

1996

Direct and television-mediated observation of verbal interaction in the classroom

Terri McDonald
University of Northern Iowa

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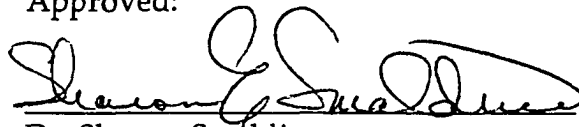
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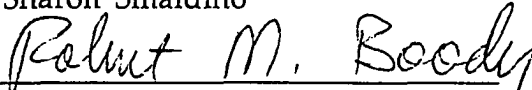
DIRECT AND TELEVISION-MEDIATED OBSERVATION
OF VERBAL INTERACTION IN THE CLASSROOM

A Dissertation
Submitted
In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

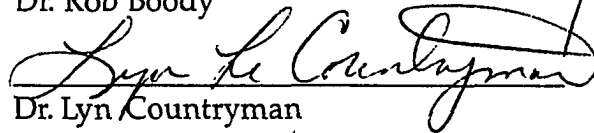
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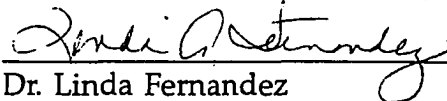
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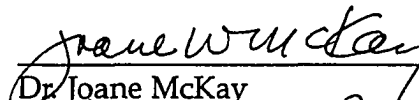
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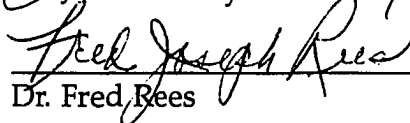
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And finally to Dan McDonald, my loving husband and best friend:

Whoever believed that they understood me,
Actually had dressed up something out of me,
After their own image.

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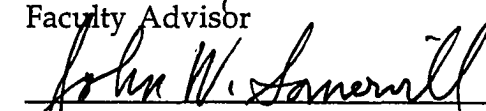
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An Abstract of a Dissertation
Submitted
In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

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May 1996

ABSTRACT

The purpose of this study was two-fold: (a) to investigate differences in preservice teachers' ability to identify and report verbal interaction in the classroom during direct observation as compared to television-mediated observation and (b) to examine the advantages and disadvantages of direct and television-mediated classroom observation as perceived by preservice teachers.

Subjects in this study were preservice teacher education majors ($N = 96$) from four university class sections enrolled in professional sequence courses prior to student teaching. The data were analyzed using a 2 X 2 ANOVA (mode of observation X tally type). The independent variable of mode of observation had two levels, direct and television-mediated. The second independent variable of tally type had two levels, teacher and student interaction. The dependent variable was accuracy scores tallied by preservice teachers.

Results from the two-way ANOVA revealed a statistically significant main effect for (a) mode of observation, (b) tally type, and (c) an interaction. It was concluded that preservice teachers tally with equal accuracy in the teacher interaction category during direct and television-mediated observation. However, in the student interaction category, preservice teacher tallied with greater accuracy when using television-mediated observation when compared to direct observation.

Common themes that emerged from preservice teachers in the direct observation groups included: (a) comments concerning the high number of teacher and student interactions in a short period of time, and (b) that direct

observation gave them ideas for their future classrooms and a "feel" for the classroom. Preservice teachers also noted some disadvantages of direct classroom observation: (a) identifying and reporting verbal interaction in the classroom was very difficult when teachers utilized cooperative learning activities because of noisy environments, and (b) the subjects also felt that they were disrupting the elementary students by being physically present in the classroom.

The themes that emerged from comments made by the preservice teachers in the television-mediated observation groups included: (a) the focusing ability of the camera, (b) watching the observation with their professor simultaneously, and (c) not having to walk to the observation site. The disadvantages included: (a) not being able to see all the students who were talking at all times and (b) that the elementary students may have been distracted by the camera and technical assistants.

CHAPTER I INTRODUCTION

Background

Teacher education programs across the United States seek to provide preservice teachers with opportunities to observe a variety of instructional practices and classroom settings. The underlying assumption is that observation for prospective teachers is beneficial because they begin to understand the connectedness between theory and practice. However, researchers have found that preservice preparation programs have not been effective in reaching the goal of connecting educational theory with practice (McIntyre & Morrison, 1967; Merkley & Jacobi, 1993; Tickle, 1987).

Good and Brophy (1987) contended that education programs rarely provide preservice teachers with the specific skills needed to observe, analyze and report classroom behavior. Good and Brophy believed that prospective teachers need to know what specific behaviors to identify, how to collect information, and how to analyze the behaviors based on a conceptual or theoretical framework.

Semmel and Thiagarajan (1973) said the ability of preservice teachers to observe and report teacher and student behaviors is essential to internalize common terminologies and develop professional communication skills. Merkley and Hoy (1992-1993) suggested that anyone interested in working with children on a daily basis should be able to observe and interpret behavior and that observation skills should become an integral part of the preservice teacher's professional repertoire.

Bonar (1985) suggested that in addition to arranging observational opportunities for preservice teachers, teacher education programs should emphasize how experienced teachers apply theoretical concepts to their every day teaching. These experiences allow preservice teachers to determine the qualities of effective teachers and provide insight into the daily realities of classroom teaching.

Cohn, Kottcamp, and Provenzo (1987) believed that observation at the preservice level provides future teachers with models and practices that build understandings about the nature of teaching and about the rewards and limitations associated with the typical classroom. The authors believed observation in teacher preparation programs is crucial because many preservice teachers may think they understand the demands of classroom teaching because they have been students for many years. Observation of a variety of instructional strategies and teaching styles assists the preservice teacher in adapting observed instructional practices to develop a professional philosophy about teaching and learning.

There is little doubt that observation experiences are necessary and valuable in the preparation of teachers based on the frequency with which classroom observation experiences are included in professional education curricula (Sarason, Davidson, & Blatt, 1986). The literature indicated that use of classroom observation by preservice teachers is based on the premise that educational theory must be closely allied with observable practices. Future teachers learn best when they see the relationship between elements in their teacher education courses and what takes place in the ordinary classroom (Liston & Zeichner, 1991).

In addition to providing observation opportunities to preservice teachers, Dewey (1916) indicated through his research that preservice teachers should be provided with situations that provoke and initiate reflection about teaching. These situations should be those experienced by practicing teachers through observation. This allows teacher education students to give careful and thoughtful consideration to what they have witnessed, thus increasing their understanding of the nature of teaching.

Cruickshank (1987) also contended that teacher education institutions need to emphasize reflection on teaching. He said that if teaching is the subject of conversation or could be made so, opportunities for reflection can foster the development of critical thinking skills. As Feiman-Nemser and Buchmann (1983) noted, teacher preparation programs should encourage students to study and reflect about teaching early in preservice preparation.

Reflective teaching involves any process that exposes future teachers to classroom reality and then causes them to reflect on what happened (Cruickshank, 1987). Preservice teachers who learn about reflection in the teaching process will be more inclined to consider their teaching carefully and refine their behavior to positively affect student outcomes. In addition, Galambos (1986) expressed, "Students must be debriefed about what they have observed and the relationship to what they are learning" (p. 12).

Holton (1984) believed teacher preparation institutions should provide opportunities for preservice teachers to observe the classroom environment and then provide opportunities for them to think thoughtfully and analytically about questions that arise during the observation. Sprinthall (1980) asserted that there is a need for "careful and continuous guided

reflection" (p. 281), and that if professors of education accept the notion that reflection on teaching is critical, instructional alternatives that promote reflection must follow.

Potential reflective teaching experiences include providing preservice teachers with observation opportunities that cause them to reflect on what happened. Instructional alternatives that promote reflection include the use of journals, analyzing specific classroom events and behaviors, debriefing, and simulations (Cruickshank, 1987). These alternatives encourage preservice teachers to examine more closely the act of teaching. Silberman (1971) wrote: "Unfortunately, too many prospective teachers travel through their preservice experience as victims of unexamined experience" (p. 39).

As the literature suggests, there are many unanswered questions related to observation and reflection experiences in the preparation of teachers. The basic questions are: what are the benefits to prospective teachers when they observe the classroom setting and are given opportunities for reflection? What is learned about teaching by observation and reflection? What procedures optimize learning during reflective teaching? Holton and Fay (1981) proposed that related inquiries could determine whether opportunities for reflection can predict success as the student of teaching enters the teaching profession.

There are also logistical problems that need to be considered when arranging and conducting classroom observation experiences. The availability of observation sites and problems with scheduling and time constraints often limit extensive opportunities for preservice teachers to observe a variety of classroom settings. In addition, the typical classroom is

built to accommodate 25-30 pupils, so college classes are typically divided into small groups, each observing different lessons. Because it is not feasible for the professor to accompany each group, there is a lack of common experience between professors and their students as they return to their college class. This lack of common ground limits the professor's ability to facilitate discussion and reflect upon the observed lessons. In addition, preservice teachers are generally unable to debrief with the observed teacher after the lesson because of time constraints. Thus, opportunities to make connections between theory and practice are greatly diminished.

Traditionally, preservice teachers sit in the back of the classroom when they visit schools for the purpose of classroom observation. Some instructional activities are more difficult to observe from this position than others. As effective teaching practices incorporate cooperative learning and small group activities and move away from direct instruction, observers have difficulty seeing and hearing interaction between students and teachers.

Television-mediated observation may provide a solution to some of the problems previously discussed. Television systems used for observation purposes integrate sophisticated control systems that permit the transmission of quality audio and video to the viewers. Cameras can follow individual students, the movement of the teacher, and/or students working in small groups. A wireless microphone worn by the observed teacher permits unrestricted movement around the room and desktop microphones can be strategically placed so that conversations between students can be heard. Cooperative learning groups, student activity centers, and teacher

conferences can be monitored so that verbal interactions between teachers and students can be clearly seen and heard by observers.

In addition, after preservice teachers observe the lesson, the interactive nature of television-mediated systems allows teacher education students and professors to debrief with the observed teacher. Questions concerning the lesson plan, classroom management, motivation techniques, and classroom strategies can be immediately discussed and clarified.

There are additional advantages to television-mediated observation. These observation systems allow preservice teachers to observe a variety of settings at a distance as a group with their professor. The focus of the lesson can be predetermined, and preservice teachers can be given instructions concerning specific behaviors to identify and ways to report and analyze the lesson. The problems of scheduling, limited time, and the availability of sites are diminished.

Another advantage of utilizing television-mediated observation in preservice preparation is that professors can work with technical staff and participating teachers, beforehand, to determine the focus of the observation. Professors are free to point out particular segments of the television screen and adjust the volume to a lower level so comments can be shared as the lesson unfolds. This common experience lays the foundation for subsequent discussion and reflection opportunities related to student and teacher behavior.

Summary

Classroom observation at the preservice level is beneficial for several reasons as outlined in this chapter. However, the research suggests that

teacher education programs have not been effective in providing classroom observation experiences to preservice teachers which connect educational theory with practice. In addition, several researchers have contended that teacher education institutions rarely provide education majors with the skills needed to effectively identify, report, and analyze classroom behaviors. It has been suggested that classroom observation can assist preservice teachers with developing the common terminology prevalent in today's schools.

