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DEVELOPMENT AND EVALUATION OF A MODEL BEHAVIORALLY-BASED TEACHER TRAINING CENTER FOR PHYSICAL EDUCATORS

DISSERTATION

Presented in Partial Fulfillment of the Requirement for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By


The Ohio State University
1976

Reading Committee:
Daryl Siedentop, Chairman
John Cooper
Charles Mand

Approved By
Daryl Siedentop
Department of Physical Education
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Major Field: Physical Education

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Studies in Applied Behavior Analysis in Education. Professors Daryl Siedentop and John Cooper
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CHAPTER I

INTRODUCTION

In keeping with the present trend toward accountability parents, teachers, and administrators are concerned with the objective evaluation of public school settings. Instruments for measuring academic progress have long been available but a more immediate concern is often a measurement of the actual behavioral processes occurring in these environments. Teacher educators, concerned with developing teachers that are effective managers of student behavior, are beginning to utilize a recently developed behavioral technology in their training programs. This technology, applied behavior analysis, commonly referred to as behavior modification, provides a source of reliable information that reflects changes in student behavior resulting from environmental changes, including changes in teacher behavior.

The development of training programs designed to teach the principles and procedures of behavior modification to teachers and other professionals is currently receiving the attention of many applied behavior analysts. For example, the 1971 Banff International Conference on Behavior Modification was devoted entirely to papers outlining strategies for implementing behavioral programs in school and clinical settings [Clark, Evans, and Hamerlynck, 1972] and the 1973
Banff Conference was devoted to papers on evaluating these programs [Davidson, Clark, and Hamerlynck, 1974].

The papers presented at these conferences made three important points:

1. There is a growing need for training programs to produce effective change agents.

2. In applying behavior modification procedures, training programs should focus on specific skill development.

3. Training programs should be evaluated systematically in order to establish the most effective and efficient training procedures.

These three points should be emphasized when planning and implementing preservice training programs for physical education teachers.

Recently, there has been an increased interest in the development of teaching centers, sometimes called student teaching centers. These centers are located in public schools and provide an opportunity for a high concentration of preservice students, plus some inservice functions at one site. The growth of teaching centers closely followed the publication of B. O. Smith's [1969] *Teachers for the Real World*. The promise of teacher centers is highlighted in the thematic section of the Spring, 1974, issue of *Journal of Teacher Education*.

Although there is a high level of national and international activity in the teacher center concept, few analyses, guidelines, and practical suggestions for teacher center development appear in the literature. Each teacher center is unique and has its own form of governance, management, and decision making. The direction a teaching
center takes depends upon the institutional needs of the university, the needs of the related school system and the personal needs of administrators, supervisors, and student teachers.

Purpose of the Project

The present project, referred to as the Thurber Project, involved the development and evaluation of an innovative teaching center for the training of physical education teachers enrolled at The Ohio State University. The purpose of the center was to serve as a model for programs and teaching strategies based on behavioral (operant) technology. Initiated during spring quarter, 1976, the project attempted to interface four systems: The Ohio State University physical education preservice block program, the university student-teaching field experiences, the graduate PETE program, and a public school physical education program.

Rationale for a Teacher Training Center
Based on Behavioral Technology

In view of the many demands that a public school physical educator must meet, the training offered by most college and universities has serious shortcomings. Perhaps the most serious of these is the lack of good programs that physical educators can become familiar with during their preservice training. Being well acquainted with fine, readily available school curricula can be very useful to prospective teachers. But for maximum benefit, these programs should involve preservice students directly. Reading about and discussing excellent
programs cannot replace the benefit that students gain from actual experience in them.

Public education is presently being faced with increased demands for precision, relevance, and accountability. Physical educators are only beginning to feel the economic squeeze. Soon, they will be confronted with having to demonstrate measurable and recognizable results of their teaching, particularly in terms of the academic, recreational, and social behaviors of their students. In preservice training programs, physical educators, like most other teachers, are not being provided with effective procedures for teaching useful and productive skills, for dealing with the inappropriate behavior that occurs regularly in educational settings, or for evaluating teaching and program effectiveness.

In the last decade, a technology which is based on reinforcement theory has been rapidly expanding and can be of great service to physical educators. This technology, applied behavior analysis, has been established on an empirical science of behavior and can be used to demonstrate functional relationships [Skinner, 1966] and to evaluate the practical applications of concepts and principles [Baer, Wolf, and Risley, 1968]. The close relationship between applied behavior analysis and accountability for teachers has been emphasized by Fargo, Behrns, Goodman, and Commons [1970]:

The concept of accountability gives urgent relevance to the application of behavior modification principles to the classroom. These principles provide teachers with precise tools for determining individual skills, individualizing modification programs and assessing the differential effects of each curriculum
change and motivational intervention on each child's performance. In this way, the teacher, perhaps for the first time, can be precisely accountable and make educational decisions based wholly upon relevant data. The process and product of learning becomes viable and visible to the people most intimately concerned— the teacher, the parent, and the student. [p. 234-235]

When used as an assessment tool, applied behavior analysis can be distinguished from other evaluative procedures by these characteristics:

1. A strong emphasis on the precise specification and objective measurement of behavior.

2. A reliance on experimentation to determine the relevance of different procedures and methods.

3. A particular concern with the environmental determinants of behavior.

4. An emphasis on procedures and techniques derived from the principles of operant psychology [Ramp and Hopkins, 1971].

Applied behavior analyses provides continuous evaluation. It has been widely accepted and is presently used extensively in diverse educational environments [Ramp and Semb, 1975; Thoresen, 1973; Ulrich, Stachnik, and Mabry, 1974]. But despite its demonstrated effectiveness and the possibility of extensive application to physical education, applied behavior analysis has been virtually ignored by physical education researchers and practitioners [McKenzie and Rushall, 1973].

Initially, applied behavior analysis was used in the treatment of patients with psychological disorders [Krasner and Ullman, 1965]. Since then, multitudinous strategies have been developed to demonstrate control of behavior in prisons, detention homes, mental institutions, shelters for the retarded, outpatient clinics, special

When used in educational settings by trained personnel, applied behavior analysis has been extremely effective in accelerating learning, decelerating undesirable responses, and maintaining learned responses:

Social and academic skills and attitudes are typically acquired more rapidly through behavior modification approaches than when instruction occurs in more conventional ways. The specificity of instructional objective, the analysis of student performance prior to instruction, the careful application of instructional strategies, and the incentives for responding all contribute to rapid learning and efficient teaching.

Maladaptive, inappropriate, and incorrect responses are modified and reduced in frequency of occurrences. A combination of deliberate activities by teachers results in a reduction of undesirable responses. Whenever possible, incorrect behavior is not reinforced. Also, conditions are arranged in such ways as to reduce the chances of wrong emissions. And as more time is spent in correct responding, less time is available for undesired behavior.

