7.40	1.42	3-9	
Interaction with Instructors	526	4.76	1.03	2-6	
Interaction with content					
Educational Materials	505	6.87	1.51	3-9	
Time and Content	522	7.60	1.54	2-10	
Expectations	526	7.02	1.47	2-10	

p<.05

instruction. Results for *Satisfaction* are listed in Table 5.3 and results for *Effectiveness* are listed in Table 5.4.

ANOVAs for selected learner and work characteristics showed no significant differences among the categories of *Education Level*, *Work Organization* (WIC or EFNEP), *Prior Participation* in a satellite broadcast, *Amount of Client Contact* versus administration, or *Race*. Statistically significant differences ($F \{1,520\}=29.21, p=.0001$) between *Reasons for Attending Training*, by *Satisfaction* level were found. Those who were required to attend, but did not want to attend, were less satisfied. ANOVA also revealed statistically significant difference among *Conference Attendance Sites*, by *Satisfaction* level ($F \{19, 513\}=3.09, p=.0001$). Mean values were obtained for *Satisfaction* at all sites. These means ranged from 6.24, (S.D. 1.46) at one site, to 8.45, (S.D. 1.84) at another. Overall mean *Satisfaction* was 7.28, (S.D. 1.71) as listed in Table 5.2. The qualitative input from participants suggest that these differences may be due to site management differences which are discussed further in the qualitative portion of these results.

No significant differences were found among categories of *Education Level*, *Work Organization* (WIC or EFNEP), *Race*, *Amount of Client Contact* or *Prior Participation* in a satellite broadcast, in regard to perceptions of *Effectiveness*. Statistically significant differences were found between *Reason for Attending Training* ($F \{1,516\}=6.13, p=.0136$) and *Effectiveness*. Those who were required to attend but did not want to, rated the conference less

Table 5.3 One-way analysis of variance between learner characteristics, learner work characteristics, conference attendance site, reason for attending the training, and prior participation in a satellite broadcast and participant satisfaction with the conference.

	SS	Satisfaction df	F	p
Work Organization	8.73	2	0.75	.4727
Error	3043.02	523		
Race	46.28	5	1.61	.1546
Error	2924.86	510		
Amount of Client Contact	3.15	3	0.18	.9107
Error	3035.03	516		
Education Level	8.12	3	0.94	.4227
Error	1497.48	518		
Conference Attendance Site	159.18	19	3.09	.0001
Error	1391.04	513		
Reason for Attending Training	81.45	1	29.21	.0001
Error	1449.87	520		
Prior Participation	0.19	1	0.07	.7974
Error	1546.48	528		

p<.05

Table 5.4 One-way analysis of variance between learner characteristics, learner work characteristics, conference attendance site, reason for attending training, and prior participation in a satellite broadcast and participant perceptions of effectiveness compared to face-to-face instruction.

	SS	Effectiveness df	F	p
Work Organization	0.75	2	0.45	.6383
Error	430.69	517		
Race	6.34	5	1.52	.1812
Error	419.97	504		
Amount of Client Contact	0.10	3	0.04	.9886
Error	428.45	511		
Education Level	2.51	3	1.00	.3913
Error	429.00	514		
Conference Attendance	30.23	19	1.96	.0092
Site				
Error	413.88	509		
Reason for Attending	5.08	1	6.13	.0136
Training				
Error	427.75	516		
Prior Participation	0.13	1	0.16	.6885
Error	440.64	524		
p<.05				

effective compared to face-to-face instruction (Table 5.4). Statistically significant differences were found among *Conference Attendance Sites*, in regards to perceptions of *Effectiveness* ($F\{19, 509\}=1.96, p=.0092$). Mean values of perceptions of *Effectiveness* at the sites ranged from 2.77, (S.D. 0.87), to 3.9, (S.D. 1.16). Overall mean *Effectiveness* was 3.34 (S.D. 0.92) as shown in Table 5.2.

Correlations to *Satisfaction* and *Effectiveness*

The research investigated relationships between *Satisfaction* level and participant perceived *Effectiveness*, and the independent variables in the study. Pearson's correlation coefficients were calculated to determine relationships between *Satisfaction* and *Effectiveness* and the independent variables: *Expectations*, *Interaction with Instructors*, *Interaction with Learners*, and interaction with content variables *Educational Materials* and *Time and Content*, *Comfort in a Satellite Broadcast*, *Importance of Instructor Presence*, *Importance of Communication Skill*, and *Knowledge of Communication*. Significant coefficients are shown in Table 5.5.

All four of the learner interaction variables showed statistically significant relationships to *Satisfaction*. This relationship was positive, and the variable most highly correlated *Satisfaction* was *Interaction with Instructor* ($r=.58, p=.0001$). All learner interaction variables show statistically significant

Table 5.5 Correlations of learner perceptions of interaction, attitude change variables and expectations to participant satisfaction and perceptions of effectiveness compared to face-to-face instruction.

Independent Variables	Dependent Variables					
	n	Satisfaction r value	p value	n	Effectiveness r value	p value
Learner interaction variables						
Interaction with Learners	518	.43	.0001	514	.24	.0001
Interaction with Instructor	515	.58	.0001	510	.42	.0001
Interaction with content						
Educational Materials	497	.53	.0001	491	.38	.0001
Time and Content	514	.42	.0001	511	.30	.0001
Attitude change variables						
Comfort in Satellite	529	.17	.0001	525	.08	.0674
Broadcast						
Importance of Instructor	502	.06	.2004	499	.08	.0589
Presence						
Importance of	523	.08	.0835	518	.08	.0835
Communication Skill						
Knowledge of	517	.27	.0001	512	.21	.0001
Communication						
Expectations	517	.42	.0001	512	.35	.0001
p<.05						

correlations to the variable *Effectiveness*, which measured participant perceptions of effectiveness compared to face-to-face instruction. These relationships were positive, and *Interaction with Instructors* has the highest correlation to *Effectiveness* ($r=.42$, $p=.0001$).

Expectations showed a statistically significant and positive relationship to *Satisfaction* ($r=.42$, $p=.0001$) and *Effectiveness* ($r=.35$, $p=.0001$). Those participants who had higher or better initial expectations rated *Satisfaction* and *Effectiveness* higher.

The attitude change variables, *Comfort in a Satellite Broadcast*, *Importance of Instructor Presence*, *Importance of Communication Skill* in work, and *Knowledge of Communication*, were investigated for relationships to *Satisfaction* and perceptions of *Effectiveness*.

Change in *Knowledge of Communication* ($r=.27$, $p=.0001$) and change in *Comfort in a Satellite Broadcast* ($r=.17$, $p=.0001$) were statistically significant. Participants who had increased comfort and knowledge, were more satisfied with the conference.

Change in *Knowledge of Communication* ($r=.21$, $p=.0001$) showed a significant positive relationship to ratings of conference *Effectiveness*. Those participants who felt they had increased their knowledge of communication, had higher perceptions of conference effectiveness compared to face-to-face instruction.

Attitude Change Variables

Paired t-tests were used to compare participant pre-conference and post-conference ratings. The means and change in the mean for the attitude variables, *Comfort in a Satellite Broadcast*, *Importance of Instructor Presence*, *Importance of Communication Skill*, and *Knowledge of Communication*, are listed in Table 5.6. Ratings of *Comfort in a Satellite Broadcast* ($T=4.80$, $p=.0001$) and *Knowledge of Communication* ($T=13.75$, $p=.0001$) differed significantly. Participants felt more comfortable in a satellite conference, and felt they knew more about the topic communication, at the end of the conference than they did at the beginning of the day. There were changes in the two other attitude variables, but these changes did not reach statistical significance for *Importance of Instructor Presence* or *Importance of Communication Skill* in work. Post-conference, participants felt that communication skill was more important in their work, than they had felt at the start of the conference. Post-conference, participants also felt that it was more important that the instructor be physically present at their conference site.

Learner Interaction Variables

A series of one-way ANOVAs were used to examine relationships between selected variables and learner perceptions of interactions as measured by four variables. These results are shown

in Tables 5.7 through 5.10 for interactions with instructors, interactions with learners, and interaction with content.

Categories of *Education Level* differed significantly only in regards to one variable, interaction with the content variable *Educational Materials* ($F_{\{3,491\}}=3.05, p=.0284$) as shown in Table 5.9. Those with lower education levels rated video, film and print materials higher than those with higher education levels.

There were no significant differences among categories of *Amount of Client Contact* in regard to ratings of the four learner interaction variables. This compared those who worked primarily in direct contact, those who worked primarily in administration, and those who did both.

There were significant ($F_{\{5,482\}}=5.59, p=.0001$) differences among categories of *Race* in regards to *Educational Materials*. Differences were also significant between categories of *Rurality of Work Community* in regards to *Educational Materials* ($F_{\{1,458\}}=4.50, p=.0345$). Participants who worked in an urban community rated video, film, and print materials higher than those who worked in rural communities (Table 5.9).

Additional Outcomes

The variable *Reason for Attending Training* was reduced to a two category variable, mandatory versus voluntary attendance, and investigated further because of its relationship to *Satisfaction* and *Effectiveness*. Chi Square analysis was performed to investigate any

Table 5.6 Mean values of pre-test and post-test attitude change variables and t-test for significance of change in the mean.

Attitude Change Variable	Pretest Mean	Posttest Mean	No.	Change in Mean	T value	Significance Level
Comfort in Satellite Broadcast	3.59	3.88	533	+.29	4.80	.0001
Importance of Instructor Presence	3.15	3.25	506	+.08	1.63	.1021
Importance of Communication Skill	3.83	3.97	526	+.14	1.61	.1073
Knowledge of Communication	2.03	2.45	520	+.41	13.75	.0001

$p < .05$

Table 5.7 One-way analysis of variance between learner characteristics, learner work characteristics, and perceived interaction with other learners.

	Interaction with Learners			
	SS	df	F	p
Work Organization Error	1.36 1044.03	2 517	0.34	.7135
Race Error	11.62 991.37	5 505	1.18	.3160
Amount of Client Contact Error	2.99 1031.62	3 510	0.49	.6872
Education Level Error	14.44 1023.50	3 514	2.42	.0655
Rurality of Work Community Error	4.49 975.89	1 479	2.20	.1383
p<.05				

Table 5.8 One-way analysis of variance between learner characteristics, learner work characteristics, and perceived interaction with instructors.