Classroom observation also assists the preservice teacher in adapting the instructional practices that are observed to the development of a personal philosophy about the teaching and learning process. It has also been noted that reflective teaching strategies can be helpful because preservice teachers need opportunities to think thoughtfully about classroom events they have just witnessed. These reflective strategies encourage preservice teachers to closely examine the act of teaching and to become life-long students of teaching.

Purpose

The purpose of this study was two-fold. Component one examined differences in the ability of preservice teachers to identify and to report teacher and student verbal interactions within cooperative groups during direct observation versus television-mediated observation. Component two examined the advantages and disadvantages of direct observation and television-mediated observation as perceived by preservice teachers.

Significance

This study is exploratory in nature and represents an initial effort to investigate the differences between the ability of preservice teachers to

identify and report verbal interactions between teachers and students during direct observation versus television-mediated observation. Although several studies in teacher education programs have compared the effectiveness of films, slides, videotapes, and closed circuit television to direct classroom observation, there appears to be a void in the literature with regard to studies concerning the use of television-mediated observation systems. Most of the earlier studies focused on closed-circuit television and were conducted in the 1960s and early 1970s. A few studies in the late 1980s and early 1990s involved the use of mediated television for the purpose of providing observation to preservice teachers; however, the technical ability of the equipment was confined. This study is also significant because debriefing sessions between the observed elementary teacher and the preservice teachers and their professor can be provided after each classroom observation. This opportunity for reflection matures the reflective capacity of the preservice teachers and aids in the development of higher-order thinking skills.

Major advances in the technological aspects of television have resulted in the development of extremely sophisticated methods for providing observation opportunities, yet these have not been extensively researched and documented. Television-mediated observation systems may improve the ability of preservice teachers to develop observation skills and to increase their proficiency in reflection, thereby improving their teaching performance as they enter the teaching profession.

Research Questions and Hypotheses

1. Will preservice teachers in direct classroom observation groups be able to identify and report verbal interactions in the classroom more accurately than television-mediated observers? The first hypothesis was that preservice teachers in direct classroom observation groups would identify and report verbal interactions in the classroom with less accuracy when compared to television-mediated observers.

2. Will preservice teachers in direct and television-mediated observation groups be able to identify and report teacher interactions with greater accuracy when compared to student interactions? The second hypothesis was that preservice teachers in the direct and television-mediated observation groups would be able to identify and report teacher interactions with greater accuracy when compared to student interactions.

3. What are the advantages of direct classroom observation as perceived by preservice teachers?

4. What are the disadvantages of direct classroom observation as perceived by preservice teachers?

5. What are the advantages of television-mediated classroom observation compared to direct observation as perceived by preservice teachers?

6. What are the disadvantages of television-mediated classroom observation compared to direct observation as perceived by preservice teachers?

Definitions

1. Direct Classroom Observation: The observer is physically present in the classroom that is the focus of the observation.
2. Live Television-Mediated Observation: Viewing of a classroom observation via a live television broadcast, guided by teacher education faculty.
3. Closed-Circuit Television: Closed television systems that transmit television signals to predetermined locations that cannot be seen or heard by anyone except specific target audiences.
4. Fiber Optics: Glass fibers interlocked within cable that transmits voice, video, and data at the speed of light, over long distances.
5. Debriefing Session: A question and answer session with the observed teacher immediately following the televised-mediated classroom observation that provides reflective opportunities with preservice teachers and professors.

Assumptions

1. All subjects participated in direct classroom observation experiences in an education course taken prior to this study.
2. The direct observation subjects will not receive debriefing sessions following the three classroom observations.
3. The elementary teachers observed in this study were competent teachers.
4. The elementary teachers observed in this study were competent in their use of cooperative learning as an instructional strategy.

5. The cooperative learning strategies used by the elementary teachers in this study were not affected by the content provided during classroom observations.

Limitations

1. This study was conducted in an education center that is connected via fiber optics to an on-campus laboratory school. The site uses a television-mediated observation system that is highly customized and has design characteristics that permit the transmission of high quality live broadcasts of elementary and secondary classroom observations to university students enrolled in the teacher education program. According to the review of literature, it is highly unlikely that this kind of system is available at other teacher education institutions.

2. This study was limited to four class sections because of the time commitment (four 75-minute class periods) required from participating professors.

Organization of the Remainder of the Study

The first component of this study addresses the issues of classroom observation in a direct observation setting as compared to a television-mediated environment. The second component describes the advantages and disadvantages of direct and television-mediated classroom observation as perceived by preservice teachers. Chapter II summarizes the literature related to formal classroom observation, historical aspects of classroom observation, preservice classroom observation, and the use of technology as an observation tool. Chapter III describes the research methods used in this investigation. Chapter IV describes the results of the study and discusses the

outcomes of the data. Chapter V provides a summary, the conclusions, and recommendations for further study.

CHAPTER II

REVIEW OF LITERATURE

This study examined the differences between the ability of preservice teachers to identify and report verbal interaction during direct versus television-mediated observation. The second component of this investigation describes the advantages and disadvantages of direct and television-mediated classroom observation as perceived by preservice teachers. The review of literature provides the following summary: (a) approaches to formal classroom observation, (b) historical developments of classroom observation within teacher education institutions, (c) approaches to preservice classroom observation, and (d) mediated-technology as an observation tool for preservice teachers.

Approaches to Formal Observation

There has been an evolution in observational methodology during the past 25 years (Merkley & Hoy, 1987). Observation procedures have been redefined and recording systems have enhanced the ability of observers to measure what happens in classrooms. These advances have also increased the ability of researchers to pinpoint effective teaching skills as they relate to learner outcomes and have led to the development of a variety of systematic observation approaches.

Medley and Mitzel (1963) suggested that the obvious approach to research on teaching involves classroom observation. Observational data are expensive and difficult to obtain and a limited number of studies involve formal observation. These authors contended that even though a few studies involved direct observation where observers were physically present in the

classroom, these studies failed to add to the knowledge base. Furthermore, These researchers concluded that classroom observation is an invasion of privacy and that behaviors may change in the presence of observers, thereby disturbing the typical classroom lesson.

Rosenshine and Furst (1973) classified past research on teaching that involved direct observation and simplified instrumentation which is relevant to the study of teaching. Rosenshine and Furst's model studied teaching in classrooms and naturalistic settings through descriptive-correlational-experimental research. Based on the Canterbury Teaching Research Project undertaken in New Zealand (Nuthall, 1971), the four-stage cycle involved developing ways to categorize typical interaction in classrooms, identifying behaviors worthy of further study, determining specific manipulations that affect student growth and interactions, and uncovering theories that can be identified by researchers that use a descriptive system.

In addition, Evertson and Green (1986) identified four phases in the historical development of observation approaches used to study educational processes. Phase I (1939-1963) was exploratory in nature and focused on whether the observer could reliably and validly observe and identify classroom interactions. Phase I witnessed the development of several observation systems designed to describe verbal and nonverbal behavior and improve the transfer of information to others (Amidon & Hough, 1967). Phase II (1958-1973) concentrated on the development of instruments that utilized category studies and paradigms for the observation of teaching.

Phase II was influenced by training, experimental, and descriptive studies (Simon & Boyer, 1970).

Phase III began in 1973 and continues today. Studies generally focused on scores from standardized tests and on whether teacher behaviors stimulated student performance. Sometimes referred to as a process-product approach, this era involves experimental and descriptive studies (Doyle, 1977; Dunkin & Biddle, 1974; Koehler, 1978). Phase IV started about the same time as Phase III but concentrated on different aspects of observation. Begun in 1972, Phase IV utilized varied approaches that advanced the theoretical and methodological techniques to study teaching. Reports sponsored by the U.S. Office of Education and the National Institute of Education laid the foundation for studies involving theory development and human interaction (Berliner & Koehler, 1983).

Evertson and Green (1986) maintained that the first question raised in observational research should be: What is the purpose of the observation? This guides the observer to what and how it will be conducted and what information can be obtained. Popper (1963) claimed that the observer is the instrument of observation and that the purpose of observation and the observer's frame of reference will influence the interpretation and description of the phenomenon observed.

Observational research in the social and behavioral sciences has developed tools and instruments for the purpose of guiding the observation for correctly analyzing student and teacher behavior. These tools further influence what will be observed. Evertson and Green (1986) stated:

Observation is a mediated process on several levels--the level of the observer as a person with biases, beliefs, training, and

ability, and the level of the instrument or tool used to make and record an observation. This tool also has a point of view, bias, structure, and so forth. (p. 165)

Horn (1914) recognized the complexity of the classroom and the many interpretations people with different backgrounds and philosophies could make with regard to teacher and student performance. In an attempt to give teachers, school administrators and other professional personnel a common terminology and common ground rules for classroom observation, Horn developed a systematic recording procedure that enabled him to communicate more clearly with teachers and to report objective findings (Semmel & Thiagarajan, 1973). Since then, hundreds of tools and instruments have been developed for the purpose of recording, storing and representing classroom observations.

Borich and Madden (1977), Flanders (1970), Spaulding (1963), and Simon and Boyer (1970) developed and identified hundreds of instruments that cover a wide range of phenomena including activities, cognitive processes, nonverbal behavior, interactions with materials, and affective processes. Spaulding (1963) designed an instrument that contains 144 combinations of 90 classifications that described affective correlates found in the classroom. Flanders (1970) developed the category systems approach that coded the sequence of specific classroom behavior.

Simon and Boyer (1970) identified 99 instruments used for observation purposes; 78 are from the field of education. Borich and Madden (1977) noted that researchers have the tendency to develop their own instruments thereby reducing the opportunity to improve existing measures and to replicate instrumentation for validity and reliability. Borich and Madden documented

over 250 instruments used for measurement of teacher and student behaviors.

During the past two decades, additional observation systems have been developed that provide shorthand techniques for data collection and that describe the complexity of the classroom. These instruments tend to be complicated and go beyond the scope of most teacher preparation programs. Although systematic observational procedures are valuable with the more advanced graduate students and professional educators, simplicity is suggested for successful observation instruments at the undergraduate level (Cunningham, Bower, & McGhee, 1984).

Stallings (1977) identified six common elements found within most observation systems:

1. The focus of classroom observation. Whom do you look at or listen to--teacher? child?--what activities, materials, environmental factors do you record?
2. A content focus. What do you want to learn about--motor development, socio-emotional development, cognitive development, physical environment, activities?
3. A coding unit. How long do you observe before recording and over how long a period do you observe--three seconds, five minutes, five hours?
4. A means to record data. How do you record data--on audiotape, videotape, with paper and pencil?
5. A setting. Where do you record--in the classroom, playroom, playground?
6. A purpose. Why are you observing--to study the child, evaluate a program, train other people, conduct a research project? (p. 6)

Four classification systems and collection procedures of the many observation tools and instruments have been identified by Evertson and Green (1986). These tools and instruments are based on four premises, and the plethora of instruments used in observational research can be sorted into a circumscribed set of classes. They include: (a) category systems, (b) descriptive systems, (c) narrative systems, and (d) technological records.

