1972

A Comparison of perceived and actual verbal interaction in elementary school physical education classes

Diane Gail Kiemele
The University of Montana

A COMPARISON OF PERCEIVED AND ACTUAL VERBAL INTERACTION IN ELEMENTARY SCHOOL PHYSICAL EDUCATION CLASSES

By

Diane Kiemele

B.S., Northern Montana College, 1971

Presented in partial fulfillment of the requirements for the degree of

Master of Science

UNIVERSITY OF MONTANA

1972

Approved by:

Gary Nygaard
Chairman, Board of Examiners

John M. Stewart
Dean, Graduate School

Aug 24, 1972
Date

8-21-72

ACKNOWLEDGEMENTS

A special thank you -

To the Missoula schools, Ken Morrison, and all the teachers who participated, for without their help this study would have never been possible.

To Dr. Gertrude Moskowitz for her helpful suggestions and introduction to Judy Feldman who did the initial analysis of data.

To Joe Payne for a lot of patience and creation of the computer programs used in this study.

To Drs. Dayries, Sharkey, and Hunt for support and helpful suggestions in the writing of this study.

To Dr. Gary Nygaard for allowing me the opportunity to share his knowledge.

To my brother Ken who listened to me verbalize, and to my Mother and Father because I love you.

D.G.K.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION AND REVIEW OF LITERATURE

To say that teaching-learning processes are experiencing rapid change and growth is merely to say that teaching-learning processes are part of the twentieth century. These turbulent years in an evaluation-oriented world of education have brought behavior analysis to a rallying point. The research in the area of classroom behavior analysis has become more and more objective by focusing on a specific behavior, rather than attempting to be subjective and look at the total view of classroom behavior. In this endeavor, behavior analysis does not try to identify good and bad teachers or the superiority of one teaching method over another, but rather to describe the events in the classroom and analyze these events to lead to a better understanding of what happened. An example of specific behavior is verbal interaction. Verbal interaction between students and teachers has long been recognized as an essential part of the teaching-learning process. Pitman points out this importance very clearly:

> If man's transcending excellence is his unique ability to be communicated with and to communicate to others by the medium of words, then it is of prime importance to develop that conceptualization and vocabulary which is the foundation of communication by language. If that ability in turn gives to man the opportunity to acquire further concepts and vocabulary from others, and to be stimulated by further thoughts which have come to minds of others, then to an even greater extent the purpose of education must be to perfect that verbal communication system--to communicate, and secondly, in the corpus of experience of that knowledge and of those thoughts which are so to be communicated and reserved (54, p. 54).

The teacher undoubtedly puts some thought into what he verbalized to present the subject matter. Does this perceived verbal interaction on the part of the teacher coincide with what actually happened? Fortunately, in looking at actual interaction, a number of reliable and objective instruments have been developed to analyze this factor of classroom behavior. This study utilized one of these instruments in an attempt to find out if perceived and actual verbal interaction coincided in elementary school physical education classes.

Development of Verbal Behavior Analysis

The verbal segment of classroom instruction has long been looked at with concern by educators. This fact can be ascertained by reviewing the early books and periodicals containing articles which focus on teaching method (51). In addition, the importance of verbal classroom behavior was illustrated by educators' early attempts at evaluation of teaching efficiency. In a summary of 209 rating scales of teachers, Bar noted that voice traits appeared in ninety-six instances (10). The other frequently occurring trait categories depended heavily on or affected a teacher's verbal behavior, for example, skill in stimulating thought, pupil participation, skill in expression, skill presentation. These rating scales summarized by Bar were primarily subjective. As educators became further interested in what type or types of teaching behavior produced the most learning and wanted more objectivity in teacher evaluation, studies on classroom climate appeared. The earliest classroom climate studies of spontaneous pupil and teacher behavior were those conducted by Anderson and his colleagues, Helen and Joseph

Brewer (4, 5). Based on the observation of "dominative" and "integrative" contacts in the classroom, these researchers found that the number of contacts made by the teacher set the pattern of behavior for the classroom; and when either type of contact predominated, it led to further similar contacts. In another study conducted by Lippitt and White (42) dealing with dominative and integrative contacts and three types of leadership (authoritarian, democratic, and laissez-faire), it was found that authoritarian leadership embodied dominative contacts, democratic leadership embodied integrative contacts, and laissez-faire leadership embodied irregular and infrequent integrative contacts. According to Flanders, this study confirmed or extended the general conclusions of Anderson et al. and established the notion of social climate in the classroom (34). Other studies in the area of classroom climate followed and either upheld the previous studies or were based on the assumption that the teacher's behavior largely determined climate.

In 1949 an important link between the previous general climate studies and the present specific behavior studies took place as a result of Withall's study (62). Basing his study on the assumptions that the social-emotional climate is a group phenomenon; that the teacher's behavior is the single factor in creating climate in the classroom; and that the teacher's verbal behavior was a representative sample of her total behavior, Withall developed a continuum of seven verbal categories ranging from learner-supportive to teacher-supportive behavior. The resulting Climate Index which was similar to Anderson and Brewers' integrative and dominative concept was a first step in looking at specific behavior.

The notable point of these pre-1960 studies on classroom climate was that they indicated that the total teaching method was too broad to investigate. As Anderson brings to light, the available evidence did not demonstrate that either authoritarian or democratic leadership was consistently associated with productivity, and that the authoritarian-democratic construct was inadequate. More clearly, he states:

> Leadership is usually defined in terms of a hypothetical authoritarian-democratic dimension. Many labels have been applied to this dimension--perhaps it should be called a dichotomy, for such it has been in practice; dominative-integrative, employer-centered--teacher centered, therapist-centered--client-centered, supervisory-participatory, directive-non-directive, but the idea is basically the same (6).

Examining this point of view and the past research, classroom behavior researchers began directing their efforts toward specific behaviors. Conducting most of the initial research in the 1950's, the 1960's brought forth a variety of specific behavior analysis systems. In an early attempt, Bloom devised a method of classifying the intended behavior of students and determining the extent to which the behavior occurred with the Taxonomy of Educational Objectives (14). Cogan took a close look at the perceptions and judgments of pupils with his system of "perception analysis" (20). He found that there was strong evidence to show that in the individual pupil perceptions the teacher's conjunctive (communication, management, creativity) and inclusive (integrative, affiliative, and nuturant) behaviors are each positively related to the pupil's scores in required work and in self-initiated work. Another system by Medley and Mitzel, the Observation Schedule and Record (OScAR) based on Withall's Climate Index, is both a method of observing and a method of recording classroom behavior (47). Requiring extensive

training, OScAR consists of six five-minute observations during which behavior commissions or omissions are noted.

At the present time specific behavior instruments can be divided arbitrarily into five categories (51). These categories deal with analysis of the cognitive level of classroom verbal behavior; analysis of teacher and student strategies and behavior in constructed or defined situations; analysis of perceptions of students, teachers, and others; analysis of the extent to which students are at-task, that is, doing what they are supposed to be doing; and analysis of verbal behavior. It is the focus of this last category--verbal behavior analysis--with which this study is concerned. Therefore, a review of the instrument used in this study follows.

One of the early leaders in the development of verbal behavior analysis as well as specific behavior analysis was Bales (7, 9). Conducting research in primarily group dynamics and small group behavior, he had by 1949 identified forty-nine categories normally used in small groups and had even designed a machine to aid in recording small group interaction. Today his system is known as Interaction Process Analysis and has been refined to twelve categories. Interestingly enough, involved in some of Bales' early work was Flanders (8), whose work in Interaction Analysis became the best known of all specific classroom behavior researchers'. It is this system that was chosen as the research tool for this study. Basing his categories on earlier research of Bales and Withall, Flanders' Interaction Analysis was developed as a result of Ned Flanders' concern about what a teacher does while teaching and about how to create more effective classroom learning (33).

Starting with twelve interaction categories that have since been refined to the present ten, this system takes a look at verbal behavior only primarily because it is felt that it can be observed with a higher degree of reliability (33). Category descriptions are presented in Table I. The major divisions of the system are teacher talk, student talk, and silence or confusion. Teacher talk is then divided into seven particular categories. The second division, student talk, is subdivided into two categories, student talk-response and student talk-initiation. Silence and confusion, the last division, is incorporated to allow for time spent in behavior other than student talk or teacher talk. Using this system an observer records every three seconds the number of the category of interaction observed. These recordings at the end of the observation are then transferred to a ten-by-ten matrix by a method of double pairing. Initial analysis then can be made by the pattern or patterns of interaction noted on the matrix. Other forms of analysis also may take place, for example, direct or indirect teacher influence, teacher response ratio, teacher question ratio, pupil initiation ratio, instantaneous teacher response ratio, content cross ratio. Through this analysis it is possible to see specific aspects of the verbal interaction that occurred.

In specific verbal behavior analysis these two systems--Flanders' and Bales'--have probably been the leaders in looking at verbal interaction. Using these systems as bases other systems have been created.

Amidon and Hunter's Verbal Interaction Category System (VICS) was created in an attempt to overcome some of the limitations of Flanders' system as well as other systems (3). As contrasted to Flanders'

TABLE I

Categories for Interaction Analysis

TEACHER TALK	INDIRECT INFLUENCE	1. ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included. 2. PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual, nodding head, or saying "um hm?" or "go on" are included. 3. ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to category five. 4. ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5. LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions. 6. GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply. 7. CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
STUDENT TALK		8. STUDENT TALK - RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9. STUDENT TALK - INITIATION: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

Source: Amidon and Hough, Interaction Analysis, p. 125.

system, VICS has seventeen categories in terms of indirectness and directness, and looks at verbal behavior in terms of initiation and response. In addition, several categories were expanded. The teacher question category was expanded to allow for broad and narrow questions asked by the teacher, and in response to pupil behavior VICS provides three categories each--accepting or rejecting pupil ideas, behavior, or feeling by the teacher--as opposed to Flanders' three categories for reacting positively and one reacting negatively. VICS in the area of pupil talk added the dimension of predictable and unpredictable responses and separated silence or confusion into two categories encouraging its use with other categories.

In response to Ober's feeling that Flanders' system was limited in student talk, the Reciprocal Category System was designed (52). Consisting of nine verbal categories, each of which can be assigned to either teacher or student talk, and a single category for silence or confusion, the RCS expands to an operational total of nineteen categories, thereby allowing the student as many avenues as the teacher in terms of verbal behavior.

Galloway also has proposed a modification to the Flanders system (36, 44). By using the Flanders categories in conjunction with nonverbal categories, both what is said and how it is said can be examined.

Other systems have been designed for use in specific situations. The Supervisor-Teacher Interaction System, a modification of the work by Blumberg, Flanders, and Bales, is just such a system (15). Created to describe the nature of the interaction that takes place between a supervisor and teacher, this system is made up of fifteen interaction

categories--ten supervisor, four teacher, and one silence or confusion.