Behavioral approaches can be effective in helping to maintain past learnings. The functional ways in which learning occurs in directive teaching encourage the use of learning which contributes to the maintenance of responses. Although the issue of maintaining behavior has not been demonstrated as well as initial learning through behavioral approaches, the focus on observable responses seemingly facilitates learning and performance across time intervals.[Stephens, 1975, vi-vii]

Unfortunately, behavioral approaches are often misinterpreted and are rarely used systematically in schools. Their use in physical education settings is even less common. This is probably because
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<td>applied-behavior analysis model, teaching techniques and models for professionals and paraprofessionals, new environmental designs, evaluation research, accountability techniques</td>
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<td>whole schools, neighborhoods, whole counties, general public</td>
<td>administrators, teachers aides, employers, students, families, selves</td>
<td>mild disturbances, normal</td>
<td>mental-health centers, social and welfare agencies, businesses, open settings</td>
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<td></td>
<td></td>
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<td>packaged learning programs for university classes, schools, homes, institutions, child-care centers, nursing homes, halfway houses</td>
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<tr>
<td>2001</td>
<td></td>
<td>everyone</td>
<td>all kinds</td>
<td>everywhere</td>
<td>a happy productive culture without war, poverty or pollution</td>
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*Adapted from K. Goodall, Shapers at Work, Psychology Today, November, 1972, p. 63.
present day physical educators were not taught this new technology in their preservice programs. The importance of including theoretical and practical experience with behavioral approaches in teacher education programs has been emphasized by O'Leary and O'Leary [1972]:

The principles of behavior modification should be included in all undergraduate curricula. In short, there is a behavior modification project larger than any yet tackled which needs to be initiated—namely the changing of educational systems and curricula to include courses in behavioral principles and practical experience in the implementation of such principles. [p. 42]

However, it is clear from the literature, as well as from a tour through almost any school, that only a small percentage of physical educators have received any training in applied behavior analysis.

There is an increased demand for teaching behavior modification techniques to both preservice and inservice physical educators. For example, Cotten [1975] surveyed eighteen selected cooperating teachers who worked regularly with student teachers in the physical education program at The Ohio State University. These cooperating teachers rated the strengths and weaknesses of the student teachers they had worked with over a period of years. Eighty-five percent of these cooperating teachers rated their student teachers as either poorly prepared or just adequately prepared in the management of student behavior problems and 75 percent gave similar ratings for class organization and management. In addition, two behavior modification workshops were held at the Ohio Association for Health, Physical Education and Recreation Annual Convention held in Columbus in November, 1975. The demand for inservice programs in applied behavior analysis techniques and the low ratings in management skills of student teachers by
cooperating teachers indicate the need for the development of behavioral programs that permit preservice physical education teachers hands-on experiences with behavior modification techniques during initial teacher training programs.

Several slightly different models have been developed to teach classroom teachers applied behavior analysis techniques. Hall [1971] has developed The Responsive Teaching Model; Lindsley [1972], Precision Teaching; and Stephens [1970], Directive Teaching. Each of the models is based on reinforcement theory and differs only in emphasis on certain aspects of applied technology.

In physical education, applied behavior analysis is less developed but has received some emphasis as a set of procedures for developing and controlling student behavior [Rushall and Siedentop, 1972; Siedentop and Rife, 1975] and as a method for training teachers [Siedentop, 1972, 1975, 1976]. For the development of effective teaching skills, Siedentop promotes a scientific data based approach with a student teacher's performance based on the collection of reliable information about student and student teacher behavior. By using applied behavior analysis, a teacher becomes a researcher and the gymnasium a laboratory [Siedentop, 1975]. Model gymnasium-laboratories and model teacher-researchers have not been available to serve in the training of preservice physical educators.

Instead of being prepared scientifically, preservice teachers are generally forced to complete their student teaching under an experience that "resembles the training of journeymen preparing for a trade more than it does a supervised internship, designed for
professionals" [Cogan, 1975, p. 209]. Students in physical education at Ohio State complete at least fifteen hours of professional credit in field experience. Considering that the student teaching period is the "single most powerful intervention in a teacher's professional preparation" [Clark and Marker, 1975, p. 63], innovative field experience programs need to be implemented and evaluated so that the most effective methods for training teachers can be determined.

The Division of Physical Education

The Thurber Project was designed to complement other efforts of the Division of Physical Education at The Ohio State University to maximize the role of field experiences, the function of local schools, and the community forces that influence students and teachers in their preservice program. The rationale for this experiential emphasis was outlined in "The Public School: A Partner in Teaching Preparation" [Hendrix, Coates, and Mand, 1971], which described the implementation of a plan to provide students majoring in physical education with an early field experience. Since this publication, additional models for increasing the amount of time and variety of experiences prospective teachers have with children and adolescents have been suggested [Coates, 1972; Siedentop, 1975] and actual practices such as the block system, a Saturday morning program for the handicapped, and a preschool workshop have been implemented.

One of the goals of the preservice block system is to involve students in actual experiences in schools as regularly as possible. In Block One, students are involved in learning how to reliably
observe and record teacher and student behavior. In Block Two, students are instructed in contingency management systems and other behavioral techniques. Programs have not been available that permit large numbers of students to visit schools and carry out observation procedures. Nor are programs that systematically utilize behavior modification techniques available so that students can at least see these procedures in operation. The development of a teaching center, operated by the Division of Physical Education, could improve the experiences of the students in these two blocks.

A teaching center in an elementary school could also benefit Block Three, the elementary area of concentration. Students in this Block have the opportunity to complete independent studies. Access to a public school would make convenient many opportunities previously not available. For example, these preservice students could build and assess developmental equipment, test equipment usage and preference, and assess student development without being confronted with the usual red tape involved in gaining access to students.

And a teaching center could be of value to the newly developed graduate Physical Education Teacher Education Program (PETE). PETE, whose goal is to train teacher educators, not only has a behavioral base, but is also concerned with providing practical experiences for its students. A teacher education center could provide the graduate students with many opportunities in testing program materials, developing observation systems, and conducting research. The actual daily operation of the center would be an invaluable experience for a future teacher educator.
The Division of Physical Education has designated several public schools, in which considerable field experiences take place, as teaching centers and has attempted to establish strong relationships with a number of schools which have innovative programs. School districts have generally been extremely enthusiastic about these cooperative efforts.

But these successful programs have been carried out in cooperation with suburban and rural schools. Cooperative efforts to implement innovative programs within Columbus schools have not been so successful. The university Field Experience Office indicated that preservice physical education students prefer to complete field experiences in predominately white suburban schools. Of 326 high school student teacher placements made from 1971-1976, 94 percent were placed in predominately white schools. Of these, 68 percent placed in suburban or rural schools [Reveron, 1976].

Cooperative programs between the Division of Physical Education and elementary schools within the city have not been established. The Columbus School Board does not hire specialist physical educators to teach at this level. Opportunities for field experiences in inner city elementary schools have not been available for students enrolled in the physical education program. The development of the Thurber Project adheres to the recommendation of the Study Commission on Undergraduate Education and the Education of Teachers [Study Commission, 1976] and provides for alternative programs for the training of teachers.
Thurber Elementary School

Thurber Elementary School was selected as a desirable place to establish the behaviorally based teaching center. The school, situated in a low socio-economic inner city area of Columbus, is approximately two miles from the Ohio State University and is easily accessible to student teachers by the public transportation system.

Approximately 370 students from kindergarten through sixth grade attend Thurber and are assigned to an educable mentally retarded (EMR), a learning and behaviorally disordered (LBD), or one of thirteen regular classrooms. Mainstreaming is attempted whenever possible at Thurber. In addition to the EMR and the LBD children, approximately thirty of the pupils in regular classes are bused to the school, having been assigned there because of behavioral problems in other schools. Although most of the pupils live in the immediate area, a breakfast and a hot lunch program, funded by the federal government, is provided for them.

A cooperative school administration was a major factor in the selection of Thurber as the base for the teaching center. A behavior modification program, conducted by The Faculty for Exceptional Children of the Ohio State University, was implemented throughout the school from 1972-1975 to improve the academic and social behavior of the students and to train the teachers in behavioral techniques. By 1975-76 the program was no longer in existence and most of the teachers trained in behavioral techniques no longer taught at the School. During the time the program had been in operation, the
administration and the Division of Physical Education established a warm, cooperative relationship. The administration expressed great enthusiasm for working in another cooperative venture with the Division.