	Interaction with Instructors			
	SS	df	F	p
Work Organization	2.10	2	0.98	.3776
Error	554.27	515		
Race	6.14	5	1.16	.3294
Error	533.08	502		
Amount of Client Contact	2.71	3	0.84	.4746
Error	548.29	508		
Education Level	2.07	3	0.64	.5867
Error	547.61	511		
Rurality of Work Community	0.04	1	0.04	.8419
Error	517.24	475		
p<.05				

Table 5.9 One-way analysis of variance between learner characteristics, learner work characteristics, and perceived interaction with the content regarding the conference educational materials which consisted of video, film, and print materials.

	SS	df	F	p
Work Organization	0.32	2	0.07	.9310
Error	1125.11	495		
Race	60.25	5	5.59	.0001
Error	1039.36	482		
Amount of Client Contact	2.60	3	0.38	.7676
Error	1114.15	488		
Education Level	20.34	3	3.05	.0284
Error	1091.99	491		
Rurality of Work Community	10.18	1	4.50	.0345
Error	1037.46	458		
p<.05				

Table 5.10 One-way analysis of variance between learner characteristics, learner work characteristics, and perceived interactions with the content regarding the appropriateness of time spent on the material and content.

	Time and Content			
	SS	df	F	p
Work Organization	0.08	2	0.02	.9766
Error	879.95	510		
Race	2.33	5	0.28	.9264
Error	840.74	497		
Amount of Client Contact	4.29	3	0.86	.4639
Error	841.42	503		
Education Level	2.49	3	0.50	.6856
Error	848.79	507		
Rurality of Work	0.83	1	.047	.4926
Community				
Error	835.11	473		

p<.05

relationships. There is a significant relationship between *Work Organization* (Chi Square=9.99, df=1, p=.002) and *Amount of Client Contact* (Chi Square= 6.91, df=2, p=.032). Those participants who were required to attend were more likely to be members of WIC instead of EFNEP, and worked primarily in direct client contact versus administration.

Overall Evaluation Means and Frequencies

Multiple questionnaire items solicited information on the overall evaluation of the conference. These items were not included as part of this study, and will not be discussed, but results are included as means and frequencies in Appendix G for reference.

Qualitative Responses

Input participants provided in response to qualitative questions supplements and gives insight to the quantitative data. One pre-conference evaluation question, and four post-conference evaluation questions were included. Very few participants listed any information on the one pre-conference evaluation, Question 21: Is there anything else you would like us to know? Of those who answered the question, the most common response was "no" or "none". Participants appeared to be confused by this question, and wondered why they were asked this before the conference had even begun. This question did not provide any useful information.

But, the four qualitative questions included in the post-conference evaluation, provided a wealth of information which may help to plan future conferences, and may help to explain some of the quantitative responses received in this study. This data has not been quantitatively summarized to provide an exact measure of the frequency of responses, nor an exact measure of rankings of these responses, because of the large data set. For the qualitative questions, all pre-conference evaluations (571) and all post-conference evaluations (554) were reviewed, although only 546 were matched and used in the quantitative portion of the data analysis.

Similar responses have been grouped into categories. Further research could be accomplished with this qualitative data, but this is beyond the scope of this study. Specific examples of participant comments are included in Appendix H, but a summarization of these qualitative post-conference evaluation questions follows.

Post Conference Evaluation Question 31: The topics participants listed most often for future conferences are shown in Table 5.11. Because of the diversity of topic ideas listed, placing them in rank order was difficult. However, issues dealing with time management, stress management in the workplace, and staff relations, appeared most often. Issues of child, drug, and alcohol abuse were also listed often, especially at conference sites located in urban communities.

Table 5.11 A categorization of the ten most frequent responses given to the Post-Conference Evaluation qualitative Question 31: *What work related topics do you recommend for future satellite conferences?*

Time management and caseload management
Stress management in the workplace
Staff relations, communication and motivation
Dealing with client drug and alcohol abuse
Child feeding and formula issues
Cultural diversity and language barriers
Breastfeeding and pregnancy topics
Dealing with child abuse
Policy and procedure changes
Counseling and nutrition education techniques

Not listed in this table, but included in Appendix H, are additional comments that suggest that those in an urban community have unique problems. A frequent comment from these participants was their concern for safety and security in the workplace.

Post-Conference Evaluation Question 32: In Table 5.12, responses to the two most helpful parts of the conference, are shown. This question was responded to more often than any of the other three qualitative questions on the post-conference evaluations. This qualitative data was not tallied, but the most frequently listed response was group activity. Selected examples of these responses are shown in Appendix H, but include such responses as "small group discussion", "group activities", and "group workshops". Comments received give insight into the importance of group activities suggesting that it was the ability to know that others shared similar problems that made these group activities so helpful.

The second most frequent response category to this question which asked about the most helpful parts of the conference, was the telephone question and answer segment of the teleconference which allowed participants at sites to call in and ask questions of the panel member experts at the studio. But, there were no other comments that helped to understand this response about the

Table 5.12 A categorization of the five most frequent responses given to the Post-Conference Evaluation qualitative Question 32:
The two most helpful parts of the conference were:

Group activities and small group discussions
Telephone question and answer sessions
Videos/film clips showing communication scenarios
Networking with other counties, and other referral agencies
The Four-Step Communication Process Model

question and answer session. Although the question and answer session was listed often, review of the other qualitative comments did not explain why it was helpful.

Participants listed the videos and film clips as helpful, and also the Four-Step Communication Process Model (see Appendix D) which was used by panel member experts in discussing communication. One response category, networking, is also shown in Table 5.12. While these responses are similar to those about group activities, it seems to be a category that is separate. Not only did participants feel that the scheduled group activities, and small group discussions were helpful, but there appears to be an added dimension that reflects participant feelings that they are going beyond their normal work situation, to interact with people from other counties, and especially from the other agencies, i.e., WIC and EFNEP.

Post-Conference Evaluation Question 33: This question was responded to less often than the other three qualitative questions on the post-conference evaluation. Two categories were most often listed as the least helpful parts of the conference (see Table 5.13). The category termed site management, encompasses the largest number of responses. These responses provided multiple issues for consideration: type of television equipment at the site, seating, room temperature at the site, site location, availability of lunch facilities, lack of refreshments at the site, problems with technical hook-up to the satellite broadcast, and lack of a FAX machine

Table 5.13 A categorization of the five most frequent responses given to the Post-Conference Evaluation qualitative Question 33:
The two least helpful parts of the conference were:

Site management issues
Video on food labeling
Telephone question and answer session management
Content too focused on WIC versus EFNEP
Conference length and content

equipment to use during the question and answer session. The second most common response listed as least helpful, was the video on food labeling which was shown as part of the panel presentation. Responses suggest that participants did not clearly understand how this video integrated with the topic conference of communication. The remainder of the comments suggest that participants felt there was not enough time scheduled for the question and answer portion of the conference. Some participants also complained of poor screening of the telephone questions, and poor access by telephone from their site to the panel experts. Some, felt the conference was focused too much on WIC versus EFNEP problems, and that the conference was too lengthy and had parts that were repetitious.

Post-Conference Question 34: This question was the final item on the participant post-conference evaluations and asked for any additional information from participants. Some participants used this item to further explain comments on previous questions, i.e., topics for future training, or the most and least helpful parts of the conference. Most, used this item to summarize their feelings about their experience in the conference. Comments were both positive and negative, varying from "It was great to have a small group and different agencies represented. Interaction that way is great", to "It wasn't really impressed on me that it was live, seemed like it could have been taped. The call-ins helped, but it was still a little less involved than I expected". Additional examples of comments received for this item, are included in Appendix H.

Qualitative Summary

Overall, more positive than negative comments were received on the qualitative items. Participants seemed to find the group activities the most helpful part of the conference, and those items which related to site management, the least helpful. Topics most often listed for future training, were time management, stress management, and staff relations.

Conclusions on Hypotheses

Based on these statistical data, the following conclusions are drawn in regards to the study hypotheses.

Hypotheses Ha1: There is a statistically significant, positive relationship between all learner interaction variables and *Satisfaction* and perceived *Effectiveness* compared to face-to-face instruction. Correlations are highest for *Interactions with Instructor* and *Satisfaction* level ($n=515$, $r=0.58$, $p=.0001$) and perceptions of *Effectiveness* ($n=510$, $r=0.42$, $p=.0001$).

Hypothesis Ha2: There is a statistically significant, positive relationship between initial *Expectations* and *Satisfaction* ($n=517$, $r=0.42$, $p=.0001$) and perceived *Effectiveness* ($n=512$, $r=0.35$, $p=.0001$). Those with higher initial expectations were more

satisfied and had higher perceptions of effectiveness compared to face-to-face instruction.

Hypothesis Ha3: Two attitude change variables, *Comfort in a Satellite Broadcast* (n=529, r=0.17, p=.0001) and *Knowledge of Communication* (n=517, r=0.27, p=.0001) showed statistically significant positive relationships to *Satisfaction*. One attitude change variable, *Knowledge of Communication* (n=512, r=0.21, p=.0001) showed a statistically significant positive relationship to perceptions of *Effectiveness*. An increase in *Comfort in a Satellite Broadcast*, and *Knowledge of Communication*, was related to higher satisfaction and perceptions of effectiveness. *Importance of Communication Skill* in work appears to increase but not significantly. An increase in the *Importance of Instructor Presence* at the conference site appears to be positively, not negatively, related to *Satisfaction* and perceptions of *Effectiveness*, although this relationship is not significant.

Hypothesis Ha4: No significant differences were found between those with or without *Prior Participation* in a satellite broadcast, and their *Satisfaction* or perceptions of *Effectiveness*.

CHAPTER 6

DISCUSSION

The primary purpose of the study was to examine learner perceptions of their personal interactions in a distance education program for nutrition care providers in Pennsylvania, and the relationship of these interactions to participant satisfaction and their perceived effectiveness of the conference compared to face-to-face instruction. Prior participation in a satellite broadcast, selected learner attitudes, and participant initial expectations were explored. Other information about specific conference sites, quality of the educational materials and equipment, and local host effectiveness, was gathered as part of the overall program evaluation.