In summary, a short review of the development of verbal behavior analysis has been presented with special note made of the system used in this study, namely, the Flanders System of Interaction Analysis.

Importance of Perceived and Actual Verbal Interaction

The primary means of conveying information to the learner over the years has been through verbal communication. Bellock, Kliebard, Hyman and Smith have stated that "few activities can be carried on in the classroom without the use of language, and that these activities are carried on between students and teachers by means of verbal interaction" (12). This verbal interaction takes many forms, for example, lecture, questions, praise, responses, and so on. Vannier and Foster bring forth that most of what children learn comes through the senses of hearing, seeing, testing, touching, and the more these can be stimulated the richer the learning experience will be (61). One way or the other, verbal interaction by the teacher sets the stage in motivating, guiding, and helping the child to learn. Holt noted that "Children's senses are keen, they notice everything, and want to do the things like grown-ups; so if we speak well, and they hear us, they will soon speak as we do" (38). Therefore, verbal interaction is not only listening to obtain knowledge, but also a means of conveying one's thoughts, ideas, and feelings to others. Miel summarizes this thought by stating that the basic phenomenon in the classroom is a pattern of interaction among human beings (48).

A study conducted by Bellock and Davitz revealed that in a ratio of approximately 3:1 teachers are considerably more active than pupils in the amount of verbal activity (13). Flanders also noted that someone is talking 60 percent of the time in an elementary or secondary school classroom, and that if someone is talking, the chances are that it is the teacher more than 70 percent of the time (34). Combs goes as far as to state that having fun with words is one of the delights of the teaching profession (21). According to Holt, the teacher does most of the talking and now and then asks the children questions, to make sure they have been paying attention and understand (38). Perhaps a question should be asked: who is at fault if learning has not occurred--the student or the teacher? In an interesting study conducted by Amidon and Giammatteo relating to the verbal behavior of superior elementary teachers, it was found that the verbal behavior patterns of superior teachers did differ substantially from those of average teachers (2). The superior teachers were found to talk approximately 40 percent of total class time, whereas, the average teachers talked approximately 52 percent of the time. In summary, Dauer emphasized that the teacher needs to talk with and listen to children, in contrast to merely talking to them (28).

These statements indicate that the teacher and students are involved in a very active verbal role in the classroom. Does the teacher know to what degree he and his students are involved, and what type of verbal activity he uses? Perceived and actual verbal interaction should go hand and hand. One involves planning of an effective and affective presentation and the other utilization of that plan. Flanders stated that most of the functions associated with teaching

are implemented by verbal communication, and that the first step toward systematic classroom management is made when a teacher learns to control his verbal communication so that he can use his influence as a social force (34).

Physical Education and Verbal Behavior

In the area of specific classroom behavior analysis, physical education until recently has been guilty of neglecting this vital area of research. According to Nygaard, most of the research in this area has concentrated on either democratic leadership and education for democracy, or social adjustment in connection with physical education and athletics (51). Classroom behavior research in physical education may be utilized in terms of research related to classroom climate (social adjustment-democratic classroom), research examining specific behaviors, and descriptive analytical research. The paragraphs which follow present a review of the literature in these areas of research with a special emphasis placed on one specific behavior, verbal interaction.

Cowell, a forerunner in physical education research in classroom climate and behavior, developed a Behavior Trend Index and a Personal-Distance Scale (24, 25). These two instruments were created in an attempt to demonstrate the effect of physical activity on the personal and social adjustment of people. Based on an index of twenty dichotomous student behavior items ranging on a scale from "not at all descriptive of student" to "markedly descriptive of student," the Behavior Trend Index was devised in 1938. The Personal-Distance scale which

was devised somewhat later attempted to indicate the degree of social participation by a student in his own group. Typical of this type of research was a study by Todd. Utilizing the "democratic" method of instructing physical education classes and through use of a sociometric analysis, she found improved acquaintanceships, upward mobility, fewer isolates, group cohesion, approval and satisfaction than with an autocratic method (58). In a later article, Todd illustrated the use of the Acquaintance Volume Test which measures the expansiveness of an individual in a given period and the Functional Choice Test which measures who wants to be with whom in a group for application in physical education classes (59). Perhaps the greatest milestone of the "democratic classroom" in physical education was a yearbook published by AAHPER over 20 years ago (1). A comprehensive guide for developing human relations through activities in health, physical education and recreation, this yearbook serves as a typical example of the early 50's emphasis on a "democratic classroom." In addition to these studies mentioned above, Nygaard points out that many studies have been done in physical education to show the relationship between physical ability and social adjustment (51). One such study was Jones'. Utilizing the case study approach, he found that the boy who is slightly deficient in physical traits may experience, in relation to his own aspirations, a slight handicap in social relations in his own group (40). In an article by Cowell on the contributions of physical activity to social development, in the May 1960 AAHPER Research Quarterly, several studies which attempt to relate physical activity and personality, social mobility, and social integration also are cited (23). Basically, these

studies, general in nature, attempted to observe or relate to the total classroom ambiance rather than specific behaviors.

Fortunately, in the last 10 years, physical educators have started to examine specific behaviors. A catalyst for much of the current work in this area is Muska Mosston. In presenting eight teaching styles (command, task, reciprocal, small group, individual program, guided discovery, problem-solving, and creativity) Mosston leads the teacher-student behaviors along a continuum from teacher-centered to student-centered learning. Expressing the importance of verbal interaction, Mosston points out that in command style the teacher conceives his role as that of a conveyer of information, a transmitter of knowledge, where the teacher tells the student how to respond (50). Gradually progressing along the continuum of styles from command to creativity, it is observed that the student gradually becomes freer to interact verbally with other class members as well as the teacher, and thereby starts to control more of the learning process (50). Mosston points out:

> It is indeed creativity that enlarges boundaries, that is not afraid. At the creative level of behavior inhibitions evaporate, ideas are expressed and questions are asked . . . It is the level at which one is free and independent (50).

Experimenting with Mosston's styles, Mariani compared command and task styles for learning the forehand and backhand tennis strokes (46). He found the task style was superior to command style in teaching the backhand tennis stroke; however, no significant difference was found between styles in teaching the forehand stroke. Significance also was shown to exist in the area of greater retention for both strokes through the use of the task style. Doughtery, also interested in the

effects of Mosston's styles, examined command, task and individual program styles of teaching in the development of physical fitness and the learning of selected motor skills (30). On the basis of his findings, a teacher who used more indirect influence or sought student involvement in the interaction process received the best results with the task or individual program styles. If the teacher felt that through using direct influence more could be accomplished, then the command style is better. Doughtery also emphasized that if physical fitness was the primary goal for improvement and the training period would be brief, then the command style would be the most efficient instructional procedure; however, if the fitness training period were to extend over a longer period of time and if goals other than fitness improvement were sought, then the task and individual program styles would be as effective as the command style. A questionnaire administered to the subjects revealed a desire for greater variation in instruction, thus, pointing to support of Doughtery's thought of value in varying the teaching style during an instructional unit. In addition to these two studies, a recent study by Boschee was conducted to investigate the effects of command, task, and individual program styles of teaching on four developmental channels (physical, intellectual, social, and emotional) as proposed by Mosston, in teaching alley soccer (17). He found that in the physical developmental channel the command group made more progress than either the individual program or task groups. For the intellectual development channel the results indicated that regardless of exposure no one style is better for teaching game knowledge than another in alley soccer. Socially speaking, no significant difference was found to exist between styles, and in the emotional channel

no significant difference was found between the styles. These findings are contradictory to Mosston's theoretical position of each style on the developmental channel continuum; however, perhaps if the teaching styles were utilized for longer periods of time and examined for effect, different results would have occurred.

Other physical education researchers have looked at perceptions as a specific behavior. Nygaard reviewed a variety of such studies examining teacher perceptions, pupil perceptions, and administrator perceptions (51). Perhaps the most noteworthy was a study conducted by Pestolesi (53). Utilizing the Critical Incident Technique, college students in physical education classes were asked to describe one critical incident that had occurred in the class that contributed to the development of favorable and unfavorable attitudes toward college physical education. "Instruction Procedures," "Interpersonal Relations," and "Instructor's Personality" were found to be the critical incidents most often in contributing to a favorable attitude.

In looking specifically at the examination of verbal behavior, motor learning research has provided some interesting information. Cratty states that verbal instructions seem most important during the pre-performance phase and during the initial phases of task performance (26). He noted that it also appears important to communicate a knowledge of the amount of task to be accomplished during the initial stages of learning. In another study examining the amount of learning that occurred when various verbal incentives such as verbal praise, verbal criticism, a combination of verbal praise and criticism were used and when no verbal incentives were used, Sparks found that a combination of verbal praise and criticism promoted retention (57). Morgan in her

study looking at both verbal and visual cues in teaching beginning swimmers the butterfly stroke found that the groups using videotape and videotape plus verbal cues improved significantly in both stroke power and speed in comparison to the control group's significant improvement in speed only (49). In an article presented by Hamilton, Anderson, and Merten, the proposal was made that one can learn to talk while developing motor skills (37). With the primary goal of providing the preschool child an opportunity for language stimulation in a natural way, the teacher's role is defined then as an architect, participant, and reinforcer, whose obligation it is to provide language stimulation as narrator of the child's activities. Clifton also brought to light some interesting points about perceptual-motor activities and audition (19). Audition which is defined as experiences with sound in relation to auditory organs is closely related to verbal interaction, for it is at this point where one is understood or not understood. She states that when one is working with direction of motor responses with young children, one should be sure that sound cues come from the direction in which the motor response is to be made (19). However, it must be pointed out that too much verbalization may be confusing, particularly for elementary school children. Dauer emphasizes that when there is instruction, the teacher should be brief and to the point, avoiding excessive verbalization (28). The point here is that although verbalization plays a role in instruction quality not quantity must be emphasized.

Until recently no attempt has been made by physical educators to use descriptive-analytical research tools to investigate specific

behaviors. Perhaps the first was Bookhout who studied the relationship of teaching behavior to the social-emotional climate of a physical education class (16). Using a modified version of OScAR, which is a system devised to observe as well as record classroom behavior, and Reed's pupil inventory, which is a questionnaire designed to examine pupil perceptions, as her research tools, she found six common patterns of teaching behavior, two of which were climate related. Of these two patterns "Integrative Behavior" was significantly related to a supportive climate and "Restraining Direction" was significantly related to a defensive climate. It must be pointed out that although this attempt was more of a look at general behavior rather than specific, a descriptive tool for noting the behavior was used.