Since the Columbus School Board does not hire specialist physical education teachers to staff elementary schools, there was none at Thurber. As a result, the physical education program at the school was inadequate. If students received instruction in physical education at all, they rarely received it more than once a week. Any classes that were taught were conducted by regular classroom teachers who, by their own admission, indicated they had not been prepared for the task, or by student teachers from Ohio State. Noon-hour and after-school programs did not exist at all.

There was no continuity to the instructional program. Teachers and student teachers, hindered by an extreme lack of equipment and supplies, conducted activities in which they felt competent, despite what the students may have learned during the previous quarter or the year before. No overall plan for the physical development of students enrolled in the school existed. The establishment of the teaching center at Thurber Elementary School would not only be of benefit to the Division of Physical Education, but would also provide a great service to the students and teachers at the school.

Educational Research

Research in education is changing. The change involves a dramatic switch from academic research on schools to operational
research in schools.

Research used to be a rather esoteric activity. Eccentrics undertook it in the British Museum, in darkest Africa, and in equally remote Cambridge laboratories. It was conducted by a relatively small group, the intelligent gentleman amateur, and usually in a scientifically constrained manner. Its purpose was to describe and to understand life and certainly was never seen as influencing it. It, or its results, scarcely raised a ripple on the massive waves that marked the passage of significant "real" events [Start, 1976, p. 324].

The recent trend is toward applied research; a trend toward the implementation and evaluation of technologies and programs. Several presentations at the Second Annual Convention of the Midwestern Association of Behavior Analysis, held in Chicago in May, 1976, supported this trend and emphasized that it was time behavioral researchers stopped poking around with surface research in vast areas to concentrate on operationalizing already developed techniques, and to develop broadly based programs. The changing role of educational research to one of innovation in education and society is described by Start [1976]:

The "describing" and "understanding" roles whilst still important have been overtaken by research through which changes can be effected in classrooms, schools, education, and society. [p. 325]

The editorial in the May, 1976 issue of Educational Researcher also supports the change toward applied research in schools, and the journal established a new department, "R & D in Progress in Schools," to serve as an outlet for the exchange of information among professionals concerned with this type of research [Schultz, 1976].
The Thurber Project conforms to the demands of this new type of research. Student teachers at Thurber studied changes in teaching skills and the effects of these changes on student behavior. In addition, the project itself was evaluated as to its effectiveness for teaching behavioral technology, for changing student teacher behavior, and for providing physical education services to an entire school population. The initiation of the Project paves the way for many additional research possibilities, both at the undergraduate and graduate levels.

**General Goals of the Project**

The purpose of the present project was to initiate, operationalize, and evaluate a teaching center for the training of preservice physical educators enrolled at The Ohio State University. A secondary aim was to establish a cooperative working relationship between the Division of Physical Education and the inner city elementary school.

Since the school in which the teaching was established did not have an adequate physical education program, a major portion of the energies expended were put forth in obtaining equipment and supplies, scheduling physical education as part of the school curriculum, developing a program with continuity, and establishing a curriculum of instruction.

The Thurber Project was established to serve as a model behaviorally-based teacher training program. As part of their field experience at Thurber, student teachers participated in behavioral seminars conducted by the Project Supervisor. These seminars were
designed to:

1. Teach practical measurement and recording techniques which can be used in physical education settings.

2. Present basic learning theory principles which form the basis for behavior change.

3. Present information on previous research and applications in physical education.

4. Have student teachers carry out studies with their own classes.

5. Provide contact for the student teachers with others carrying out studies and with someone skilled and knowledgeable in making behavioral applications.

Since the Thurber Project was designed to interface several different systems, including a public elementary school, a university preservice block program, a university field experience program, and a graduate student program in teacher education, procedures had to be developed which would accommodate the on-going processes of each system. These procedures are outlined in the Handbook describing the student teaching process at Thurber.

The following chapters will provide:

1. A review of the current literature related to student behavior change and teacher behavior change.

2. A description of the program and the procedures implemented to alter teacher and student behavior.

3. A description and analysis of evaluation procedures.

4. A summary of the results of the evaluation and recommendations based on the first quarter's operation of the Project.
CHAPTER II

REVIEW OF LITERATURE

Teacher training should be devoted to techniques that maximize student behavior change. The need for locating teacher behaviors that significantly affect student learning has been pointed out by McDonald [1973]. Studies that relate pupil outcomes directly to teacher behavior have a behavioral base. The present discussion consists of two parts:

1. A review of behavioral techniques commonly used by teachers to effectively change student behavior.

2. A review of behavioral techniques used to train teachers in applied behavior analysis.

The techniques in each case are notably similar.

Behavioral Techniques for Changing Student Behavior

Teachers trained in applied behavior analysis should be able to utilize specific principles of operant psychology and be able to implement techniques that have been demonstrated to be effective in changing student behavior. A great variety of behavioral techniques have been used for study in special and regular classrooms. These have been recently reviewed [Hanley, 1970; Kazdin and Bootzin, 1972; O'Leary and O'Leary, 1972]. Application of similar techniques to
change student behavior in physical education and sports environments, although rare, have also been reviewed [McKenzie, 1976; Rushall and Siedentop, 1972]. Only the highlights of these reviews will be included in this discussion.

Behavioral techniques used to change student behaviors include: (1) instructions and rules, (2) social reinforcement, (3) token reinforcement, (4) behavior contracting, and (5) punishment, including reprimands and the withdrawal of positive reinforcers. A review of the techniques is included because these are the procedures in which teachers need training. In addition, it is these same procedures that have been effectively used to modify the behavior of teachers [Kazdin, 1975].

Instructions and Rules

The use of instructions and rules has received extensive evaluation in classroom studies. When used alone, instructions and rules are rarely effective [Herman and Tramontana, 1971; Kazdin, 1973c; Madsen, Becker, and Thomas, 1968] and if effective, are usually an influence on changing student behavior that is not particularly problematic [Kazdin, 1973].

McKenzie and Rushall [1971] alluded to the use of notice boards and program boards as methods for controlling behaviors in swimming environments, however, the singular use of instructions, rules and cues in physical education settings has not been investigated. Realistically, these antecedent events should be expected to be of little effect unless combined specifically and contingently with
student behavior. Guidelines for the use of instructions and rules in physical education settings are available in the literature [Siedentop, 1976; Siedentop and Rife, 1975].

**Social Reinforcement**

Contingent social reinforcement in educational settings has been widely evaluated. Many classroom studies have demonstrated teacher praise, approval, and attention to be effective in improving student behavior and academic performance [e.g., Hall, Lund, and Jackson, 1968; Kazdin, 1973; Thomas, Becker and Armstrong, 1968]. Verbal approval is usually the focus of social reinforcement studies but non-verbal attention, such as smiles and physical contact, may also be effective [Kazdin and Klock, 1973]. Investigators have indicated that peers can be trained to use social reinforcement to effectively alter the disruptive behavior of their classmates [Axelrod, Hall, and Maxwell, 1972; Solomon and Wahler, 1973].

Some investigations have been closely associated with physical activity. Baer and Wolf [1970] demonstrated the effectiveness of contingent social reinforcement in increasing the cooperative play in a pre-school child. McKenzie [1972] used a praise and reprimand contingency to reduce the frequency of inappropriate behaviors in a swim practice environment.

To effect change in their students' physical education, student teachers need to be trained to use social reinforcers properly. For some, this may mean increasing their frequency of approval and attention. But for all, it means making attention and approval contingent
upon desirable student behavior, rather than uncontingently or contingently upon undesirable behavior [Hall, et al., 1968].

Traditionally, students are treated as information processing systems requiring no reinforcers [Patterson, Cobb, and Ray, 1972]. Most classroom observation studies indicate that classroom teachers dispense very few social reinforcers, such as smiles, praise or physical contact. For example, Madsen, Becker, and Thomas [1968] showed that teachers averaged less than one social reinforcer per minute for appropriate classroom behavior. Recent data indicate that even leaner schedules of positive social reinforcement for appropriate behavior occur in physical education classes conducted by student teachers [Dessecker, 1975; Dodds, 1975].

