

THE RELATIONSHIP BETWEEN TEACHER ENTHUSIASM
AND STUDENT INVOLVEMENT DURING
MOTOR SKILL ACTIVITIES

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Due to the presumed effects a teacher's enthusiasm (T.E.) has upon a student, and the importance of student involvement (S.I.) in an activity, this investigation studied these behaviors as they occurred in the physical education setting. Two specifically designed descriptive-analytic coding systems were developed appropriate to the target behaviors. The subjects were five physical education teachers and a randomly selected student from one of each of their classes. The subjects were video taped, with a separate camera for each teacher and student. Three coders per system were trained until at least 80% inter-coder reliability was attained. The coders then coded the video tapes and mean scores for each teacher and student were computed. Three relationships between teacher enthusiasm and student involvement were investigated (T.E. ten seconds prior to S.I.; T.E. thirty seconds prior to S.I.; and T.E. every ten seconds during S.I.). Significant differences were not found in four of the five teacher-student pairs. A significant, negative

correlation was found between T.E. and S.I. in one teacher-student pair, as they were studied in each of the three associations. It is recommended that further research be conducted to establish additional tools to study teacher and student behaviors as they occur during the teaching-learning process.

To Mom and Dad

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CHAPTER I

INTRODUCTION

Education is undergoing constant change in order to meet the needs of today's students and to be accountable for promoting student learning. Helping to bring about and providing directions for this change are in depth descriptive-analytic studies of various important aspects of teacher and student behavior. This study deals with the interaction of two such important behavioral aspects, teacher enthusiasm (T.E.) and student involvement (S.I.) as they occur in the physical education setting.

The interaction of teacher-student variables was studied for two reasons. First, it seems that studying teacher behaviors alone can lead to recommendations for changing teacher behaviors without accompanying research to show what effects these changes will have on student behaviors. To avoid this problem, teachers and students need to be observed, analyzed, and evaluated, not as separate entities, but together as an interacting pair. Teacher-student interactions and behaviors during class time are an invaluable source from which to describe the effects of the teacher's performance on the student's learning. If the behaviors of students could be studied

as they occurred during class time, it would provide the teacher valuable input about the effect he or she is having upon the student.

A second, but related reason for studying the interactions of teacher-student variables, is so that information from such a study can help teachers adjust their behaviors to have the most positive effect on student learning. Hough and Duncan (1970) state that a teacher's primary purpose is to facilitate learning. Furthermore, student learning can only be measured through observations that reveal change in student behavior. Galloway (1971 c) has stated, "as teachers we have been admonished to understand that actions speak louder than words, that our behavior can mean more than what we say". Further, Galloway has found through research that "the acts of teaching and learning are more than verbal; that teaching influence occurs without words. We call such communications, non-verbal". Therefore, as the teacher influences and communicates through various behaviors, the student's behaviors can be observed to reveal what is happening to them. Communication "is the language of gesture, facial expression, and body movement, and the use of time and space that help convey not only information about external happenings but also about the process by which humans communicate" (Reusch and Kees, 1959:7). It can be understood then that behaviors exhibited during class time by both teachers and students are a source of information

from which the teaching-learning process can be better understood.

Once a teacher becomes aware of students' non-verbal behaviors and realizes how this awareness can influence his own behaviors he can be more responsive to pupil cues in terms of ideas and feelings being expressed. In light of this knowledge, the teacher reorganizes his thinking and strategies relative to planning, teaching, and evaluation (Roderick and Moyer, 1971:16).

The interaction of T.E. and S.I. was studied in a physical education setting because a physical educator's role in the student-learning process is no less vital than that of the classroom teacher. In view of this, "the physical educator must identify those aspects of the teaching-learning act which will insure student growth; physical, emotional, and intellectual, in all areas of physical education inquiry" (Heitman, 1974:3).

To enhance the teaching-learning process in the physical education setting, the teacher would want to set his or her objectives and behaviors at enabling the students to become totally "involved" in the activity undertaken. Physical education becomes the medium for learning, and the positive "involvement" in an activity is the means by which students explore, discover, grow, and have experiences that teach them about themselves, their movement potential, and the world around them. Therefore, a physical education teacher needs tools to judge his or her own behavior, and the relationship of that behavior with the involvement of his or her students.

In addition to being aware of how his or her behavior is affecting the student, the teacher must realize whether or not this is having an effect on the students' learning. "Students need to interact freely with teachers as their guides and companions in learning" (Parker and French, 1971:227). Therefore, it is not enough for a teacher to interact randomly with students during class time, but to interact genuinely with a positive concern about what is going on. One of the responsibilities of a teacher is "in teaching students how to enjoy a subject matter rather than hate it" (Siedentop, 1976). "If a student's physical education experiences are to promote growth tendencies, then the physical education teacher must teach in a manner that strengthens the student's approach tendencies toward physical activities" (Siedentop, 1976:7). "An approach tendency is any behavior of students that would allow one to conclude that they find the subject and the learning experience satisfying, challenging, or some combination of these" (Siedentop, 1976:6).

Enthusiasm is thus one of the behaviors teachers demonstrate that affect the students. The relationships between the teacher's enthusiasm and the student's involvement was to be studied in this investigation. It was hoped that associations between these two variables would be substantiated and would have implications for the teaching-learning process in the physical education setting.

The purpose of this study, then, was to investigate

selected teacher and student behaviors during motor skill activities in physical education classes, through the use of descriptive-analytic coding systems designed to study each of the behaviors. The selected behaviors were teacher enthusiasm (T.E.) and student involvement (S.I.). As stated previously, the teacher would want to affect the students through positive behaviors, i.e. enthusiasm, in order that the students' "approach tendencies" may be developed and strengthened toward an activity. The student's involvement in an activity will demonstrate how a student feels about what he or she is doing, what is going on, and reflect the teacher's behavior. Observing the student's involvement in an activity will reveal any changes in behavior, and hopefully will lead to what caused these changes, both positive and negative. Measurement and evaluation of the teacher's enthusiasm, at the same time, may show associations between these two behaviors, and how they affect each other.

The descriptive-analytic instruments used in this study were designed to measure teacher enthusiasm and student involvement. It is hoped that these systems may stimulate the development of other instruments to analyze and evaluate teacher-student behaviors in the classroom.

Statement of Problem

This study was designed to formulate two descriptive-analytic coding systems and to determine if

certain relationships exist between teacher enthusiasm (T.E.) and student involvement (S.I.) in the physical education setting.

Delimitations

1. This study is delimited to five elementary school physical education teachers in the Rochester, New York, area.

2. This study is delimited to a target student randomly selected in each of the five teacher's classes.

3. This study is delimited to motor skill (non-competitive, non-game) activities.

4. This study is delimited to the descriptive coding of teacher enthusiasm during physical education class, and the involvement of the target student while engaged in a motor skill activity.

Limitations

1. Video tape recorders may not pick up all of the verbal and nonverbal behaviors actually demonstrated during the classes.

2. The presence of videotape recorders and the individuals to operate them may have an effect on the teacher and student behaviors.

3. The reliability of the coding systems developed through this study is limited to pilot testing and inter-coder reliability attained during the training period, prior to the final testing.

Definitions of Terms

The terms used in this study are defined as follows:

Motor Skill Activity. An activity in which a student is actively engaged in practicing or performing skills, or tasks typically associated with the subject matter of physical education. Further, it is non-game and uncompetitive in its form.