Doughtery, in his study of teaching styles mentioned earlier, included as one of his sub-problems the use of a modification of Flanders Interaction Analysis in order to find out if the three teaching styles could be differentiated by use of the research tool. By merely adding an eleventh category--Meaningful Non-Verbal Activity--and subdividing categories (1-7) whenever the teacher was speaking to an individual rather than to the entire group to Flander's system, he found that through the use of this modified interaction analysis procedure command style could be differentiated from task and individual program styles; however, task and individual program styles were not able to be differentiated between.

Another system devised by Barrett is designed to look at the structure of movement tasks (11). She found and described six types of movement tasks: command, guided discovery, selected response, specific limitations, non-specific limitations, and free-exploration. In con-

clusion to her study, she felt the system needed some refinement and stated that more research needs to be done in this area.

Fishman has also developed a descriptive-analytical system for use in physical education classes designed to look at augmented feedback (32). The system is arranged in six major categories with twenty sub-categories based on various forms of feedback, direction of feedback, time of feedback, intent of feedback, specific referent of feedback.

Another adaptation of the Flanders system has been proposed by Love (39). Designed for behavior descriptions in physical education, the eleven-category system, which looks at both observable verbal and non-verbal teacher-student interaction, is called the Timer-Love adaptation of the Flanders System of Interaction Analysis. Love and Barry described the use of this instrument in a phase of the student teacher program at the University of Maryland in conjunction with Wheaton-Belt-Randolph Teacher Education Center by using the data collected to help the student teacher better understand his teaching behavior (45). This is considered an important phase of the student teaching program.

Nygaard was one of the first to analyze verbal interaction in physical education classes using Flanders' system. He stated that verbal behavior is only one aspect of the total classroom behavior, but that by looking at interaction analysis there is potential for self-improvement on the part of physical educators (51). He found that the interaction pattern most used by the forty teachers viewed was extended periods of lecture followed by silence or confusion followed by lecture. A secondary pattern consisting of lecture followed by questions followed by student talk-response followed by use of student ideas followed by more lecture was the next most frequent interaction pattern. Verbal

interaction differences also were found to exist between sexes. The men used more lecture with emphasis on content leading to more periods of extended direct influence; whereas, the women used significantly more praise and encouragement, directions, criticizing and justification of authority, student talk-initiation, and silence or confusion leading to more periods of extended indirect influence.

In summary, one can see that many physical educators recognize the importance of verbal interaction in the classroom. By further examining texts on teaching methods in physical education, it can be seen that these texts have been a primary source for contemporary writers in expressing thoughts about verbal interaction. In review of physical education method textbooks, it was noted that these authors alluded to verbal activity by aggregating it into a teaching style of sorts (51). For example, Bucher discussed a democratic-controled classroom (18), and Doughtery discussed a formal, informal, and compromise approach (29). Turner has presented the idea that in order to develop creativity in the college classroom, the teacher's role is changing from lecturer to guide, learner, and resource individual (60). He contended that while lecture is important, sharing between students and guide is of primary importance. Therefore, according to this and further mentioned information, the fact that many physical educators recognize the importance of verbal interaction can be ascertained. They also appear to recognize the importance of looking at specific behaviors through the use of descriptive-analytical research tools. This fact can be ascertained by previously reviewed studies and through the dedication of Quest January 1971 issue to a discussion of educational change in the teaching of physical education (55). However, no attempt

has been made thus far to look at perceived verbal interaction in contrast to the actual verbal interaction. This aspect should not be neglected, and it was in part on the basis of this neglect that this approach to the examination of classroom interaction was chosen.

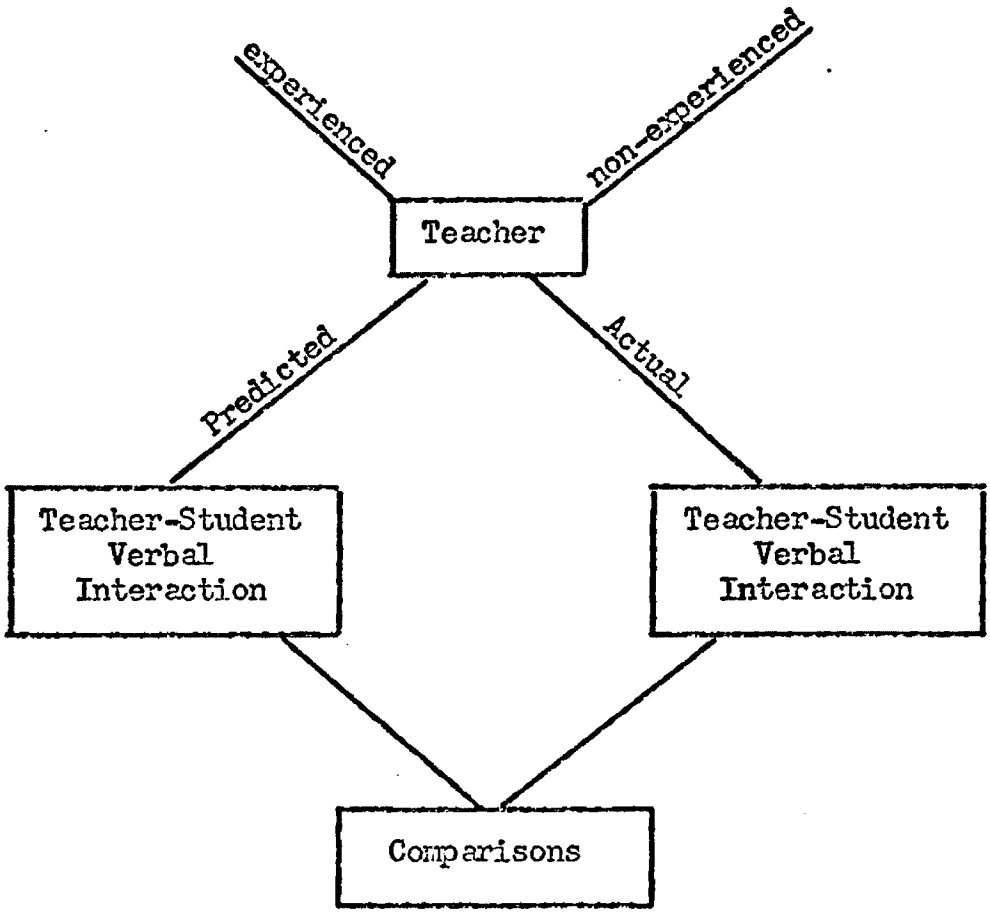
Significance of Problem

This review indicates the importance of verbal behavior in the classroom. It also draws attention to the fact that physical education has neglected the application of descriptive analytical systems. If an objective instrument is available for analysis of classroom behavior, it should be put to use. As a research tool, it can be used in describing the events in physical education classrooms that can later be serviceable, for example, in teacher education programs. As a self-evaluation tool, this instrument appears to have possibilities for use by the teacher to gain insight into classroom behavior and teaching style employed.

Statement of Problem

The purpose of this research project was to compare perceived and actual verbal interaction of teachers and students in elementary physical education classes. The types of perceived and actual verbal interaction between teachers and students were examined at the elementary grade school level (grades one through eight) in Missoula, Montana. At this level the verbal behavior in the classrooms of experienced teachers and those with little or no experience was differentiated for additional analysis. It was basic descriptive research and non-

experimental via the Flanders System of Interaction Analysis. The model below further explains the basic design of this project.



Definitions

Actual verbal interaction--the real verbal communication which took place during the introductory activity in the classroom as determined by Flanders Interaction Analysis System.

Experienced Teacher--any teacher with at least three years of experience.

Flanders System of Interaction Analysis--a ten-category system set up to objectively record spontaneous verbal interaction within the classroom including organization of the data and analysis of results in order to study patterns of verbal interaction.

I/D ratio--the sum of categories 1-4 divided by the sum of categories 5-7. It is an indication of whether the teacher used direct or indirect influence. A teacher exhibiting direct influence would score .99 and below, and a teacher exhibiting indirect influence would score greater than 1.00.

Primary Interaction Pattern--the primary pattern as interpreted by the Flanders System of Interaction Analysis shows the sequence of verbal events used by a teacher in a classroom.

Introductory lesson--a learning session focused on initiation of a new activity, sport, game or skill, which was a component of an activity, sport, or game.

Meaningful physical activity--those periods of time during which the student is actively engaged in productive activity that might otherwise be considered silence or confusion.

Matrix--a 10-row by 10-column table used as a method of recording the sequence of events which occurred in the classroom.

Perceived verbal interaction--the teacher's expressed view of the types of verbal interaction that will take place during an introductory activity between himself and his students.

Significant cell--any cell in the matrix which receives approximately one tally every two minutes.

Delimitation

The study was delimited to elementary schools in the city of Missoula, Montana.

Limitations

The following are limitations of this study as a result of the research design:

The style of verbal behavior used by a teacher reflects only the style used on one day during a physical education introductory activity.

Some of the elementary teachers involved are not physical education specialists, but teachers in self-contained classrooms with responsibility to their students for physical activity.

Verbal interaction patterns may have been affected by the presence of an observer and tape recorder. (According to Samph, teachers tended to be more responsive toward pupils when an observer was present in the classroom with a higher incidence of categories 3--accepting or using student ideas--and 4--asking questions (56).)

There was no attempt made to control the number of experienced and non-experienced teachers.

Recording procedures had to be altered for use of the Flanders Interaction Analysis system in elementary physical education classes because of no allowance for periods when children were engaged in periods of meaningful activity. This was done by merely turning the recorder off during these periods. Consequently, the recording procedures that resulted did not include all verbal activity occurring during the observation session. This included verbal behavior occurring during meaningful physical activity and that occurring between teacher and individual student away from the group due primarily to the inability of the recorder to clearly pick up this verbal activity.

Preliminary Methods and Procedures

Preliminary procedures involved in this research project commenced with the securing of cooperation by the University of Montana and School District #1, Missoula, Montana. Copies of the Proposal were submitted to the director of student teaching at the University of Montana and the assistant superintendent of School District #1 for approval. Once cooperation had been granted, the assistant superintendent supplied a list of all elementary teachers in the Missoula school district from which three teachers from each grade level were selected by means of a table of random numbers.

The random sample included three teachers at each grade level:

1. Lower elementary:

   Grade 1 - 3 teachers
   Grade 2 - 3 teachers
   Grade 3 - 3 teachers
   Grade 4 - 3 teachers

2. Upper elementary:

   Grade 5 - 3 teachers
   Grade 6 - 3 teachers
   Grade 7 - 3 teachers
   Grade 8 - 3 teachers

The assistant superintendent then contacted each elementary principal, distributing copies of the proposal and lists of the teachers selected. This procedure secured cooperation from all elementary school principals.