Yet, while appropriate student behavior goes relatively unnoticed, teachers respond at extremely high rates to inappropriate behaviors. Many classroom studies have indicated that the majority of teachers' attention followed non-study behavior [e.g., Hall, et al., 1968; Walker and Buckley, 1972]. Studies indicate that student teachers in physical education settings also react disproportionately to off-task or disruptive behaviors [Dodds, 1975; Hughley, 1973].

Staats [1973] noted that in many classrooms only the very deviant or the academically talented student can consistently produce high rates of teacher attention. In physical education classes, it appears that the highly skilled student may replace the academically talented in the bid for teacher attention, but the deviant student is again the winner in this setting. Teachers seem to be placing themselves in "the odd position of reinforcing the very behaviors which
make...life miserable as a teacher" [Patterson, et al., 1972, p. 153].
To avoid this mistake, student teachers need to learn to react to
student behavior appropriately. Preservice programs should be
organized so that student teachers are trained not only to respond
positively to appropriate student behavior, but also are trained to
avoid reinforcing student behavior that is inappropriate.

Vicarious Reinforcement

Reinforcing one student may have an effect on adjacent student.
A study by Kazdin [1973] indicated that reinforcing one student for
being attentive increased the attentive behavior of both that individ­
ual and his peers. Kazdin [1973] suggested that the reinforcement of
one individual serves as a prompt for those who are vicariously
reinforced. Reinforcing a well behaved student may cue disruptive
students to modify their behavior. Kounin [1970] also found vicarious
effects of punishment and has indicated that students may behave more
appropriately when one of their peers is punished. The effects of
vicarious reinforcement and vicarious punishment in physical education
settings have not been investigated.

Token Reinforcement

Token economies usually involve several behavior techniques.
They are complex engineering systems that "incorporate all the prin­
ciples of behavior modification, which include most experimental
techniques of changing human behavior" [Krasner and Krasner, 1973,
p. 375]. Generally, a token system involves a student receiving a
token such as a checkmark, ticket, or poker chip at various intervals
for appropriate academic, social, or skilled performance. Later, these tokens can be exchanged for a variety of other reinforcers, such as edibles, free time, or special privileges. The basic elements of a token economy include: (1) systematic observation, (2) specific behaviors designated as desirable or undesirable, (3) backup reinforcers, (4) tokens, the medium of exchange, and (5) exchange rules [Krasner and Krasner, 1973].

The power of token economy systems to improve a wide variety of social and academic behaviors in special, remedial, and regular classrooms has been noted in several recent reviews [Axelrod, 1971; Kazdin and Bootzin, 1972; McLaughlin, 1975; O'Leary and Drabman, 1971]. However, in these reviews no reference was made to the use of token reinforcement procedures in physical education settings. Any reference to events resembling sports and physical education activities was to establish them as potential reinforcers for improved academic and social behavior. This can be most disconcerting to physical educators who consider learning about, and participating in, sports and active games of great importance.

Token systems have been effectively implemented with diverse populations in a wide range of educational and non-school settings. These systems have been successful in changing a wide variety of behaviors that are the concern of physical educators, including numerous academic, social, and self-care skills. Reinforcement systems can be implemented with ease, and with the abundance of no cost reinforcers, including free time, special privileges, and access to games, can be
inexpensive to operate. Evidence also indicates that, for the most part, pupils enjoy participating in token economies. In addition, teachers, administrators and the general public have expressed satisfaction with token applications. A recent paper, "Token Economy Research: A Review for the Physical Educator," concluded that token economy systems were "a largely untapped resource for improving behaviors in physical education and sports environments" [McKenzie, 1976, p. 48].

Only a few research studies in physical education have involved token economies. Siedentop and Hutchinson [1972] effectively combined dispersing tokens for appropriate target behaviors, social praise, ignoring inappropriate behavior, and time out in a physical education class for multiple handicapped children. An important aspect of this study was establishing the procedures for administering physical tokens to young children who are moving rapidly around a gymnasium.

Huber [1973] studied the effects of a token economy program on appropriate behavior and motor task performance of educable mentally retarded children in adapted physical education. Reinforcement procedures were effective in reducing disruptive behavior, but were only mildly effective in increasing the motor skills of the eleven subjects. The study showed that a token economy program which utilized backup reinforcers inherent in most physical education environments (access to play) could be employed by a beginning teacher to gain control of appropriate gymnasium behaviors.

Brock, Brock and Willis [1972] studied the effects of awarding points and posting the results of practice attempts for two fifteen-
year old male pole vaulters. Accumulated points could be exchanged for a milkshake or an excused absence from practice. Results showed that performance of both vaulters improved greatly during treatment, and deteriorated slightly for one of the athletes after the removal of the chart and point system.

Token economy research in physical education has involved small numbers of subjects from special populations. Research involving large numbers of students in physical education classes has not been reported. The studies that have been reported indicate that token systems can be extremely effective in environments in which there is a great deal of physical activity and that applications can be administered without undue difficulty.

**Contingency Contracting**

An increasingly popular method for improving student behavior is for students and teacher to come to a mutual agreement regarding each other's responsibilities and payoffs. This is referred to as contingency contracting [Homme, 1971] and usually involved the formal signing of a document delineating the terms of the agreement. Contracts may be made on an individual or a group basis and are usually effective because of the involvement of students in determining classroom procedures. Contracting has been used more frequently with junior and senior high school students than elementary school students. Contracts have been effective in altering both academic and social behavior [Arwood, Williams, and Long, 1974; Mac Donald, Gallimore, and McDonald, 1972; Williams and Anandam, 1973b; Williams, Long, and
The use of contingency contracting in physical education settings has not been reported.

**Group Contingencies**

In many physical education settings it is often not practical to program individually special contingencies for each class member. Several reinforcement techniques having group consequences have been advocated for use in classrooms [Drabman, et al., 1974; Litow and Pumroy, 1975; McLaughlin, 1975]. There are two distinct advantages of using group consequence systems in school settings. Firstly, they are more economically feasible and easier to manage than individual consequence systems, and secondly, the peer group can be utilized in controlling and enhancing classroom behavior.

Classroom group-oriented contingencies have recently been reviewed [Litow and Pumroy, 1975; Walker and Buckley, 1974, Chapter 5]. Litow and Pumroy [1975] classified group-oriented contingency systems into three different categories: independent, dependent, and interdependent. According to their classification, an independent group-oriented contingency system is established when "the same contingencies are simultaneously in effect for all group members, but are applied to performances on an individual basis" [p. 432]. This is the conventional system that has been extensively applied and is generally referred to as an "individual" system [Drabman, et al., 1974]. These reviewers have indicated that it is more precise to refer to all behavioral contingencies carried out in a group as "group-oriented contingencies." Following this line of thought, an individual
contingency program would involve only one person, such as the token system designed by McLaughlin and Malaby [1974] for a student who failed to respond to a class-wide token system.

A dependent group-oriented contingency system is established when "the same response contingencies are simultaneously in effect for all group members" [Litow and Pumroy, 1975, p. 432]. An example of this type of system would be to make reinforcers available to an entire class contingent upon a performance of an individual. This type of group-oriented contingency has been basically used to have peers influence a class member's deficient academic or social behavior.

An interdependent group-oriented contingency system is established when "the same response contingencies are simultaneously in effect for all group members, but are applied to a level of group performance" [Litow and Pumroy, 1975, p. 343]. An example would be a system in which basketball scrimmage for an entire class would be contingent upon the group making a total of fifty free-throws. Each member's reinforcement depends upon a level of group performance.