Teacher Enthusiasm. The extent to which a teacher displays any positive feeling through facial expression (cheers, smiles), body movements (energetic, exciting), participation (in activities), physical contact with the students, unusual warmth, or constant participation.

Student Involvement. The degree to which a student displays positive facial expressions and movements, enthusiasm, interactions, etc., while engaged in a motor skill activity, that has been chosen by the teacher, a peer, or the student himself/herself. Involvement ends when the student is no longer performing that motor skill.

Descriptive-Analytic System. "A categorical 'coding system' which will accurately describe the events in a classroom, which when analyzed, enables a better understanding of what transpired" (Anderson, 1969:3).

Inter-Coder Reliability. A level of agreement among the coders, to establish that the coding systems can be used reliably. An eighty percent, or better, inter-coder reliability must be reached during training, prior to the final testing.

CHAPTER II

REVIEW OF LITERATURE

This chapter deals with literature concerning the analysis of teacher and student behaviors, and the descriptive-analytic systems devised to perform this task. As the research previously conducted is reviewed, it will be noted why these systems would not be sufficient to observe teacher enthusiasm (T.E.) and student involvement (S.I.) within this study. Further development of new descriptive-analytic systems, and the refinement of the ones that already exist, will be stressed throughout.

There are a number of devices and systems (i.e. Flanders; Galloway; and McDonald) to describe teacher and student behavior, and to measure the interaction between them. Most of these systems are applicable to the classroom setting and not to the physical education setting. To fully carry out the purposes of this study, it was important for this investigator to find a system or systems to describe a physical educator's nonverbal behavior, and the behavior of their students, during class time.

The role of the teacher in the student-learning process is a critical and precarious one. The extensive research in instructional theory bears this out. Much of

the work done in this area has been based on the work of Piaget and B. F. Skinner. Both theorists deal with cognitive development in children, and with structural analysis of the teaching act (Moore, 1968:154). Skinner's theory implies that immediate reinforcement has a positive effect on the learner. Therefore, in the classroom or gymnasium setting, we can see how a teacher's interaction with a student is relevant and important to the student's learning.

As we begin to understand more completely the interaction between the student and teacher...we will see the teacher becoming more and more crucial in the child's healthful development...with wholesome development, the child's capacity to learn is vastly accelerated... (Moore, 1968:56).

Reported in Mirrors For Behaviors (1967) is the unpublished study by J.B. McDonald and Esther Zaret, in which an analysis of teacher-student behavior of nine teachers and their students showed that "when teacher behaviors tended to be 'open' -- clarifying, stimulated, accepting, facilitating -- the student responses tended to be 'productive'." And when teacher behavior was "closed" the student's responses were "reproductive". In view of this, the physical educator would want to be "open", i.e. enthusiastic, in his or her behavior toward the student to produce "productive", i.e. involved, student behavior for learning.

Flanders (1965) presents a number of tools for analyzing classroom interaction, including a method of measuring student attitudes. But his systems, while satisfactory for the classroom, are difficult to apply to the

physical education setting. Yet, Dougherty (1971) and others have modified the Flanders system for use in physical education. Zahorit (1970) conducted a study on students' perception of the teachers' verbal feedback, and compiled a list of teaching suggestions from the results. Again, we would find such a system inefficient for the gymnasium, because it concentrates on verbal behaviors exhibited in the regular classroom setting. Galloway (1968) describes nonverbal communication, and includes a summary combining verbal categories with Flanders nonverbal categories. The teacher's nonverbal behaviors are seen with the potential positive or negative effect they could have on the student's behavior. In Mirrors For Behavior (1967), there are twenty-two systems cited for analysis of verbal and nonverbal communication, but they are for use in the classroom situation. While students are students, and teachers are teachers, there is a comparable difference in their behavior and interactions when they are in the physical education environment, as opposed to the classroom setting. This is obviously due to the difference in content, structure, environment, organization, and so on, in the two situations.

Anderson (1969) comes forth to review the descriptive research done within the teaching profession, and concludes,

descriptive systems have been developed to account for the events in academic classrooms. They focus almost exclusively on verbal interactions between

teacher and student. There is evidence to indicate that these systems are not adequate to the task of accounting for many crucial events in the gymnasium, swimming pool, and athletic field (Anderson, 1970: 7).

Anderson further details how descriptive research may be done in physical education and what such data would provide for the teacher. One benefit would be to measure the relationship between teaching and learning.

Many psychologists believe that it is not possible to see learning. They further feel that the only thing we can see is behavior and that when a change in behavior has occurred, then it is possible to infer that learning has probably occurred (Humphrey, Love, Irwin, 1972:60).

As Galloway sees it,

Students expect to be observed by teachers and quickly learn to communicate information that is in their own best interest. Attending school requires the young to learn nonverbal language of the classroom. We see teachers engaging in various maneuvers to influence the behavior of students. These overt behaviors communicate silent expectations about classroom behavior. These nonverbal interactions between teacher and students are occurring continuously. Such interactions have a profound influence on learning conditions and working relationships between teacher and students, (1971:67-68).

While new methods of teaching are being defined and implemented, we need to realize what effect these techniques will have upon students, and student learning. Educational publications are available to guide teacher behavior. These books define teaching methods, principles, techniques, etc. (Hough and Duncan, 1970; Mosston, 1966; Schurr, 1975; and others); but these professional guides fall short due to the majority of theory content. What is needed is a method of evaluating the theories in order to be accountable for

putting them into effect. The physical education profession has begun the necessary research to help discover the best means possible to positively influence student learning.

A system was developed by Hurwitz (1974) to describe the teacher's role in the learning-activity selection process, which is referred to as TRI-LASP. In his study he defines the learning activity selection process in respect to the teacher and the student. His main interest was in categorizing teacher behavior into descriptive terms for research and testing. His study was developed for the physical education setting, with potential for the classroom. Another implication from the study was to define the student's role in the learning activity selection process, and apply the TRI-LASP System incorporating the student. It can be seen that emphasis should be placed on research to describe student behavior and teaching behaviors and their implications in the learning situation.

A large number of descriptive-analytic studies which focus on teacher enthusiasm have been conducted, prior to this study. These studies have used behavioral categories that have been too large and/or too general, and the results were not conclusive. Teacher enthusiasm is a strong variable which should be further studied in order to understand its full potential, and the effect it could have on student learning.

There are variables of teaching behavior that

could enhance student performance and learning in the educational setting. Research has been conducted to determine the variables between teacher behaviors and student achievement. Smith (1971) summarizes such studies and eleven variables of teacher behavior are found to have an effect on student achievement. Teacher enthusiasm is one of the five strongest teacher behaviors to cause an effect on student achievement.

Many descriptive-analytic systems use some form of recording to observe the behaviors to be studied. This eliminates using a live, on-the-scene observer/coder, and permits later analysis. There are a number of disadvantages to be considered in the use of video tape recordings. To date, the advantages outweigh the disadvantages, and make the decision of how to record the behaviors simpler. Bush, Bittner, and Brooks (1972) found that there was no significant difference for any of the three factors of anxiety, exhibitionism, or reticence, between subjects that were videotaped, and subjects that were not. In order to carry out descriptive-analytic research it is necessary to record behaviors, in some way, in order to analyze them. With the convenience (and now standard) of using video tape recordings, it appears to be the most practical means of recording data, for descriptive-analytic research.