Each elementary principal in whose school a teacher had been selected was contacted in person by the writer. This visit enabled the writer to personally meet with the principals and answer any questions about the study, and to contact the teachers selected to secure their

permission to observe verbal behavior in their classrooms. After a teacher had consented to participate in the study, a time was arranged to audio-tape an introductory learning session in which a new game, skill, activity, or topic would occur; and to procure the amount of experience that each teacher had.

Twenty-minute or less learning sessions were then taped depending on the length of the introductory lesson. After completing all observations, the tapes were sent to Temple University, Philadelphia, Pennsylvania, for initial analysis. When the data returned it was combined for additional analysis into the following group matrices and used to determine the perceived interaction:

1. Total teachers
2. Experienced teachers
3. Non-experienced teachers.

Further explanation as to procedures involved in determining and interpreting results can be found in Chapter II.

CHAPTER II

METHODS AND PROCEDURES

In view of the purpose of this study, which was to examine and compare perceived and actual verbal interaction of elementary physical education teachers, this chapter outlines selection of subjects, procedure for observing subjects, initial analysis, hypotheses, and further analysis of data.

Selection of Subjects

The subjects involved in this study were the elementary school physical education teachers of School District #1, Missoula, Montana. This included teachers of lower elementary physical education (grades one through four), and teachers of upper elementary physical education (grades five through eight). The total population was subdivided into experienced and non-experienced teachers. Any teacher with at least three years of teaching was considered an experienced teacher. In order to obtain a list of the elementary teachers, the assistant superintendent of School District #1 was contacted. After a short interview with the assistant superintendent, a list of all elementary teachers in the Missoula school district was provided. From this list a simple random sample was drawn. Three teachers from each grade level were chosen by a means of a table of random numbers. It is important to point out that the sample was not a proportionate stratified random sample because it was the intent of the researcher to keep the sample

sizes equal (three in each group). Grades one through six were sampled in the regular manner--randomly; however, grades seven and eight were sampled without replacement. This method was used at these grade levels due to the small size of the populations involved and the fact that many of the teachers taught physical education at both grade levels which could have resulted in the selection of the same teacher more than once. According to Cumbee and Harris, "In practice, sampling with replacement is rarely practiced" (27). Sample size was kept to three teachers per grade level for the following reasons: First of all, it was the wish of the researcher to keep all sample sizes equal to expedite statistical treatment; and secondly, due to a time limit set by the researcher in which all observations had to be made. It must be pointed out that no attempt was made to randomly select experienced and non-experienced teachers due to difficulty in obtaining information on just how much experience each teacher had prior to the researcher-teacher interview.

All selections were made from a Table of Random Numbers in Downie and Heath (31). The sampling units were the teachers at each grade level. The starting point on the table was determined by a blindfolded marking of the page. Proceeding by one or two numbers depending on the size of the frame, movement was in any direction, for example, downward, sideward, or obliquely. When the bottom of a column was reached direction was changed and the process repeated. At the time of selection it was intended to include three teachers per grade level; however, in the preliminary selection five teachers per grade level were selected to allow for substitution for those elementary

teachers who were not teaching elementary physical education, those who had taken a course in Flanders Interaction Analysis or some form of teacher-student verbal communication analysis, and those who refused to participate in the study.

After completing selection of the teachers, the assistant superintendent was again contacted; and after reviewing the proposal, the elementary school principals were contacted. At this time the assistant superintendent distributed copies of the proposal to each elementary principal and secured his cooperation in the project. The teachers were then contacted personally by the researcher and usually their elementary school principal. If a selected teacher was not teaching elementary physical education, had taken a course in Flanders Interaction Analysis or some form of verbal analysis, or did not care to participate in the study, the next name on the list was contacted.

Exceptions to the original sampling technique occurred in one case (grade six) where more than five (six) teachers had to be selected in order to obtain three teachers who were eligible to participate in the study. In all, there were one case of refusal, two cases of teachers who had taken a course in Flanders Interaction Analysis, and three cases of teachers who were not teaching physical education.

During this introductory-selection session, a time for observation was established. It was explained that verbal interaction between teacher and students was the prime concern of the observation and the session would be audio-taped. Therefore, an introductory lesson would be preferred for observation to ensure a fair amount of verbal interaction. These introductory lessons included the introduction of a new

activity, sport, game, skill, or topic. The classes observed were not randomly selected. This was due to the researcher's teaching and class study commitment at the University of Montana, and as mentioned before, to ensure that a fair amount of verbal activity between teacher and students would occur. In addition to setting up an observation time that was in accordance with the researcher's schedule and the acquiescence of the teacher, the amount of the teacher's experience was procured. This division was not random and resulted in fourteen experienced teachers with an average of nine years experience and ten non-experienced teachers with an average of .8 years experience. Generally, very favorable attitudes were expressed by teachers and administrators towards cooperation in the study.

Procedure for Observing Subjects

On the day of the observation the researcher arrived 15-20 minutes early. During this time an interview with the teacher concerning the perceived verbal behavior occurred, along with an examination of the gymnasium and subjective appraisal of the acoustics.

The perceived verbal behavior session began with an explanation of Flanders Interaction Analysis. It was described as an instrument that objectively examines verbal behavior between teachers and students. A trained observer by listening to a tape or attending a live observation records every three seconds the number of the verbal category used as shown on the Perceived Interaction Form (Table II). Results are then transferred by a method of double pairing to a ten-by-ten matrix where the verbal behavior pattern is examined as well as the amount of

TABLE II

PERCEIVED INTERACTION FORM

Perceived % in each category			Categories for Interaction Analysis
	TEACHER TALK	INDIRECT INFLUENCE	1. ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
			2. PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual, nodding head, or saying "um hm?" or "go on" are included.
			3. ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to category five.
			4. ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
		DIRECT INFLUENCE	5. LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions.
			6. GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.
			7. CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
	STUDENT TALK		8. STUDENT TALK - RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.
			9. STUDENT TALK - INITIATION: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
			10. SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

PERCEIVED I/D RATIO: _____

time spent in each category, directness or indirectness of teachers' verbal behavior, teacher response ratio, teacher question ratio, pupil initiation ratio, instantaneous teacher response ratio, and content cross ratio. It was emphasized that this instrument is not an evaluative tool, but a descriptive tool that merely describes what happens verbally in their classrooms. Each category then was read carefully on the Perceived Interaction Form along with examples of each category in use. The following is an illustration of this procedure.

> Category One - Accepting Feeling is any verbal behavior that accepts and clarifies the feeling tone of the student in a non-threatening manner. Feeling may be positive or negative. Predicting or recalling feeling are included. For example, "My! This class is excited!"

Recording procedures were next explained. Only that verbal behavior that was of an introductory nature (a new skill, activity, game or topic) was recorded; therefore, warm-up exercises or activity of this nature were not considered. It also was pointed out that during the time the children were involved in meaningful physical activity the recorder would be turned off. In addition, verbal activity between the teacher and an individual student away from the group would not be considered; however, that verbal activity between teacher and an individual student in the group situation was considered. In other words, the main concern was group verbal behavior.

After all categories and recording procedures were explained and any questions answered, the teacher was asked to think about how she would categorize her and the students' verbal behavior during the introductory lesson. Given the Perceived Interaction Form, the teacher then proceeded to categorize her and the students' perceived verbal

behavior in terms of percentages with 100 percent equaling the total time recorded according to the recording procedures mentioned earlier. This session provided the researcher with valuable information on class organization that aided recording procedures, for example, class position and order of presentation.

Usually before the perceived interaction session depending on the teacher's opportunity to meet with the researcher, the gymnasium was examined and the acoustics subjectively surveyed. Many times other elementary physical education classes were in progress when the researcher arrived enabling an examination of the gym in use and time to test taping the acoustical environment with other teachers and students interacting verbally.

The recorder used for the project was a Craig Cassette model 2602 tape recorder available at the University of Montana Instructional Materials Center. It is considered by Consumers Report to be particularly well-suited for non-musical recordings (22), and was used in a study by Hygaard examining verbal interaction in physical education classes (51). He indicated that the cassette recorder did not require an electrical outlet, thereby removing the restriction of the recorder to one location, the cassette recorder was very mobile enabling the researcher to follow the flow of the class, and the cassette recorder's size and shoulder strap made it possible for the recorder to be relatively inconspicuous (51). In addition to the recorder, a stopwatch was also used. It was utilized to keep observation sessions at the 20-minute time limit in order to obtain an adequate representation of those aspects of the original interaction occurring in the classroom

(33). However, apparently a faulty stopwatch was used and in three cases tape times exceeded approximately seven minutes over the original maximum of 20 minutes. Despite this error results should not be grossly affected.

During the taping session the investigator had wished to remain at the rear of the class as much as possible; however, in several of the gymnasia it was necessary to closely shadow the teacher due to difficulty in picking up verbal behavior because of energetic children with piercing voices and reserved teachers with gentle voices.

In some cases the teacher introduced the investigator as an observer from the University of Montana. In other cases, the investigator was not introduced. This decision was left up to the teacher in hopes that she would choose that method which caused the least amount of disruption in her classroom. Due to the frequent occurrence of observers in the Missoula schools, it was assumed that the teacher was in the best position to make this decision.

When the instructional phase of the class began, the teacher in some way, either verbally or non-verbally, notified the investigator to begin recording. As pointed out earlier, the instructional phase included the introductory activity, skill, game, sport, or topic. Only that verbal activity occurring within the group and not meaningful physical activity was considered, therefore, this procedure necessitated stopping and starting the tape recorder several times during the observation session. The cassette tape recorder microphone's on-off switch held in the researcher's hand greatly facilitated this procedure. It must be pointed out that recording procedures and the system of

analysis used could have resulted in some of the time spent in silence or confusion. At the completion of the recording session, the tape was replayed to insure that the verbal behavior was legible.

Initial Analysis

Upon completion of all observations, which occurred between February 8, 1972 and March 20, 1972, the tapes were shipped to Temple University, Philadelphia, Pennsylvania 19122, that in turn relayed them to a trained observer whose reliability with Flanders System of Interaction Analysis is between .82 and .87. This initial analysis included listening to the tapes and recording every three seconds the number of the interaction category used. This procedure of initial analysis was conducted for two reasons in this manner. First of all, the researcher's reliability was not as high as that of the trained observer; and secondly, a time limit set by the researcher did not allow for time to raise reliability and initially analyze all twenty-four tapes. After this phase of initial analysis which was completed by the latter part of April, 1972, a computer programmer was contacted to devise a program to transfer the raw data to ten-by-ten interaction analysis matrices. This task, which is primarily a clerical one, consists of pairing consecutive observation tallies and making in the matrix a separate tally. For example, an observed five followed by an observed four was placed in the fifth row and the fourth column of the ten-by-ten matrix. Each subject tape followed the same procedure.

Once these initial processes were completed, the investigator was prepared to conduct further analysis of the completed matrices.