Data from category systems record behaviors as they occur through the use of coding forms, tally systems, rating scales, and checklists. All behaviors must fall within a given preset category. The category is documented at designated intervals and can be used in combination with audio and/or video tapes. Two dimensions that have emerged regarding the period of observation are time and event. When time is isolated, specific events are ignored (e.g., Flanders, 1970--every three seconds; Stallings, 1977--every five minutes). When an event is the sampling unit, observers ignore time and look for the beginning and ending of specific events.

Evertson and Green (1986) defined descriptive systems as having predetermined categories that are used in combination with technological records and transcripts (Adelman, 1981; Green & Wallat, 1979). Communicative or pedagogical structure is derived from recorded behavior and is identified systematically to provide a retrospective analysis of the total recording. When using narrative systems, the observer either writes a live narrative description as the phenomenon unfolds or describes events on a tape recorder as they occur. The journal record or tape recordings can be analyzed later for reflective purposes. The original purpose for the

observation, which is generally situation specific, determines the length of observation which can vary from a few minutes to several hours.

Technological records are obtained by using electronic devices that produce permanent records and are recorded live (Ericson & Wilson, 1982). The data is systematically analyzed later to construct representations of events. The placement of electronic devices, gaining access to classrooms, and predetermining the focus of the observation and the appropriate length of observations are drawn from the observers' goals and questions (Evertson & Green, 1986).

According to Dunkin and Biddle (1974), category and descriptive systems are closed systems because they contain a finite number of categories that are predetermined (e.g., teacher behavior, student achievement). Closed systems are confined and self-contained to reflect the nature of the event under investigation. When using narrative and technological records, categories are not preselected, and data are gathered after the observation. These open systems are less descriptive, and new categories can be generated from observed patterns and behaviors.

Classroom Observation in Teacher Education: Historical Perspectives

An investigation of the literature with regard to classroom observation in the preparation of teachers reveals four distinct components related to historical developments: (a) teachers' colleges, normal schools, colleges, and universities have considered classroom observation to be an integral part of the teacher education curriculum, (b) classroom observation by preservice teachers is found in the majority of teacher education programs across the country, (c) classroom observation experiences are carried out through

methods which greatly vary from one institution to another, and (d) classroom observation is necessary and valuable to the development of competent teachers.

Classroom observation has a rich history dating back to 1839, when Stowe described a model for professional training for elementary teachers. He stated:

A thorough, scientific and demonstration study of all the branches to be taught in common school, with directions at every step as to the best observation method of inculcating each lesson for teachers in training must be the center of the development of intellectual habits. (p. 117)

Five decades later, Grey (1887) surveyed 74 normal schools and reported about half used observation in preservice preparation. Whereas several institutions had highly organized programs, Grey reported observation in some teacher education programs as a "rather incidental element in the training program" (p. 41).

By the end of the 19th century, normal schools included both classroom observation experiences and practice teaching. Snyder (1898) recommended one year of classroom observation for normal school programs, in conjunction with seminars, followed by one year of practice teaching. However, Luckey (1903) surveyed 20 colleges and universities and found that, even though the majority considered classroom observation to be an integral component in their curriculum, none offered courses relating to techniques of classroom observation until 1895. By the early 1900s, he found 25 institutions that had developed a course specifically for the development of observation skills for teachers in training.

According to Abel (1960), from 1900 to 1930 Admonson and Webster (1925), Bolton (1906), Kruse (1929), and Ulrich (1933) documented that classroom observation and demonstration were becoming more prevalent in teacher preparation programs. This trend started when John Dewey (1904) suggested that preservice teachers must learn by watching experienced teachers in actual classroom situations. Subsequently, the manner in which teacher preparation institutions have administered observation experiences to preservice teachers has varied greatly from one institution to another.

Williams (1962) found that of 128 normal schools, 27 different patterns emerged with regard to how institutions organize observation experiences. The most frequent model was classroom observation aggregated with professional courses. In 1948, Machaelis reported that 68% of teacher training programs required classroom observation prior to student teaching. He investigated 242 teacher training institutions, and found that over 75% combined observation with other professional courses.

The literature indicates that the importance teacher education institutions place on classroom observation leaves little doubt that these experiences are necessary and valuable. Even though the purpose and learning outcomes of classroom observation vary at each institution, it is generally agreed that classroom observation opportunities provide a realistic view of the profession of teaching and offer a connectedness of theory and practice.

Approaches to Preservice Classroom Observation

Studies concerning observation at the preservice level began to appear in the literature during the mid part of the 20th century. The value of

observation was not questioned but rather how to develop more effective methods for observation and field-based experiences.

Cohn et al. (1987) believed that observation of a variety of classrooms enables preservice teachers to look at teaching from a pedagogical viewpoint and encourages going beyond their experiences as elementary and secondary students. When teacher education institutions expose students to various curriculum materials, age levels, and instructional practices, they can appreciate the complex nature of classroom settings (Schulman, 1987).

Borich (1994) noted the purpose of observation in the preparation of teachers is to “develop and continually revise a plan for self-improvement at a level that matches one’s own stage of experience” (p. 3). Advocates for systematic training of observational methods early in the preservice program agree that learning to distinguish between relevant and irrelevant facts determines the success or failure of effective teachers (McCall, Lombardo, & Morrison, 1988; Sternberg, 1989).

Ingle and Robinson (1965) examined the value of classroom observation for future teachers. Scores on the Minnesota Teacher Attitude Inventory showed no significant differences between preservice teachers who observed the classroom environment as compared to those students who did not observe the teaching-learning setting. Ingle and Zaret (1968) divided students enrolled in an educational psychology into two groups. One group served as tutors for high school students and the other group two visited local schools to observe classrooms. The results reported that student observers scored the same in an educational psychology course as did those who served as tutors for high school students.

Hedburg (1979) found no difference in scores on a final examination between students who participated in classroom observation and attended class as compared to those who attended class but did not participate in the field experience component. However, Marso (1971) reported that students who participated in early observation experiences felt better prepared to enter the teaching profession compared to those students who were not exposed to classrooms. Similarly, Benton and Osborn (1979) found that teacher education students were positively influenced by classroom observation according to the Minnesota Teacher Attitude Inventory.

These aforementioned studies suggest that the fast pace of activities in the classroom setting and the inability of preservice teachers to look for specific events may cause problems for researchers wishing to find differences in observational methodologies. Many teacher education students incorrectly analyze behavior thereby tainting the results of studies that involve classroom observation (Benton & Osborn, 1979; Hedburg, 1979; Ingle & Robinson, 1965; Ingle & Zaret, 1968; Marso, 1971).

Many preservice teachers are sent to observe classrooms without prior knowledge of exactly what they are to observe. This problem is multiplied when preservice teachers spend hundreds of hours in schools without knowing the basic principles of observational theory and how to unify these principles with instructional practices. A strong theoretical background often discourages practicing teachers from attaching themselves to faddish pedagogical notions. Dewey (1904) wrote:

The student of the practical adjusts methods of teaching, not to the principles which he is acquiring but to what he sees succeed and fail in an empirical way from moment to moment: to what he sees other teachers doing who are more experienced and

successful in keeping order than he is; and in conjunctions and directions given to him by others. (p. 97)

Ross, Hughes, and Hill (1981) believed that if preservice teachers were oriented to look for and to identify the many components of the teaching and learning process (e.g., positive reinforcement, instructional schemes), positive benefits would increase. Cunningham et al. (1984) advised:

It is crucial that teacher education programs predetermine the focus of classroom observations and provide opportunities to students of the teaching profession so they can become familiar with the classroom environment and are exposed to teaching strategies, classroom arrangement and other aspects of teaching so they become informed observers. (p. 102)

Cunningham et al. (1984) also contended that many teachers who have taught for several years have stated their preparation was inadequate in terms of the realities of the classroom and the school system itself. The researchers asserted that teacher education programs fail to demonstrate relevance to the actual teaching task and fall short of blending theory and practice. The observation of master teachers at the preservice level allows undergraduate students the opportunity to adapt their behaviors and techniques to meet the needs of their future students (Sarason, Davidson & Blatt, (1986). It is impossible to observe a classroom without certain questions coming to mind. Preservice teachers receive little training in the nature and problems of observation and the important role observation and reflection can play in teacher training. Merkle and Hoy (1992-1993) indicated:

Preservice teachers are typically novices to the teaching act. If they are immersed in realistic examples of the phenomena being investigated, they can be guided to viewing educational concepts and theories, not as isolated facts or mechanical procedures to be memorized for evaluation, but as tools which experienced teachers use in problem solving. (p. 27)

Zeichner (1980) examined the myths and realities confronting preservice teachers. He suggested that more attention should be given to the quality of classroom observation and other field-based experiences in order to develop thoughtful and reflective teachers and that more research is needed to clarify what is learned during these experiences. He also proposed that most studies involving pre-post questionnaires and surveys show mixed results based on any given variable and that preservice experiences can be valuable or harmful depending on the predetermined criteria.

These crucial observation components previously mentioned are embedded in most teacher education programs; however, researchers agree that preservice programs still struggle with blending theory and practice. The majority of students engaged in the observation process do not know what to look for or how to recognize and report specific behaviors as they occur (Sarason et al. (1986). At the preservice level, less emphasis on the development of observation skills has motivated several researchers to suggest that observation methodology should become a more important element in teacher education curriculums (Good & Brophy, 1987).

Because preservice teachers have been elementary and secondary students themselves, classroom life as demonstrated by experienced teachers is hard to comprehend (Lortie, 1975). In addition, the high attrition rate of beginning teachers implies that many are not equipped to assume responsibility and confront problems associated with the daily life of classrooms. Howey (1977) expressed the belief that unless we pilot preservice models that include systematic observation, problems confronting teacher education cannot easily be resolved.

Mediated Technology as an Observation Tool for Preservice Teachers

Mediated technology has been used in classroom observation since the late 1940s when the Bales Interaction Recorder (Bales & Gerbrands, 1948), and Chapple's Interaction Chronograph (Chapple, 1949) were designed to facilitate describing behavior. Most instruments were specifically designed for experienced professionals familiar with observational methodology for the purpose of observing social behavior. These systems were highly complex in nature and did not lend themselves to use by inexperienced observers, especially preservice teachers.

Direct observation of classrooms by preservice teachers has proven to increase understanding of teacher roles and education in general, whereas other models of observation using mediated technology have been used effectively in teacher education programs. Some of the earliest observational studies compared the use of various media to the use of direct observation where the preservice teacher is physically present in the classroom.

Clemens (1956) found that televised observation prior to direct observation is more effective than televised observation only, direct observation only, or television after direct observation. Clemens concluded that unguided observation had little value compared to guided observation by the instructor.