As part of this study, research in the areas of teacher enthusiasm, student involvement, and descriptive-analytic coding systems were investigated. Most of the

work previously conducted could not be incorporated into the design of this study. In addition to the lack of similar research in the gymnasium, no study was found that used two different coding systems, appropriate to different target behaviors. In addition, there proved to be no research covering the three associations studied between the variables of T.E. and S.I., as was carried out in this study.

As a result of the research, the need for adequate descriptive systems to analyze teacher and student behavior in the physical education setting is clear. Such devices would describe and compare student and teacher nonverbal behavior and analyze implications for the positive or negative effects these behaviors have on learning.

CHAPTER III

METHODS AND PROCEDURES

The method used to study teacher enthusiasm (T.E.) and student involvement (S.I.) during motor skill activity involved a descriptive analysis of video tapes of physical education classes. To record and measure these behaviors, two coding systems were developed. Coders were selected and trained to study the video tapes and record the observed behaviors on coding sheets. Inter-coder reliability of 80% or better was established prior to the final testing. From the collected data, T.E. was correlated with S.I. before, during, and after motor skill activity for the duration of class.

The following chapter is divided into four major sections:

1. The Need For The Coding Systems.
2. The Two Coding Systems That Have Been Developed.
3. The Collection Of The Data.
4. The Design Of The Study and The Analysis Of The Data.

The Need For The Coding Systems

The purpose of a coding system is to classify certain focused-on behaviors into categories to observe selected aspects of the teaching-learning process. Most of the systems developed through research have been

intended for use in the academic classroom. A few have been modified and adapted for the application in the physical education environment, but research of this kind is still limited in the field of physical education. For the purposes of this study, there was a need to formulate and test a coding system specifically developed for the analysis of T.E. and S.I. during motor skill activity. For this investigation, two coding systems were developed to carry out this task. One focused on the verbal and nonverbal behaviors of involvement a student displays while engaged in motor skill activity. The other focused on the verbal and nonverbal behaviors of enthusiasm a physical education teacher displays during a physical education class. The behaviors were observed and recorded on specially designed coding sheets (see pages 19 and 25).

The Two Coding Systems

This study involved ten video tapes of physical education classes and the observation and classification of the observed behaviors by coders trained in each system. The series of video tapes were collected for use during this study for three main reasons. First, it would be virtually impossible for the group of trained coders to meet together at times when physical education classes were scheduled. Second, the presence of a number of people (6-8) could be very disturbing to normal class procedures, and could adversely affect the teacher's and students' behaviors. Thirdly, coding is a simpler task when

employing the use of video tapes, as opposed to doing live coding of behaviors. The tapes may be stopped at any point and reviewed over and over again.

Two descriptive coding systems were developed for use in this investigation. Each system was different, but contained the same components as follows:

A. The FOCUS which defines the behaviors to be described by the system,

B. A SET OF CATEGORIES to which the focused-on behaviors can be assigned,

C. INFORMATION which enables people to recognize the behaviors to be described and then determine the category to which each behavior should be assigned,

D. PROCEDURES FOR OBSERVING the focused-on behaviors and FOR RECORDING the categories to which the observed behaviors are assigned,

E. Systematic PROCEDURES FOR SUMMARIZING the data recorded on a coding form. (Hurwitz: 1975).

Coding System I. Coding System I (C.S. I) was developed to observe the teacher's behavior.

Focus. The focus is on the teacher's enthusiasm during physical education classes.

Categories. The categories to which teacher enthusiasm can be assigned depend on the extent to which the teacher's enthusiasm has been observed. The categories are as follows:

| <u>Category-Code</u> | <u>Definitions</u> |
|----------------------|--|
| 5 | The teacher displays enthusiastic behavior 80-99% of the time. |
| 4 | The teacher displays enthusiastic behavior 60-79% of the time. |
| 3 | The teacher displays enthusiastic behavior 40-59% of the time. |
| 2 | The teacher displays enthusiastic behavior 20-39% of the time. |
| 1 | The teacher displays enthusiastic behavior 0-19% of the time. |

Definitions. Teacher enthusiasm is defined as the extent to which the teacher displays any positive feeling through facial expression (smiles, cheers), body movements (energetic, exciting), participation (in activities), physical contact with the students, unusual warmth, or constant participation.

Coding Procedures. (See Coding Sheet on the following page). Three coders focus on the T.E. for the full duration of a class. Coding is begun at the start of class and does not stop during periods of instruction, demonstration, or while the teacher is fulfilling a task. Ten second intervals are announced by a pre-recorded tape denoting ten second time spans. After each ten second interval the coders mark the appropriate box on the coding sheets with a number from 1 to 5, according to the category-codes.

CODER: _____

STUDENT OR TEACHER

TAPE NUMBER: _____

TIME: _____

| TIME | CODE | TIME | CODE | TIME | CODE | TIME | CODE | TIME | CODE |
|------|------|------|------|------|------|------|------|------|------|
| 1 | | 21 | | 41 | | 61 | | 81 | |
| 2 | | 22 | | 42 | | 62 | | 82 | |
| 3 | | 23 | | 43 | | 63 | | 83 | |
| 4 | | 24 | | 44 | | 64 | | 84 | |
| 5 | | 25 | | 45 | | 65 | | 85 | |
| 6 | | 26 | | 46 | | 66 | | 86 | |
| 7 | | 27 | | 47 | | 67 | | 87 | |
| 8 | | 28 | | 48 | | 68 | | 88 | |
| 9 | | 29 | | 49 | | 69 | | 89 | |
| 10 | | 30 | | 50 | | 70 | | 90 | |
| 11 | | 31 | | 51 | | 71 | | 91 | |
| 12 | | 32 | | 52 | | 72 | | 92 | |
| 13 | | 33 | | 53 | | 73 | | 93 | |
| 14 | | 34 | | 54 | | 74 | | 94 | |
| 15 | | 35 | | 55 | | 75 | | 95 | |
| 16 | | 36 | | 56 | | 76 | | 96 | |
| 17 | | 37 | | 57 | | 77 | | 97 | |
| 18 | | 38 | | 58 | | 78 | | 98 | |
| 19 | | 39 | | 59 | | 79 | | 99 | |
| 20 | | 40 | | 60 | | 80 | | 100 | |

Illustration of Coding Sheet I

Figure 3.1

The boxes are in succession with numbers marking the first (1) ten second interval, the second (2) ten second interval, and so on, with enough boxes to cover the duration of class time.

Data Summary Procedures. The procedures for summarizing the data recorded on the coding forms will be to compute the mean of the coding scores of the T.E. for the three coders during every ten second time interval. In the cases where only two of the three coders enter a score, the mean of the two scores will be computed.

Coding System II. Coding System II (C.S. II) was developed to observe a student's behavior.

Focus. The focus is on a student's involvement during motor skill activities. This is defined as the degree to which the student displays positive facial expressions and movements, enthusiasm, interactions, etc., while engaged in a motor skill activity that has been chosen by the teacher, a peer, or the student himself/herself. Involvement ends when the student is no longer performing the motor skill.