The first step, however, was to combine the individual matrices into the following group matrices from which comparisons were made.

1. Experienced teachers
2. Non-experienced teachers
3. Total teachers

These matrices as well as individual matrices were then used to determine the perceived interaction based on percentages given by the teachers.

Hypotheses

The following hypotheses were examined in this research project:

1. There will be no significant difference between perceived and actual verbal interaction for the total teacher sample.

2. There will be no significant difference between perceived and actual verbal interaction of experienced and non-experienced teachers.

3. There will be no significant difference between perceived and actual verbal interaction of experienced teachers.

4. There will be no significant difference between perceived and actual verbal interaction of non-experienced teachers.

5. There will be no significant difference between perceived and actual I/D ratios for total teacher sample.

6. There will be no significant difference between perceived and actual I/D ratios of experienced and non-experienced teachers.

7. There will be no significant difference between perceived and actual I/D ratios for experienced teachers.

8. There will be no significant difference between perceived and actual I/D ratios for non-experienced teachers.

Further Analysis of Data

Hypotheses 1-4 were tested by converting the teachers' perceived percentages to category totals. By use of the following formula, basing total tallies on actual individual matrix totals for each teacher were computed.

$$\frac{100}{\text{(total tallies)}} \times \text{(category total)} = \text{percent given}$$

After, each teacher's perceived and actual verbal interaction was compared by the "t" test at each of the ten categories.

Hypotheses 5-8 were tested by computing I/D ratios for each teacher by summing categories 1-4 and dividing this sum by the sum of categories 5-7. This ratio is an indication of whether the teacher used direct or indirect teacher influence in the classroom. A teacher exhibiting indirect influence would score greater than 1.00, and a teacher exhibiting a direct influence would score .99 and below. When all perceived and actual I/D ratios had been computed, the "t" test was used to test for difference between the means.

In addition to the above hypotheses, the perceived and actual category totals and actual primary interaction patterns of the total teacher sample, experienced teachers, and non-experienced teachers were examined to provide additional insight. The actual primary interaction pattern as interpreted by the Flanders System of Interaction Analysis shows the sequence of verbal events used by a teacher in a classroom. To examine the perceived primary interaction pattern a subjective judgment would have had to be made on the part of the researcher because the teachers were not asked to supply this information due to the complexity of explaining the pattern tracing technique to each teacher.

Therefore, category totals were examined on the basis of frequency. Those perceived categories with the highest frequency were contrasted with those actual categories with the highest frequency. In addition, actual primary interaction patterns were analyzed according to the following procedures. The cell with the greatest frequency on the matrix was circled. Within that row movement was horizontal to the cell with the most frequencies. From that cell, movement was vertical directly to the steady state cell. From this point movement was again horizontal to the cell with the frequency was reached again or until all significant cells (cells in the matrix which receive approximately one tally every two minutes) had been accounted for. Then by arranging the category numbers in chronological order according to the most frequently occurring cells, the primary pattern was determined. Table III, which is a sample matrix, shows the flow of the primary interaction pattern and that of a 5-4-8-3-5 was the typical verbal pattern used. In other words, the most frequent pattern of verbal exchange was lecture followed by questions followed by student talk-response followed by accepting or using student ideas followed by lecture. In this case other patterns have also occurred (secondary and tertiary), however, they will not be examined. Both the perceived and actual primary interaction patterns were examined for possible differences for total teachers, experienced and non-experienced teachers.

Statistics involving hypotheses 1-4 were computed on facilities at the University of Montana. Using an IBM 1620 Fortran III and V and PDP 11-Basic, these "t" tests were run and developed at the Data Processing Center at the University of Montana. Hypotheses 5-8 were compared by "t" tests computed by the researcher.

TABLE III

SAMPLE OF TEN-BY-TEN MATRIX

CATEGORY	1	2	3	4	5	6	7	8	9	10	Total TALLIES
1											
2			2	2	2						6
3		2	6	7	13				1		45
4			1	22		1		34	17	5	80
5			1	17	139	4			2		163
6					3	3				2	8
7					8		2				10
8		1	23	5	2			6	1	2	40
9		2	15	2	3		10		28		60
10		1	2	3	2				1	3	12
TOTAL TALLIES		6	50	45	163	8	10	40	60	12	424
%		1	12	17	41	2	2.5	10	12	3	
% of Total	30%				41.5%			22%		3%	
								Student Talk		Silence or Confusion	
	Teacher Talk 74.5%										

CHAPTER III

ANALYSIS AND DISCUSSION OF DATA

Keeping in mind the purpose of this research which was to examine and compare perceived and actual verbal interaction of elementary physical education teachers, this chapter presents analysis and discussion of data.

Analysis of Data by Hypotheses

Hypothesis One: There will be no significant difference between perceived and actual verbal interaction for the total teacher sample.

With the confidence level set at .01 for each category, significance was found for category 1 (accepting feeling), 3 (accepting or using student ideas), 6 (giving directions), 10 (silence or confusion). It should be pointed out that category 10 also differed significantly at the .001 level.

In examining category means, teachers predicted higher interaction use for categories 1, 3, and 6, and predicted lower use of category 10 than actually occurred.

Of additional interest is the fact that categories 2 (praise or encouragement) and 7 (criticizing or justifying authority) differed significantly at the .05 level and categories 4 (asking questions), 5 (lecture), 8 (student talk-response) and 9 (student talk-initiation) did not differ significantly. In examining means for categories 2 and

7, teachers predicted higher interaction use than that which actually occurred. Table IV presents the perceived and actual category means and "t" scores obtained in analysis of the total teacher sample.

It can, therefore, be concluded that for the total teacher sample, teachers were not able to predict verbal interaction between themselves and their students. However, they were more successful in predicting some categories than others. The easiest to predict were categories 4, 5, 8, and 9. Categories 2 and 7 were somewhat more difficult to predict, with categories 1, 3, 6, and 10 the most difficult.

Hypothesis Two: There will be no significant differences between perceived and actual verbal interaction of experienced and non-experienced teachers.

Table V presents experienced and non-experienced category means for perceived and actual verbal interaction and "t" scores. By examining this table, it can be seen that the null hypothesis is accepted.

It made no difference whether the teacher was experienced or non-experienced because both predicted similarly and carried out similar interaction according to categories.

Hypothesis Three: There will be no significant difference between perceived and actual verbal interaction of experienced teachers.

Category 10 (silence or confusion) was the only category differing significantly at the pre-set .01 confidence interval. This category also differed significantly at the .001 level. The category means draw attention to the fact that teachers predicted a lower use of this category than that which actually occurred.

TABLE IV

TOTAL TEACHER SAMPLE CATEGORY MEANS AND "t's"

Categories	Perceived Means	Actual Means	Dif.	"t"
1. Accepting Feeling	8	0	8	3.10**
2. Praise or Encouragement	24	7	17	2.79***
3. Accepts or Uses Student Ideas	12	2	10	2.92**
4. Asks Questions	18	12	6	1.32
5. Lecture	55	73	-18	-1.29
6. Giving Directions	84	34	50	3.21**
7. Criticizing or Justifying Authority	18	6	12	2.54***
8. Student talk - response	19	12	7	1.68
9. Student talk - initiation	16	12	4	1.11
10. Silence or Confusion	19	113	-94	-5.37*

* .001 level t = 3.767

** .01 level t = 2.807

*** .05 level t = 2.069

TABLE V

EXPERIENCED VERSUS NON-EXPERIENCED PERCEIVED AND ACTUAL CATEGORY MEANS AND "t's"

Categories	Experienced Means	Non-experienced Means	Dif.	"t"
Perceived				
1. Accepting Feeling	5	13	-8	-1.43
2. Praise or Encouragement	15	36	-21	-1.34
3. Accepts or Uses Student Ideas	7	19	-12	-1.65
4. Asks Questions	13	27	-14	-1.41
5. Lecture	50	63	-13	-.55
6. Giving Directions	90	75	15	-.45
7. Criticizing or Justifying Author.	15	21	-6	-.58
8. Student talk - response	20	12	8	1.02
9. Student talk - initiation	18	13	5	.77
10. Silence or Confusion	25	10	15	1.69
Actual				
1. Accepting Feeling	0	0	0	0
2. Praise or Encouragement	6	8	-2	-.32
3. Accepts or Uses Student Ideas	3	2	1	.33
4. Asks Questions	13	11	2	.33
5. Lecture	82	60	22	1.04
6. Giving Directions	34	35	-1	-.35
7. Criticizing or Justifying Author.	5	6	-1	-.25
8. Student talk - response	11	11	0	.60
9. Student talk - initiation	10	14	-4	-.88
10. Silence or Confusion	91	143	-53	-1.40

.01 level = 2.819

.05 level = 2.074

It is interesting to note that categories 6 (giving directions) and 7 (criticizing and justifying authority) significantly differed at the .05 level. Both categories had higher predicted than actual interaction category means. No significant difference existed for categories 1 (accepting feeling), 2 (praise or encouragement), 3 (accepting or using student ideas), 4 (asking questions), 5 (lecture), 8 (student talk-response) and 9 (student talk-initiation). Table VI presents perceived and actual category means and "t" scores for the experienced teachers.

In conclusion, experienced teachers could not predict the verbal interaction between themselves and their students. They were, however, more successful in predicting some categories. The easiest to predict were categories 1, 2, 3, 4, 5, 8, and 9. Categories 6 and 7 were somewhat more difficult to predict, with category 10 the most difficult to predict.

Hypothesis Four: There will be no significant difference between perceived and actual verbal interaction of non-experienced teachers.

At the pre-set .01 confidence interval, only one category, namely 10 (silence or confusion) was found to differ significantly between perceived and actual verbal interaction. For this category the predicted interaction category mean was lower than the actual category mean.

In addition, categories 1 (accepting feeling), 2 (praise or encouragement), 3 (accepting or using student ideas), and 6 (giving directions) differed significantly at the .05 level with predicted

TABLE VI

EXPERIENCED TEACHER SAMPLE CATEGORY MEANS AND "t's"

Categories	Perceived Means	Actual Means	Dif.	"t"
1. Accepting Feeling	5	0	5	1.69
2. Praise or Encouragement	15	6	9	1.60
3. Accepts or Uses Student Ideas	7	3	4	1.73
4. Asks Questions	13	13	0	.066
5. Lecture	50	82	-32	-1.50
6. Giving Directions	90	34	56	2.25***
7. Criticizing or Justifying Authority	15	5	10	2.56***
8. Student talk - response	20	11	9	1.49
9. Student talk - initiation	18	10	8	1.54
10. Silence or Confusion	25	91	-66	-5.59*

* .001 level = 4.22

** .01 level = 3.01

*** .05 level = 2.16

category means higher than actual. Categories 4 (asking questions), 5 (lecturing), 7 (criticizing or justifying authority), 8 (student talk-response), and 9 (student talk-initiation) demonstrated no significant difference. Table VII presents the category and "t" scores of the non-experienced teachers.

