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PREVIEW

DESCRIPTION AND EFFECTS OF PRESERVICE TEACHER  
SEQUENTIAL PATTERNS IN THE CONTEXT OF STUDENT  
APPROPRIATE AND INAPPROPRIATE PRACTICE.

by

Monica A. Fabian Lounsbery

A DISSERTATION

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The Graduate College at the University of Nebraska  
In Partial Fulfillment of Requirements  
For the Degree of Doctor of Philosophy

Major: Interdepartmental Area of  
Community and Human Resources

Under the Supervision of Professor Steven A. Egglund

Lincoln, NE

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DISSERTATION TITLE

DESCRIPTION AND EFFECTS OF PRESERVICE TEACHER SEQUENTIAL PATTERNS  
IN THE CONTEXT OF STUDENT APPROPRIATE AND INAPPROPRIATE PRACTICE

BY

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DESCRIPTION AND EFFECTS OF PRESERVICE TEACHER  
SEQUENTIAL PATTERNS IN THE CONTEXT OF  
STUDENT APPROPRIATE AND INAPPROPRIATE PRACTICE

Monica A. Fabian Lounsbery, Ph.D.  
University of Nebraska 1997

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The purpose of this study was two-fold. The first purpose was to gain a sequential description of preservice teacher (N=4) instructional interactions with students in situational context. Second, the study compared the effects of traditional observational feedback to sequential feedback on increasing the number and the conditional probability with which students appropriately practiced in the context of instructional interactions. The sequential pattern data results indicated that explicit instruction (8) and refinement (R) occurred around student appropriate practice more often than general instruction (7). The results comparing traditional observational feedback data with sequential feedback indicated that, with the onset of the sequential feedback protocol, all participants demonstrated a consistent increase in the conditional probability with which students appropriately practiced in the context of instructional interactions. The significance of this study to the teacher effectiveness literature and implications for sequentially observing and analyzing teacher and student events in situational context are discussed.

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## CHAPTER ONE

### INTRODUCTION

#### Background

The challenge of how to prepare effective physical education teachers has long been a subject of debate. Three questions typically drive the experiences provided in teacher training programs: 1) What characterizes effective teaching? 2) How can teachers be educated to reflect those characteristics? and 3) How can teacher educators ensure that teachers are able to demonstrate those characteristics in their first professional position without the aid of direct supervision?

The physical education literature has described effective teachers in terms of time (e.g., allocated time, student engaged and academic learning time or ALT-PE; Dodds, Rife, & Metzler, 1982; Metzler, 1980 & 1991; Placek & Randall, 1986; Seidentop, Tousignant, & Parker, 1982), and through comparing student correct learning task trials to total learning task trials (e.g., C/T ratios; Buck, Harrison, & Bryce, 1991; Grant, Ballard, & Glynn, 1990; Silverman, 1985). However, these methods take time-based variables and task-trial measures out of situational context. For example, time-based data for hypothetical teacher 'A' shows that he or she spent 20% of the class time instructing. What is only known from this measure is the cumulative time the teacher spent instructing out of

situational context. Specifically, it is not known when the instruction occurred in relationship to the appropriate and inappropriate practices of students receiving that instruction (Sharpe, in press).

Morris (1992) argued that the form and function of an individual's (in this case the student's) response cannot be established independent of other factors existing in the environment (e.g., classroom) and additionally, the same response may have different functions concurrently, or successively, within individuals or across them. What is therefore necessary to a more complete understanding of teacher effectiveness is a sequential analysis of what the teacher does (e.g., frequency and duration accounts) in the context of ongoing student practices (e.g., frequency and duration). In this manner, one can analyze the specific teacher behaviors which mediate particular appropriate and inappropriate practices of students--all in situational context.

#### The Problem

Metzler (1991) emphasized the need for studying the "teaching act" or the sequential practices of teachers and students in gymnasium contexts, as opposed to description and analysis of isolated classroom events. He further argued the need to expand the empirical knowledge base of actual teaching practices in context. The problem lies in the nature of how empirical studies have collected quantified data on classroom and gymnasium processes. These

studies typically observed specific time-based and/or frequency-based variables, extracted these variables out of situational context, and aggregated them over time. Collecting data in this manner eliminates the ability to analyze the temporal relationship among variables as they naturally occur in time.