Categories. The set of categories to which student involvement in motor skill activities will be assigned relates to the degree of the student's involvement. The following five categories account for the S.I. from high to low:

| <u>Category-Code</u> | <u>Definitions</u> |
|----------------------|---|
| 5 | When the student displays positive facial expressions and movements, reaches out to others, shows enthusiasm while engaged in activity. The student is concentrating fully on the particular motor skill. |
| 4 | The student engages in an activity slowly, without an all out effort; some smiles, clapping, and cheering; a low level of interaction with others and is distracted at times. |
| 3 | Rote performance of the motor skill, neutral facial expression, no enthusiastic interactions. |
| 2 | The student displays negative facial expressions and body movements. |
| 1 | There is no effort or initiation to participate, the student sits out, or withdraws from the activity. |
| 0 | When he (the student) is waiting his turn, turning a jumprope, or any other periods of time when he is not physically participating in a motor skill activity. When the student is engaged in another activity other than a motor skill. (Adaptation from Roderick and Moyer: 1971). |

Ground Rule. Student participation in a motor skill activity is when the student engages in a motor skill that has been chosen by the teacher, a peer, or by the student himself/herself. This participation ends when the student is no longer performing that motor skill. The student is not participating when:

1- he/she performs the skill of running just to get from one place in the gymnasium to another for organizational purposes;

2- he/she "incidentally" begins to perform physical education skills while a demonstration and/or explanation is going on;

3- he/she "coincidentally" begins to perform physical education skills without the apparent intent to practice the skill (i.e. dribbling a basketball while waiting to practice foul shooting, throwing a ball to a student putting the balls away),

4- he/she is waiting his turn, turning a jumprope, or any other periods of time when he is not physically participating in a motor skill activity (Adaptation from Hurwitz: 1974). When the coders observe these behaviors, they will mark the corresponding box with a (0).

Coding Procedures. (See Figure 3.2). One target student is randomly selected for each observed physical education class. It was felt that every student is affected by his or her teacher. Therefore, a randomly selected student would provide a chance to observe the teacher's effect on him or her during motor skill activity, with implication of how the other students may also be affected by the teacher.

Before a class is video taped, the investigator asks the teacher how many students are in the class (example- 25). From this number an aide working with the investigator selects a number within the range of 1 to 25 (example- 7). As the students enter the gymnasium, the number student (the seventh) becomes the target student to be observed.

A second video tape recorder records the target student's behavior, at the same time the first video tape recorder records the behaviors of the teacher. The two tapes are started together, and stopped when the thirty minute tapes end. Both tapes simultaneously record the target student's and the teacher's verbal and nonverbal behaviors throughout the class.

At every ten second interval three coders mark the student's involvement. (These ten second intervals coincide with the ten second intervals of the T.E. coding). At this point the coders mark the time sequence box with the appropriate code. (See Figure 3.2).

Data Summary Procedures. The procedures for summarizing the data from C.S. II will be the same as the procedures used with C.S. I. That is, the mean of the three coders' scores will be computed for each time sequence. It should be noted that only the time intervals in which two or all three of the coders marked a score of one or higher are to be used.

Explanation of the Coding Sheet. A coding sheet was specially designed to record the T.E. for Coding System I (Figure 3.1), and to record S.I. for Coding System II (Figure 3.2). Each sheet is set up with a line of numbers in the first column, and a blank space in the following column. The first column of numerals keeps track of the ten second time intervals. The second column is for the coder's score appropriate to the category-codes. Each

T.E. coder will be placing a number from 1-5, and S.I. coders a number from 0-5 for every ten second time interval.

Half the coders (three) were trained to observe T.E., and to mark the coding sheet. The marks in the second column indicate the percentage of observed T.E. during the ten second time interval. The coders began coding together at the start of the tapes, and they stopped together when the tapes were finished.

The other three coders were trained to observe and record S.I. when the student was engaged in motor skill activity. The coders marked the second column according to the level of involvement displayed at the end of the ten second time intervals. If no involvement occurred at these points, the coders entered a code according to the level of involvement displayed during the last second of that activity.

Reliability. This investigation involved the development of reliable systems that would accurately describe T.E. and S.I., and prove reliable for continued use and application in the educational setting. Therefore, it was of major importance to establish such credibility prior to the final use of the coding systems for this study.

Originally the coding systems were developed through observation of live and video taped physical education classes. Behaviors were selected that were indicative of a teacher's enthusiasm and of a student being involved.

CODER: _____

STUDENT OR TEACHER

TAPE NUMBER: _____

TIME: _____

| TIME | CODE | TIME | CODE | TIME | CODE | TIME | CODE | TIME | CODE |
|------|------|------|------|------|------|------|------|------|------|
| 1 | | 21 | | 41 | | 61 | | 81 | |
| 2 | | 22 | | 42 | | 62 | | 82 | |
| 3 | | 23 | | 43 | | 63 | | 83 | |
| 4 | | 24 | | 44 | | 64 | | 84 | |
| 5 | | 25 | | 45 | | 65 | | 85 | |
| 6 | | 26 | | 46 | | 66 | | 86 | |
| 7 | | 27 | | 47 | | 67 | | 87 | |
| 8 | | 28 | | 48 | | 68 | | 88 | |
| 9 | | 29 | | 49 | | 69 | | 89 | |
| 10 | | 30 | | 50 | | 70 | | 90 | |
| 11 | | 31 | | 51 | | 71 | | 91 | |
| 12 | | 32 | | 52 | | 72 | | 92 | |
| 13 | | 33 | | 53 | | 73 | | 93 | |
| 14 | | 34 | | 54 | | 74 | | 94 | |
| 15 | | 35 | | 55 | | 75 | | 95 | |
| 16 | | 36 | | 56 | | 76 | | 96 | |
| 17 | | 37 | | 57 | | 77 | | 97 | |
| 18 | | 38 | | 58 | | 78 | | 98 | |
| 19 | | 39 | | 59 | | 79 | | 99 | |
| 20 | | 40 | | 60 | | 80 | | 100 | |

Illustration of Coding Sheet II

Figure 3.2

Following this, the categories of behaviors were tested by the investigator and fellow graduate students. Each time, adjustments were made to clarify the categories and simplify the coding procedures. Three pilot studies were conducted by volunteers, and the proposed coding systems evolved from the success during these sessions.

Prior to the final testing, the coders were trained until a 80% or better level of inter-coder reliability was reached.

Collection of Data

The investigator contacted twenty elementary schools within the Rochester, New York, school districts. Ten schools agreed to allow the investigator to video tape their physical education classes for data to be used in this study.

It was also decided that after the taping was finished the tape would be erased if the teacher opposed the purpose for which it would be used. This was never the case. Each teacher looked forward with interest to learn how the study would turn out.

The video tapes were collected by the investigator and an aide. Two JVC Videotape Rovers with Ampex thirty minute tapes were used to collect the data. In each class, one video tape recorded the behaviors of the teacher, and the other recorded the behaviors of the target student. The two tapes were started together, and ended when the thirty minute tape was finished. Thus, the teacher's and

the student's behaviors were recorded simultaneously.

The twenty collected tapes were reviewed by the investigator on the basis of quality. This took into account how clear the pictures were (focus and lighting), any taping faults or mishaps, or such times when the activities were switched from motor skill to any other type. Ten tapes were finally accepted as adequate for use: five teacher tapes and five corresponding student tapes.