Limitations of the Study

A limitation of the study is the failure to formally pilot test, and validate the questionnaire items used. The intent of questionnaire items was to obtain learner perceptions of interaction, attitudes, and their perception of the effectiveness of this conference compared to face-to-face instruction. Items did not measure in any tangible way, the actual amount of interaction occurred, nor were participants asked to specifically rate the overall effectiveness of this conference. This does bring the validity of the measure into question, however, few validated

instruments to measure satisfaction in a distance education setting are available. Some researchers are attempting to develop these instruments through the identification of dimensions of satisfaction (Biner, 1993, 1993; Harrison, et. al, 1991), and certainly more precise measurements and questions are needed if research is to accurately measure learner perceptions in a distance education setting. Despite these limitations, the results of this study provide information about participant's perceptions which may have implications for future research and evaluation (Appendix G).

Overall Satisfaction and Effectiveness

Overall, this teleconference was viewed as successful, in terms of participants satisfaction and their perceptions of effectiveness compared to face-to-face instruction. Because this conference combined training for two different organizations (WIC and EFNEP), and because the training was offered to all educational levels and those with varying amounts of client contact, it seemed prudent to assess any differences in satisfaction and perceptions of effectiveness between and among these groups. There were no significant differences in satisfaction, or perceived effectiveness compared to face-to-face instruction, in regards to the work organization (WIC or EFNEP), in regards to participant education level (professionals or paraprofessionals), or in regards to client contact (direct client contact or administration). This suggests that

this combined training on "communication" was successful for both WIC and EFNEP participants, for both the professionals and paraprofessionals that attended, and for workers at all levels within those organizations. These results however, may be topic dependent. The topic of this conference was "communication". If a different topic had been chosen, it may not have been equally relevant to all groups.

There were no significant differences in satisfaction and perceived effectiveness, however, qualitative comments both praised and criticized this combined training. Some EFNEP participants stated that the program content was too focused on WIC specific problems, yet others felt that the "networking" with WIC and the "interaction" between WIC and EFNEP were positive and helpful parts of the conference. Overall, qualitative comments were more positive, than negative.

Learner Interactions

This study used Moore's (1989) model of the three types of interactions. These interactions occur between the learner and the instructor, the learner and other learners, and the learner and the actual program content. Other researchers have used this model (Garrison, 1990; Fulford & Zhang, 1993), or variations of the model (Kruh & Murphy, 1990; Fulford & Zhang, 1994), and found it a useful framework for their research.

The findings in this study, regarding the relationships of learner perceptions of interactions to satisfaction are, not surprisingly, consistent with most literature that evaluates these interactions in a distance education setting. The findings of the significant relationships between satisfaction and interaction with the instructor, interaction with other learners, and interaction with content, support, learner-instructor and learner-content interactions, support the importance of interaction in distance education as discussed by Moore (1989, 1993), Bates (1993), Garrison, (1990), and Keegan (1993). These interactions, which are primarily dependent on some type of two-way communication, are necessary for education to occur (Garrison, 1990; Moore, 1989) and are what keeps the learner actively involved in the distance education program. This active involvement, provides higher learner satisfaction and can result in better attitude and motivation, and consequently, more effective education and training (Kruh & Murphy, 1990). Several researchers believe that satisfaction is an appropriate measure of effectiveness of distance education (Biner, 1993, 1994; Hackman & Walker, 1990; Kruh & Murphy, 1990) and that measurement of this satisfaction should be used to evaluate programs before any measure of learner performance or achievement is conducted.

In this study, all three types of learner perceptions of interactions were related to satisfaction, but perceived interaction with the instructor appears to have the highest correlation ($r=.58$). This would support other studies which have identified instructor

behaviors or instruction aspects as part of learner satisfaction (Hackman & Walker, 1990; Biner, 1993, 1994; Harrison, et. al., 1990). This study did not investigate interactions that learners had with their on-site facilitators, which could be an interesting area for further study. If a learner's interaction with the on-site facilitators was perceived to be high, would that result in a change in learner perception of either the amount of interaction with the instructor, or the importance of this interaction?

The instructional design used in this program included on-site facilitators who managed the group activities, which were included to encourage learner interactions with other learners. This interaction with other learners is an interaction most frequently discussed in the literature. Advancements in technology have provided for even more interactive distance education (Bates, 1993; Garrison, 1985; Romiszowski, 1993) at a gradually decreasing cost and increasing availability (U.S. Congress, 1989). Technologies will now allow the learner to interact not only with the instructor, but with the learners at their site, and potentially with learners at other sites also, although in this conference, learner interactions were limited to the local sites. Two-way communication was not available site to site, but was available to the panel member experts during the telephone question and answer sessions.

The conference "uplink" time was approximately three hours, with approximately one and one-half hours included in the afternoon portion of the agenda, for the on-site group activities. Not all sites had enough time to do all group activities, but participants felt the

group activities that they did complete were helpful. Comments which can be categorized as group activities were the most frequent response listed as most helpful. Comments such as "communicating with peers", "great input I got from others", and "hearing real people with real problems and how they handle them", were listed as responses to questionnaire items, and justify the continued use of facilitated group activities in future teleconferences. It is surprising that the correlations of interactions with learners were not higher, however, this may be reflective of the limitations of the validity of the measure. The issue of interactions with the facilitator also has a potential influence on these group activities, and should be investigated further. Facilitators at some sites were not volunteers, and some had not facilitated group activities before. These factors may influence learner interactions at that conference site.

The importance of the two-way communication with the panel member experts is also suggested by qualitative comments received. The telephone question and answer session was one of the five most frequently listed items that were most helpful. The telephone question and answer session was also one of the five most frequently listed items that was least helpful, when problems were perceived. Comments such as "not being able to get through on the telephone", and "calls need to be screened" are examples. The importance of this telephone question and answer session, the only means of two-way communication with the panel member experts is apparent when participants consider the "ability to ask questions of

the panel members", helpful, and perceive limitations of this ability to be a problem.

The findings of the study also support the relationship between the learner interaction variables and perceived effectiveness compared to face-to-face instruction. All variables showed a positive, and statistically significant ($p < .0001$) relationship. The relationship between instructor interactions and perceived effectiveness appears strongest ($r = .42$). This is consistent with findings of the relationship between instructor interactions and satisfaction.

Research in distance education has evaluated learner characteristics such as sex and age, to identify those for whom distance education is more effective. To evaluate these learners for whom types of interactions may be more effective, a series of one-way analysis of variance was done using work organization (WIC and EFNEP), race, amount of direct client contact versus administration, education level, and rurality of work community (rural versus urban). Only the interactions with the content variable on the video, film and print materials showed significant differences among groups. Participants who were Black and worked in urban communities rated the video, film and print educational materials as higher contributors to learning, however, this could be due to confounding variables which bear further investigation. Participants with higher education felt that the video, film and print materials contributed less to learning than did the lower education level of participants. Future program design should identify the learner educational level

and recognize that some types of media and technology may be more effective for some than others.

Reason for Attending Training

Motivation may be an important issue with this group. While one of the fundamental assumptions about adult learners is that they are self-directed and ready to learn (Knowles, 1980), such is not always the case when training is mandatory. This study did not directly assess motivation, however those who were required to attend (mandatory) were less satisfied than other learners, and rated the conference less effective than other learners. Based on Chi-square analysis, these participants were more likely to work for WIC and spent most work time in direct client contact. These differences were significant at the $p < .0001$. This suggests that motivational issues are a concern. Techniques to increase motivation, such as allowing participant's control in their choice of training and conference sites, should be included in future programs with this group.

Expectations

As hypothesized, expectations were related to participant satisfaction ($r = .42$). Those with negative initial expectations had significantly lower ($p < .0001$) ratings of satisfaction. Expectations were also negatively related to effectiveness ($r = .35$, $p < .0001$). This

also suggests areas for further research: Do those with negative expectations maintain negative attitudes, or can advancing information, "stage setting" for the event, or establishing "relevancy" of the topic, make a change in these attitudes and improve satisfaction?

Attitude Change

Attitude change variables were used to measure the learner's comfort in a satellite broadcast, the importance of the instructor's physical presence at their site, the importance of communication skill in work, and their knowledge of communication.

The importance of instructor presence was higher, reflecting that participants felt it was more important that instructors be present at their conference site, the opposite of what had been hypothesized, although this change was not statistically significant ($p < .1021$). This provides additional support to this instructor interaction as an important issue in distance education settings, consistent with other literature in the field which has identified the instructor as an important dimension in participant satisfaction. However, further investigation is needed to assess the role of the facilitator, and the impact of the facilitator on either learner perceptions of these interactions with the instructor, or on the importance of these interactions.

Prior Participation

Prior participation in a satellite conference did not prove important in learner satisfaction or in perceptions of effectiveness compared to face-to-face instruction. This was contrary to the hypothesis. There were no significant differences in satisfaction or ratings of effectiveness between those with and without prior participation in a satellite conference. However, Hillman, Willis and Gunawardena (1994) suggest that there is a fourth type of interaction: learner-interface interaction. This occurs between the learner and the technology they are using to reach the content, the instructor or other learners. They propose that training and orientation on these technologies are needed to provide learners the skill and confidence to use these technologies, and that exercises to develop these skills must be included in program design.

Conference Attendance Sites

Differences in conference sites were explored and differences were found among sites. Quantitatively, site differences were difficult to assess because of the large number of categories (20 sites) which prevented valid Chi-Square analysis. However, qualitative data may help to explain some of these sites differences. Examples of participants comments were "bug in the satellite hook-up", "not introduced to other people in the room", "cold room", "uncomfortable chairs", "facilitator should have had more

opportunity to be prepared", "please provide refreshments", or "larger screen would have been helpful", were countered by, "catered lunch was a good idea", "very comfortable facilities", "I appreciated the fact that I did not have to travel a long distance", and "great host". These comments help to identify site differences which may have altered participant satisfaction or perceptions of effectiveness at that site. These comments could be categorized as "site management", or "environmental factors" and support dimensions identified by other researchers who are investigating learner satisfaction in a distance education setting (Biner, 1993, 1994; Harrison, et. al. 1991). While these items were not the focus of this study, they support a rationale for striving for consistency and good quality among sites, in regards to facilitator training, site and equipment set-up, and the inclusion of refreshments of lunch arrangements. Ideally, although perhaps not realistically, program design should attempt to reduce these differences in order to get a more accurate picture of the actual program impact on learner satisfaction and perceptions of effectiveness. And, the environmental factors should be included as part of any program design.