Based on these results, it can be seen that non-experienced teachers could not predict the verbal interaction between themselves and their students. They were more successful in predicting some categories than others. Categories 4, 5, 7, 8, and 9 were the easiest to predict, with categories 1, 2, 3, and 6 somewhat more difficult to predict. Category 10 was the hardest to predict.

Hypothesis Five: There will be no significant difference between perceived and actual I/D ratios for total teacher sample.

With 23 degrees of freedom and a confidence interval set at .01 (t = 2.807), a t score of 2.9598 was obtained, thereby rejecting the null hypothesis of no significant difference between perceived and actual I/D ratios for the total teacher sample at the .01 level of confidence. Table VIII presents total teacher sample perceived and actual I/D ratios.

It can, therefore, be concluded that for the total teacher sample, teachers were more direct than they thought they would be.

Hypothesis Six: There will be no significant difference between the perceived and actual I/D ratios of experienced and non-experienced teachers.

It was found that with 22 degrees of freedom in both "t" tests and a confidence interval set at .01 (2.819) that the perceived I/D

TABLE VII

NON-EXPERIENCED TEACHER SAMPLE CATEGORY MEANS AND "t's"

Categories	Perceived Means	Actual Means	Dif.	"t"
1. Accepting Feeling	13	0	13	2.74**
2. Praise or Encouragement	36	8	28	2.41**
3. Accepts or Uses Student Ideas	19	2	17	2.59**
4. Asks Questions	27	11	16	1.68
5. Lecture	63	60	3	.169
6. Giving Directions	75	35	40	2.93**
7. Criticizing or Justifying Authority	21	6	15	1.50
8. Student talk - response	12	11	1	.24
9. Student talk - initiation	13	14	-1	-.366
10. Silence or Confusion	10	143	-133	-3.69*

* .01 level = 3.25

** .05 level = 2.26

TABLE VIII

TOTAL TEACHER SAMPLE PERCEIVED AND ACTUAL I/D RATIOS

Teacher	Perceived	Actual
1 FDH	.33	.15
1 JHCS	.00	.42
1 LCCSP	.80	.10
2 SHCS	.14	.05
2 SPWI	1.14	.27
2 ESL	1.00	.17
3 JPL	.14	.08
3 CHCS	.88	.52
3 SSWH	.33	.40
4 BRP	.20	.14
4 BHCSP	.64	.94
4 HGJ	.13	.03
5 LJJ	.66	.28
5 SBWI	.42	.14
5 RBR	.00	.21
6 APWA	.13	.03
6 DWED	.20	.04
6 RDC	.83	.14
7 MYWH	.90	.08
7 PRH	.25	.16
7 MDRA	.14	.02
8 LCWA	.33	.02
8 AAMH	.25	.37
8 SKLC	.13	.08
Means	.42	.20

ratios with a "t" score of 2.7526 and the actual I/D ratios with a "t" score of .5024 accepted the null hypothesis. It should be noted, however, that the perceived I/D ratio was very close to rejecting the null hypothesis. Table IX presents both the experienced and non-experienced teachers' I/D ratios.

In conclusion, it made no difference whether the teacher was experienced or non-experienced because both predicted and carried out similar direct influences in their classrooms.

Hypothesis Seven: There will be no significant difference between perceived and actual I/D ratios of experienced teachers.

It was found that the null hypothesis was accepted. With 13 degrees of freedom and a confidence interval set at .01 (3.012), a "t" of 1.0797 was computed. Table IX presents the I/D ratios for the experienced teachers.

Based on this result, it can be concluded that experienced teachers were able to predict that they would be direct influences in their classrooms.

Hypothesis Eight: There will be no significant difference between perceived and actual I/D ratios of non-experienced teachers.

At the .01 level of confidence with 9 degrees of freedom (3.25), a "t" of 3.3361 was computed, thereby, rejecting the null hypothesis of no significant difference between perceived and actual I/D ratios of non-experienced teachers at the .01 level of confidence. Table IX presents the non-experienced teachers' I/D ratios.

TABLE IX

EXPERIENCED AND NON-EXPERIENCED TEACHERS
PERCEIVED AND ACTUAL I/D RATIOS

Teacher	Perceived	Actual
Experienced Teachers		
1 FDH	.33	.15
1 JHCS	.00	.42
2 SHCS	.14	.05
3 JPL	.14	.08
4 BRP	.20	.14
4 BHCSP	.64	.94
4 HGJ	.13	.03
5 SBWI	.42	.14
5 RBR	.00	.21
6 RDC	.83	.14
7 PRH	.25	.16
7 MDRA	.14	.02
8 LCWA	.33	.02
8 SKLC	.13	.08
Means	.26	.18
Non-Experienced Teachers		
1 LCCSP	.80	.10
2 SPWI	1.14	.27
2 ESL	1.00	.17
3 CHCS	.88	.52
3 SSWH	.33	.40
5 LJJ	.66	.28
6 APWA	.13	.03
6 DWED	.20	.04
7 MYWH	.90	.06
8 AAMH	.25	.37
Means	.63	.23

Therefore, non-experienced teachers were more direct than they thought they would be.

In addition to the above hypotheses, the actual primary interaction patterns and perceived and actual category totals were examined. The perceived category totals were examined in relation to the actual category totals, and the actual primary interaction patterns determined by the procedure mentioned in Chapter II from the total sample, experienced, and non-experienced teachers group matrices. These matrices are presented in Tables X, XI, and XII. Both the actual and perceived patterns are shown.

For the total teacher sample Table X conveys that as far as perceived category totals are concerned that the total teacher sample felt they would use: 1) 6 (giving directions), 2) 5 (lecture), 3) 2 (praise or encouragement), 4) 10 (silence or confusion). (Other categories will not be explored at this time.) In examining the actual category totals, categories 6, 5, and 10 were used; however, the order would be: 1) 10, 2) 5, 3) 6, and 4) 4, followed closely by categories 8 and 9. Therefore, for the total teacher sample, teachers were able to predict and carry out use of categories 5 and 6 according to category totals during the introductory lesson. However, they predicted more use of categories 2 and 4 and ended up using a greater amount of category 10, more even than categories 5 and 6. The actual primary interaction pattern was silence or confusion followed by directions followed by silence or confusion, 10-6-10, and a 10-5-10 or silence and confusion followed by lecture followed by silence or confusion.

The experienced teachers (Table XI) felt that they would or wanted to use categories 6 (giving direction), 5 (lecture), 10 (silence

TABLE X

TOTAL TEACHER SAMPLE MATRIX

CATEGORY	1	2	3	4	5	6	7	8	9	10	Actual Total Tallies	Perceived Total Tallies
1												194
2		23	5	19	24	35	5	3	9	45	168	565
3		5	2	15	22	2	1	2	2	5	56	279
4		3	1	43	5	18		176	28	16	290	440
5		5	4	66	1335	97	16	5	76	150	1754	1324
6		9		28	42	301	20	13	22	392	827	2012
7		4	1	9	22	23	32	2	12	28	133	423
8		35	27	44	35	18	7	73	8	32	279	444
9		15	14	11	102	13	16	1	82	33	287	384
10		69	2	55	162	320	36	4	48	1999	2700	457
TOTAL TALLIES		168	56	290	1724	827	133	279	287	2700	6494	
%		2.6	.9	4.5	27	12.7	2	4.3	4.4	41.6		
% of Total			7.9			41.8		8.7		41.6		
								Student Talk		Silence or Confusion		

Teacher Talk 49.7%

TABLE XI

EXPERIENCED TEACHER SAMPLE MATRIX

CATEGORY	1	2	3	4	5	6	7	8	9	10	Actual Total Tallies	Perceived Total Tallies
1												68
2		14	2	10	14	25	2	1	3	18	89	206
3		3	1	12	16	1		1		1	35	93
4			1	30	3	13		103	20	9	179	175
5		4	4	44	897	63	10	2	41	86	1151	699
6		7		19	26	174	8	7	10	229	480	1262
7				5	15	16	22		3	13	74	209
8		17	18	30	24	9	4	39	3	11	155	282
9		10	9	4	54	3	6	1	44	12	143	256
10		34		25	102	176	22	1	19	892	1271	353
TOTAL TALLIES		89	35	179	1151	480	74	155	143	1271	3577	
%		2.5	1	5	32.2	13.4	2	4.3	4	35.6		
% of Total			8.5			47.7		8.3		35.6		

Student Talk

Silence or Confusion

Teacher Talk 56.2%

TABLE XII

NON-EXPERIENCED TEACHER SAMPLE MATRIX

CATEGORY	1	2	3	4	5	6	7	8	9	10	Actual Total Tallies	Perceived Total Tallies
1												126
2		9	3	9	10	10	3	2	6	27	79	359
3		2	1	3	6	1	1	1	2	4	21	186
4		3		13	2	5		73	8	7	111	265
5		1		20	438	34	6	3	34	66	603	625
6		2		10	16	127	12	6	11	163	347	750
7		4	1	5	7	7	10	2	8	15	59	214
8		18	9	14	11	9	3	34	5	21	124	117
9		5	5	7	48	10	10		38	21	144	128
10		35	2	30	65	144	14	3	31	1105	1429	104
TOTAL TALLIES		79	21	111	603	347	59	124	144	1429	2917	
%		2.7	.7	3.8	20.5	11.8	2	4.2	4.9	48.6		
% of Total			7.2			34.3		9.1		48.6		

	Student Talk	Silence or Confusion

Teacher Talk 41.5%

or confusion) and 8 (student talk-response). Actual category totals showed that this group used 10, 5, 6, and 9 (student talk-initiation) in that order more frequently. Therefore, experienced teachers were able to predict those categories they would use most frequently, however, the order of use was somewhat different. With more predicted use of categories 6, 5, 10 and 8, actual demonstrated more use of silence and confusion than lecture, directions, and student talk-initiation. The actual interaction pattern most used by these fourteen teachers was a 5-10-6-10-5 pattern, or lecture followed by silence or confusion followed by directions followed by silence or confusion followed by lecture.

Examining the non-experienced teachers matrix (Table XII) perceived category totals show 6 (giving directions), 5 (lecture), 2 (praise and encouragement), 4 (questions), 7 (criticizing or justifying authority) more frequently used, whereas, the actual category totals show a 10, 5, 6, 9 (student talk-initiation) usage. Non-experienced teachers were not able to predict the categories they would use most frequently. They did predict use of categories 6 and 5, but used more lecture than directions. Category 10 was the most used but was not predicted to be used, as was category 9, although this category was used less than categories 5 and 6. Categories 2, 4, and 7 were predicted to be used with greater frequencies, however, they were not. The actual interaction pattern most used by these ten teachers was 10-6-10 and 10-5-10 or silence or confusion followed by directions followed by silence or confusion and silence or confusion followed by lecture followed by silence or confusion.