A research project undertaken by Keller (1957) maintained that television provides observers with a common ground and frame of reference that lays the foundation for subsequent discussions. His study also pointed out that television weaves together the teaching-learning process into an interrelated pattern, as well as providing a realistic view of teaching patterns,

instructional principles, and pupil characteristics. The results of research conducted by Rogers (1958) indicated that television enables large groups of future teachers to be taught at one time, allowing them to make practical connections of what they are viewing by observing children of all age levels.

Rench (1961) reported several strengths and weaknesses when closed-circuit television is used as an observational tool. The obvious advantage was that the college professor, the observed teacher, and the technical staff could plan items to be observed to a greater degree as compared to direct observation. The lesson plan can be discussed and the technical personnel can control what is to be seen and heard. Close-up camera shots can provide clarity and emphasis that conventional classroom observation does not permit. The professor can guide preservice teachers through the observation, pointing out and discussing events as they happen.

Another advantage described by Rench (1961) is that large groups of university students can observe the lesson simultaneously. Because of space considerations, it is almost impossible to bring large groups into classrooms for observation. In addition, children and teachers are less likely to be distracted by the cameras because they become accustomed to them in a very short period of time. Teachers commented that they felt their level of instruction was enhanced, because closed-circuit television and kinescope recordings of each lesson allowed a continuous feedback mechanism for the teacher and preservice teachers.

In 1962, Rogers studied the use of a college television-mediated system that included the use of a mobile production unit that could be moved to public schools to transmit live lessons to San Jose College. The system

allowed technicians and college professors to remotely operate three cameras placed in the participating schools. Microphones were placed strategically so observers could be oriented to the total classroom activity. Preservice teachers could view the lesson via two 23" television monitors placed in the auditorium. Results indicated that television observation was as effective as in-person observation based on college qualification tests, grade point average by group, faculty rating sheets, and evaluation of student teachers' means by group.

Fulton and Rupiper (1962) suggested that problems associated with direct observation could be solved by using appropriate mediated materials. Their investigation attempted to determine whether vicarious observations were as effective as direct observation at the preservice level. Film, slide, and videotape sequences presented educational principles and classroom concepts found in most preservice foundation courses. The study was conducted in three university classes where preservice teachers are introduced to classroom observation. The authors found a statistically significant difference in favor of vicarious observation versus direct observation in one out of the three college classes.

Weis (1962) compared direct observation to observation using closed-circuit television. He reported a significant difference between the kind of discussion that took place after television-mediated observation. Weis also found that comments made by observers after the mediated observation were more detailed and spontaneous because they shared a common frame of reference. However, direct observation yielded more comments concerning

the interaction between the teacher and students and on the social aspects of the lesson.

An experiment conducted by Rumford (1962) concluded that televised lessons were as effective as direct observation in increasing meaning at the preservice level. Dependent variables included daily observation papers, multiple choice tests, and pre-post scores on the Minnesota Teacher Attitude Instrument. He suggested closed-circuit television was a feasible way to provide meaningful classroom observation experiences for teacher education students.

Painter (1975) emphasized the many problems associated with direct observation of classrooms. Some colleges and universities are located in rural areas and local schools cannot handle the burden of accommodating large groups of observers. Films and videotape were used to record classroom activities and were shown to students enrolled in education psychology classes in lieu of direct observations. The results of an analysis of co-variance showed a level of achievement equal to direct classroom observation.

Painter (1975) also asserted that films and videotapes provide illustrative material that can make relatively abstract concepts more meaningful for preservice teachers. As the demand for observation opportunities increases, films and videotapes can be used in lieu of direct classroom observation. Once produced, these recordings can be used by professors to provide observation experiences for teacher education students.

Stroller and Lessor (1963) investigated the use of mediated-television for improving teacher training. Information about methods of teaching were measured by an objective 120-item multiple choice methodology exam.

The ability of preservice teachers to analyze an observed elementary lesson was measured through a lesson evaluation essay exam. The authors suggested that kinescope recordings provided a more effective medium of observing as compared to television, and that television was more effective than direct classroom observation.

Wireless observation and multi-channel recording were the focus of a pamphlet written by Herbert and Swayze (1964). They advised that the use of a wireless microphone, an FM receiver, and a stereophonic tape recorder as a means for observers to obtain a permanent record of a given setting. They also insisted subjects must know they are being observed, must be told what will be recorded, and must be aware of who has access to the tapes and for what purpose.

Other devices used for classroom observation over the past 30 years include periscopes (Asano & Barrett, 1964), one-way mirrors with audio receivers (Daniels & Prosen, 1962), plastic masks where the observer's mouth and nose were covered allowing the observer to record comments without disturbing classroom activities (Schoggen, 1964), and tape recorders (Hutt & Hutt, 1970).

There were very few studies conducted in the 1970s and early 1980s regarding the use of technology in preservice programs. However, Merkley and Hoy (1992-1993) and Merkley and Jacobi (1993) supported infusing concrete observation experiences into preservice preparation by broadcasting microwave transmissions from public school classrooms to the campus of Iowa State University.

In the study reported in 1992-1993 by Merkley and Hoy, all subjects were exposed to class lectures that used textbooks and handout materials that centered on five teaching behaviors including resource utilization, lesson implementation, questioning skills, motivation techniques, and communication techniques. Students in the control group subsequently read two articles on these teaching behaviors. Follow-up discussion of behavior was based on notes taken from the readings. The experimental group watched one hour of live televised lessons from public school classrooms, observing a different teacher for each behavior studied. Notes taken from the observation served as the basis for follow-up discussion. Reflective discussion for both groups allowed the sharing of what they had learned concerning the behaviors under study.

At the end of the semester, both groups watched a 20-minute videotape of a math lesson that contained examples of the five behaviors and took notes when they saw these behaviors exhibited in the videotape. They were given 45 minutes after videotape observation to write a synopsis of the lesson. The results indicated that both groups were similar in reporting general concepts relating to the five teaching behaviors. However, experimental students were more precise in their descriptions of the behaviors as they were able to use specific terminology and document specific examples of the predetermined teaching behaviors.

In a follow-up study, Merkley and Jacobi (1993) investigated preservice teachers' skills in observing and reporting specific teaching behaviors. They examined the effects of three laboratory experiences on preservice teachers' knowledge of teaching behaviors, their ability to observe classroom teachers,

and their ability to report teaching behaviors. Independent variables included an interactive video system, a live television observation, and a research response technique involving cluster rating forms. Multiple choice tests assessed the knowledge level of behaviors under examination, and observation essays allowed students to describe specific teaching behavior. Results indicated there was a significant difference in favor of live telecast observation as compared to the use of an interactive video system and research response techniques.

Summary

Research indicates that classroom observation by preservice teachers is an integral component of teacher education programs. Systematic observation at the preservice level is a complex process including the teachers and students who are being observed, the professors who facilitate classroom observation, and the preservice teachers who participate in classroom observation. Each of these components affects the the ability of preservice teachers to identify and report the various behaviors prevalent in classrooms. Research also shows that using technology to facilitate classroom observation affects the quality of observation experiences for preservice teachers.

There is a void in research that examines the use of technology to enhance the ability of preservice teachers to identify, report, and reflect upon classroom experiences they have just witnessed. Television-mediated experiences may dramatically impact the classroom observation methods that are presently utilized in preservice preparation programs. Increased use of television-mediated observation systems may increase the ability of preservice teachers to identify effective teaching strategies and to better

prepare them for the dilemmas and opportunities inherent in the everchanging dynamics of the classroom.

CHAPTER III METHODOLOGY

Introduction

The purpose of this study was two-fold: (a) to investigate differences in the ability of preservice teachers to identify and to report verbal interaction in the classroom during direct classroom observation as compared to television-mediated classroom observation when elementary students were arranged in cooperative learning groups, and (b) to examine the advantages and disadvantages of direct and television-mediated classroom observation as perceived by preservice teachers. It was hypothesized that preservice teachers in the television-mediated observation groups would be more accurate in tallying teacher and student interactions. A second hypothesis was that preservice teachers in both the direct and television-mediated observation groups would be able to tally the teacher interactions with more accuracy than the student interactions.

The Setting

The College of Education at a medium-sized university in the Midwest has been utilizing a television-mediated observation system for the past five years to transmit live broadcasts from an on-campus laboratory school. The laboratory school serves students from preschool through Grade 12. The television-mediated observation system consists of a mobile production unit with two cameras and several microphones that can be moved into any one of 48 locations throughout the laboratory school to originate a live broadcast. The technical aspects of the observation system sends high quality and audio

video, so observers watching the broadcast can analyze particular aspects of teacher and student behavior.

Preservice teacher education students view the classroom lessons from an interactive classroom located in an education center a quarter-of-a-mile away via a fiber optic link. The interactive classroom has two television monitors in the front of the room so preservice teachers can see and hear the live transmissions. After watching the lesson on television with their professor, the students participate in a question-answer session with the laboratory school teacher by using push-to-talk microphones. Questions generally center around the lesson plan, student interaction, classroom discipline and management, and instructional strategies. The interactive nature of the mediated system allows preservice teacher education students to see and hear the classroom teacher and also permits the classroom teacher to see and hear the students and their professor.

Subjects

The subjects in this study were preservice teacher education majors from four university class sections enrolled in professional sequence courses prior to student teaching. Two sections of a Teaching Elementary School Social Studies course and two sections of an Elementary Classroom Management course were involved in the study. A flip of the coin randomly determined which class sections would participate in the direct classroom observations and which sections would participate in the television-mediated classroom observations. Subjects in the direct observation groups were randomly assigned to four subgroups (B, C, E, and F). The choice of four subgroups was appropriate because lower numbers of direct observers decreased the amount

of disruption in the elementary classrooms during each observation. Each subgroup had less than 17 observers. The television-mediated observation groups (A and D) did not have to be randomly assigned to subgroups, because the receive site allows up to 50 observers to view a live classroom lesson simultaneously.

To reduce the threat to the internal validity of this study, and to insure that all variables in this situation were constant, the following extraneous variables were considered. The class syllabi confirmed that: (a) professors did not discuss anything related to cooperative learning with their students prior to this study, (b) professors did not discuss the use of tally sheets with their students prior to this study, and (c) professors did not discuss classroom observation prior to this study. Another possible problem with history was whether subjects had used tally sheets before. Therefore, a statement on the questionnaire (Appendices C & D) confirmed that none of the subjects had used tally sheets during classroom observation experiences prior to this study.

Instruments

A verbal flow instrument, adapted from a classroom observation model designed by the Association for Supervision and Curriculum Development (1987), was used in this study to document the interactions between teachers and students during classroom discussion. The instrument was in the form of tally sheets (Appendix A). The tally sheets had two categories printed at the top of the page related to two distinct behaviors. The behaviors included teacher interactions and student interactions. Interobserver reliability of the verbal flow instrument was checked before the data was collected in this study. Two expert observers were trained to use the tally sheet with the two

categories of interaction under study to assess the reliability of the instrument. The degree of agreement between observers was estimated using a formula by Emmer and Millett (1970):

$$\text{Percentage agreement} = 100 \left(1 - \frac{A - B}{A + B} \right)$$

A and B are the frequency counts of the two observers for the total of the teacher and student interactions that took place in a 10-minute time frame.

$$100 \left(1 - \frac{72-60}{72+60} \right) = 100 \left(1 - \frac{12}{132} \right) = 91\%$$

To gather information from preservice teachers regarding the advantages and disadvantages of direct and television-mediated classroom observation, a questionnaire containing open-ended questions was developed by the researcher. Subjects in the direct classroom observation groups were asked two questions:

1. What are the advantages of direct classroom observation?
2. What are the disadvantages of direct classroom observations?