Selection of Coders. Coders were selected according to the following criteria:

1. Six coders were sought.
2. Coders had to be familiar with the subject matter of physical education.
3. Coders had to be familiar with teaching methodology; specifically the roles of teachers and students.
4. Coders had to be able to devote a considerable amount of time over a one month period.
5. Coders' schedules had to allow for a common meeting time.

Six undergraduate students from Bethany College, West Virginia, were selected as coders, and fulfilled the above criteria.

Training of Coders. The coders underwent a training period of twenty-four hours, spaced over thirty days. During the training sessions, the coders observed a series of video tapes of teachers and students in physical

education classes. Half of the coders were trained to observe the T.E. and the other half to observe S.I.

Specifically they were trained to:

1. note when a student was actively involved in a motor skill activity (C.S. II); note when the teacher was enthusiastic during the class (C.S. I).

2. note what categories of these behaviors were exhibited,

3. code every ten seconds.

Final Development of the System. It was the original intent of this study to have a coding system to observe teacher enthusiasm and involvement, and student enthusiasm and involvement. After a live pilot study was conducted, the coding system was reorganized into two separate, more refined systems. The original categories contained too much information for the coders to focus on. The degrees of observed behaviors were also not clear enough for practical use. The investigator continued to test the proposed categories until satisfactory reliability was found. It was at that time the actual testing was conducted.

Research Design

This investigation was designed to formulate and test two coding systems to observe teacher enthusiasm and student involvement and then to determine the relationships between these variables.

Statistical Analysis

The statistical analysis was conducted using the mean coding scores. The following steps were carried out to analyze the data.

1. Calculation of the mean T.E. score for each ten second interval on the five tapes.
2. Calculation of the mean S.I. score for each ten second interval on the five tapes, for which at least two of the three coders had entered a score of one or higher.
3. Calculation of the mean S.I. scores during the first thirty seconds of each new period of involvement in motor skill activity. (If a period was less than thirty seconds, calculation of the mean was for the ten or twenty second period).
4. Calculation of the mean of the mean T.E. scores during the thirty seconds prior to the start of each new period of the student's involvement in motor skill activity.
5. Pearson Product Moment correlation of the scores computed in steps three and four, (Correlation 30-P: T.E. thirty seconds prior to S.I.).
6. Pearson Product Moment correlation of the mean T.E. for each ten second interval with the mean S.I. for each ten second interval that followed, (Correlation 10-P: T.E. ten seconds prior to S.I.).
7. Pearson Product Moment correlation of the mean S.I. score for each ten second period of involvement in motor skill activity with the mean T.E. score for the same ten second interval, (Correlation 10-D: T.E. during each ten seconds of S.I.).

CHAPTER IV

ANALYSIS OF DATA AND RESULTS

The purpose of this study was to determine whether certain associations exist between teacher enthusiasm and student involvement during motor skill activities. Coding systems were used to measure the behaviors, and the associations were determined through correlation techniques.

This chapter includes three sections of presentation. First, the inter-coder reliability in using the coding systems to collect the data, is discussed. The formulas, the data, and the resulting scores are presented. Section two deals specifically with the associations that were investigated between teacher enthusiasm and student involvement during motor skill activities. The third section is a summary of the information covered in the previous two sections. The data is presented in tables and organized per association. Included are the reliability results of each group of teacher coders and student coders. Both should be looked at carefully for a complete understanding of the study and its findings.

Reliability of Coding Systems

Two coding systems were devised, appropriate to the selected behaviors of teacher enthusiasm (T.E.) and

student involvement (S.I.). Both were pilot tested and found practical for use. Six coders were selected and trained in accordance with the criterion set forth in Chapter III (see Coding Procedures, Chapter III). The inter-coder reliability scores were determined in the same manner during the training period as they were for the final testing. During training, the coders reached 80 to 100% inter-coder reliability scores. The following details how the scores were calculated:

The three coders per coding system, marked the designated coding sheet with the appropriate numeral from zero (0) through five (5) for each ten second time interval. Each occurrence of coding scores, per coding system, received a new score determined by inter-coder agreement. The total inter-coder reliability scores were formulated by the proportion of inter-coder agreement per tape. The inter-coder agreement scores were assigned accordingly:

Inter-Coder Agreement

Definition

3

When the scores read the same number simultaneously for that time interval (ex.4,4,4,); all the coders had been in agreement with what they had observed and what coding category that behavior belonged to.

1

When only two of the coders were in agreement as to what had been observed during that ten second time interval (ex. 4,4,2).

Inter-Coder AgreementDefinition

0

When all three coders marked the time interval differently (ex. 4,3,1), and no one was in agreement as to what was observed.

First, the total number of observations were multiplied by the optimal amount of agreement possible for each occurrence, which was three. Therefore, if the total number of observations were twenty, sixty (twenty multiplied by three) would be the number used in the reliability formula.

Then, the number of agreement scores (3, 1, or 0) were totaled in another column, and divided by the number of occurrences (sixty, as in the example previously given). The quotient of this is the proportion of inter-coder agreement. To further explain:

| <u>Sequence of Occurrences</u> | <u>Coder's Scores</u> | <u>Agreement Scores</u> |
|--------------------------------|-----------------------|-------------------------|
| 1 | 4 4 4 | 3 |
| 2 | 4 4 1 | 1 |
| 3 | 2 1 2 | 1 |
| 4 | 4 3 2 | 0 |
| 4 x 3 = 12 | | Total 5 |

$5/12 =$ proportion of inter-coder agreement.

Inter-coder reliability equals .417, or 41.7%, in the example above. Table 4.1 presents the inter-coder reliability scores (percentage of agreement) from the final testing.

The final testing scores for inter-coder reliability were lower than the scores reached during the training period. The following data results should be looked at with the inter-coder reliability scores in mind. A discussion of these scores is in the following chapter.

Associations

This study was conducted to determine if certain associations exist between T.E. (Variable 1) and S.I. (Variable 2) during motor skill activities. The associations that were investigated were as follows:

30-P (Thirty-Prior), to see if the T.E. thirty seconds prior to the S.I. in a motor skill activity was related to the student's initial thirty seconds of involvement in each motor skill activity.

10-P (Ten-Prior), to see if the T.E. for each ten second interval, was related to the S.I. of each ten second interval that followed in each motor skill activity.

10-D (Ten-During), to see if the T.E. during each ten second time interval was related to the S.I. during each corresponding ten seconds.

The three coders' scores within each coding system were converted into means for each teacher and student. These means were paired per teacher and student and used to determine whether the three associations could be established through a Pearson Product Moment Correlation. Table 4.2 presents the correlation coefficient between Variable 1 and Variable 2, for each association over the

Table 4.1.

Inter-Coder Reliability in the Application of C.S. I and C.S. II

| | | Inter-Coder Reliability (Percentage of Agreement) | |
|------|-----|---|----------------|
| | | C.S. I (T.E.) | C.S. II (S.I.) |
| TAPE | I | 80.5 | 84.4 |
| | II | 46.5 | 84.3 |
| | III | 64.9 | 91.3 |
| | IV | 70.2 | 83.0 |
| | V | 67.3 | 90.6 |
| | I-V | 64.9 | 86.2 |

five tapes.