Discussion

It is extremely important to emphasize that the results of this study should not be used to make qualitative judgments about verbal interaction in elementary physical education classes. First of all, as mentioned in the limitations, this study is a representation of verbal interaction on one day. Secondly, an introductory lesson was observed. Perhaps a review or practice session would have produced different verbal interaction. Thirdly, as of yet there is no research to prove that any particular interaction pattern or category use produces the best results. The actual patterns noted were, however, very similar to those noted by Nygaard (51) mentioned in this study earlier of verbal interaction in physical education classes. If any one is in a position to make a value judgment about the verbal interaction occurring, it is the teacher. Her frequent contact with her students and her individual personality need to be considered. Perhaps the most frequently occurring patterns, 10-6-10, silence or confusion followed by direction followed by silence or confusion, and 10-5-10, silence or confusion followed by lecture followed by silence or confusion, were the most efficient method for some teachers. However, if one assumes that the sign of a good teacher is one who can predict and carry out her verbal behavior as Flanders implies (34), then some thought about the relationship between the predicted and actual verbal interaction can take place. Regardless of the categories chosen for use, the relationship between predicted and actual verbal interaction can have great meaning to physical educators, particularly those involved in teacher preparation. If we can not carry out our planned verbal pattern, do we

make ourselves clear to the student? Studies conducted by Kirk (41), Furst (35), and Lohman, Ober, and Hough (43) suggest that training in interaction analysis can help student teachers become more aware and flexible in use of their verbal behavior. Perhaps those teachers who wanted to use category 3 (accepting or using student ideas) wanted to but did not know how to go about doing so. In relation to category usage questions can be asked--why the use of an abundance of silence or confusion?, why were some categories easier to predict than others?, was there an effort on the part of the teacher when predicting to put forth an impressive picture that was never used or practiced?, does thought about verbal behavior occur when teaching and should it? These questions could perhaps go on for pages, but the main point is--should concern be placed on the "how"to teach rather than on "what" to teach, particularly in methods courses?

Of additional interest is the non-experienced teachers predicted less direct influence and actually had quite direct influence. Is it because of idealism? Why were the experienced teachers better able to predict their direct influence? In relation to the total sample, why are physical educators so direct in their verbal presentation of an introductory lesson? This finding was again in accordance to that found by Nygaard (51). Is there something about this subject area and this type of lesson that calls for a direct influence?

It is of additional importance to point out that when any categorical system of verbal analysis is used, care must be taken in making qualitative judgments about category meaning. For example, silence or confusion, category 10, could be a period of production (student thinking, reading, etc.) or a period of unproduction or chaos.

In summary, the investigator has found that perhaps the most valuable use of looking at perceived and actual verbal interaction has resulted in awareness of personal verbal behavior both perceived and actual and the possibilities for creation of new verbal interaction in one's classroom.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

With the purpose of conclusion, this chapter presents the summary, conclusions, and recommendations of this research project.

Summary

The intent of this research was to examine perceived and actual verbal interaction of elementary school physical education teachers and their students. The teachers involved in this study were selected from the elementary schools (grades 1-8) in School District #1, Missoula, Montana. Choosing by a means of a simple random sample from a list provided by the assistant superintendent, thirty teachers, grades 1-6 (five at each grade level) were chosen, whereas, grades 7-8 were randomly sampled without replacement due to small population numbers, resulting in preliminary selection of forty teachers total. Preliminary selection was used to allow for those teachers who were not teaching physical education, those who had taken a course in Flanders Interaction Analysis or some form of verbal analysis, and those who did not wish to participate in the study. The final sample selection which took place during an introductory interview with each teacher resulted in twenty-four teachers total or three at each grade level.

During the introductory session as teachers were selected to participate in the study, an observation time was set up and the amount of the teachers' experience procurred. The observation session was chosen

according to the teacher's lesson plans so that a lesson in which a new skill, game, activity, or topic was presented, and in accordance with the researcher's and teacher's time schedule.

On the date the observation occurred a pre-teacher-researcher interview preceded the taping of the actual verbal interaction session. This pre-session consisted of a short explanation of the research tool used--Flanders Interaction Analysis--along with actual verbal recording procedures, and the filling out of the Perceived Interaction Form by the teacher. It is important to emphasize that the actual taping sessions were to last a maximum of 20 minutes; however, a faulty stopwatch altered this limit somewhat; and that the only verbal interaction that was of an introductory nature and group oriented was considered. For the actual verbal interaction session a Craig Cassette Model 2602 tape recorder was used because of its effectiveness for non-musical recordings, its mobility, and its successful use in another study. This machine was obtained from the Instructional Material Center at the University of Montana. During the taping session the researcher tried to remain as inconspicuous as possible; however, poor acoustics made it necessary in several cases for the researcher to closely shadow the teacher. These observations which included the pre-interview and the taping session took place during the time period of February 8, 1972 to March 20, 1972.

Following the completion of all observation sessions, the recorded tapes were sent to Temple University for initial analysis. Here a reliable observer recorded every three seconds the interaction category used by each teacher on a tally sheet. After tally sheets were

returned to the researcher, the tallies were arranged by duplicated pairs into a ten-by-ten matrix for each teacher, total teachers, experienced teachers, and non-experienced teachers, through use of a computer program created at the University of Montana Data Processing Center.

Actual individual matrix totals were then used along with perceived percentages given by the individual teachers on the Perceived Interaction Form to determine perceived category totals. When these totals had been compiled, the "t" test was used to test for differences between the means. For hypotheses 1-4, a computer program was used. All computers used in this study were IBM 1620 - Fortran III and V, and PDP11-Basic. Hypotheses 5-8 were computed by the researcher. All statistical comparisons were made at the .01 confidence interval. However, additional examination was made at the .001 and .05 levels in hypotheses 1-4 due to the light this information shed on the data.

The following hypotheses were tested in this study:

1. There will be no significant difference between perceived and actual verbal interaction for the total teacher sample.

2. There will be no significant difference between perceived and actual verbal interaction of experienced and non-experienced teachers.

3. There will be no significant difference between perceived and actual verbal interaction of experienced teachers.

4. There will be no significant difference between perceived and actual verbal interaction of non-experienced teachers.

5. There will be no significant difference between perceived and actual I/D ratios for total teacher sample.

6. There will be no significant difference between perceived and actual I/D ratios of experienced teachers and non-experienced teachers.

7. There will be no significant difference between perceived and actual I/D ratios for experienced teachers.

8. There will be no significant difference between perceived and actual I/D ratios for non-experienced teachers.

Conclusions

1. For the total teacher sample, teachers were not able to predict verbal interaction between themselves and their students. However, they were more successful in predicting some categories than others. The easiest to predict were categories 4 (asking questions), 5 (lecturing), 8 (student talk response), and 9 (student talk initiation). Categories 2 (praise or encouragement) and 7 (criticizing or justifying authority) were somewhat more difficult to predict, with categories 1 (accepting feeling), 3 (accepting or using student ideas), 6 (giving directions), and 10 (silence or confusion) the most difficult.

2. It made no difference whether the teacher was experienced or non-experienced because both predicted similar and carried out similar interaction according to categories.

3. Experienced teachers could not predict the verbal interaction between themselves and their students. They were, however, more successful in predicting some categories. The easiest to predict were categories 1 (accepting feeling), 2 (praise or encouragement), 3 (accepting or using student ideas), 4 (asking questions), 5 (lecturing),

8 (student talk response), and 9 (student talk initiation). Categories 6 (giving directions) and 7 (criticizing or justifying authority) were somewhat more difficult to predict, with category 10 (silence or confusion) the most difficult to predict.

4. Non-experienced teachers could not predict the verbal interaction between themselves and their students. They were more successful in predicting some categories than others. Categories 4 (asking questions), 5 (lecturing), 7 (criticizing or justifying authority), 8 (student talk response), and 9 (student talk initiation) were the easiest to predict, with categories 1 (accepting feeling), 2 (praise or encouragement), 3 (accepting student ideas), and 6 (giving directions) somewhat more difficult to predict. Category 10 (silence or confusion) was the hardest to predict.

5. For the total teacher sample, teachers were more direct than they thought they would be.

6. It made no difference whether the teacher was experienced or non-experienced because both predicted and carried out similar direct influences in their classrooms.

7. Experienced teachers were able to predict that they would be direct influences in their classroom.

8. Non-experienced teachers were more direct than they thought they would be.

For the total teacher sample, teachers were able to predict and carry out use of categories 5 (lecturing) and 6 (giving directions) according to category totals during the introductory lesson. However, they predicted more use of categories 2 (praise and encouragement) and 4 (asking questions) and ended up using a greater amount of category 10

(silence or confusion), more even than categories 5 and 6. The actual interaction pattern most used by these twenty-four teachers was silence or confusion followed by directions followed by silence or confusion and silence or confusion followed by lecture followed by silence or confusion (10-6-10 and 10-5-10).

Experienced teachers were able to predict those categories they would use most frequently, however, the order of use was somewhat different. With more predicted use of categories 6 (giving directions), 5 (lecturing), 10 (silence or confusion) and 8 (student talk response), actual demonstrated more use of silence and confusion than lecture, directions, and student talk initiation. The actual interaction pattern most used by these fourteen teachers was a 5-10-6-10-5 pattern, or lecture followed by silence or confusion followed by directions followed by silence or confusion followed by lecture.

Non-experienced teachers were not able to predict the categories they would use most frequently. They did predict use of categories 6 (giving directions) and 5 (lecturing), but used more lecture than directions. Category 10 (silence or confusion) was the most used but was not predicted to be used as was category 9 (student talk initiation) although this category was used less than categories 5 (lecturing) and 6 (giving directions). Categories 2 (praise or encouragement), 4 (asking questions), and 7 (criticizing or justifying authority) were predicted to be used with greater frequencies, however, they were not. The actual interaction pattern most used by these ten teachers was 10-6-10 and 10-5-10 or silence or confusion followed by directions followed by silence or confusion and silence or confusion followed by lecture followed by silence or confusion.

Recommendations

The following recommendations are suggested as possible avenues for further research:

1. Compare the predicted and actual interaction in other classroom situations, for example, a review lesson or practice session.

2. Compare the perceived and actual verbal interaction of those teachers who are not specialists in physical education with those who are.

3. Compare the ability of student teachers trained in interaction analysis to predict their verbal behavior with those who are not trained.

4. Compare perceived and actual interaction of experienced and non-experienced teachers over a longer period of time using another system of analysis.