Preservice teachers in the television-mediated groups were asked to respond to two questions:

1. What are the advantages of television-mediated classroom observation?
2. What are the disadvantages of television-mediated observation?

Data Collection Procedures

All subjects received a 55-minute training session presented by the researcher concerning classroom observation, elementary teacher and student interactions in cooperative learning groups, and the use of tally sheets. Subjects were given information regarding teacher interactions and student interactions. The subjects were asked to write a tally mark in Category I when the teacher spoke. The subjects were asked to write a tally mark in Category II when the student spoke, either to the teacher or to other students. The researcher pointed out several examples of teacher and student interactions to the subjects before the subsequent practice session began.

Next, the subjects watched a 10-minute videotape and practiced using the tally sheets. The videotape showed cooperative learning groups in a science lab working on an experiment involving liquid solutions and focused on teacher and student interactions. The videotape demonstrated several examples of the teacher speaking to the group, the teacher speaking to an individual student, individual students speaking to the teacher, and individual students speaking to other students. Subsequently, the subjects received feedback from the investigator regarding the accuracy of their ability to identify and report verbal interaction between the teacher and students.

Following the feedback session, the subjects watched the same 10-minute videotape and practiced using the tally sheets a second time. Subjects received feedback from the investigator regarding the accuracy of their tally sheet. A question and answer session followed the practice session. Specific questions centered around exactly when to start and stop tallying, and how to code the tally sheet if two or more students spoke at once.

After the initial training session, Sub-groups B and E directly observed three 20-minute lessons along with Expert One. This expert was responsible for the logistics of meeting the students at the location of the observations, seating subjects, handing out the tally sheets, starting and stopping the tallying, and collecting the tally sheets at the end of the observed lesson. Expert One stayed within close proximity of the teacher during the observed lessons and reported the verbal interaction between teachers and students using tally sheets. Expert One also watched the videotapes of the television-mediated observations in Group A and marked the tally sheets each time a verbal interaction occurred in Category I or II.

Sub-groups C and F directly observed three 20-minute lessons along with Expert Two. This expert was responsible for the logistics of meeting the students at the location of the observations, seating subjects, and handing out the tally sheets, starting and stopping the tallying, and collecting the tally sheets at the end of the observed lesson. Expert Two moved around the room during the observed lessons and reported the verbal interactions between teachers and students using tally sheets. Expert Two also watched the videotapes of the television-mediated observations in Group D and marked the tally sheets each time a verbal interaction occurred in Category I or II.

At the end of the third observation, all subjects in the direct observation groups were given a short questionnaire by the experts (Appendix B). Subjects were given 15 minutes to complete the questionnaires, which were collected by the experts after completion.

Groups A and D observed three television-mediated lessons along with their professor. Each observed lesson was approximately 2 weeks apart and

20-minutes in length. Subjects watched each observation from the Education Center interactive classroom and reported teacher and student interactions using the tally sheets. The tally sheets were collected by the professor at the end of each observation.

At the end of the third observation, each subject in the television-mediated observation groups was given a short questionnaire by their professor (Appendix C). Subjects were given 15 minutes to complete the questionnaire, which was collected by the professor after completion.

An important aspect of using Experts One and Two was to document the occurrence of the verbal interactions present during each observation as accurately as possible. Thus, these experts moved around the room during direct observations, stayed in close proximity to the teacher, and used the tally sheets to document the occurrence of the predetermined categories of interaction. These experts viewed the videotapes of the television-mediated lessons so that their tally sheets reflected, as accurately as possible, the occurrence of the predetermined categories of interaction. The experts' tally sheets were used as a comparative tool with the preservice teachers' tally sheets. This process determined the the ability of preservice teachers to identify and report verbal interactions between teachers and students.

Data Analysis

The data in this study were initially analyzed descriptively to portray the characteristics of the large groups of subjects and to transfer the numbers into a more manageable form. After the means and standard deviations were computed, the data were analyzed using a 2 X 2 analysis of variance (ANOVA). The two independent variables were mode of observation and

tally type. The two levels of the first factor were direct and television-mediated observation. The two levels of the second factor were teacher and student interactions. The dependent variable was accuracy scores obtained from preservice teachers on tallying teacher and student interactions during elementary classroom observations.

In the second component of this study, questionnaires were given to subjects in the direct and television-mediated groups after observing three classroom lessons. Preservice teachers were asked to write about the advantages and disadvantages of direct and television-mediated observation. Thematic analysis, a procedure outlined by Bogdan and Biklen (1982), was used to analyze the results of the questionnaire.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was two-fold. Component one examined the ability of preservice teachers to identify and report verbal interactions during direct classroom observation as compared to television-mediated classroom observation. Component two examined the advantages and disadvantages of direct and television-mediated classroom observation as perceived by preservice teachers. A review of the literature led to the following research questions and hypotheses.

1. Will preservice teachers in direct classroom observation groups be able to identify and report verbal interactions in the classroom more accurately than television-mediated observers? The first hypothesis was that preservice teachers in direct classroom observation groups will identify and report verbal interactions in the classroom with less accuracy than television-mediated observers.

2. Will preservice teachers in direct and television-mediated observation groups be able to identify and report teacher interactions with greater accuracy when compared to student interactions? The second hypothesis was that preservice teachers in both the direct and television-mediated observation groups will be able to identify and report teacher interactions with greater accuracy when compared to student interactions.

3. What are the advantages of direct classroom observation as perceived by preservice teachers?

4. What are the disadvantages of direct classroom observation as perceived by preservice teachers?

5. What are the advantages of television-mediated classroom observation compared to direct observation as perceived by preservice teachers?

6. What are the disadvantages of television-mediated classroom observation compared to direct observation as perceived by preservice teachers?

Instruments

In the first component of this study, a verbal flow tally sheet, adapted from a model developed by the Association of Supervision and Curriculum Development, was used by preservice teachers in this study to document the occurrence of teacher and student interactions during classroom observations. The data were used to answer the first two research questions. In the second component of this study, thematic analysis (Bogdan & Biklen, 1982) was used to analyze the data collected from questionnaires given to the subjects after they completed three classroom observations. Common themes emerged from each question, and the researcher used the most commonly occurring statements from the responses as the basis for discussion. Other comments made by the direct and television-mediated observers which were considered unique were also highlighted. This analysis was used to answer the last four qualitative research questions.

Data Collection Procedures

Component One

The subjects in this study were teacher education majors enrolled in professional sequence courses during the semester prior to their student teaching semester. All subjects who were present on the day of the training received an informational session that included classroom observation

concepts and the use of tally sheets for identification of verbal interaction between elementary teachers and students. After the training sessions, the subjects observed three elementary classroom lessons, either directly or by means of television-mediated observation.

One expert observer accompanied the subjects to each direct classroom observation. As the expert and the preservice teachers observed the classroom lesson, they used tally sheets to record verbal interactions that occurred between elementary teachers and students. In the television-mediated classroom observations, preservice teachers also used the tally sheets to record the verbal interactions between the elementary teachers and students. Each television-mediated broadcast was videotaped so that the experts could tally the observations at their leisure. After collecting the quantitative data, the expert scores on the tally sheets were compared to the subject scores on the tally sheets to determine the ability of preservice teachers to accurately identify and report verbal interactions between elementary teachers and students. Questionnaires were given to all subjects after three classroom observations to collect the qualitative data.

Analysis of Descriptive Data

The quantitative data in this study were initially analyzed descriptively so that the large groups of numbers collected could be transformed into a more manageable form. The underlying distributions and the assumptions associated with analysis of variance were considered. After analyzing the descriptive data, it was found that there were considerable differences in the number of interactions recorded in different classroom observations (Table 1). In order to adjust for the fluctuations in the number of interactions between

classrooms, and to derive a more directly meaningful index, the difference between each subject's tally score and the appropriate expert score was divided by the expert score to obtain accuracy percentages. For example, if an expert tallied 88 interactions and one of the subjects tallied 74 interactions, this subject was 14 tallies away from the expert. By dividing 74 by 88, it can be determined that the subject had an accuracy of tallying score of 84%.

Table 1

Expert Tallies in Direct and Television-mediated Classroom Observations

Observation Groups	Observation Number					
	1		2		3	
	Tally Type					
	Teacher/Student		Teacher/Student		Teacher/Student	
Group A	119	144	89	89	51	77
Group B	122	143	91	87	105	152
Group C	34	77	43	52	100	110
Group D	50	55	133	170	53	78
Group E	75	110	95	111	137	122
Group F	142	157	98	86	147	40

Note. Group A and Group D = Television-Mediated Classroom Observations
Group B, C, E, and, F = Direct Classroom Observations

The extent of the differences may be due to the way individual teachers approach cooperative learning strategies based on (a) personal teaching philosophies, (b) the nature of the lesson being taught, (c) the grade level of the students, (d) the number of students, and other factors. For example, during one classroom observation, there were 34 interactions in the teacher category and 77 interactions in the student category. In contrast, during another classroom observation, there were 142 interactions in the teacher category and 157 interactions in the student category.

The table of means and standard deviations of subject accuracy in tallying during three classroom observation are shown in Table 2. After analyzing this data, some of the subjects were dropped from the original sample. Preservice teachers who were not present for the training sessions before the study began were dropped from the sample because they were not trained to tally the teacher and student interactions during the classroom observations. There were also outliers that were dropped from the original set of data. An outlier in this study referred to a subject who tallied remarkably different from the other subjects in the sample. One subject in a direct observation group was dropped because the accuracy rate for tallying in the student category was only 33%. Any subject who tallied below the 60% level of accuracy was dropped from the sample because of its potential impact on the summary of the data. Additional subjects were dropped from the data due to dual enrollment in both university courses used in this study.

Table 2

Means and Standard Deviations of Preservice Teachers' Accuracy in Tallying

Observation Method	Observation Number					
	1	2	3	1	2	3
	Tally Type					
	Teacher Interactions			Student Interactions		
Direct						
<i>M</i>	87.2%	77.7%	78.7%	66.0%	65.2%	73.2%
<i>SD</i>	9.9%	18.0%	19.0%	14.2%	16.9%	15.6%
Television-mediated						
<i>M</i>	82.6%	88.0%	87.5%	82.8%	86.4%	87.6%
<i>SD</i>	15.7%	11.4%	7.7%	18.8%	14.0%	8.9%

Analysis of Inferential Data

A two-way analysis of variance was conducted using mode of observation, (direct and television-mediated classroom observation) and tally type (elementary teacher and student interactions) as the independent variables. The dependent variable was preservice teachers' accuracy percentages in tallying classroom observations. The 2 X 2 ANOVA was used to address the first 2 quantitative research questions in this study.