Several different types of group performance levels have been used. The most common has involved the group as a whole reaching a set criterion [Koch and Breyer, 1974; Packard, 1970; Schmidt and Ulrich, 1969]. Koch and Breyer divided their class into four groups and awarded points to a group when all members were on task. Hamblin, et al. [1971] used averages of group performances, including (a) the top three, (b) the lowest three, and (c) the total group, to determine reinforcement. Drabman, et al. [1974] made reinforcement contingent upon the highest, the lowest, or a randomly selected performance in a
Interdependent group-oriented systems have focused both on the class as a whole [e.g., Hall, et al., 1968; Packard, 1970] and on dividing the class into smaller groups or teams [e.g., Barrish, et al., 1969; Koch and Breyer, 1974; Sloggett, 1971].

Litow and Pumroy [1975] discussed the relative effectiveness of the three types of group-oriented contingency systems in managing the behaviors of the entire class. They indicated that no studies have assessed the amount of classroom control exerted by dependent group-oriented contingencies. Studies of this type have focused on the control of groups over one or more students. The authors hypothesized that of the three systems, dependent group-oriented systems probably exert the least control over the entire class.

Fourteen studies were indicated to have compared the relative effectiveness of independent group-oriented contingency systems in managing classroom behavior. Seven of these reported no differences, six reported interdependent systems to be more effective, and one reported the independent systems to be more effective. Litow and Pumroy concluded:

If further studies can empirically demonstrate that interdependent group-oriented contingency systems are as effective as individual contingencies and independent group-oriented contingency systems, the applied behavior scientist will have an array of techniques that are practical, effective, and cognizant of peer-group pressures in the classroom setting. More widespread use of interdependent group-oriented contingency systems will be seen as advantages in behavioral technology offer devices for monitoring classroom behavior and for regulating this system of group-oriented contingencies in the classroom. [p. 344]
Teachers and researchers have been urged to use discretion when applying group-oriented contingencies [Kazdin, 1975, p. 142; Williams and Anandam, 1973a, p. 25-26]. This concern has been summarized by O'Leary and Drabman [1971]:

Probably, combinations of group and individual contingencies could be used to produce the greatest behavioral change, but group contingencies must be initiated with caution because of (a) the possibility that a particular child cannot perform the requisite behavior; (b) the resulting possibility of undue pressure on a particular individual; and (c) the possibility that one or two children may find it reinforcing to subvert the program or "beat the system." [p. 390]

For these reasons, applications of dependent and interdependent group-oriented systems require much planning and sufficient monitoring. Although peer pressure can be used effectively to modify student behavior in a seemingly positive manner, not enough about its effects on ancillary student interactions is known. Additional research is needed to study the effects of peer pressure on both target and concomitant behaviors.

Since many activities in physical education and sports settings involve teams or groups, the application of interdependent group-oriented systems seems particularly appropriate in these environments. However, only a few studies in these areas have been reported.

McKenzie [1972] used an interdependent group-oriented contingency system called "disqualification" to decrease inappropriate behaviors in a swim practice environment. Club members were divided into three teams. Swimmers could be disqualified by members of the other teams for (1) unnecessary stopping, (2) not pushing off, (3) not
swimming in, (4) changing stroke, or (5) not following the rules of the game. To disqualify a swimmer, another team member had to notify the swimmer why he was disqualified and place a "d" in swimmer's unit space on the training program board. The team with the fewest "d's" each day won the game and received social praise and small humorous rewards from the coaches. The number of target behaviors, which interfered with good swim practice performance, was reduced dramatically during the game contingency.

Siedentop, et al. [1973] used an interdependent group contingency game to reduce the time spent in management by junior high school students during physical education classes. The entire class could accumulate "free time" which could be used once a week for activities they had selected as reward activities if all students were (1) in assigned places by starting time, (2) attentive to the teacher within five seconds of being cued, and (3) able to complete organizational changes within twenty seconds after a signal. Total savings in class time, which could then be used for instruction and/or activity, amounted to as much as twelve minutes per class.

Another type of behavior game has been used to reduce the frequency of inappropriate behavior in a second grade physical education class. Young [1973] set up an interdependent group contingency system so that either one or both of two teams could earn additional gymnasium time. Points were earned if team members were behaving appropriately when a pre-programmed cassette tape sounded at variable intervals. Groups that did not earn a point when the tape sounded were told why they failed to do so. Huber [1973] used a similar game with
educable mentally retarded students. His game was designed on an independent basis so that each student could win free time for himself only. These games were easy to administer, taking approximately ten seconds to consequence behavior from six to ten times each class. In each case the game dramatically increased the frequency of appropriate behavior.

There is sufficient evidence to indicate that group-oriented contingencies can be effective in altering student behavior. Although most of the research has been completed in classroom settings, several recent unpublished studies have been carried out in physical education settings. These studies indicate that not only are group contingencies effective in these environments, but that they can be implemented with unexpected ease.

Punishment

Punishment refers to the presentation of an aversive event or the removal of a positive event following a response which decreases the frequency of that response [Kazdin, 1975, p. 33]. Punishment is a complex phenomenon, and in educational settings should be used judiciously and sparingly [O'Leary and O'Leary, 1972, Chapter 4]. Consequently, teacher training has de-emphasized the use of punishment in favor of more positive control techniques. However, teachers should be able to utilize punishment techniques when demanded by special circumstances.

Reprimands. While reprimands may control disruptive behavior [Hall, Axelrod, Foundopoulos, Shellman, Campbell and Cranston, 1971] most investigations have shown that verbal reprimands actually increase
the disruptive behavior the teacher is trying to suppress [Kazdin and Moyer, 1976]. However, soft reprimands audible only to the child may prove very effective with extremely disruptive students [O'Leary, et al., 1970]. An analysis of the interactions between John Wooden, considered the most successful basketball coach in history, and his players revealed that he used scolds and reprimands as frequently as he used positive statements [Tharp and Gallimore, 1976]. Prospective teachers should remember that no cause-effect relationship was established in the investigation and that contingencies effective with a highly motivated college basketball squad may be vastly different from those successful with regular physical education classes.

**Time out.** Disruptive students capture a disproportionate share of the teacher's attention and time. For example, Walker and Buckley [1972] found that 77 percent of a teacher's attention was directed toward problem children. Of this, 89 percent was attention for inappropriate behavior and only 11 percent was for appropriate behavior. Comparable percentages for non-deviant children were 24 and 76 percent. In addition, disruptive student behavior yields much reinforcement from peers. Time out, a mild punishment technique, in which a student is removed from the reinforcing effect of teacher and peer attention, has been demonstrated to weaken disruptive behavior when applied consistently [Leitenberg, 1965]. Research by White, Nielson, and Johnson [1972] showed that short time-out intervals of one minute may be as effective as thirty minutes for many children. Time out has been used extensively in physical education settings, however, empirical evidence of the effectiveness of different procedures have
not been reported.

**Intermixing Reinforcement Techniques**

Behavioral techniques supplement each other and rarely is one procedure used alone. For example, Kirschner and Levine [1975] combined a token economy system with individual and group contracts, behavior rehearsal, modeling, and home contracts to modify the aggressive behavior of elementary school students. Brooks [1975] blended a modified token economy, contracting, and group guidance meetings to successfully reduce truant behaviors of high school students. Arwood, Williams, and Long [1974] combined contracts and proclamations with a point system. Cohen, et al. [1971].combined a token system with parent-child contracts and Knapezyk and Livingston [1973] combined a token system with self-recording.

Although behavioral systems rely heavily on the use of positive reinforcement, a punishment component may also be included. For example, three different forms of aversive control, time out [Drabman and Tucker, 1974], social isolation [Drabman and Spitalnik, 1972], and response cost [Kaufman and O'Leary, 1972], have been used in conjunction with token economy systems.