Recommendations

This teleconference was a success, as measured by participant satisfaction and their perceptions of effectiveness compared to face-to-face instruction. It was equally successful, for both the WIC and EFNEP and professional and paraprofessional members of these nutritional care organizations. The conference provided training to a large number of participants (574) over a large geographic area, and seems an appropriate method of delivery of continuing education for this, and similar groups.

Interactions with the instructors, interactions with other learners, and interactions with content were related to satisfaction and perceptions of effectiveness, and are emphasized by qualitative comments which target the group activities, and the telephone question and answer sessions which provide two-way-communication. Future teleconferences should plan for the inclusion of these types of activities, as well as evaluate the role of, and interactions with, the site facilitators.

Learner expectations, and their motivations were related to outcome. The inclusion of "stage setting" activities at the start of the conference may improve learner expectations, allowing participants choice in their training, when possible, should be encouraged in efforts to increase the motivation of these learners.

Significant site differences give support to researchers who have identified factors or dimensions of learner satisfaction that relate to course management or environmental quality. Clearly, the

qualitative comments received from participants in this study identify variation among sites which may have contributed to the observed differences in satisfaction and learner perceptions of effectiveness compared to face-to-face instruction. Every attempt should be made during program design to maintain high quality among sites in order to obtain a more accurate measure of the program impact on the participants.

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APPENDIX A
INFORMED CONSENT FORM



Building Communication Bridges in Family Nutrition Programs

Claudia Probart, Ph.D., R.D., L.D., Principal Investigator

Cheryl Achterberg, Ph.D., R.D., Co-Principal Investigator

Ethel Susanne Shearer, R.D., Co-Principal Investigator

Description of Study

The purpose of this study is to determine the effectiveness of education and training by distance education methods such as satellite and telephone technologies.

If you agree to participate, you will receive two separate evaluation questionnaires to complete. One will be given at the beginning of the conference, and the other at the end of the conference, to obtain your knowledge, attitudes and opinions. This information will be used to determine what parts of the conference were most beneficial to your learning, so that future education and training programs can be further improved.

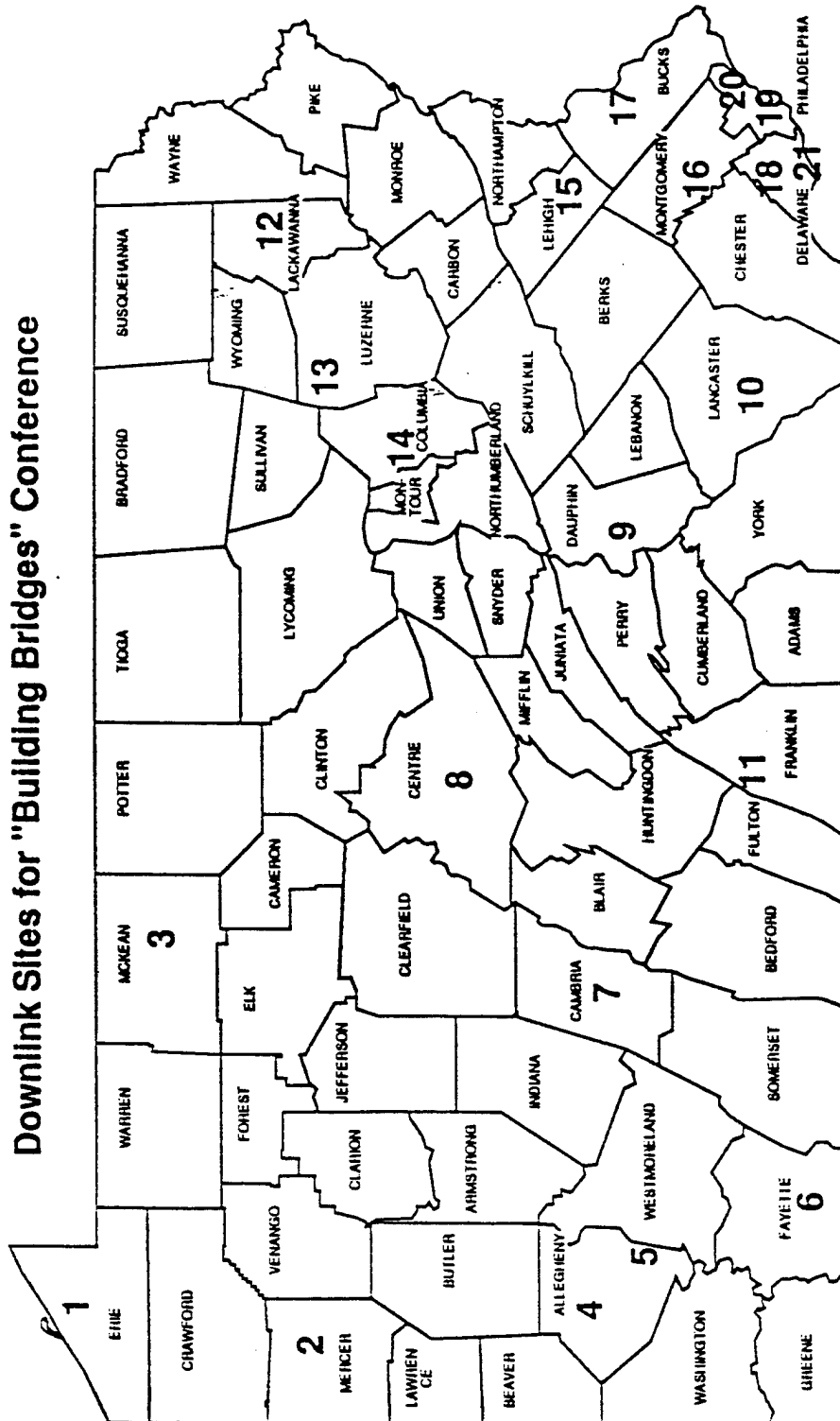
You will be under no risk by participating in this study. All data will be kept in strict confidence and no names will appear with the data or in any subsequent reports. Pre- and post- conference questionnaires are number coded for matching purposes, but your name is not required and the information is anonymous.

Your participation is voluntary and you may stop participating in the research at any time. You may decline to answer any specific questions without penalty. Your completion and return of the questionnaires implies your consent to participate as a volunteer in this study which is an authorized part of education and research at the Pennsylvania State University, and is under the supervision of Dr. Claudia Probart, and Dr. Cheryl Achterberg.

If you have any questions or concerns, please contact Dr. Probart, Dr. Achterberg, or Susanne Shearer at 814-863-0772.

APPENDIX B
CONFERENCE DOWNLINK SITES
IN PENNSYLVANIA

Downlink Sites for "Building Bridges" Conference



- | | | | | | |
|---|-----------------------------------|----|---|----|---------------------------------------|
| 1 | Penn State Behrend Campus, Erie | 8 | Penn State University Park, State College | 15 | Penn State Allentown, Fogelsville |
| 2 | Mercer County CE, Mercer | 9 | Penn State Harrisburg, Middletown | 16 | Intermediate Unit 23, Norristown |
| 3 | Intermediate Unit 9, Smethport | 10 | Lancaster County CE, Lancaster | 17 | Bucks County Free Library, Doylestown |
| 4 | Intermediate Unit 3, Pittsburgh | 11 | Franklin County CE, Chambersburg | 18 | Penn State Delaware County, Media |
| 5 | Penn State McKeesport, McKeesport | 12 | Penn State Worthington-Scranton, Dunmore | 19 | Temple University, Philadelphia |
| 6 | Penn State Fayette, Uniontown | 13 | Intermediate Unit 18, Kingston | 20 | Intermediate Unit 26, Philadelphia |
| 7 | Cambria County CE, Ebensburg | 14 | Columbia Vo-Tech School, Bloomsburg | 21 | Intermediate Unit 25, Media |

APPENDIX C
CONFERENCE AGENDA

Building Communication Bridges in Family Nutrition Programs

9:00 - 9:30 A.M. Introduction

Please sign in by 9:00. Your local host will talk about today's sessions, and will explain your role in the conference.

9:30 - 10:45 A.M. Effective Communication

Presenters: Cynthia Begnal, Jim Van Horn, Claudia Probart
Host: Patty Satalia

What kinds of communication challenges do you find when working with your clients? In this session, you will watch three examples of challenges that you may encounter on the job, and get some tips on how to handle them.

10:45 - 11:00 A.M. BREAK

11:00 - 12:00 A.M. Communicating with Clients About Nutrition

Presenters: Cheryl Achterberg, Claudia Probart
Host: Patty Satalia

How can you get your clients to care about nutrition? Learn how to make nutrition more interesting and relevant to them.

12:00 - 1:00 P.M. LUNCH

1:00 - 2:30 P.M. Communication Issues in Your Local Agencies

Local Group Discussion

What other communication challenges do you find in your local agencies? Discuss these challenges with staff from other agencies, and develop strategies to handle them.