5. Compare actual and post-thought interaction of experienced and non-experienced teachers.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. American Association for Health, Physical Education and Recreation. Developing Democratic Human Relations Through Health Education, Physical Education and Recreation, First Yearbook of the American Association for Health, Physical Education, and Recreation. Washington, D.C.: AAHPER, 1951.

2. Amidon, Edmund, and Michael Giammatteo. "The Verbal Behavior of Superior Elementary Teachers," in Interaction Analysis: Theory, Research, and Aplication, edited by Amidon and Hough. Reading, Mass., Palo Alto, London, Don Mills, Ontario: Addison-Wesley Publishing Co., 1967.

3. Amidon, Edmund, and Elizabeth Hunter. "Verbal Interaction in the Classroom: The Verbal Interaction Category System," in Interaction Analysis: Theory, Research, and Application, edited by Amidon and Hough. London: Addison-Wesley Publishing Co., 1967.

4. Anderson, Harold A., and Helen M. Brewer. Studies of Teachers' Classroom Personalities: Part I. Dominative and Socially Integrative Behavior of Kindergarten Teachers. Stanford, Calif.: Stanford University Press, 1945.

5. Anderson, Harold A., and Joseph E. Brewer. Studies of Teachers' Classroom Personalities: Part II. Effects of Dominative and Integrative Contacts on Children's Classroom Behavior. Applied Psychology Monographs, No. 3, 1946.

6. Anderson, Richard C. "Learning in Discussion: A Resume of the Authoritarian-Democratic Studies," Harvard Educational Review, 29:201-205 (Summer 1959).

7. Bales, Robert T. Personality and Interpersonal Behavior. New York: Holt, Rinehart, and Winston, 1970.

8. Bales, Robert T., and Ned Flanders. "Planning an Observation Room and Group Laboratory," American Sociological Review, 19:771-781 (December 1954).

9. Bales, Robert T., and Henry Gibrands. "The Interaction Recorder: An Apparatus and Check List for Sequential Content Analysis of Social Interaction," Human Relations, 1(4):456-463 (1948).

10. Bar, A. S. "The Measurement and Prediction of Teaching Efficiency," Journal of Experimental Education, 16:203-283 (September 1947).

11. Barrett, Kate R. "The Structure of Movement Tasks--A Means for Gaining Insight into the Nature of Problem-Solving Techniques," Quest, Monograph 15 (January 1971).

12. Bellock, Arno A., et al. The Language of the Classroom. New York: Teachers College Press, Teachers College, Columbia University, 1966.

13. Bellock, Arno A., and Joel Davitz. The Language of the Classroom: Meanings Communicated in High School Teaching. New York: Institute of Psychological Research, Teachers College, Columbia University, 1963.

14. Bloom, Benjamin S. (ed.). Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook 1: Cognitive Domain. New York: David McKay Co., 1956.

15. Blumberg, A., and P. Cusick. "Supervisor-Teacher Interaction: An Analysis of Verbal Behavior," Education, 91:126-134 (November 1970).

16. Bookhout, Elizabeth C. "An Observational Study of Teaching Behavior in relation to the Social-Emotional Climate of Physical Education Classes." Unpublished Ph.D. dissertation, New York University, New York, 1965.

17. Boschee, Floyd. "A Comparison of Command, Task, and Individual Program Styles of Teaching on Four Developmental Channels." Unpublished Ed.D. dissertation, University of Montana, Missoula, 1972.

18. Bucher, Charles S. Methods and Materials for Secondary School Physical Education. St. Louis: C. V. Mosby Co., 1970.

19. Clifton, Marguerite. "A Developmental Approach to Perceptual Motor Experiences," Journal of Health, Physical Education and Recreation, 41:34 (April 1970).

20. Cogan, Morris L. "Theory and Design of a Study of Teacher-Pupil Interaction," in Interaction Analysis: Theory, Research, and Application, edited by Amidon and Hough. London: Addison-Wesley Publishing Co., 1967.

21. Combs, Arthur. The Professional Education of Teachers. Boston: Allyn and Bacon, Inc., 1965.

22. Consumers Union. "Cassette Tape Recorder," Consumer Report, 1971, Buying Guide Issue, December, 1970.

23. Cowell, Charles C. "The Contributions of Physical Activity to Social Development," Research Quarterly, 31:286 (May 1960).

24. Cowell, Charles C. "A Suggested Index of Social Adjustment in High School," Educational Research Bulletin, 17:10-19 (January 1938).

25. Cowell, Charles C. "Validating an Index of Social Adjustment for High School Use," Research Quarterly, 29:7-18 (March 1958).

26. Cratty, Bryant J. Movement Behavior and Motor Learning. Philadelphia: Lea and Tebiger, 1967.

27. Cumbee, Frances Z., and Chester W. Harris. "Populations and Samples," in Research Methods in Health, Physical Education and Recreation. Washington, D.C.: American Association for Health, Physical Education, and Recreation, 1959.

28. Dauer, Victor. Dynamic Physical Education for Elementary School Children. Minneapolis: Burgess Publishing Co., 1971.

29. Doughtery, Greyson. Methods in Physical Education and Health for Secondary Schools. Philadelphia: W. B. Saunders Co., 1969.

30. Doughtery, Neil Joseph. "A Comparison of the Effects of Command, Task, and Individual Program Styles of Teaching in the Development of Physical Fitness and Motor Skills." Unpublished Ph.D. dissertation, Temple University, Philadelphia, 1970.

31. Downie, N. M., and R. W. Heath. Basic Statistical Methods. New York, Evanston, London: Harper and Row, Publishers, 1970.

32. Fishman, Sylvia C. "A Procedure for Recording Augmented Feedback in Physical Education Classes." Unpublished doctoral dissertation, Teachers College, Columbia University, New York, 1970.

33. Flanders, Ned. Analyzing Teaching Behavior. Reading, Mass.; Menlo Park, Calif.; Don Mills, Ontario, London: Addison-Wesley Publishing Co., 1970.

34. Flanders, Ned. "Teacher Influence in the Classroom," in Interaction Analysis: Theory, Research, and Application, edited by Amidon and Hough. London: Addison-Wesley Publishing Co., 1967.

35. Furst, Norma. "The Effects of Training in Interaction Analysis on the Behavior of Student Teachers in Secondary Schools," in Interaction Analysis: Theory, Research and Application, edited by Amidon and Hough. London: Addison-Wesley Publishing Co., 1967.

36. Galloway, Charles M. "Nonverbal Communication," Instructor, 77: 37-42 (April 1968).

37. Hamilton, Alicita; Pride Anderson, and Carol Merten. "Learning to Talk while Developing Motor Skills," Journal of Health, Physical Education and Recreation, 43:80 (April 1972).

38. Holt, John. How Children Learn. New York, Toronto, London: Pitman Publishing Corporation, 1967.

39. Humphrey, James; Alice Love and Leslie Irwin. Principles and Techniques of Supervision in Physical Education. Dubuque, Iowa: W. C. Brown Company, 1972.

40. Jones, Harold E. "Physical Ability as a Factor in Social Adjustment in Adolescence," Journal of Educational Research, 40: 287-301 (December 1946).

41. Kirk, Jeffrey. "Elementary School Student Teachers and Interaction Analysis," in Interaction Analysis: Theory, Research, and Application, edited by Amidon and Hough. London: Addison-Wesley Publishing Co., 1967.

42. Lippitt, R., and R. K. White. "Social Climate of Children's Groups," in Child Behavior and Development, edited by R. G. Barker, J. S. Kounin, and H. F. Wright. New York: McGraw-Hill Book Co., 1943.

43. Lohman, Ernest; Richard Ober, and John Hough. "The Study of the Effect of Pre-Service Training in Interaction Analysis on the Verbal Behavior of Student Teachers," in Interaction Analysis: Theory, Research, and Application, edited by Amidon and Hough. London: Addison-Wesley Publishing Co., 1967.

44. Loil, Sue. "Model in Use (Non-Verbal Communication)," Theory Into Practice, 7:176-180 (December 1960).

45. Love, Alice, and Patricia Barry. "The Teacher Education Center in Physical Education," Journal of Health, Physical Education, and Recreation, 42:33-35 (April 1971).

46. Mariani, Tom. "A Comparison of the Effectiveness of the Command Method and the Task Method of Teaching the Forehand and Backhand Tennis Strokes," Research Quarterly, 41:171-174 (May 1970).

47. Medley, Donald M., and Harold E. Mitzel. "A Technique for Measuring Classroom Behavior," Journal of Educational Psychology, 49:86-92 (April 1958).

48. Miel, Alice (ed.). Creativity in Teaching. Belmont, Calif.: Wadsworth Publishing Co., 1961.

49. Morgan, Nancy. "Comparison of Verbal and Visual Cues in Teaching Beginning Swimming," Research Quarterly, 42:431 (December 1971).

50. Mosston, Muska. Teaching Physical Education. Columbus, Ohio: Charles E. Merrill Co., 1966.

51. Nygaard, Gary Allen. "An Analysis of Verbal Interaction in Physical Education Classes." Unpublished Ed.D. dissertation, University of Oregon, Eugene, 1971.

52. Ober, R. L. "Reciprocal Category System," Journal of Research and Development in Education, 4:34-51 (Fall 1970).

53. Pestolesi, Robert A. "Critical Teaching Behavior Effecting Attitude Development in Physical Education." Unpublished Ph.D. dissertation, University of Southern California, 1968.

54. Pitman, Sir James. "Man--the Communicating Animal, Par (Verbal) Excellence," New Approaches to Individualizing Instruction, a Report of a Conference on May 11, 1965, to mark the Dedication of Ben A. Wood Hall. Princeton, N.J.: Educational Testing Service, 1960.

55. Quest, Monograph XV (Winter Issue, January 1971).

56. Samph, T. "Observer Effects on Teacher Behavior." Unpublished doctoral dissertation, University of Michigan, 1968.

57. Sparks, Jack L. "Relative Effects of Various Verbal Incentives on Learning and Retention of a Gross Motor Skill." Unpublished Master's Thesis, Pennsylvania State University, 1963.

58. Todd, Frances E. "Democratic Methodology in Physical Education," Research Quarterly, 23:106-110 (March 1952).

59. Todd, Frances E. "Sociometry in Physical Education," Journal of Health, Physical Education, and Recreation, 24(5):23-29 (1953).

60. Turner, Edward T. "Creativity in the College Classroom," Journal of Health, Physical Education, and Recreation, 41:36 (September 1970).

61. Vannier, Mary Helen, and Mildred Foster. Teaching Physical Education in Elementary Schools. Philadelphia, London, Toronto: W. B. Saunders Company, 1968.

62. Withall, John G. "The Development of a Technique for the Measurement of Social-Emotional Climate in Classrooms," Journal of Experimental Education, 17:347-361 (March 1949).