#### Statement of the Purpose

There is limited literature devoted to the "teaching act" as it occurs sequentially, and its relation to situational and environmental events in the context of student appropriate and inappropriate practices. The first purpose of this study was to describe and document preservice teacher behavior specific to gymnasium situations in the context of student appropriate and inappropriate practices. It seemed most appropriate to study preservice teacher teaching situations given their relative inexperience in the gym coupled with the greater propensity for student inappropriate practice. The second purpose of this study was to document a behavioral field systems (cf., Lounsbery & Sharpe, 1996; Sharpe, in press, 1996; Sharpe & Hawkins, 1992; Sharpe, Hawkins, & Ray, 1995;) sequential approach to altering preservice teacher behaviors which were temporally related to student inappropriate practices.

#### Significance

This study attempted to provide important insight into the sequential behavior patterns of preservice teachers in the context of student appropriate and inappropriate

practice. First, the identification of effective (e.g., sequences of teacher behavior that occur around student appropriate practice and have conditional probability  $\geq .20$ ) and non-effective (e.g., sequences of teacher behavior that occur around student inappropriate practice at  $\geq .20$  conditional probability) instructional patterns of preservice teachers are documented. Next, the relative effectiveness of one practicum-based sequential feedback protocol is described and documented regarding its relative effectiveness in increasing teacher behaviors which facilitate appropriate student practices.

#### Limiting Factors

##### Scope

This study was designed to provide information regarding the effects of physical education preservice teacher behavior patterns on student appropriate and inappropriate practice in gymnasium settings. In addition, the study provided comparative data on the effects of traditional observational feedback on isolated events only (e.g., ALT-PE, rates of feedback, % duration of instruction, etc.) in contrast to sequential feedback on the teacher instructional patterns conducive to appropriate and inappropriate student practices.

##### Assumptions

The assumptions of this study are as follows:

1. Sequential teaching patterns influence student practice.



2. There are sequential patterns of teaching that occasion student appropriate practice.
3. Providing sequential feedback instruction will produce positive changes in preservice teacher sequential teaching patterns and those pattern changes will produce positive changes in student appropriate practices.

### Limitations

Systematic observation is limited by the following:

- 1) Data are collected on only observable, overt behaviors.
- 2) Data are descriptive, not prescriptive in nature.
- 3) Generalization to characteristically different participants and settings prior to exhaustive replication is limited.

### Operational Definitions

- 1) Sequential teaching patterns: The time-based pattern of various teacher behaviors.
- 2) Student appropriate practice: Any subject-matter practices which are performed in accordance with the objectives as described by the teacher (e.g., the teacher directs a student to tuck legs in a forward roll and the student responds by tucking legs while executing the forward roll).

3) Student inappropriate practice: Any subject-matter practices which are not performed in accordance with the objectives of the teacher for that day (e.g., the teacher directs a student to execute a volleyball forearm pass to the target and the student responds by executing the volleyball forearm pass but fails to direct it to the target).

4) Effective sequential teaching pattern: Conditional probability ( $\geq .20$ ) teaching pattern emitted in the context student appropriate practice.

5) Non-effective sequential teaching pattern: Conditional probability ( $\geq .20$ ) teaching pattern emitted in the context of student inappropriate practice.

## CHAPTER 2

### REVIEW OF THE LITERATURE

This study investigated the distinct and variable transactions of observable sequential teacher behavior patterns that, when emitted, have an influence on student appropriate and inappropriate practices. While attempting to understand the relationship between teacher behavior and student achievement is not unique to the teacher effectiveness literature, the conceptualization and analysis of teacher sequential behavior patterns in the context of student practice has been relatively unexplored. It is posited here that the description and analysis of what teachers do sequentially and its relative impact on student practice performance in context are fundamental to the distinction between effective and not-so-effective teaching.

The purpose of this chapter is to provide a literary foundation in support of such sequential study. While introductory study has been done within the teacher effectiveness literature in physical education, (e.g., Hawkins and Sharpe, 1992) the conceptual basis of this research and the methodologies applied are grounded in interbehavioral field systems theory, a theory found largely in the behavioral psychology literature. Therefore, this review of literature includes an introduction to interbehavioral systems theory as related to its appeal in studying applied educational concerns.

The chapter begins by describing the evolution of research on teacher effectiveness. Three phases, highlighting in particular the scientific methodology and implications of the general findings, are described. Next, studies which examined mediating student process variables as direct and proxy measures for student achievement are reviewed. The first of these, the Beginning Teacher Evaluation Study (BTES), is described at some length because it significantly contributed to teacher effectiveness research in physical education. The focus of the chapter then shifts exclusively to the time and frequency measures of student learning and achievement in physical education teacher effectiveness, especially ALT-P.E. After this, the teacher effectiveness section summarizes the current knowledge base as related to student achievement in physical education. Emphasis is placed upon discussing the ecological validity of common variables and the statistical means by which they are measured. The following field systems theory section makes a case for adopting an interbehavioral systems scientific approach as one means to further the current knowledge base in teacher effectiveness. An introduction to systems theory is provided by comparing it to the more traditional mechanical or statistical correlation approach. Emphasis is placed upon data collection techniques and implications for research in educational settings. The chapter concludes with a summary of salient points which provide a rationale for the studies

described in Chapter 3.