Most reinforcement applications involve a change in classroom structure, rules, praise, ignoring and teacher attention. They are also extremely flexible and seem to encourage a "shotgun" approach to behavior change [Hanley, 1970].

Most change systems used in physical education settings are also "package" interventions. For example, McKenzie and Rushall [1974]
used self-recording, the public posting of performance, and social reinforcement to improve attendance and practice performance in a swimming pool. The separate effects of these conditions were not tested. Parts of a package intervention might be deleterious to the task at hand and an analysis of individual components should be made whenever possible. On the other hand, in situations when interventions are now only being tested, such as in active physical education classes, it may be well-advised to saturate the environment with a variety of techniques first, and complete a component analysis at a later time.

Summary of Techniques for Changing Student Behavior

A great variety of behavioral techniques, including the use of instructions and rules, social reinforcement, vicarious reinforcement, token reinforcement, group contingencies and behavior games, behavior contracting, and punishment techniques such as reprimands, time out, and response cost, have been implemented to effectively alter a wide variety of behaviors in diverse educational settings. Research on applications of reinforcement systems in physical education settings has been limited. However, reinforcement programs have been successful in changing a wide variety of behaviors that are the concern of physical educators, including numerous academic, social, and recreational skills.

In schools, reinforcement systems can be implemented with ease, particularly if students become involved in the administration of programs and if group-oriented contingencies are used. Systems
are inexpensive to operate. An abundance of no cost reinforcers, including free time, privileges, and special events, are available in most settings. The potential of reinforcement systems appears to be a largely untapped resource for improving behaviors in physical education and sports environments. Innovative programs should be developed so that behavioral applications in physical education settings can be tried and tested. Model programs also need to be developed so the preservice and inservice physical educators can observe and practice making behavioral applications.

**Behavioral Techniques for Training Teachers**

One of the very important assets of utilizing an applied behavior analysis approach to training teachers is that it presents a conceptual framework for viewing the development of teacher behavior and behavior change procedures. Three years ago a view of the use of behavior modification in teacher education concluded that "the training of teachers is a rich field to mine for applications of behavior modification technology" [McDonald, 1973, p. 73]. The present discussion centers on common behavioral techniques used in the classroom and gymnasium to train teachers and student teachers to be effective modifiers of student behavior. Interestingly, the procedures used to modify teacher behavior are the same procedures effectively used by teachers to change the behavior of students.

**Instructions and Lectures**

Applied behavior analysis techniques, if part of a teacher training program at all, are usually taught by traditional methods
such as lectures, discussions, and written assignments. Those already engaged in the field may find out about behavioral procedures in their typical inservice workshops. Many books and manuals have been written to provide explanations of behavior modification, especially for teachers [Buckley and Walker, 1970; Bushell, 1973; Homme, 1971; Madsen and Madsen, 1970; Poteet, 1973]. Such instructional procedures may be effective for teaching teachers about behavioral strategies, but rarely have their effects on actually changing instructional behavior been investigated. Responding in an appropriate manner to a multiple choice question is far different from responding appropriately to alter a student behavior.

Instructions, without accompanying practical training, do not appear to be sufficient when training behavior modifiers [Gardner, 1972; McKeown, Adams, and Forehand, 1975]. In one university training system, Responsive Teaching [Hall, 1971b; Hall and Copeland, 1972], instructions have been successful in changing teacher behavior. However, this system required that the teachers enrolled in the course execute a behavior modification project in the classes they instructed. This method of teaching provided participants with an opportunity to define and measure behaviors in a classroom situation, develop and assess reliability of recording procedures, apply experimental procedures systematically, scientifically verify the effectiveness of interventions, and interact with others who are having similar experiences. Obviously, the Responsive Teaching Model is a special program that goes beyond traditional instructional procedures and includes large amounts of practical training.
Feedback

Feedback refers to a teacher receiving information about the adequacy of a performance. Feedback may be a conditioned reinforcer and is present in many forms of consequences, including praise, reprimands, and tokens. When used independently of other reinforcers, feedback is usually referred to as knowledge of results [Kazdin and Moyer, 1976].

Many studies of feedback as a change agent for teacher behavior have been completed in classroom settings [e.g., Breyer and Allen, 1972; Cooper, Thompson and Baer, 1970; Kazdin, 1974a; McNamara, 1971; Saudargas, 1972]. Feedback has been provided by several methods. Cooper, et al. [1970] used written feedback to train two preschool teachers to attend to appropriate child behavior. McNamara [1971] used a telemetric signalling system to provide immediate feedback to an elementary teacher regarding his attention to appropriate and inappropriate student behavior. McNamara's signals were in the form of a mild electrical charge. Thompson and Cooper [1969] were able to provide immediate feedback by way of a hearing aid receiver, and video tape recordings were used to provide feedback by Saudargas [1972] and Thomas [1971]. However, the typical method is to provide written and verbal feedback to the teacher immediately following class.

In most studies dealing with feedback, the dependent variable has been teacher verbal behavior. Feedback provided by principals, university supervisors, fellow teachers, student teachers, classroom students, as well as self-generated feedback, has been studied. In
most instances, feedback is combined with other change procedures, making an examination of the effects of feedback alone impossible.

Direct information feedback formed a major part of an intervention package used in a series of studies directed by Daryl Siedentop of The Ohio State University [Boehm, 1974; Darst, 1974; Dessecker, 1975; Dodds, 1975; Hamilton, 1974; Hughley, 1973; Rife, 1973]. The subjects for these experiments were physical education students completing student-teaching experiences during their senior year. Interventions were effective in modifying a wide variety of teacher behaviors, most of them verbal. The typical teacher behaviors that served as dependent variables included: (1) positive reactions to on-task behavior, (2) positive reactions to on-task behaviors with specific information, (3) negative reactions to off-task behavior, (4) general positive skill feedback, (5) specific positive skill feedback, (6) specific corrective skill feedback, (7) pupil contacts using first name, (8) overall teacher reactions, and (9) time spent in management.

Several of these studies [Boehm, 1974; Darst, 1974; Hamilton, 1974] also included measures of pupil behavior. These pupil measures included appropriate/inappropriate behaviors, active/inactive learning, and time spent in managerial episodes. The results indicated a maintenance or improvement of pupil behaviors as teacher behaviors were altered in desired directions. Functional relationships between behavioral intervention techniques and changes in teacher behavior, and between teacher behavior change and changes in pupil behavior have thus been established in physical education settings.
In addition to feedback, the intervention package used by Hughley [1973] included instructions, cueing, reinforcement, and goal setting. Rife [1973] also included modeling in his package. A competency-based framework was added by Darst [1974], Hamilton [1974], and Boehm [1974], and verbal mediation was included by Dodds [1975]. Dodds also demonstrated that student teacher peers could generate feedback to effectively modify the instructional behavior of their teaching partners. Dessecker [1975] adapted the package to include a self-assessment approach to accompany delayed feedback from a student teacher supervisor.

Feedback has also been used to change the behavior of instructors in sports settings. Direct information feedback was used to modify the behavior of a basketball coach [Mertler, 1974]. Self-generated feedback by coaches was used to alter coach-swimmer interactions in a competitive swimming environment [McKenzie, 1972].

In the main, information provided to teachers about target teaching performances has been effective in improving those performances. But a few exceptions of feedback failing to change teacher behavior have been reported. Breyer and Allen [1972] showed that information provided to a teacher on an intermittent basis (every second day) was insufficient to increase her positive comments and decrease her negative comments. Similarly, Cossaırt, et al. [1973] found that feedback was ineffective in increasing the use of praise by a teacher. These failures suggest that often, in addition to feedback, a variety of other techniques should be used in the teacher training process. Results of a study by Clark and Macrae [1976] suggest that trainees be permitted
to choose the components that are to be used in their training session.