2:30 - 2:45 P.M. BREAK

2:45 - 3:30 P.M. Satellite Discussion

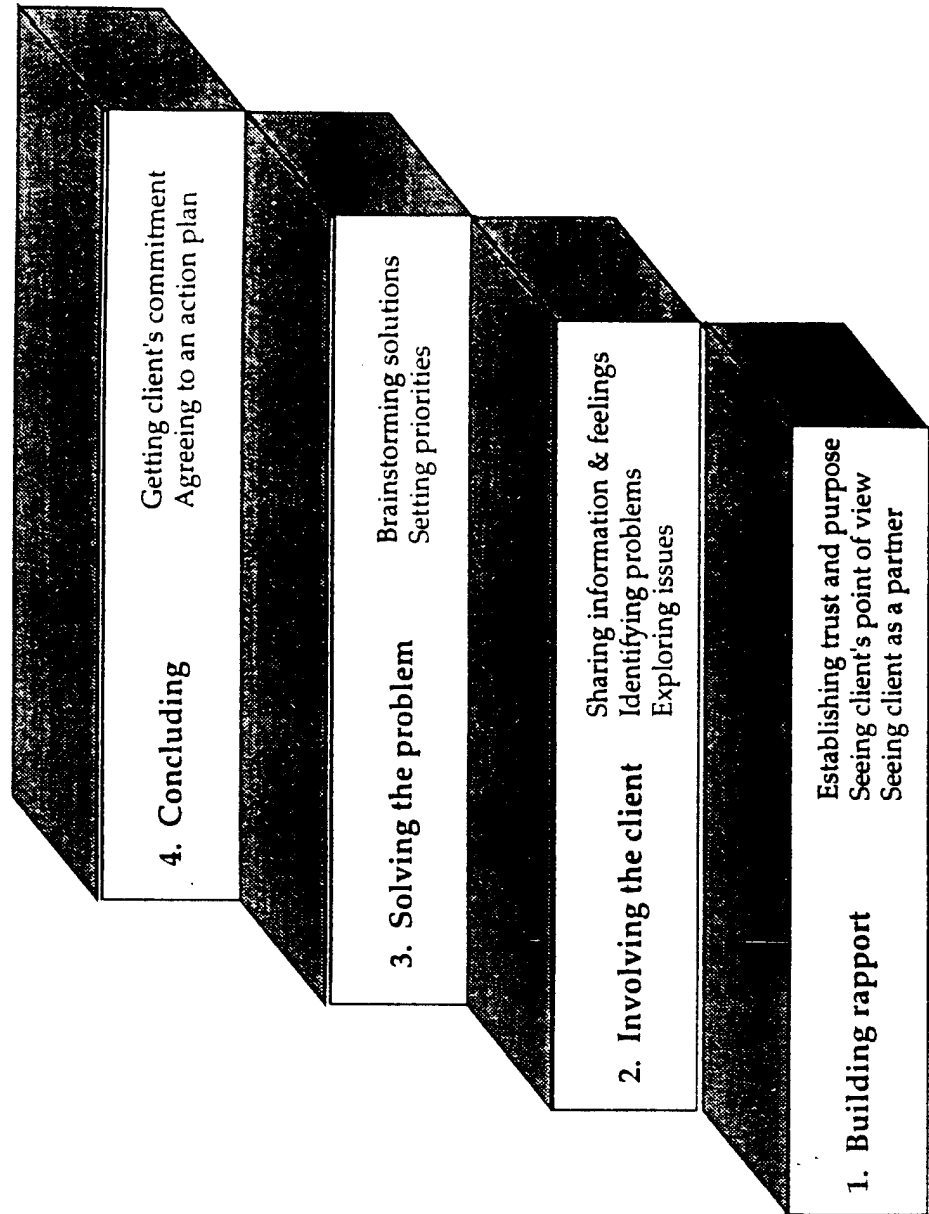
We will share the results of the discussion sessions, and respond to our questions and comments.

3:30 - 4:00 P.M. Summary and Evaluation

Please share your opinions about today's conference.

APPENDIX D
FOUR-STEP COMMUNICATION PROCESS MODEL

Four-Step Communication Process



APPENDIX E
PRE-CONFERENCE PARTICIPANT EVALUATION

BUILDING COMMUNICATION BRIDGES
IN
FAMILY NUTRITION PROGRAMS

PRE-CONFERENCE PARTICIPANT EVALUATION

The purpose of this Penn State study is to determine the effectiveness of education and training by distance education technologies such as satellite broadcast.

This pre-conference survey asks for information about your work, participation in educational conferences, and about yourself. Your answers will be kept completely anonymous.

Dr. Claudia Probart
Dr. Cheryl Achterberg
E. Susanne Shearer
The Graduate Program in Nutrition
S-126 Henderson Building
University Park, PA 16802
814-863-0772

PRE-CONFERENCE EVALUATION

In this section, we'd like to get some basic information about your work and your participation in this conference. Please circle or fill in your responses.

Q-1 Which organization do you work for? (circle one)

1. WIC
2. EFNEP/PENN STATE COOPERATIVE EXTENSION
3. OTHER _____
please specify

Q-2 How long have you worked for this organization?

_____ months _____ years

Q-3 In your current job, how do you spend most of your time? (circle one)

1. IN DIRECT CONTACT WITH CLIENTS/PARTICIPANTS
2. IN ADMINISTRATION
3. BOTH
4. OTHER _____
please specify

Q-4 What type of community do you work in most of the time? (circle one)

1. RURAL
2. URBAN

Q-5 Approximately how long did it take you to travel here today?
(circle one)

1. LESS THAN 1/2 HOUR
2. 1/2 - 1 HOUR
3. 1 - 2 HOURS
4. GREATER THAN 2 HOURS

PLEASE CONTINUE-->

Q-6 How convenient was it for you to travel here today? (circle one)

1. VERY INCONVENIENT
2. INCONVENIENT
3. NEITHER INCONVENIENT NOR CONVENIENT
4. CONVENIENT
5. VERY CONVENIENT

Q-7 Which of the following best describes your reason for attending this conference? (circle one)

1. I DID NOT WANT TO ATTEND BUT WAS REQUIRED TO ATTEND
2. I WANTED TO ATTEND AND WAS REQUIRED TO ATTEND
3. I WANTED TO ATTEND BUT WAS NOT REQUIRED TO ATTEND

Q-8 Before you arrived this morning, what did you know in advance about this conference? (circle all that apply)

1. I KNEW THE TIME AND PLACE
2. I KNEW THE TOPIC WAS COMMUNICATION
3. I KNEW THE CONFERENCE WOULD USE SATELLITE BROADCAST
4. I KNEW NOTHING ABOUT THE CONFERENCE

The topic for the conference today is "Building Communication Bridges in Family Nutrition Programs". It will be televised and delivered by satellite broadcast from the University Park Campus of Penn State to multiple sites throughout Pennsylvania. Please answer the following questions about the conference.

Q-9 How comfortable do you feel right now, in a conference which will be delivered by satellite broadcast? (circle one)

1. VERY UNCOMFORTABLE
2. UNCOMFORTABLE
3. NEITHER UNCOMFORTABLE NOR COMFORTABLE
4. COMFORTABLE
5. VERY COMFORTABLE

PLEASE CONTINUE-->

Q-10 Have you ever participated in any of the following educational activities before today? (circle all that apply)

1. CORRESPONDENCE COURSES
2. VIDEO TAPED CONFERENCES OR COURSES
3. SATELLITE BROADCAST TELEVISED CONFERENCES OR COURSES
4. EDUCATIONAL CONFERENCING BY TELEPHONE
5. EDUCATIONAL CONFERENCING BY COMPUTER
6. OTHER _____

please specify

Q-11 How important is it to you as a learner, that the instructor /presenter be physically present at your conference site? (circle one)

1. VERY UNIMPORTANT
2. UNIMPORTANT
3. NEITHER UNIMPORTANT NOR IMPORTANT
4. IMPORTANT
5. VERY IMPORTANT

The next short section asks about your knowledge of communication.

Q-12 How important are communication skills in your work? (circle one)

1. VERY UNIMPORTANT
2. UNIMPORTANT
3. NEITHER UNIMPORTANT NOR IMPORTANT
4. IMPORTANT
5. VERY IMPORTANT

Q-13 How much do you feel you know about the conference topic, communication? (circle one)

1. VERY LITTLE
2. AN AVERAGE AMOUNT
3. A GREAT DEAL

PLEASE CONTINUE-->

Please help us to learn about you, by answering the following questions.

Q-14 What year were you born?

19 _____

Q-15 What is the highest level of education or training that you have completed? (circle one)

1. LESS THAN 12 YEARS
2. 12 YEARS (HIGH SCHOOL OR EQUIVALENT)
3. 13 TO 14 YEARS
4. 15 TO 16 YEARS
5. MORE THAN 16 YEARS

Q-16 How satisfied are you, in your current job position? (circle one)

1. UNSATISFIED
2. NEITHER UNSATISFIED NOR SATISFIED
3. SATISFIED

Q-17 What is your gender? (circle one)

1. FEMALE
2. MALE

Q-18 Which of the following best describes your racial or ethnic identification? (circle one)

1. BLACK/AFRICAN AMERICAN
2. LATINO/HISPANIC AMERICAN
3. AMERICAN INDIAN/NATIVE AMERICAN
4. WHITE
5. ASIAN/PACIFIC ISLANDER
6. OTHER _____

please specify

PLEASE CONTINUE-->

In the following questions, use the scale shown and circle the one number which best indicated your rating.

Q-19 Which of the following best describes your overall expectations for this satellite conference on communication? (circle one)

1 2 3 4 5

it will be boring

it will be exciting

Q-20 Which of the following best describes your expectations on how much you will learn today about communication? (circle one)

1 2 3 4 5

I will learn
very little

I will learn a
great deal

Q-21 Is there anything else you would like us to know about this conference?

THANKS FOR YOUR HELP WITH THIS PRE-CONFERENCE EVALUATION.

PLEASE GIVE THIS TO YOUR LOCAL HOST NOW.

NUMBER: _____

CONFERENCE SITE: _____

APPENDIX F
POST-CONFERENCE PARTICIPANT EVALUATION

BUILDING COMMUNICATION BRIDGES
IN
FAMILY NUTRITION PROGRAMS

POST-CONFERENCE PARTICIPANT EVALUATION

The purpose of this Penn State study is to determine the effectiveness of education and training by distance education technologies such as satellite broadcast.

This post-conference survey asks for your attitudes and opinions about today's conference. Your answers will be kept completely anonymous.

Dr. Claudia Probart
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POST-CONFERENCE EVALUATION

In this section, please give your overall rating of the conference and aspects listed. Circle the one number in the scales at the right of each question to indicate your response. 1=very poor; 2=poor; 3=average; 4=good, and 5=very good.

	Very Poor	Poor	Avg	Good	Very Good
Q-01 Sound and video quality were.....	1	2	3	4	5
Q-02 Physical facility, seating, and equipment were.....	1	2	3	4	5
Q-03 Registration, directions, and advance information were.....	1	2	3	4	5
Q-04 Local host effectiveness was.....	1	2	3	4	5
Q-05 Conference printed material quality was	1	2	3	4	5
Q-06 Overall quality of the conference was.....	1	2	3	4	5

PLEASE CONTINUE-->

Next, please let us know how presenters and participants at the conference affected you. In the scales at the right, circle the one number which indicates your response to each question. 1=very little; 2=somewhat; 3=a great deal.