The between-subjects factor was mode of observation and the within-subjects factor was tally type. This quantitative data were analyzed using SPSS (Statistical Package for the Social Sciences).

The two-way ANOVA summary is shown in Table 3. The F ratio for the row factor, mode of observation, was significant ($df = 1$ and $F = 22.23$). The effect size was .12831. The F ratio for the column factor, tally type was found to be significant ($df = 1$ and $F = 33.08$). The effect size was .17972. The F ratio for the interaction effect, the interaction between mode of observation and tally type was also found to be significant ($df = 1$ and $F = 37.42$). The effect size was .19860.

Table 3

Summary Table for 2 X 2 ANOVA

	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p values</u>
Between Effects	151	113.87		
Observation Mode	1	2531.12	22.23	.000
Within Effects	151	68.17		
Tally Type	1	2255.35	33.08	.000
Observation Mode X Tally Type	1	2551.05	37.42	.000

Certain assumptions about the sample(s) and population(s) are associated with a 2 X 2 ANOVA. These include (a) random selection, (b) independence, (c) normality, and (d) homogeneity of variance. The assumption of random assignment was not met because the subjects were intact when the study began. Even though there was no particular reason to suspect that the subjects were different, inferring to a larger population becomes more difficult. In terms of independence, the assumption was met because the subjects scores were not influenced by any other subject during the study. The assumption of normality, that each population was normally distributed was tested through computer analysis (SPSS). After inspecting the data, the assumption of normality was found to be met. The homogeneity of variance assumption was also tested using SPSS. The results showed that the variance between two groups being compared (direct and television-mediated) was reasonably normal.

A two-way ANOVA answers three statistical questions. The first two questions deal with the main effects, which refers to the effect of a single factor, such as mode of classroom observation, when all other factors, such as tally type, are disregarded. The third statistical question in a two-way ANOVA involves interaction. An interaction is said to exist when the two independent variables operate together or combine to have an effect on the dependent variable. Huck and Comier (1996) stated:

Once the results of the two-way ANOVA become available, researchers will usually look to see what happened relative the the interaction. If the interaction turns out to be nonsignificant, they will move their attention to the two main effects. If however, the interaction turns out to be significant, as it did in this study, no attention will be devoted to the main effects. This is because conclusions based on the main effects can be quite misleading in the presence of significant interactions. (p. 370)

Hypothesis One stated that preservice teachers in the television-mediated groups would be able to identify and report verbal interactions more accurately than preservice teachers in the direct observation groups. The results of the interaction shown in Figure 1. This graph indicates that direct observers tallied with equal accuracy as compared to the television-mediated groups in the teacher interaction category. However, the television-mediated groups tallied more accurately in the student interaction category when compared to the direct observation groups.

Hypothesis Two stated that preservice teachers in the direct and television-mediated groups would be able to identify and report the teacher interactions more accurately than the student interactions. The results of the interaction indicated that preservice teachers in the direct observation groups tallied the teacher interactions with greater accuracy when compared to the student interactions. However, the television-mediated groups tallied the teacher interactions with equal accuracy when compared to the student interactions.

The underlying information gathered from the ANOVA is that the observation mode makes no difference in the teacher interaction category. However, in the student interaction category, the mode of observation makes a difference in favor of television-mediated observation.

The results of the data collected in this study can be used to infer that when teacher education institutions send their students into elementary classrooms, preservice teachers participating in direct observation may find that it is easier to see and hear the teacher interactions than to see and hear the student interactions. In general, the teacher is in a standing position and

the students are seated at their desks. The voice of the teacher is usually more distinguishable than student voices because of the volume level of the teacher's voice. Elementary students who were observed during this study were in grades 1-5, so the level of their voices may have been lower than the level of the teacher's voice. However, when using television-mediated observation, preservice teachers may find that teacher and student interactions can be seen and heard with equal accuracy because of the focusing ability of the camera and the presence of microphones.

In the student interaction category, the television-mediated groups tallied with greater accuracy when compared to the direct observation groups. It may be more difficult for direct observers to see student interactions because of their positioning in the classroom. During the direct classroom observations, subjects were either sitting in the back of the room or were sitting off to one side of the room. They were asked to remain seated during as they would normally in such an observation. If the teacher was working with a group located across the room from the subjects, it was much more difficult to identify the student interactions.

During the television-mediated observations, the camera focused on the cooperative groups, so subjects using this mode of observation were in a better position to identify the student interactions. Also, the placement of the microphones in the center of the cooperative groups may have allowed the television-mediated groups to hear with greater accuracy. The director of the television-mediated system had the ability to turn up the audio level of the microphone based on which group the teacher was working with and the

other microphones were turned off so that discussions within other groups could not be heard.

Table 4

2 X 2 Interaction

Group	Teacher Tally	Student Tally	Differences
Direct Observation	87%	76%	11%
Television-mediated Observation	87%	87%	0%
Differences	0%	11%	

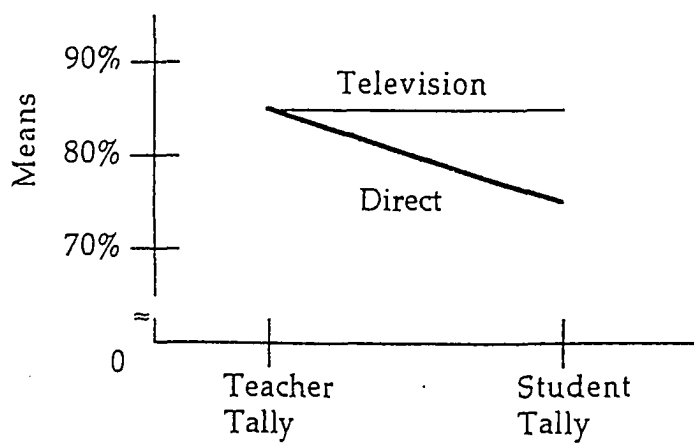


Figure 1. Effect of mode of observation and tally type of accuracy in tallying.

A possible reason that preservice teachers in the direct observation groups tallied with less accuracy in the student interaction category, when compared to the teacher interaction category, may be due to the nature of cooperative learning activities. Elementary students that were observed in this study were seated at their desks and arranged in a circle. Depending on the placement of the direct observers in the room, there were many times when the elementary student talking had his/her back to the observers.

Another reason that the television-mediated groups tallied with greater accuracy in the student interaction category when compared to the direct observation groups may be because the cameras were mobile. When an individual elementary student began to talk, the director of the broadcast gave instructions to the camera operators to move the cameras to a specific position so that the television-mediated observers could clearly see who was talking. The technical ability of the camera also allows the lens on the camera to be zoomed in, so that the elementary student who was talking could be seen with even greater clarity. However, the capacity of the cameras also can be looked upon as a limitation, because when the conversation shifts to a different elementary student, there is a chance that the second camera is not focused upon the individual student who is talking. It often takes up to 10 seconds to move the camera to the proper position so that the director of the broadcast can switch the system to the student who is talking.

Component Two

Thematic analysis (Bogdan & Biklen, 1982) was used to analyze the data collected from questionnaires given to the subjects after they completed three classroom observations. Common themes emerged from each question, and

the researcher used the most commonly occurring statements from the responses as the basis for discussion. Other comments made by the direct and television-mediated observers which were considered unique were also highlighted. This analysis was used to answer the last four qualitative research questions. Preservice teachers in the direct classroom observation groups were asked to respond to two questions:

1. What are the advantages of direct classroom observation?
2. What are the disadvantages of direct classroom observation?

Subjects in the television-mediated observation groups were asked two questions:

1. What are the advantages of television-mediated classroom observation?
2. What are the disadvantages of television-mediated classroom observation?

Research Question 3: What are the advantages of direct classroom observation?

When asked to respond to the advantages of direct classroom observation, many of the comments centered around the interactions between elementary teachers and students. One preservice teacher noted:

I was exposed to how teachers interact with students. It was interesting to see how different learning strategies are used based on the ideas the students come up with and conflicts that arise. It has given me some ideas for my own classroom.

Another student stated, "Looking at the teacher interact and react to her students in unexpected situations gave me the opportunity to consider how I would handle the situation if I were in her shoes."

One preservice teacher noted that direct classroom observation provided ideas about how to arrange classrooms by writing:

Being in the classroom has allowed me to see how the room is set up and how teachers design their room to encourage student interaction. The learning activity centers gave me ideas for how I can engage my students when I become a teacher.

Gaining an understanding of the changing nature of teaching was an important advantage of direct observation according to this preservice teacher:

I really got a feeling how loud or quiet a classroom is, depending on the interactions between the teachers and students. You find that there are physical factors that effect [sic] your teaching environment. Your lesson may be affected by this also so you have to be adaptable to change as the lesson is going on.

Another student found it very beneficial to directly observe the classroom, stating:

It helped me to get into the mode of the classroom environment. I felt very involved in the lesson that was occurring. By focusing on teacher and student interactions, I became aware that over 150 interactions can occur in about 20 minutes. I would have never guessed that there were that many interactions in such a short period of time!

Some students wanted to observe more classrooms during their preparation for teaching. "I feel that the more schools and classrooms we visit, we will be prepared better when we begin actually teaching. Watching the interactions, I was able to see how a teacher discusses the day's events."

Other subjects noted that direct observation is beneficial because the students are "right in front of you" and that you can "see the whole classroom." Another student stated that "watching the teacher put theory into practice was very exciting. It is hard to learn this kind of information

while just reading about it. You really have to spend time in the classroom to see how everything blends together.”

Research Question 4: What are the disadvantages of direct classroom observation?

Preservice teachers were also asked to discuss the disadvantages of direct classroom observation. Many subjects commented about not being very accurate in their tallying because they could not hear the teacher and student interactions very well due to noise and distractions. Other preservice teachers were concerned that they may have distracted the young students they were observing by being present in the room. Several statements were also made with regard to interactions with elementary students. Many preservice teachers said they wanted to be able to assist with the instruction, instead of observing from a predetermined location.

With regard to tallying the observation, one preservice teacher wrote:

Sometimes it was very difficult to see and hear the students when they were discussing in their groups. I feel that I missed a lot of tally marks because of this. I also feel that I might have placed extra marks down, because I assumed that a student was talking even if I didn't see him/her.

Other students made comments about the noise factor associated with cooperative learning and the use of tally sheets during direct observation.

It was hard to listen for the teacher/student interaction when the teacher was on the other side of the room because there was too much noise from the other groups. Sometimes, even though the teacher was right in front of me, I could not clearly hear what was being said, so the tallying was nearly impossible.

Some students in the direct observation groups seemed to be distracted by the noise in the classroom as well as the tallying exercise.

I think that when you directly observe, you can miss lots of things because of outside noise and distractions. I thought it was extremely hard to keep up with the tallying rather than the content of the lesson. The tallying was harder than I expected. I was distracted by the tallying as much as I was all the noise from different groups.