### Measures of Effectiveness

The methodologies used to study effective teaching have slowly evolved over the past 70 years. This evolution can be categorized into three distinct historical phases: a) teacher characteristics, b) instructional methods, and c) process-product studies.

#### Teacher Characteristics

The earliest research on teacher effectiveness attempted to describe teacher characteristics which served to distinguish effectiveness from non-effectiveness (Brophy & Good, 1986; Medley, 1979). During this phase of research it is important to note that data came from perceptions of effectiveness and not classroom observations.

As Medley (1979) describes, these studies analyzed teacher effectiveness as the result of certain teacher characteristics or personality traits. Some studies commonly utilized student opinion as the primary data source for establishing effective teaching characteristics. Other studies relied on the judgment of those who were thought to be experts (e.g., school administrators) as valid data for the characterization of effective teaching.

This phase of research offered little to the knowledge of teacher effectiveness. This was primarily because data were based on biased perceptions and the false assumption that presage variables (e.g., age, philosophical beliefs, personality, undergraduate G.P.A., etc.) were causally

linked to effective teaching. Hence, consistent correlations could not be made between rater perceptions, presage variables, and teachers who were thought to be effective in the classroom (Medley, 1979).

### Instructional Method

This historical period of research can be best characterized by studies attempting to establish a universal 'best' method of teaching (Brophy & Good, 1986). In studies of this kind, two or more classes were taught by different methods and mean gains in student achievement were compared. Over time, these studies showed that differences between methods were so minor that there was a general failure to produce any meaningful differences in student achievement (Brophy & Good, 1986). These studies generally failed to produce results which could be applied to other instructional settings and, in addition, data were often contradictory. Medley (1979) stated that one reason may lie within the typically used unit of analysis. He contended that since studies of this nature focused on student achievement as opposed to teacher behavior as the primary unit of analysis, no valid generalizations to teachers outside of the study could be made and thereby studies often produced contradictory results.

The first two phases of educational research, therefore, contributed little to the current body of knowledge on teacher effectiveness characteristics. From these first periods, however, the profession did learn that

studies must be designed well so that they are ecologically valid, sensitive to the independent variable, and the dependent variables are valid measures of the phenomenon of interest.

While the research questions related to teacher effectiveness have remained the same (i.e., what constitutes effective teaching), scientific methodologies quickly evolved to a third stage. Characterized by the process-product research paradigm, the third stage gave rise to a new approach for studying teacher effectiveness--the systematic observation of daily classroom processes.

#### Process-Product

Process-product research is characterized by studies which systematically observe classroom processes (i.e., what teachers say and do) and correlate those processes with student achievement or student products. With the onset of systematic observation as a conceptual foundation for collecting data, researchers began to develop instruments designed to capture specific events occurring within the instructional environment. Initially, many instruments were developed with the intent to provide preservice teachers with quantified data-based feedback during student teaching, while few were used for research (Simon & Boyer, 1967, 1970a, 1970b).

In a literature review in the second edition of the Handbook of Research on Teaching, Rosenshine and Furst (1973) noted that some consistent research findings with

regard to teacher effectiveness were beginning to emerge as a result of using systematic observation instruments. They identified 10 generic variables which discriminated effective from non-effective teaching: clarity, variability, enthusiasm, task-oriented, student opportunity to learn criterion material, indirectness, criticism, structuring, questioning, and probing. In addition, Rosenshine and Furst made a lasting impact on the methodological approach to teacher effectiveness research. They prescribed the "descriptive-correlational-experimental loop." This loop proposed that the instructional environment to be studied should first be the subject of a detailed ethnography. From this ethnographical account, researchers could develop observational instruments consisting of multiple categories to reflect phenomena of interest in the instructional environment. After the instrument was developed, correlational studies could be conducted to tie together important descriptive variables. Finally experimental studies were recommended to test correlational relationships for causal effects. Rosenshine and Furst also made the following important methodological suggestions which further helped to shape contemporary teacher effectiveness research:

- a) Attend to the cognitive (rather than the affective) aspects of teaching, since these are [more] likely to [effect] learning;