	Very Little	Some What	A Great Deal
Q-07 How much did presenters help you feel involved in the conference?.....	1	2	3
Q-08 How much did presenters add to what you learned?.....	1	2	3
Q-09 How much did you participate with others at your site?.....	1	2	3
Q-10 How much did your participation with others at your site add to your learning?.....	1	2	3

Please identify the extent that you feel the following activities contributed to your learning. In the scales at the right, circle the one number which indicates your response to each question. 1-very little; 2=somewhat; 3=a great deal.

	Very Little	Some What	A Great Deal
How much did these add to your learning?			
Q-11 The discussion sessions/group activities.....	1	2	3
Q-12 The video on food labeling.....	1	2	3
Q-13 The communication film clips.....	1	2	3
Q-14 The conference printed materials.....	1	2	3

PLEASE CONTINUE-->

Q-21 Through the day, did you become more or less comfortable in a conference delivered by satellite broadcast? (circle one)

1. LESS COMFORTABLE
2. NO CHANGE IN COMFORT
3. MORE COMFORTABLE

Q-22 How comfortable do you feel now, in a conference delivered by satellite broadcast? (circle one)

1. VERY UNCOMFORTABLE
2. UNCOMFORTABLE
3. NEITHER UNCOMFORTABLE NOR COMFORTABLE
4. COMFORTABLE
5. VERY COMFORTABLE

Q-23 How important is it to you as a learner, that the instructor/presenter be physically present at your conference site? (circle one)

1. VERY UNIMPORTANT
2. UNIMPORTANT
3. NEITHER UNIMPORTANT NOR IMPORTANT
4. IMPORTANT
5. VERY IMPORTANT

The next section asks again, for your knowledge of communication.

Q-24 How important are communication skills in your work? (circle one)

1. VERY UNIMPORTANT
2. UNIMPORTANT
3. NEITHER UNIMPORTANT NOR IMPORTANT
4. IMPORTANT
5. VERY IMPORTANT

Q-25 How much do you feel you now know about the conference topic, communication? (circle one)

1. VERY LITTLE
2. AN AVERAGE AMOUNT
3. A GREAT DEAL

PLEASE CONTINUE-->

Please help us learn more about your attitudes and opinions of this conference, by answering the following questions.

Q-26 Would you like to attend future televised conferences delivered by satellite broadcast? (circle one)

1. YES
2. NO

Q-27 Which would you like to see included in future satellite conferences?
(circle all that apply)

1. SHORT FILM CLIPS
2. VIDEOS
3. WRITTEN MATERIALS/HANDOUTS
4. SATELLITE PRESENTATIONS
5. PANEL DISCUSSIONS
6. QUESTION AND ANSWER SESSIONS
7. LOCAL SITE HANDS-ON WORKSHOPS
8. INDIVIDUAL EXPERTS/SPEAKERS

In the following questions, use the scales shown and circle the one number which best indicates your rating.

Q-28 How would you compare the effectiveness of this satellite conference, to those where all participants and instructor/presenters are physically present at the same site? (circle one)

1 2 3 4 5
less effective more effective

Q-29 How would you describe your overall impression of today's conference?
(circle one)

1	2	3	4	5
it was boring				it was exciting

Q-30 How satisfied are you with what you learned today? (circle one)

1 2 3 4 5
very dissatisfied very satisfied

PLEASE CONTINUE-->

Please fill in your responses to the following questions.

Q-31 What work related topics do you recommend for future satellite conferences?

Q-32 The two most helpful parts of the conference were:

1.

2.

Q-33 The two least helpful parts of the conference were:

1.

2.

Q-34 Is there anything else you would like us to know?

THANK YOU FOR PARTICIPATING IN THIS SURVEY.

PLEASE GIVE THIS EVALUATION FORM TO YOUR
FACILITATOR/LOCAL HOST.

NUMBER: _____

CONFERENCE SITE: _____

APPENDIX G
OVERALL EVALUATION MEANS AND FREQUENCIES

OVERALL EVALUATION MEANS

OVERALL EVALUATION MEANS

Means for Pre and Post Questionnaire Continuous or Scaled Items

Pre-conference evaluation	N	Mean	S.D.	Range
Question 2	530	5.75	5.52	1-32
Question 14	504	55.50	10.68	21-75
Question 19	527	3.40	0.81	1-5
Question 20	526	3.62	0.82	1-5
Post-conference evaluation				
Question 1	533	4.11	0.76	1-5
Question 2	535	3.84	0.89	1-5
Question 3	531	3.73	0.99	1-5
Question 4	534	4.19	0.78	1-5
Question 5	535	4.25	0.65	1-5
Question 6	533	4.03	0.74	1-5
Question 7	528	2.46	0.59	1-3
Question 8	528	2.29	0.60	1-3
Question 9	525	2.56	0.54	1-3
Question 10	525	2.45	0.61	1-3
Question 11	523	2.40	0.61	1-3
Question 12	514	2.17	0.67	1-3
Question 13	510	2.32	0.61	1-3
Question 14	524	2.37	0.56	1-3
Question 15	525	3.78	0.77	1-5
Question 16	528	3.81	0.73	1-5
Question 17	528	3.96	0.76	1-5
Question 18	527	3.75	0.84	1-5
Question 19	528	3.76	0.78	1-5
Question 28	529	3.34	0.92	1-5
Question 29	534	3.59	0.89	1-5
Question 30	534	3.69	0.91	1-5

OVERALL EVALUATION FREQUENCIES

BUILDING COMMUNICATION BRIDGES

IN

FAMILY NUTRITION PROGRAMS

PRE-CONFERENCE PARTICIPANT EVALUATION

The purpose of this Penn State study is to determine the effectiveness of education and training by distance education technologies such as satellite broadcast.

This pre-conference survey asks for information about your work, participation in educational conferences, and about yourself. Your answers will be kept completely anonymous.

Dr. Claudia Probart
Dr. Cheryl Achterberg
E. Susanne Shearer
The Graduate Program in Nutrition
S-126 Henderson Building
University Park, PA 16802
814-863-0772

PRE-CONFERENCE EVALUATION

In this section, we'd like to get some basic information about your work and your participation in this conference. Please circle or fill in your responses.

Q-1 Which organization do you work for? (circle one)

- | | | |
|----|--|-----------|
| 1. | WIC | 451/82.6% |
| 2. | EFNEP/PENN STATE COOPERATIVE EXTENSION | 80/14.7% |
| 3. | OTHER _____ | 6/1.1% |
| | please specify | |

Q-2 How long have you worked for this organization?

_____ months _____ years

Q-3 In your current job, how do you spend most of your time? (circle one)

- | | | |
|----|---|-----------|
| 1. | IN DIRECT CONTACT WITH CLIENTS/PARTICIPANTS | 408/74.7% |
| 2. | IN ADMINISTRATION | 24/4.4% |
| 3. | BOTH | 90/16.5% |
| 4. | OTHER _____ | 9/1.6% |
| | please specify | |

Q-4 What type of community do you work in most of the time? (circle one)

- | | | |
|----|-------|-----------|
| 1. | RURAL | 193/35.3% |
| 2. | URBAN | 303/55.5% |

Q-5 Approximately how long did it take you to travel here today? (circle one)

- | | | |
|----|----------------------|-----------|
| 1. | LESS THAN 1/2 HOUR | 187/34.2% |
| 2. | 1/2 - 1 HOUR | 252/46.2% |
| 3. | 1 - 2 HOURS | 89/16.3% |
| 4. | GREATER THAN 2 HOURS | 8/1.5% |

PLEASE CONTINUE-->

Q-6 How convenient was it for you to travel here today? (circle one)

- | | | |
|----|-------------------------------------|-----------|
| 1. | VERY INCONVENIENT | 97/17.8% |
| 2. | INCONVENIENT | 32/5.9% |
| 3. | NEITHER INCONVENIENT NOR CONVENIENT | 110/20.1% |
| 4. | CONVENIENT | 202/37.0% |
| 5. | VERY CONVENIENT | 99/18.1% |

Q-7 Which of the following best describes your reason for attending this conference? (circle one)

- | | | |
|----|---|-----------|
| 1. | I DID NOT WANT TO ATTEND BUT WAS REQUIRED TO ATTEND | 98/17.9% |
| 2. | I WANTED TO ATTEND AND WAS REQUIRED TO ATTEND | 349/63.9% |
| 3. | I WANTED TO ATTEND BUT WAS NOT REQUIRED TO ATTEND | 88/16.1% |

Q-8 Before you arrived this morning, what did you know in advance about this conference? (circle all that apply)

- | | | |
|----|---|-----------|
| 1. | I KNEW THE TIME AND PLACE | 422/77.3% |
| 2. | I KNEW THE TOPIC WAS COMMUNICATION | 335/61.4% |
| 3. | I KNEW THE CONFERENCE WOULD USE SATELLITE BROADCAST | 367/67.2% |
| 4. | I KNEW NOTHING ABOUT THE CONFERENCE | 21/3.8% |

The topic for the conference today is "Building Communication Bridges in Family Nutrition Programs". It will be televised and delivered by satellite broadcast from the University Park Campus of Penn State to multiple sites throughout Pennsylvania. Please answer the following questions about the conference.

Q-9 How comfortable do you feel right now, in a conference which will be delivered by satellite broadcast? (circle one)

- | | | |
|----|---------------------------------------|-----------|
| 1. | VERY UNCOMFORTABLE | 33/6.0% |
| 2. | UNCOMFORTABLE | 27/4.9% |
| 3. | NEITHER UNCOMFORTABLE NOR COMFORTABLE | 173/31.7% |
| 4. | COMFORTABLE | 236/43.2% |
| 5. | VERY COMFORTABLE | 70/12.8% |

PLEASE CONTINUE-->

Q-10 Have you ever participated in any of the following educational activities before today? (circle all that apply)

- | | | |
|----|---|-----------|
| 1. | CORRESPONDENCE COURSES | 133/24.4% |
| 2. | VIDEO TAPED CONFERENCES OR COURSES | 134/24.5% |
| 3. | SATELLITE BROADCAST TELEVISED
CONFERENCES OR COURSES | 100/18.3% |
| 4. | EDUCATIONAL CONFERENCING BY TELEPHONE | 30/5.5% |
| 5. | EDUCATIONAL CONFERENCING BY COMPUTER | 15/2.7% |
| 6. | OTHER _____ | 15/2.7% |

please specify

Q-11 How important is it to you as a learner, that the instructor /presenter be physically present at your conference site? (circle one)

- | | | |
|----|-----------------------------------|-----------|
| 1. | VERY UNIMPORTANT | 49/9.0% |
| 2. | UNIMPORTANT | 65/11.9% |
| 3. | NEITHER UNIMPORTANT NOR IMPORTANT | 202/37.0% |
| 4. | IMPORTANT | 165/30.2% |
| 5. | VERY IMPORTANT | 39/7.1% |

The next short section asks about your knowledge of communication.