It was shown that only one teacher-student pair had a significant relationship, at the .05 level (according to the Guilford Table), in each association investigated. The significant pairs are indicated by an asterisk preceeding the correlation coefficient (see Table 4.2).

The first association, 30-P, was investigated to determine whether or not a teacher's enthusiasm prior to a student's involvement in an activity, had any relationship with the student's initial level of involvement, per activity. The thirty seconds of T.E. would include the time during which instructions are given, explanations provided, or demonstrations given. The n should be noted, showing the number of times the activities were changed per class. With the exception of one class, the two variables showed no significant relationship at the .05 level. Pair V shows a small negative relationship, as do the combined scores of I-V, in this association.

The second association, 10-P, was investigated to see if a relationship existed between the T.E. every ten seconds and each ten second interval of S.I. that followed. This association deals with running time and scores throughout the five classes. Therefore, the teacher's enthusiasm was constantly analyzed, along with the subsequent S.I., to see if the changes in T.E. affected the S.I. in any way.

According to Table 4.2, no significant relationship exists between the variables in Pairs I-IV. Pair V shows a significant relationship at the .05 level, and it is again negative.

The last association, 10-D was similar to 10-P by making use of the same mean scores. But, each ten seconds of T.E. was correlated with each corresponding ten seconds of S.I. It was hoped that an association might be found over the duration of class time, if an immediate, constant, study of T.E. and S.I. were made. Again, only Pair V was a significant association, which was a negative correlation, as the coefficients in Table 4.2 indicate.

Summary of Findings

This study was conducted for two purposes. First, it was the intent to study the behaviors of teachers and students, and see if associations existed between them. Second, was to develop two coding systems that would reliably describe and analyze the behaviors of enthusiasm and involvement. The selected target behaviors were assigned and labeled as teacher enthusiasm and student involvement during motor skill activities. The coding systems were pilot tested, for practical as well as experimental purposes. Coders were trained to use the coding systems, and to reach a level of 80%, or better, of inter-coder reliability. Then the final testing was carried out to determine what relationships, if any,

Table 4.2

Correlation Coefficients Between T.E. (Variable 1) and S.I. (Variable 2)

| | | 30-P | | 10-P | | 10-D | |
|-------------------------|-----|-------------|----|-------------|----|-------------|----|
| | | Coefficient | n | Coefficient | n | Coefficient | n |
| Teacher-Student Pair | I | -0.25900 | 10 | -0.02247 | 48 | -0.00545 | 48 |
| | II | -0.71090 | 6 | -0.08852 | 62 | -0.11280 | 62 |
| | III | 0.00000 | 2 | 0.01250 | 25 | -0.10639 | 25 |
| | IV | -1.00000 | 2 | 0.01217 | 70 | 0.09419 | 79 |
| | V | -0.77651* | 10 | -0.40730* | 52 | -0.45590* | 50 |
| | I-V | -0.48992* | 30 | | | | |

* Significant at .05 level

existed between the two variables of T.E. and S.I.

The coding systems were used with an overall reliability of 64.9% for Coding System I., and 86.3% for Coding System II. The means scores were computed for the three coders, per coding system, and analyzed using a Pearson Product Moment Correlation. The findings of the three correlations indicated that no significant association existed between T.E. and S.I. in Pairs I-IV, as these behaviors were analyzed in this study. The findings of this study showed, in four of the five pairs of teachers and students, that no significant relationship existed among: 1) the T.E. thirty seconds prior to S.I. in a motor skill activity, 2) the T.E. for each ten second interval prior to the S.I. in a motor skill activity, 3) the T.E. for every ten seconds of S.I. in a motor skill activity. But a significant relationship was found between the variables in Pair V in each of the investigated associations. It indicated that a negative relationship existed between T.E. and S.I. in the three associations of 30-P, 10-P, 10-D, as they were investigated in this study. Although a significant relationship was shown between T.E. and S.I. in the three associations, for only one teacher-student pair, the existence of a stronger relationship should not be dismissed. A further explanation of the data with its implications and conclusions follows.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to formulate two descriptive coding systems and to determine if certain relationships exist between teacher enthusiasm (T.E.) and student involvement (S.I.), during motor skill activities. The two coding systems were devised and put to use; the coders were trained and the final testing was conducted. Unfortunately, the final inter-coder reliability scores fell below the target level of 80% among the coders of C.S. I (T.E.). The low reliability may have had a detrimental effect on the final results.

Three associations were investigated, 30-P, 10-P, and 10-D, between the variables of T.E. and S.I. Only one of the five teacher-student pairs indicated a significant relationship. The correlation coefficients indicated that a negative relationship existed between the variables of Pair V, as they were investigated in this study. Overall, the results were contrary to expectations and the following chapter will attempt to explain the findings.

The nature of the coding systems, the effect of

the low inter-coder reliability, the type of behaviors of the teachers and students, all have bearing on the results. These variables will be stressed, along with other pertinent information, and shown to be of value to the outcome of this study. There are three remaining sections of this chapter. First, a discussion of the results will include subsections covering the major variables that had effects on this study. The second section concludes the findings of the study. Lastly, the third section provides recommendations to aid others that may do similar investigations.

DISCUSSION OF RESULTS

The final results show low, negative correlation between teacher-student Pair V, in the three associations of 30-P, 10-P, and 10-D. All of the associations are different in purpose, but use similar standards of measure. The same T.E. and S.I. mean scores were used in each, but the grouping and occurrence varied for each. It was expected that the first association, 30-P, would show the greatest levels of change in the studied behaviors. This association grouped two to three of the means for each occurrence. It is now felt that the 10-P and 10-D associations were too close in time sequence to provide an adequate picture of changes in behaviors that could be correlated.

In looking at the mean scores in Table 5.1, one can see that the student involvement means were overall

consistently higher than the teacher enthusiasm mean scores. A large consideration should be given also, to the standard deviation scores among the teachers and students, presented in Table 5.2. Student number V had the largest standard deviation score among the students, while the corresponding teacher had a standard deviation score that falls in the middle. With the small amount of deviation within an already small scale of potential scores, a correlation would be adversely affected (Guilford; 1965). This may explain one reason for the low relationships, and for the only significant correlation to be negative. The small deviation in mean scores among teachers and students would reduce the relationship between the variables. The consistent high scores of the students and the contrasting low scores of the teachers would cloud correlation results. Such a difference in the coding systems had not been previously encountered, and could have adversely affected the final results.