Another preservice teacher related to the position of the teacher in the room by advising:

The teacher's back is to us most of the time. I could not hear the students, or I should say that could not hear the ones I was suppose to hear. Maybe you could ask the teacher to turn towards us more often when she speaks.

Still another common concern dealt with where the direct observers were sitting and how many observers were in the room at one time. One preservice teacher commented:

Sometimes it was difficult to hear and see who, if anyone, is speaking in the groups depending on your location in the room in relation to where the teacher is. It would be nice if we could move around, but this would cause chaos. Maybe if there were fewer of us here, that would work.

In contrast to statements about not being able to see or hear very well, preservice teachers were concerned about their presence and the disruption they felt they were causing the students and in some cases, the teacher. "I think the biggest drawback to these direct observations is the fact the insiders [sic] are coming into the room and this may distract a student. The teacher may also perform in such a way that is different that his/her normal routine."

Other issues of distraction during direct classroom observation were also noted on the questionnaire. One preservice teacher wrote:

Some students seem to be distracted because we were all sitting around and staring at them. A few seem intimidated and may have been

performing out of character. Sometimes children can get disrupted or off task when there are so many people in the classroom. In addition, the teacher may not be teaching as he/she normally does, perhaps glamorizing things. That will take away from how the children are really feeling or reacting.

Other preservice teachers wanted to be more directly involved in the lesson they were observing. One subject wrote:

You can't jump in and help. Just observing doesn't allow you to interact with the students. I wanted to get up and help the students and I couldn't. This has made me aware of just how difficult it is to guide students through cooperative activities. The teacher can only be in one place, yet several students may need you at the same time. We need to be able to assist with the instruction.

The review of all of the comments made by preservice teachers who participated in this study found only two students who reflected upon this experience unfavorably. "I think it is completely absurd to take students out of four hours of very important class time to sit around and just observe. We should get some of our tuition money back." Another student commented "I really never understood why we were here. I feel that I have been cheated. This is leaving me, as well as others less prepared as a beginning teacher."

Other noteworthy comments by the preservice observers in relation to the disadvantages of direct observation included statements concerning how observation is very time consuming, and that observation is difficult because of the lack of physical space for observers among of all of the displays, computers, and activity centers. A few subjects mentioned problems with parking, having to walk to the observation site, and the fact that they felt classroom observation was boring and tedious.

Research Question 5: What are the advantages of television-mediated classroom observation?

Preservice teachers were also asked their opinion about the advantages of television-mediated observation. The comments associated with the television technology generally dealt with the focusing ability of the cameras and the audio quality of the microphones. Preservice teachers also felt that students would not be as distracted by the cameras as they would be by direct observers. In addition, preservice teachers did not feel distracted when they viewed the classroom observations with the television-mediated system.

According to the subjects, the most obvious advantage of television-mediated observation was that the cameras kept them focused. More than half of the subjects noted that they could see and hear the observation very clearly. "Some advantages are that cameras can get close up to certain groups and students, so you can hear conversations and see better. You have a chance to concentrate only on what the camera shows you." Another student stated:

Watching through TV allows you to see from different areas of the room instead of just the one place that you might be sitting in. Also, watching over TV makes you less of a distraction to the teachers and students. The chance of the viewer being disrupted is much less. You are also able to hear all the students due to the microphones.

Another advantage of the television-mediated observations was stated by this preservice teacher:

You are able to focus on one thing, whereas if you were in the classroom, you are able to see everything else that is going on in the room. This would take your mind off the actual things you are suppose to be looking for. You are not distracted from the observation by students who need help or other action going on else where in the classroom. Also, the camera focuses on the interaction area and this helped focus my attention on the interactions.

Many other students wrote about the fact that many students could observe at the same time and talk about the lesson as it was taking place.

"The advantages of TV observation is that as an observer, I don't have to go to the classroom. Another advantage is that you can all watch the same thing at the same time and discuss and compare with others that are observing also."

Preservice teachers also appreciated the fact that they did not have to walk to the classroom. One subject noted:

More people can observe and this also takes less time because we do not have to go to the classroom. It is very cold to be walking to the lab school this time of year. It is easier because trying to fit a whole university class into a crowded classroom is impossible. Also, we can better discuss and evaluate the lesson after the observation is over, because we watched the same lesson as everybody else.

Most of the subjects felt that the cameras would not be as disruptive as having observers in the classroom. One preservice teacher commented, "The lab school students seemed like they were not even distracted at all by the cameras. I was surprised that they were not looking into the camera during the lesson. It seems that they are use [sic] to them." Another subject added, "When I have observed students in the past in the classroom, they are always looking at me and it seemed that their behavior may have changed. But when they are on television, it seems like they are not as distracted."

Several of the preservice teachers said that they were not as distracted during the classroom observation when they were watching the television-mediated observations. "There are so many distractions in the classrooms I have visited. On TV, I was not distracted as much because I was so focused on the interactions and because I was only able to see one group at a time."

Research Question 6: What are the disadvantages of television-mediated classroom observation?

When preservice teachers were asked about the disadvantages of television-mediated observation, two distinct themes emerged. These themes included issues concerning technology and classroom disruption. According to preservice teachers, the biggest disadvantage to television-mediated observation is that it is hard to see who is talking. Because verbal interaction happens at such a rapid pace, it is impossible for the director of the broadcast to switch to the camera that is showing the student who is talking. On many occasions, both cameras cannot be in the position to capture every student within the group anyway, so the director relies on only one camera to show the group that the teacher is working with. In reference to the disadvantages of television-mediated observation, a preservice teacher commented:

It is often hard to know who is talking during cooperative groups. Often the camera is not directly on the students that you can hear. One of the major disadvantages is that it is difficult to establish who is talking when and who they are talking to.

Many of the preservice teachers in the television-mediated observation groups wanted to see who was talking so they could be more accurate in their tallying. One subject believed:

The tallying of the voices is easier when you can actually see the student that is talking. Sometimes the camera would show two or three students, but another student in the group would talk. This made it harder to concentrate on tallying.

Another student commented about not being able to distinguish between voices by writing:

I found myself wanting to see each student as they talked, but it is impossible for the cameras to show each student as they talked because the interactions were occurring so fast. Sometimes two students spoke at once and I could not distinguish which one spoke. I found it much easier to tally when the teacher spoke because the voice was more distinguishable.

Some comments made by television-mediated observers were related to the limitations of the equipment. One preservice noted:

The cameras could not show all of the faces in one group. Even when the camera was zoomed out all the way, it could not capture all of the students. This made it hard to get a understanding of exactly who was talking. Also, some students spoke at the same time, so if the conversation was going on between two students, we may only be able to see one student at a time because some students had their back to the camera.

Other comments by preservice teachers dealt with issues of classroom disruption. One observer stated, "The cameras and camera operators may have caused students to behave differently. Even though it was hard to tell whether they were actually distracted or not, I assume they are because people in general behave in a different way when there are cameras in the room." Another preservice teacher added, "The classroom student may be distracted by the cameras and they may not volunteer answers as much as when the equipment is not in the room. Students may sometimes put on a show because they know they are on camera."

Preservice teachers were curious about what the elementary students were told about the presence of cameras in the classroom. Concerning issues of disruption, one subject stated:

I am wondering how much the students know about why the cameras are focusing on them. The students would need to be debriefed about the camera and microphones so they would not be distracted by them. The students may feel nervous knowing that they are on camera, so

things may not occur as naturally as in a normal day. But if everything was explained to them, they would not be as distracted.

Preservice teachers made some interesting comments concerning the advantages and disadvantages of direct and television-mediated classroom observations. In general, preservice teachers think that classroom observation is valuable, whether it be a direct classroom observation, or a television-mediated classroom observation.

Preservice teachers pointed out several advantages of direct classroom observation. Most subjects felt that the only way to gain an understanding of the classroom is to observe a variety of elementary teachers, students, and classroom settings. This gives teacher education majors ideas for their future classrooms and exposes them to classroom management techniques and instructional strategies. The majority of preservice teachers think that direct classroom observation gives them a better understanding of the nature of teaching and that they are now more aware of the kind of interactions that take place between the teacher and the students.

Being in the classroom also gives preservice teachers a "feel" for the classroom environment because they can see the whole classroom and how elementary students react to other students. According to teacher education majors, it is one thing to read about teaching in a book, and yet another to actually observe classrooms.

In terms of the disadvantages of direct observation, some preservice teachers had a difficult time using the tally sheets to report verbal interactions. This is especially true with cooperative learning because of the level of noise in the classroom generally rises as students begin to

communicate with each other. This made some preservice teachers feel inadequate when it came to identifying and reporting verbal interactions.

The position of the teacher in the classroom also hindered the tallying. In some cases the teacher was on the opposite side of the room, so tallying became impossible. However, if the teacher just happened to be working with a group that was positioned right in front of the direct observers, the preservice teachers felt that they were accurate in their tallying because they could see and hear with greater success.

One of the most often mentioned comments on the questionnaire dealt with the issue of disruption. Preservice teachers showed a genuine concern for the elementary students who were observed. In the direct observation groups, most of the subjects were concerned that they were disrupting the behavior of the students. In some cases, it was felt that the teacher may have been disrupted as well.

Some preservice teachers also made comments about not being able to interact with the elementary students. It was challenging for them to remain seated and continue with the tallying if they noticed a student that needed assistance. This is probably more common during cooperative learning activities because the teacher can only work with one group of students at a time.

When preservice teachers were asked to write about the advantages of television-mediated observations, many comments centered on the technical ability of the cameras and microphones. Because the cameras followed the teacher throughout each televised lesson, it was easier for the observers to stay focused on the teacher and student interactions. In addition, the

technical capabilities of the observation system allowed the microphones to be turned off and on, depending on the location of the teacher within a particular group. The wireless microphone worn by the teacher transmitted high quality audio, so the teacher was clearly heard at all times.

Preservice teachers also believed that there are advantages to watching the same lesson, at the same time, with their professor. This gives them the ability to discuss the lesson to a greater degree after the observation is over because they have all witnessed the same thing.

The television-mediated observers had varying opinions as to whether direct observers were more of a distraction or whether the equipment caused more disruption. However, when asked about the advantages of television-mediated observation, about three-quarters of the preservice teachers thought that the cameras were less distracting than direct observers would be.

It should be noted that the elementary students who were observed during this study have been observed many times before, either directly or by the television-mediated system. It is estimated that over 2000 observers a year visit the school in which this study took place. Also, over 50 television-mediated broadcasts are transmitted from the building each year. The students are accustomed to observers and cameras being present in the room, because most of them have been the focus of observations since first grade.

Some of the disadvantages of television-mediated observation as perceived by preservice teachers is that it is difficult to see who is talking during some of the conversations. As previously mentioned, conversations take place at such a rapid pace in elementary classrooms that it is almost impossible for the camera to capture each student who speaks. Also,

depending on the location of the cooperative group and the movement of the teacher, there may be a delay in positioning the camera so that students in each group can be seen. There are also limitations to the width of the camera lens, so if students are spread out within their group, the camera may not be able to show everyone.