Social Reinforcement

Only a few studies have investigated the effects of social reinforcement such as praise, approval, and attention on changing teacher behavior. For example, McDonald [1973] examined the effect of praising teachers for selecting certain behavior change strategies. Teachers who received praise tended to be more supportive (i.e., use more verbal encouragement and pats on the back) than their counterparts who received no praise. Praise from a psychologist has also been used to reinforce a teacher for using certain techniques in a classroom setting [Brown, Montgomery, and Barclay, 1969].

In a physical education setting, student teachers were complemented and praised by peer partners and their supervisor immediately following teaching a class [Dodds, 1975]. In this case, social reinforcement was part of a large intervention package that was effective in changing a wide variety of verbal interactions.

Cossairt, et al. [1973] studied the effect of positive comments directed to teachers by a consultant and the subsequent effect of increased teacher praise or improved attending behavior by students. Feedback to two teachers, indicating how often students attended and the amount of praise given to them by the teacher, was ineffective in producing change in both teacher and student behaviors. Positive comments by the experimenters markedly increased the teacher use of praise. Dramatic increases in pupil attending behavior followed the teachers' increased use of praise.
These studies indicate that teacher behavior can be directly influenced by social reinforcement. Since social reinforcement can be administered with ease by principals, cooperating teachers, student teaching supervisors, and peers, its systematic use in developing student teacher behavior is suggested.

Token Reinforcement

Other than grades, few token conditioned reinforcers have been used to change preservice teacher behavior. However, with classroom teachers, McNamara [1971] combined information feedback, a positive reinforcement procedure, and a response cost contingency to alter teacher attention to appropriate and inappropriate pupil behavior. Teachers received points for good performance and lost them for attending to inappropriate pupil behavior. The points could be exchanged for cans of beer. Occasionally, extra beer was given for superb teacher performance. Teacher performance was particularly high during these conditions.

Token reinforcement systems established in classrooms to change pupil behavior have been demonstrated to have an indirect influence on teacher behavior. Chadwick and Day [1971] found that a teacher and classroom aides increased their approval statements and decreased their disapproval statements when they administered tokens for academic behavior. The use of token reinforcement has also been demonstrated to provide increased rates of social interaction between teacher and students [Breyer and Allen, 1975; Mandelker, Brigham, and Bushell, 1970]. The Breyer and Allen study also suggests that a token system
can influence the quality of a teacher's contacts with students at times other than when the system is in effect.

Presently, grades are used as token reinforcement for improved performance during student teacher field experiences. Unfortunately, grades are dispersed for global behaviors, and often unsystematically. The systematic application of token reinforcement to alter the behavior of student teachers in physical education settings, either directly or indirectly through procedures to change student behavior, remains to be investigated.

**Modeling**

Observing a well-trained teacher make behavioral applications and demonstrate pupil behavior change would seem to be extremely useful to preservice teachers. However, modeling has rarely been reported as a procedure to train teachers to use applied behavior analysis techniques effectively.

A modeling procedure developed by Rule [1972] involved a supervisor replacing the teacher for five minutes whenever the teacher had not used enough praise. During this five minute period the teacher was to observe the model of the supervisor's use of the teaching skill.

Another investigator served as a model in a fourth grade class and administered verbal and token reinforcement to decrease inappropriate student behavior [Ringer, 1973]. The classroom teacher gradually took over the responsibility of administering the program. When the teacher resumed complete responsibility for the class, inappropriate behavior was maintained at a lower rate than baseline. The results suggest that viewing a model "token helper" enabled the
teacher to improve classroom control.

Modeling formed part of a training package designed to teach reinforcement skills to preservice elementary school teachers [Clark and Macraw, 1976] and preservice teachers of educable mentally retarded pupils [Clark, Macrae, Ida, and Smith, 1975]. A summer workshop program reported by Sloggett and Kubany [1973] also included the modeling of skills as part of a package program to train teachers.

Rife [1973] implemented a modeling and information feedback intervention to effectively alter several teaching behaviors of two preservice physical education teachers at the elementary school level. The relative effectiveness of the various parts of these packages was not investigated.

The foregoing studies demonstrated the effectiveness of modeling in the teacher training process. In these modeling formed part of a training package, but its use was not rigidly controlled. Although only preliminary investigations have taken place, the use of modeling procedures for training preservice teachers to implement behavioral techniques is strongly supported.

**Prompting**

A few attempts have been made to change teacher behavior through prompting. Hall, et al. [1968] had an observer hold up a colored square to cue a teacher to use praise. Student-teacher observers cued their partners teaching physical education classes by holding up a "happy face" [Dodds, 1975]. In each of these cases, the teacher was signalled when students or target subjects were engaging
in desirable behavior.

Another experiment [Van Houten and Sullivan, 1975] demonstrated the efficacy of auditory prompting over a school public address system to increase the use of praise of three teachers. The data from this study demonstrated that prompting can work in situations where counting, charting, and self-recording are less effective. To clip boards carried by swim coaches, McKenzie [1972] attached sheets of paper listing the names of swimmers with whom the coaches were to interact. This procedure enabled the coaches to distribute their attention more evenly and over a wider range of swimmers. These studies indicate that simple practical procedures can be developed to provide a frequent discriminative stimulus for teachers to look at and attend to student behavior.

Maintenance

Research in classrooms suggests that as soon as procedures for training teachers are removed, target teacher behaviors revert to pre-training levels [Brown, et al., 1969; Cooper, et al., 1970]. A study by Dodds [1975] indicated the same phenomenon exists with student teachers in physical education settings. The problem of maintaining behavior following treatment is far from being unique to teacher training. The topic of generalization, i.e., response maintenance and transfer of training, has been the major focus of several reviews [Kazdin, 1974; Kazdin and Bootzin, 1972; Wildman and Wildman, 1975].

Wildman and Wildman [1975] reviewed the behavioral literature and suggested fifteen tentative rules for promoting generalization.
These authors concur with Baer, Wolf and Risley's [1968] often quoted statement that, "Generalization should be programmed rather than expected or lamented" [p. 97]. Elaborate procedures to ensure that student teachers maintain the teaching learned in preservice programs should be instituted. However, the applications of Wildman and Wildman's [1975] rules to teacher training are rarely evidenced in teacher training programs.

Coscairt, et al. [1973] used reinforcement on an intermittent basis throughout a no-treatment condition to successfully maintain teacher attending behavior. This is the lone example of procedures to promote maintenance used during training. Procedures involved in equating stimulus conditions, so that the student-teacher can learn about and apply behavior modification skills in settings resembling those in which they will teach, have not been reported. Research in other areas support the notion of teaching self-monitoring procedures to preservice teachers so that behavioral control techniques might generalize to regular teaching settings [Thorsen and Mahoney, 1974; Williams and Long, 1975].

The literature suggests that if teacher behavior is to be changed, and if this change is to be maintained, emphasis should be placed on rehearsal and practicing behavior rather than on exposure to lectures, reading, and discussion [Kazdin, 1974; Houts and Hench, 1976]. The training of teachers should concentrate on developing programs so that preservice teachers can make actual applications of behavioral techniques in real-life situations. Programs of this nature are not available for preservice teachers in physical education.
Summary of the Literature

Teacher training requires specification of the techniques used by teachers to change pupil behavior. Behavioral techniques demonstrated by research to be effective and easily implemented by teachers have been reviewed briefly. Specific techniques used to train teachers to employ behavior modification procedures with students have also been reviewed. Although a great many behavioral techniques have been successfully implemented by teachers, the use of behavior modification procedures to train teachers is only recent and is not fully developed. Methods to promote maintenance of training need to be studied.