Q-12 How important are communication skills in your work? (circle one)

- | | | |
|----|-----------------------------------|-----------|
| 1. | VERY UNIMPORTANT | 138/25.3% |
| 2. | UNIMPORTANT | 0/0% |
| 3. | NEITHER UNIMPORTANT NOR IMPORTANT | 4/0.7% |
| 4. | IMPORTANT | 67/12.3% |
| 5. | VERY IMPORTANT | 327/59.9% |

Q-13 How much do you feel you know about the conference topic, communication? (circle one)

- | | | |
|----|-------------------|-----------|
| 1. | VERY LITTLE | 76/13.9% |
| 2. | AN AVERAGE AMOUNT | 366/67.0% |
| 3. | A GREAT DEAL | 95/17.4% |

PLEASE CONTINUE-->

Please help us to learn about you, by answering the following questions.

Q-14 What year were you born?

19 _____

Q-15 What is the highest level of education or training that you have completed? (circle one)

- | | | |
|----|--------------------------------------|-----------|
| 1. | LESS THAN 12 YEARS | 3/0.5% |
| 2. | 12 YEARS (HIGH SCHOOL OR EQUIVALENT) | 141/25.8% |
| 3. | 13 TO 14 YEARS | 147/26.9% |
| 4. | 15 TO 16 YEARS | 143/26.2% |
| 5. | MORE THAN 16 YEARS | 100/18.3% |

Q-16 How satisfied are you, in your current job position? (circle one)

- | | | |
|----|-----------------------------------|-----------|
| 1. | UNSATISFIED | 67/12.3% |
| 2. | NEITHER UNSATISFIED NOR SATISFIED | 123/22.5% |
| 3. | SATISFIED | 336/61.5% |

Q-17 What is your gender? (circle one)

- | | | |
|----|--------|-----------|
| 1. | FEMALE | 517/94.7% |
| 2. | MALE | 12/2.2% |

Q-18 Which of the following best describes your racial or ethnic identification? (circle one)

- | | | |
|----|---------------------------------|-----------|
| 1. | BLACK/AFRICAN AMERICAN | 124/22.7% |
| 2. | LATINO/HISPANIC AMERICAN | 39/7.1% |
| 3. | AMERICAN INDIAN/NATIVE AMERICAN | 11/2.0% |
| 4. | WHITE | 335/61.4% |
| 5. | ASIAN/PACIFIC ISLANDER | 7/1.3% |
| 6. | OTHER _____ | 10/1.8% |
- please specify

PLEASE CONTINUE-->

In the following questions, use the scale shown and circle the one number which best indicated your rating.

Q-19 Which of the following best describes your overall expectations for this satellite conference on communication? (circle one)

14/2.6%	25/4.6%	264/48.4%	183/33.5%	41/7.5%
1	2	3	4	5

it will be boring

it will be exciting

Q-20 Which of the following best describes your expectations on how much you will learn today about communication? (circle one)

5/0.9%	21/3.8%	219/40.1%	204/37.4%	77/14.1%
1	2	3	4	5

I will learn
very little

I will learn a
great deal

Q-21 Is there anything else you would like us to know about this conference?

THANKS FOR YOUR HELP WITH THIS PRE-CONFERENCE EVALUATION.

PLEASE GIVE THIS TO YOUR LOCAL HOST NOW.

NUMBER: _____

CONFERENCE SITE: _____

BUILDING COMMUNICATION BRIDGES

IN

FAMILY NUTRITION PROGRAMS

POST-CONFERENCE PARTICIPANT EVALUATION

The purpose of this Penn State study is to determine the effectiveness of education and training by distance education technologies such as satellite broadcast.

This post-conference survey asks for your attitudes and opinions about today's conference. Your answers will be kept completely anonymous.

Dr. Claudia Probart
Dr. Cheryl Achterberg
E. Susanne Shearer
The Graduate Program in Nutrition
S-126 Henderson Building
University Park, PA 16802
814-863-0772

POST-CONFERENCE EVALUATION

In this section, please give your overall rating of the conference and aspects listed. Circle the one number in the scales at the right of each question to indicate your response. 1=very poor; 2=poor; 3=average; 4=good, and 5=very good.

	Very Poor	Poor	Avg	Good	Good
Q-01 Sound and video quality were.....	2/0.4% 1	9/1.6% 2	90/16.5% 3	258/47.3% 4	174/31.9% 5
Q-02 Physical facility, seating, and equipment were.....	4/0.7% 1	35/6.4% 2	135/24.7% 3	230/42.1% 4	131/24.0% 5
Q-03 Registration, directions, and advance information were.....	12/2.2% 1	49/9.0% 2	131/24.0% 3	218/39.9% 4	121/22.2% 5
Q-04 Local host effectiveness was.....	3/0.5% 1	12/2.2% 2	69/12.6% 3	246/45.1% 4	204/37.4% 5
Q-05 Conference printed material quality was	0/0% 1	1/0.2% 2	63/11.5% 3	274/50.2% 4	197/36.1% 5
Q-06 Overall quality of the conference was.....	2/0.4% 1	10/1.8% 2	95/17.4% 3	290/53.1% 4	136/24.9% 5

PLEASE CONTINUE-->

Next, please let us know how presenters and participants at the conference affected you. In the scales at the right, circle the one number which indicates your response to each question. 1=very little; 2=somewhat; 3=a great deal.

		1 Very Little	2 Some What	3 A Great Deal
Q-07	How much did presenters help you feel involved in the conference?.....	27/4.9% 1	228/41.8% 2	273/50.0% 3
Q-08	How much did presenters add to what you learned?.....	42/7.7% 1	290/53.1% 2	196/35.9% 3
Q-09	How much did you participate with others at your site?.....	1/13% 1	206/37.7% 2	306/56.0% 3
Q-10	How much did your participation with others at your site add to your learning?.....	33/6.0% 1	225/41.2% 2	267/48.9% 3

Please identify the extent that you feel the following activities contributed to your learning. In the scales at the right, circle the one number which indicates your response to each question. 1-very little; 2=somewhat; 3=a great deal.

		Very Little	Some What	A Great Deal
	How much did these add to your learning?			
Q-11	The discussion sessions/group activities.....	33/6.0% 1	247/48.7% 2	243/44.5% 3
Q-12	The video on food labeling.....	79/14.5% 1	266/49.1% 2	169/31.0% 3
Q-13	The communication film clips.....	38/7.0% 1	268/49.1% 2	204/37.4% 3
Q-14	The conference printed materials.....	22/4.0% 1	287/52.6% 2	215/39.4% 3

PLEASE CONTINUE-->

Please state your disagreement, or agreement with the following statements. In the scales at the right, circle the one number which indicates your responses for each question. 1=strongly disagree (SD); 2=disagree (D); 3=neither disagree nor agree (Not D Nor A); 4=agree (A); 5=strongly agree (SA).

				Not D Nor		
		SD	D	A	A	SA
		9/1.6%	25/4.6%	94/17.2%	339/62.1%	58/10.6%
Q-15	Enough time was spent on each topic....	1	2	3	4	5
		5/0.9%	22/4.0%	106/19.4%	331/60.6%	64/11.7%
Q-16	Content was not too easy or too hard.....	1	2	3	4	5
Q-17	My site was supportive/good for learning.....	5/0.9%	14/2.6%	89/16.3%	306/56.0%	114/20.9%
		1	2	3	4	5
Q-18	The conference helped me increase my communication skills.....	10/1.8%	36/6.6%	102/18.6%	309/56.6%	70/12.8%
		1	2	3	4	5
Q-19	The conference helped me meet the learning objectives.....	9/1.6%	23/4.2%	118/21.6%	314/57.5%	64/11.7%
		1	2	3	4	5

The topic for today's conference was "Building Communication Bridges in Family Nutrition Programs" and was televised and delivered by satellite. Please answer the following questions about the conference.

Q-20 At the beginning of today's conference, how comfortable did you feel in a conference which would be delivered by satellite broadcast? (circle one)

- | | | |
|----|---------------------------------------|-----------|
| 1. | VERY UNCOMFORTABLE | 22/4.0% |
| 2. | UNCOMFORTABLE | 32/5.9% |
| 3. | NEITHER UNCOMFORTABLE NOR COMFORTABLE | 176/32.2% |
| 4. | COMFORTABLE | 210/38.5% |
| 5. | VERY COMFORTABLE | 78/14.3% |

PLEASE CONTINUE-->

Q-21 Through the day, did you become more or less comfortable in a conference delivered by satellite broadcast? (circle one)

- | | | |
|----|----------------------|-----------|
| 1. | LESS COMFORTABLE | 39/7.1% |
| 2. | NO CHANGE IN COMFORT | 255/46.7% |
| 3. | MORE COMFORTABLE | 234/42.9% |

Q-22 How comfortable do you feel now, in a conference delivered by satellite broadcast? (circle one)

- | | | |
|----|---------------------------------------|-----------|
| 1. | VERY UNCOMFORTABLE | 35/6.4% |
| 2. | UNCOMFORTABLE | 14/2.6% |
| 3. | NEITHER UNCOMFORTABLE NOR COMFORTABLE | 87/15.9% |
| 4. | COMFORTABLE | 239/43.8% |
| 5. | VERY COMFORTABLE | 158/28.9% |

Q-23 How important is it to you as a learner, that the instructor/presenter be physically present at your conference site? (circle one)

- | | | |
|----|-----------------------------------|-----------|
| 1. | VERY UNIMPORTANT | 40/7.3% |
| 2. | UNIMPORTANT | 84/15.4% |
| 3. | NEITHER UNIMPORTANT NOR IMPORTANT | 172/31.5% |
| 4. | IMPORTANT | 168/30.8% |
| 5. | VERY IMPORTANT | 65/11.9% |

The next section asks again, for your knowledge of communication.