Some additional disadvantages of television-mediated observation are that several students may speak at one time. The microphones are strategically placed in the middle of the cooperative groups, and the quality of the microphones allows all voices to be transmitted. If two students happen to speak at once, it is difficult to distinguish who is talking and exactly when to tally the interaction.

Even though most television-mediated observers believed that the cameras were not disruptive to the observed students, some preservice teachers felt that the presence of the cameras may have caused some of the elementary students to behave in a different way. However, it was also noted that if the young students were given an explanation about the equipment, they would not be as distracted during the classroom lessons.

The themes that emerged from preservice teachers in the direct observation groups included: (a) comments concerning teacher and student interactions, (b) that direct observation gave them ideas for their future classrooms and a "feel" for the classroom environment, and (c) that being able to tally accurately in a noisy environment was very difficult and depended on the location of the teacher and students in the classroom, as well as the location of the classroom observers. Other common concerns dealt

with issues of classroom disruption and that direct observation did not allow interaction with the elementary students.

The themes that emerged from comments made by the preservice teachers in the television-mediated observation groups included: (a) the focusing ability of the cameras, (b) the advantages to observing classroom lessons while the professor is present, and (c) the limitations of the equipment. Other concerns dealt with issues of classroom disruption and not being able to see the elementary student who is talking at all times.

In general, the preservice teachers in this study took their role as observers very seriously. These observers arrived at the classroom observations on time, appeared to have a good attitude about the experience, and they seemed to enjoy the classroom observations. Their observational abilities surpassed any prior expectations by the researcher.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The objective of this study was two-fold. Component one determined whether there is a difference between the ability of preservice teachers to identify and report verbal interaction in elementary classrooms with more accuracy when they directly observed classroom lessons as compared to observing lessons via a television-mediated observation system. A verbal flow tally sheet was used to collect the quantitative data which were analyzed by a two-way ANOVA. The second component of this study involved documenting the advantages and disadvantages of direct and television-mediated observation as perceived by preservice teachers. Questionnaires were used to collect the data which were analyzed using a thematic analysis procedure.

Conclusions

Classroom observation can take place in a direct situation where the observer is physically present or through various media such as pictures, videotapes, printed materials, audio recordings, live television productions, or any combination of these. Each medium has its advantages and disadvantages and will affect the observation process in several ways.

Perhaps more attention should be given to how teacher education institutions arrange and administer classroom observation experiences at the preservice level. Classroom observation, whether direct or television-mediated gives the observer too many things to see at one time. Therefore, the focus of the observation should be predetermined. This allows the

observer to screen out some information while attention is given to exactly what the observer is there to see. Thus, if an observer wants to learn about the behavior of one specific student, they would ignore the movement and behavior of the teacher and other students.

In addition, the results of this study indicate that there are several factors to consider during classroom observation by preservice teachers. Whether observers are physically present in the classroom or watching a live broadcast with a television-mediated observation system, noise factors, seating patterns, class size, instructional strategies, and the number of verbal interactions that occur in the classroom influence the process of looking at classroom behaviors.

The outcomes of this study also suggest that preservice teachers are able to identify and report teacher interactions with more accuracy than student interactions during direct observation. The sheer physical complexity of the classroom environment may prevent the preservice teacher from seeing and hearing student interactions. One way to break down this complexity is to monitor the teacher and the behavior of only a few students at a time. This would be especially important at the beginning of preservice preparation. Then, as preservice teachers become informed observers, additional behaviors could be included in the classroom observation.

In addition to breaking down the complexity of the classroom, perhaps more attention should be given to the types, quality, and quantity of new technologies for their use in observational training and research. Giving future teachers a variety of opportunities to observe educational settings might increase both the depth and breadth of understanding the underlying

concepts and principles associated with classroom observation. Direct observation could be used in combination with new technologies, and this expansion could greatly enhance the effectiveness of teacher education programs and improve the quality of preservice preparation programs.

From a logistical point of view, direct and television-mediated observations are very difficult to arrange because the university schedule generally does not coincide with the schedule in most schools. In addition, various forms of technology, displays and student activity centers are now present in most classrooms. Since many classrooms were built to accommodate 25-30 pupils, lack of physical space must be considered.

One of the possible advantages of television-mediated observation systems is that there are fewer limitations and more flexibility with regard to the size of the group that may be accommodated except for the size of the university receive classroom. In this study, up to 50 students can view an observation simultaneously and interact with the teacher at the end of the lesson.

Preservice teachers had interesting comments to make concerning direct and television-mediated observation. In general, most preservice teachers in this study felt that classroom observation was valuable. The themes that emerged from preservice teachers in the direct observation groups included: (a) comments concerning teacher and student interactions, (b) that direct observation gave them ideas for their future classrooms and a "feel" for the classroom environment, and (c) that being able to tally accurately in a noisy environment was very difficult and depended on the location of the teacher and students in the classroom, as well as the location

of the classroom observers. Other common concerns dealt with issues of classroom disruption, and that direct observation did not allow interaction with the elementary students.

The themes that emerged from comments made by the preservice teachers in the television-mediated observation groups included: (a) the focusing ability of the cameras, (b) the advantages to observing classroom lessons while the professor is present; and, (c) the limitations of the equipment. Other concerns dealt with issues of classroom disruption and not being able to see the elementary student who is talking at all times.

There are several other conclusions and observations supported by this study. The use of television-mediated classroom observations saves preservice teachers time and transportation costs. Since transmissions are sent to a central location on campus, students are not required to walk or take transportation to the observation site. On the other hand, some television-mediated observers wished they could have visited the classrooms so they could see the entire classroom and get a "feel" of the environment. There seemed to be an opinion that they might miss something if they departed from the traditional method of observation.

The question of intrusiveness is important to consider when arranging classroom observations. Some kind of behavioral measure of possible classroom disruption might be the amount of time it takes for the observed student to ignore the observer or the equipment. The presence of direct observers or cameras and additional technical personnel usually changes behaviors in the beginning. Most students are very curious about people or equipment and are distracted the first few times they are exposed to a new

environment. However, as time passes, students generally are unconcerned about what is going on around them, and they get back to the task on hand.

Classrooms are complex environments and the communication that takes place happens at a rapid pace. After determining which classroom behaviors will be the focus of observations, choosing the most appropriate system for classroom observation may be the next fundamental step in improving the quality of observational experiences for the preservice teacher.

In this study, the importance of classroom observation at the preservice level has been highlighted. It has been suggested that professors working with preservice programs consider the use of direct observation methodology and other observation methods that allow inquiry into the educational process. Direct observation may be more effective when teachers are using direct instruction, and television-mediated observation may be preferred for those wishing to observe cooperative learning. In the absence of outcome data about the directions in which teacher education programs administer observational experiences to preservice teachers, there cannot be wholesale changes. Instead, pilot programs should be established and evaluated for the possible benefits to the preservice teacher. This will lay the foundation toward a consensus on needed directions for improving teacher education.

In addition to the data collected in this study, there are some very important points to consider if teacher education institutions decide to implement television-mediated observation systems into their preservice program. The system is expensive because of the technical components necessary to successfully broadcast high quality transmissions and because of the maintenance costs. Several technical personnel are needed, and they

must be highly trained. A facilitator is required to provide leadership and work with faculty and the observed teachers to arrange schedules and direct the live broadcasts, as well as work with professors and teachers to use the technology in an efficient and effective manner. Policies and procedures must be developed that reflect the teaching philosophies of both the receive professors and the demonstration teacher.

For those who wish to televise classroom lessons, there are some basic conditions that need to be met and are essential to quality picture and sound. The room should be well lit, and shades should be available to cover the windows. A picture becomes very distorted when the camera is pointed toward a bright light source such as a window. In terms of the sound, microphones need to be strategically placed so that the voices of young children can be clearly heard. Students need to be given instruction about covering the microphone with materials or playing with the microphone with an object such as a pen or pencil.

Recommendations for Further Study

With regard to the review of literature and the data collected in this study, the following recommendations are made for further research:

1. Replicating this study using another instructional strategy such as direct teaching to find out if preservice teachers could identify and report verbal interactions with more or less accuracy as compared to cooperative learning.
2. Replicating this study using smaller groups of students in the observed classroom to determine if preservice teachers can identify and report interactions with greater accuracy.

3. Replicating this study to include feedback to preservice teachers concerning their accuracy in tallying and to provide ideas for improvement after each classroom observation. This feedback could yield opportunities for preservice teachers to improve their observational skills.

4. Replicating this study using three tally types rather than two, to determine if preservice teachers tally with different levels of accuracy when asked to identify and report more than two behaviors.

5. Developing an observation seminar course where preservice teachers are introduced to the nature and problems of classroom observation. This seminar could make use of direct observation in combination with other observation modes.

6. Identifying the specific components of basic observation skills that are necessary to assist preservice teachers in developing competent observation skills that will improve their ability to observe classroom settings.

7. Developing classroom observation instruments that are appropriate for use by preservice teachers. An extensive review of the literature revealed only a few instruments developed for preservice teachers during classroom observations.

8. Investigating the effects of direct classroom observation with subsequent debriefing sessions between the observer and the observed teacher.

9. Investigating teacher education majors who are presently teaching to determine whether there is a difference in teaching performance between the

teachers who participated in different modes of observation at the pre-professional level.

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APPENDIX A
VERBAL INTERACTION
TALLY SHEET

Teacher Interaction	Student Interaction

APPENDIX B
QUESTIONNAIRE FOR
DIRECT OBSERVATION GROUPS

Questionnaire

Name _____

Major _____

Classification: (Circle one) Junior Senior

Are you a transfer student? (Circle one) Yes No

Have you completed the Field Experience course (20:018)? (Circle one) Yes No

Have you ever seen a live televised lesson from a Price Lab classroom before?

(Circle one) Yes No

Have you observed cooperative learning before at UNI? (Circle one) Yes No

Have you ever used tally sheets during classroom observations?

(Circle one) Yes No

Questionnaire

You now have 15 minutes to complete the following questions.

- 1) What are the advantages of direct classroom observation?

2) What are the disadvantages of direct classroom observation?

APPENDIX C
QUESTIONNAIRE FOR
TELEVISION-MEDIATED GROUPS

Questionnaire

Name _____

Major _____

Classification: (Circle one) Junior Senior

Are you a transfer student? (Circle one) Yes No

Have you completed the Field Experience course (20:018)? (Circle one) Yes No

Have you ever seen a live televised lesson from a Price Lab classroom before?
(Circle one) Yes No

Have you observed cooperative learning before at UNI? (Circle one) Yes No

Have you ever used tally sheets during classroom observations?

(Circle one) Yes No

Questionnaire

You now have 15 minutes to complete the following questions. Think back to the experiences you have had when you have visited classrooms for observation purposes and compare those experiences to television-mediated observations.

1) What are the advantages of television-mediated classroom observation as compared to direct classroom observation?

2) What are the disadvantages of using television-mediated classroom observation as compared to direct classroom observation?