Some theories may be drawn to explain how teacher enthusiasm could show a negative relationship to a student's involvement in a motor skill activity. One theory is proposed on the basis that the coding systems may not adequately score "short bursts" of the selected behaviors as they were studied. It also shows a weakness in C.S. I (T.E.). The coding system rates enthusiasm over each ten second time interval, according to the duration or frequency of the enthusiasm. Consequently, if a teacher is

Table 5.1

Overall Means for Variable 1 (T.E.) and Variable 2 (S.I.)

| | | 30-P | | 10-P | | 10-D | |
|---------|-----|------------|------------|------------|------------|------------|------------|
| | | Variable 1 | Variable 2 | Variable 1 | Variable 2 | Variable 1 | Variable 2 |
| CLASSES | I | 1.09399 | 4.60599 | 1.07749 | 3.93520 | 1.05645 | 3.93520 |
| | II | 1.80333 | 4.55833 | 2.35741 | 4.81822 | 2.48661 | 4.81822 |
| | III | 1.70000 | 4.00000 | 2.12199 | 4.66720 | 2.28239 | 4.66720 |
| | IV | 1.26999 | 4.83500 | 1.32278 | 4.19303 | 1.30999 | 4.18885 |
| | V | 1.30199 | 4.08900 | 1.55999 | 3.46826 | 1.53559 | 3.40699 |
| | I-V | 1.35733 | 4.39893 | | | | |

Table 5.2

Standard Deviation for Variable 1 (T.E.) and Variable 2 (S.I.)

| | | 30-P | | 10-P | | 10-D | |
|---------|-----|------------|------------|------------|------------|------------|------------|
| | | Variable 1 | Variable 2 | Variable 1 | Variable 2 | Variable 1 | Variable 2 |
| CLASSES | I | 0.11890 | 0.55721 | 0.17373 | 1.13237 | 0.14509 | 1.13237 |
| | II | 0.60513 | 0.66763 | 1.22915 | 0.29730 | 1.37172 | 0.29973 |
| | III | 0.70710 | 0.00000 | 0.87160 | 0.46108 | 0.92805 | 0.46108 |
| | IV | 0.09899 | 0.23334 | 0.52219 | 0.80422 | 0.50357 | 0.80257 |
| | V | 0.43954 | 1.65706 | 0.63954 | 1.86158 | 0.64311 | 1.87279 |
| | I-V | 0.46883 | 1.05095 | | | | |

highly enthusiastic for two seconds, it will be coded correctly, with a two (2). At the same time the student is being positively affected, starts to display the highest amount of involvement and is scored a five (5). As the ten second time intervals pass, this could happen again and again. Thus, the lower level of T.E. could positively affect the S.I., but would not appear to. This would produce a negative correlation indicating that the lower T.E. affects a higher S.I. In reality the actual behaviors not the levels, might indicate a more positive relationship. Therefore, it should be noted, that a low score of T.E. does not necessarily mean that the teacher was lacking in enthusiasm. It simply indicates the duration of which this behavior was sustained.

The student's actual involvement may become less evident according to C.S. II. As it can be seen now, it is very hard to differentiate between overt behavior, and positive participation. A student could be thoroughly enjoying himself, and involved in what is going on in an activity, but not be actively participating, choosing instead to turn rope, instruct others, etc. According to C.S. II, that student would receive the lowest score of involvement.

As an overview, the results do not indicate a strong relationship between the two variables, and indicate a negative relationship in one of the five pairs. Therefore, further explanations will be presented in an

attempt to explain these results. A major feeling of the investigator and those who worked closely with the study, is that relationships do exist between teacher and student, beyond what this study indicates.

The study and coding systems were developed to observe and measure behaviors on a time sequence of ten second intervals. The resulting means were transferred and computed through a correlation technique that was hoped to either negate or support the associations investigated between the two behavioral variables. The investigator's process and approach did not have the proper experience or sophistication to accomplish the goals of the study. Everything was carried out as proposed, and further detailed, but, as can be seen more objectively now, misses an important point. The data handled on ten second intervals could only show incidental associations. The results show a small, almost negative influence between the two variables in one of the five teacher-student pairs. The investigator is proposing that a longitudinal study of teacher and student behaviors might yield better results and implications that a stronger relationship exists other than what this study has concluded.

Coding Systems

The coders marked a score per time interval. Each group of three scores were converted to means. The means per coding system were paired and used for the statistical analysis. But, many of the scores were not used. Further,

of the scores used, not all were indicative of actual T.E. and S.I., as pointed out in the previous section.

One reason for the coding scores to have been inconsistent, and unreliable, was due to the problem of the student's incidental activity, (for example), waiting in line, receiving instructions, etc. These behaviors were a part of each of the observed classes, and it made the coding of the selected behaviors difficult. The coders also had trouble coding the T.E., as seen in the reliability levels. Although these coders had the least amount of problems during training, they experienced the most difficulty during the final testing. Apparently, the teachers observed during the final testing exhibited too much diversity in their behaviors, which made it difficult for the coders to follow and keep up with. This point also helps explain some of the results. If it is true that the coders of C.S. I had more trouble coding than did the coders of C.S. II, this would be reflected in the mean scores, and thus affect the final results. It could be that C.S. II was easier because it rated behavior from high to low, while C.S. I measured the duration of the observed behavior.

It is evident that this type of research should be further developed for use in the gymnasium, exclusively. Only one of the coding systems was originally designed for this study. The other was borrowed from another researcher and adapted for use. While analytic-descriptive systems developed for use in the classroom laid the groundwork for

this study, they are not sophisticated or diverse enough to carry over into the gymnasium. The gymnasium offers a variety of behaviors (especially overt ones, i.e. gross motor activity, expressive movement, vocalization), that would never been seen in the confines of the classroom. Therefore, the original idea to code more than one behavior per subject would be both feasible and practical. It might also help solve some of the problems encountered thus far in the area of descriptive-analytic research. The most practical way, would be to train groups of coders separately, with each group concentrating on a different behavior indicative of the purposes of the study. It might also be a benefit for coders to study the other behaviors exhibited during the same time period.

Discussion of the Teachers and Students

It was intended that through random selection of teachers and students, a cross section would be found of both. The coders later classified each teacher differently, as did the investigator, as was evident from their behavior on the tapes. These descriptions should be considered while the reliability and results are taken into account.

TEACHER I - This teacher was sedate, soft spoken, and moved very slowly. The students were held at a distance, and the teacher was an observer throughout the taped class. The class was conducted through group exercises, stations of activities, and lastly, divided into two large groups based on skill.

This teacher scored the lowest means, and could have been a victim of the Short Burst Theory discussed previously. It would also seem reasonable to assume that without contact with the student the teacher would have less opportunity to demonstrate enthusiasm. Perhaps that is the reason for the low mean scores of the teacher's enthusiasm.

TEACHER II - This teacher was lively, played music throughout the class and used it as a cue. The teacher moved constantly among the groups of students and interacted freely and openly. The class was conducted through group play and stations previously set up.

This teacher scored the highest means, as did the corresponding student. But this was a fast paced teacher, whom the coders had difficulty keeping up with (which is reflected in the inter-coder reliability score, which is the lowest of all the other teachers). This would definitely have an adverse effect on the correlation. Without reliable and consistent scores, correlation techniques are at a loss as to what they are truly indicating. Low reliability scores reduce correlation results and the degree of association.

TEACHER III - This teacher was quiet, sensitive to students, but apparently nervous. The activities were demonstrated to the class as a whole by the teacher. Free choice was provided, with decision making on the part of the students. The class was conducted through group

activities and free choice stations.

This teacher-student pair had the second highest means, but a significant correlation was not evident. A point that may have affected this correlation, is the fact that there were only twenty-five occurrences of the studied behaviors used for the statistical analysis. This number is far below the number of occurrences for the other teacher-student pairs.

TEACHER IV - This teacher was controlled, circulated and participated throughout the class, but interacted with the students from a distance. It was an open gymnasium and student-directed. The class was conducted through the use of stations.

This teacher scored second to the lowest means, while the student scored a high level of involvement. The fact that the class was student-directed could indicate that the teacher's behavior had very little effect on the student's involvement throughout the class. It would seem logical, that the more independent a student is, the less the student will be affected by the teacher's behaviors.