Q-24 How important are communication skills in your work? (circle one)

- | | | |
|----|-----------------------------------|-----------|
| 1. | VERY UNIMPORTANT | 119/21.8% |
| 2. | UNIMPORTANT | 1/0.2% |
| 3. | NEITHER UNIMPORTANT NOR IMPORTANT | 3/0.5% |
| 4. | IMPORTANT | 61/11.2% |
| 5. | VERY IMPORTANT | 349/63.9% |

Q-25 How much do you feel you now know about the conference topic, communication? (circle one)

- | | | |
|----|-------------------|-----------|
| 1. | VERY LITTLE | 12/2.2% |
| 2. | AN AVERAGE AMOUNT | 264/48.4% |
| 3. | A GREAT DEAL | 252/46.2% |

PLEASE CONTINUE-->

Please help us learn more about your attitudes and opinions of this conference, by answering the following questions.

Q-26 Would you like to attend future televised conferences delivered by satellite broadcast? (circle one)

- | | | |
|----|-----|-----------|
| 1. | YES | 453/83.0% |
| 2. | NO | 69/12.6% |

Q-27 Which would you like to see included in future satellite conferences? (circle all that apply)

- | | | |
|----|-------------------------------|-----------|
| 1. | SHORT FILM CLIPS | 268/49.1% |
| 2. | VIDEOS | 285/52.2% |
| 3. | WRITTEN MATERIALS/HANDOUTS | 229/41.9% |
| 4. | SATELLITE PRESENTATIONS | 221/40.5% |
| 5. | PANEL DISCUSSIONS | 229/41.9% |
| 6. | QUESTION AND ANSWER SESSIONS | 270/49.5% |
| 7. | LOCAL SITE HANDS-ON WORKSHOPS | 259/47.4% |
| 8. | INDIVIDUAL EXPERTS/SPEAKERS | 268/49.1% |

In the following questions, use the scales shown and circle the one number which best indicates your rating.

Q-28 How would you compare the effectiveness of this satellite conference, to those where all participants and instructor/presenters are physically present at the same site? (circle one)

- | | | | | |
|----------------|---------|-----------|-----------|----------------|
| 21/3.8% | 47/8.6% | 247/45.2% | 161/29.5% | 53/9.7% |
| 1 | 2 | 3 | 4 | 5 |
| less effective | | | | more effective |

Q-29 How would you describe your overall impression of today's conference? (circle one)

- | | | | | |
|---------------|---------|-----------|-----------|-----------------|
| 14/2.6% | 34/6.2% | 180/33.0% | 234/42.9% | 72/13.2% |
| 1 | 2 | 3 | 4 | 5 |
| it was boring | | | | it was exciting |

Q-30 How satisfied are you with what you learned today? (circle one)

- | | | | | |
|-------------------|---------|-----------|-----------|----------------|
| 7/1.3% | 40/7.3% | 169/31.0% | 213/39.0% | 105/19.2% |
| 1 | 2 | 3 | 4 | 5 |
| very dissatisfied | | | | very satisfied |

PLEASE CONTINUE-->

Please fill in your responses to the following questions.

Q-31 What work related topics do you recommend for future satellite conferences?

Q-32 The two most helpful parts of the conference were:

1.

2.

Q-33 The two least helpful parts of the conference were:

1.

2.

Q-34 Is there anything else you would like us to know?

THANK YOU FOR PARTICIPATING IN THIS SURVEY.

PLEASE GIVE THIS EVALUATION FORM TO YOUR
FACILITATOR/LOCAL HOST.

NUMBER: _____

CONFERENCE SITE: _____

APPENDIX H
PARTICIPANT QUALITATIVE RESPONSES

PARTICIPANT QUALITATIVE RESPONSES

The pre-conference participant evaluation contained one open-ended question to capture expectations or feelings at the onset of the conference (Question 21: Is there anything else you would like us to know about this conference?). Fewer than 5 percent of participants who completed the pre-conference evaluation (571) responded to this question. Most of the comments related to the lack of advance information about the conference and the lack of refreshments at some conference sites.

The post-conference participant questionnaire contained 4 open-ended questions to obtain input on: topics for future conferences, the two most helpful parts of the conference, the two least helpful parts of the conference, and any other information that participants would like evaluators to know (Questions 31-34).

Post-Conference Question 31: What work related topics do you recommend for future satellite conferences?

Topics most often listed for future training needs were: breastfeeding, cultural diversity and foods, child nutrition and child abuse, pregnancy, time and stress management, staff communication and teamwork, dealing with drug and alcohol abuse, handling irate, violent and illiterate clients, updates on nutrition research, nutrition and group education skills, and policy and procedure (WIC) updates.

Post-Conference Question 32: The two most helpful parts of the conference were:

Of the four qualitative questions, Question 32, "the two most helpful parts of the conference" had the most frequent responses. Listed most often were examples of group activity, group discussions, and group interactions:

- "interaction with group,"
- "communicating with peers,"
- "discussion with other people,"
- "networking with WIC,"
- "great ideas I got from others,"
- "realizing a situation isn't unique to our clinic,"
- "getting input from others,"
- "brainstorming of ideas between WIC and EFNEP,"
- "sharing thoughts with other workers,"
- "problem solving in small groups,"
- "local group discussions," and
- "hearing real people with real problems and how they handle them."

Also listed as most helpful were the four-step communication process model used by panel members for discussing communication, and the question and answer portion of the conference. Some negative comments reflected disappointment that not all questions

were answered, or that questions were misinterpreted by the call screeners or by the panel.

Post-Conference Question 33: The two least helpful parts of the conference were:

Listed as least helpful were the food labeling video shown during panel member presentations, problems during the question and answer sessions, and the conference focus on WIC specific (versus EFNEP) problems. There were no significant differences, however, in satisfaction and effectiveness between these two groups, and the interaction and networking between WIC and EFNEP were common positive comments on the evaluations. Participants were unsure of how the food labeling video fit into the conference topic of communication, and they wanted to know where and when it would be available to use with clients. Technical quality of the video at some sites was also a problem.

Both positive and negative comments were received on specific site problems: site location, seating, refreshments and lunch facilities, skills of the local host/facilitator, and technical and equipment issues.

Time limitations prevented sites from completing the second of two group activities. Three sites did not try the activity and of the other 17 sites, some failed to complete the activity, failed to discuss the results, did not understand how to complete it or felt it was ineffective.

Urban sites appear to have specific concerns and problems, demonstrated by selected comments which are listed below.

- "protection of the WIC worker,"
- "safety of clients and personnel in the office,"
- "violence in the workplace,"
- "topics that deal with urban problems such as drugs,"
- "the videos ... do not relate to inner city WIC offices at all,"
- "working with drug addicted clients,"
- "cities have different problems," and
- "I really feel that we need more teleconferences on stress management and teaching how to deal with urban problems such as drug addiction,"

Post-Conference Question 34: Is there anything else you would like us to know?

Responses to the final question on the post-conference evaluation were varied, and often expanded on previous comments. Selected remarks from participants that address the effectiveness of the conference, are listed below:

"We need more personal interaction, but it's a good way to reach a large amount of people in many areas."

"I was first skeptical about a satellite conference, but I felt it was quite effective."

"After a while of listening to the conference, it is really easy to ignore the conference since it feels like watching TV and I don't like to watch TV all that much. How long can you watch TV for and truly, truly pay attention to every single word said. I can do that maybe for a couple of hours. After that it becomes less effective than presenters. Breaks were appreciated, but not given."

"I've taken satellite courses previously so I was quite comfortable with the conference. I felt very comfortable with the presentations and the opportunity to discuss ideas in smaller groups. We bounced ideas off of each other. It was very helpful."

"I prefer live lectures because the "back and forth" interactions between the lecturer and audience lends to more interesting discussions."

"It was nice to know (through phone calls/discussion) that we all seem to have the same problems/situations to deal with no matter where we work."

"This has been a really productive day. Good interaction between WIC and EFNEP."

"This was the first teleconference I've attended. I prefer this type of learning session as opposed to someone physically standing in front of the group speaking. This was a very educational and rewarding experience."

"I prefer having a person right in front of me to ask more questions, but all the presenters on satellite were interesting and brief. This idea was an excellent one and a nice new way to get some helpful information to a large group of people."

"Time of the conference was very workable--good response, interaction among program participants. Program hostess was superb, guest speakers each did a very good job as part of the panel. Good friendly feeling during the program."

"I appreciated the fact that I did not have to travel a long distance. I liked that the information was directly related to WIC. I thought it was helpful to meet with individuals from other agencies."

"This conference I felt was indirectly dealing just with nutritionists. The administrative clerks and nutrition aides I felt didn't really benefit from this. I would rather have separate conferences for the different titles so we can discuss our own individual problems together as a group."

"It was great to have a small group and different agencies represented. Interaction that way is great."

"This was my first satellite conference. I felt it was very effective, however, I feel some of the panel have never been in a WIC

clinic. Maybe they should visit and observe an active WIC clinic because some of their suggestions were not feasible."

"It wasn't really impressed on me that it was live, seemed like it could have been taped. The call-ins helped, but it was still a little less involved than I expected."

"I feel this conference was very helpful as far as getting to know what goes on in other WIC offices. As far as employee/client related problems, this conference is interesting and I would like to attend other ones like this in the near future."

"This was a great conference. Keeping the two programs closely interacting is great. Having the size of attendance that was present at this site (30) was perfect, networking was great. It was really nice to attend a conference that is directly related to what you do."

"EFNEP and WIC work so very differently. "Communication Bridges" seems geared to WIC staff. Without fairly good communication skills, EFNEP personnel would be jobless. The major difference is of course, time spent with the clients. WIC is limited with time per client. It was a very good experience to get some better insight into WIC."

"All this is very important--but staff cannot be expected to give each client this kind of time every time a client comes in. There is not enough staff, not enough space or not enough money to do all this!!"

"Much of this information was redundant. Info that I had in a nutrition counseling class in undergraduate college coursework. I feel comfortable with satellite conferences, but feel they are less effective than a hands-on, in-person conference. May be due to lack of experience with satellite conferences."