TEACHER V - This teacher was direct, stayed in a particular group and participated. Music was played throughout and used as a cue. All activities were reviewed, including the rules. Answers were provided by the teacher as to the purpose of each activity. The class was conducted through the use of group exercises and stationed activities.

This teacher scored means in the middle, but the

student had the lowest scored means. This teacher-student pair had the only significant correlation in each of the three associations investigated. While this teacher may have participated, and was enthusiastic, the student and teacher only contacted each other once during the class. The student was not too active during the class, but kept himself busy. This lack of interaction throughout class, while the teacher was participating at one end of the gymnasium, the student at the other, might help explain the negative correlation.

Another consideration in this area is that the collection of data provided the observed teachers with a few problems out of the norm. These variables could very well explain the final findings of the study, or at least should be considered as having an effect on the teachers' behaviors. First, it had been previously arranged and approved that the teachers would not know anything about why they were being video taped until after their classes were over. They did know, however, that the information being gathered would be used in a study of some sort. Most teachers seemed concerned about which behaviors were going to be evaluated, and whether or not it would reflect in an evaluation of how well they taught. Secondly, the observed teachers were asked to conduct motor skill activities, and specifically not to have any competitive situations during the class time being taped. This offset many of the teachers' plans for the day, and could

definitely have affected the class atmosphere. It was later to be found that only two of the five teachers had ever been observed through the use of video tape, therefore that affected their outward behavior, and may have made them more self-conscious and nervous than they normally would have been. These same variables had an effect on the students, including having strangers observing the class.

While the target students were also selected randomly from within each class, they appeared basically to be rather similar. The coders had no difficulty coding other than when the student was out of view.

The description of students and teachers is an overview and a general opinion from a group of observers. It is not to be implied that the teachers or students are always as they appeared on the tapes.

There are other variables which affected both the teacher and student which could not have been controlled for this study. Some, noted by the investigator, are:

- 1- the type of activities conducted,
- 2- the effect of the student's peers; whether the students were organized into groups of two, three, or more,
- 3- the abrupt change from classroom to gymnasium,
- 4- the amount of interaction between the teacher and students, and how consistent it was,
- 5- the amount of freedom provided, along with decision making opportunities,
- 6- the amount of class time, and the occurrences

per week,

7- the overall setting of the gymnasium, classroom and school.

Some conclusions were reached by the investigator after watching the final tapes many times. The following information is suggested from those hours of viewing, by the coders who participated, by the teacher's comments after the class was taped, and by the data that resulted:

First, teacher behavior does affect student behavior in the gymnasium, as it does in the classroom. The initial problem in the gymnasium, as opposed to the structured classrooms of previous studies of this kind, is the teaching style. Teaching styles today reflect the students' needs, and accommodate student individuality. It is very rare (or was among the teachers selected for the study) to find the teacher traditional in the sense of lecture, demonstration, and evaluation. Rather, the classes were broken into groups (ability, interest, needs), and after the preliminary instructions, the students were on their own.

Secondly, there was already an organization precedent in each class. What was not realized was that extrinsic student motivation occurred in two of the classes. There were wall charts, with the students' names on them, which kept track of their success at the various activities. This tradition continued without the knowledge of the

investigator. (The top scorers would be rewarded at the end of each week, month, or unit, as the case called for).

In the gymnasium the students are immediately affected by the change of environment from the classroom to a more open space. Also affecting the students are the variables of how often their class meets in the gymnasium, how long the classes are, and the types of activities in which they participate. In the classroom the students are more permanent, and less active; physical education requires physical participation in activities. Due to the amount of time a student spends in a classroom, the classroom teacher becomes a more consistent influence upon the students. Some physical education classes meet twice a week, and last as little as twenty minutes. In addition, it has been found that students' behaviors vary between the classroom and gymnasium. This is caused by many factors, only one of which is student interest, and the fact that time in the gymnasium is in great contrast regarding movement, to the classroom setting.

To the reviewers, the results might not support what is currently believed by most educators. That is, that teaching behaviors have influence over student's behaviors. For year, and years, educators have heard students complain about teachers for their presentations, demonstrations, student-teacher interactions, quality of material, etc. The teachers' effect on their students has been to encourage, discourage, inspire and/or bore. Some

teachers are remembered by their students for a life time, others just from class to class. It is important for educators to learn what behaviors have the most influential effect upon the students, in order to teach them in the most positive way possible. It is also necessary to train teachers with the most appropriate behaviors in order for them to carry out their responsibilities to the best possible extent. With more research that studies teaching behaviors and the influence upon students, the more knowledge and understanding educators will have of the teaching-learning process. This will ensure that the most productive behaviors and techniques will be acquired to better meet the needs of students in learning, and throughout their education. Teachers will be better equipped to enhance student learning, and make the experience more productive and fulfilling for all. While this study did not show a significant association between the investigated variables, the investigator feels confident in the purposes and results as a worthwhile, fruitful endeavor.

It is hoped that this type of study might be conducted by other researchers. More information can be investigated and is needed regarding the effects and influence of teacher and student behaviors. The development of reliable coding systems could prove to be a valuable tool for educators in the areas of evaluation, and teacher training.

There are other major considerations to be made

before this type of research is to be conducted. While the following statements are suggested from the experiences encountered during this study, they will also prove practical for others interested in this area of research.

First, the cost of collecting the video tapes was large in both time and money. It would be advised to find a video tape bank that would loan appropriate recordings of teachers and students (unless a personal video collection is desired).

Secondly, the pilot tests should be as controlled as possible, and not undertake too large an area. It would prove valuable to break the study down into all of its components, and pilot test each one until satisfaction is reached, and no problems are obvious. This would be time-consuming but in the end it would be more than worth the effort.

Thirdly, if live coding is to be carried out, a number of rules need to be established between the observed teacher and the researcher. This will provide understanding, consistency, and control while making the recordings.

Overall, this type of research endeavor is new, but not without merit. To attain the goals we strive for, only more research will provide the answers. This investigation is only a part of the total inquiry, but plays a substantial role, to help educators understand the teaching-learning process.

CONCLUSION

Within the scope of this study, the following conclusions are justified:

1) That two coding systems can be developed to describe and measure Teacher Enthusiasm (T.E.) and Student Involvement (S.I.) while engaged in motor skill activity. In addition, coders can be reliably trained to implement these systems.

2) That only one significant relationship exists between the two variables in Pairs I-V as they were studied in this investigation. This relationship indicates a negative correlation between T.E. and S.I. while engaged in motor skill activity.

RECOMMENDATIONS FOR FURTHER RESEARCH

1. A similar investigation is recommended in which both students and teachers from the junior high school and senior high school are included and compared.

2. A similar investigation is recommended in which there is more than one target student per class, to get a better overview.

3. A similar investigation is recommended in which the same classes are used for data but that they be compared at different times of the year; i.e. beginning of school year, mid-year, and at the end of school year.

4. That whenever subject data is to be collected

through the use of A-V equipment, that the materials, and recording personnel be out of the way. If necessary, the recorders might take the time to familiarize the subjects with being observed in this manner.

5. A similar investigation is recommended in which the activities could be controlled for one group and varied within another, to lessen the effect of choice of activities.

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