Most of the research reviewed here has been conducted in regular classroom environments. Applied behavior analysis in physical education settings is practically non-existent. Preservice teachers are rarely taught the behavior modification skills necessary to be an effective teacher in today's schools. And those that do encounter these techniques are not afforded an opportunity to practice making behavioral applications in live situations.

Procedures for observing and recording student and teacher behaviors in physical education settings are not yet well developed. Nor have adequate procedures been developed for implementing into active physical education settings the techniques that have been so effective in the classroom. Programs need to be developed so that preservice teachers can observe applied behavior analysis techniques in operation and so that they practice making behavioral applications in real-life situations. The development of such programs should also
help improve behavioral observation and recording systems for physical education settings. These programs should also cultivate additional procedures for implementing behavioral techniques in these extremely active environments.
CHAPTER III

METHODS AND PROCEDURES

The purpose of the Thurber Project was to initiate, operationalize, and evaluate a teacher training center based on behavioral technology. The training center served the Division of Physical Education of The Ohio State University and was established in an inner city elementary school.

In attempting to carry out this mission, many operational problems were encountered, some of which were not anticipated. As the program developed, a series of decisions about organization and implementation processes, measurement techniques, experimental designs, and intervention procedures had to be reached. This chapter is included in an effort to portray some of the realities of an attempt by university personnel to establish a field-based experience for physical educators in a public school. Included are a description of the methods, procedures, and processes used in implementing the Project. Procedures employed to change the behavior of the student teachers at Thurber, but not ordinarily used in training teachers, are described in some detail. Behavioral techniques used to alter pupil behavior are also described.
Initiation

Implementation of the program had to proceed with caution. All new innovations in program and evaluations of services had to be negotiated between the school personnel and the university personnel. The adoption of a behavioral approach in a public school required a retraining of the existing staff, the students, and the student teachers. Wholesale change in the way the physical education program was operated would likely have produced discomfort and resistance from school personnel. To reduce resistance, several procedures were followed:

1. The Project Director, Daryl Siedentop, the Project Supervisor, and the School Principal met on two occasions and established guidelines for the Project.

2. The Project Supervisor attended school staff meetings to explain the proposed program to the principal and classroom teachers.

3. The Project Supervisor met regularly with the Physical Education Coordinator, a classroom teacher appointed by the School principal to serve as liaison for the Project.

4. The Project Supervisor met individually with classroom teachers throughout the quarter to further clarify the program, solicit ideas and suggestions, conduct an informed evaluation, etc.

At the university similar procedures were followed:

1. The Project Director met initially with the Chairman of the Division of Physical Education. A meeting with the Project Director, the Chairman, and the Project Supervisor followed several weeks later.

2. The Project Director requested of the Department Coordinator for Student Teaching that four student teachers be assigned to Thurber Elementary School for Spring Quarter.
3. The Project Supervisor met with the Department Coordinator for Student Teaching on several occasions preceding the implementation of the Project and during its operation.

Extreme modification of a student teaching experience would have produced resistance from both the university field experience personnel and the student teachers assigned to the Project. Procedures outlined by the Office of Student Field Experience and by the Department Coordinator for Student Teaching were followed diligently.

Student Teachers

Four student teachers from The Ohio State University served as the physical education teachers for the Thurber Project. These student teachers were selected by the physical education coordinator for student teaching and were assigned to Thurber School to complete their field experience under the supervision of the Project Supervisor. Approximately one month before the Project was initiated, the Supervisor met with each of the student teachers to give a detailed explanation of the proposed program and the situation at Thurber School. Each of the student teachers agreed verbally to participate in the Project.

Two female and two male teachers, ranging in age from twenty-one to twenty-three, were assigned. While all four were teaching at the elementary school level for half-day periods for ten weeks, three were also teaching at the secondary school level during the opposite half-day. The fourth student teacher had completed his secondary level student teaching experience, necessary for K-12 certification.
in Ohio, during Winter Quarter and was enrolled in several academic courses.

Two of the three student teachers enrolled for full-time student teaching, fifteen credit hours, were also enrolled for academic courses, one for three credit hours, the other for five credits. The person enrolled for five credits also had to make-up an incomplete from the previous quarter and was a member of an intercollegiate team that was in its competitive season. The third student teacher was a prominent member of another varsity sport team that was presently in competition and also worked part-time at an off-campus location.

Previous teaching experiences for the student teachers included participation in The Ohio State Freshman Early Experiencing Program, field experiences in Block Three (Elementary Methods 541), and Block Four (Secondary Methods 647), and summer camp counseling. All four student teachers had been introduced to applied behavior analysis in Block One of the physical education block program, but none had seen behavioral techniques in operation or had any direct experience in applying behavioral strategies. Three of the four student teachers were from small towns within Ohio, and none of the four had any experience as a student or teacher in inner city schools.

These four student teachers instructed students in physical education from regular classes. Two other student teachers, not part of the Project, but majoring in adaptive physical education within the Division, taught students from the two special classes within the school.
Thurber Elementary School

The school setting was an inner city elementary school containing two classes from each grade level one through six, a kindergarten class, a class for the learning and behaviorally disordered (LBD), and a class for the educable mentally retarded (EMR). The total school population was approximately 370 pupils, most of whom lived in the low socio-economic neighborhood surrounding the school. In addition to the EMR and LBD children, approximately thirty students were bused to Thurber, being assigned there because of behavioral problems in other schools. Mainstreaming, where educable children are maintained in regular classrooms, was put into practice when feasible. Approximately 77 percent of the school population were white and 23 percent were black. A federally funded breakfast and hot lunch program were provided for the pupils.

The physical education program at Thurber was inadequate. The school had no physical education specialists and no early morning, noon hour, or after-school programs were in operation. Regular classroom teachers were responsible for their own physical education classes. If instruction in physical education was carried out at all, it was rarely more than once each week. There was no evidence of continuity in programming from week-to-week or from year-to-year. Classroom teachers and physical education student teachers, whenever they were assigned to Thurber, conducted activities in which they felt competent, despite what the students may have previously experienced. Any plans for establishing an adequate program would have been hampered by a
serious lack of physical education supplies and equipment. 
The facilities for physical education at Thurber were modest, but adequate. The gymnasium served not only as a teaching station, but also as a lunchroom, an auditorium, a waiting area for bus students, and as a polling station during elections. Tables, chairs, and voting machines prevented the full use of the gymnasium for instructional purposes. The outdoor facilities included a large paved area, accommodating three tetherball poles, three slides, and two pieces of traditional climbing equipment and a grassy field with a softball backstop. A small adjacent park could also be used during physical education classes.

Expanding the Physical Education Program

A major component of a physical education program is the curriculum, goals, or target behaviors. Teachers need to decide what curricular goals are appropriate for each student. Within a broad range, there are hierarchies of skills in which particular behaviors are dependent upon the prior acquisition of other more elementary skills.

There are many published curricula in physical education that can be drawn upon as resources for content, sequence, and activities [e.g., Dauer and Pangrazi, 1975; Gilliom, 1971; Kirchner, 1970; Schurr, 1975; Stanley, 1969]. Each has its own philosophical rationale, range of content, degree of specificity, and practical relevance. Each also has particular strengths and weaknesses and has undergone periods of popularity.
The curriculum used at Thurber during Spring Quarter was similar to the curriculum adopted by the Division of Physical Education in the Province of Prince Edward Island, Canada in 1974. The Project Supervisor was a member of the Physical Education Curriculum Committee for the Province at that time. This curriculum draws from other published curricula and is outlined in the Physical Education Developmental Skills Chart for Elementary Schools [undated].

The physical education program at Thurber expanded not only in terms of content, but also in the time allotted for instruction. A new schedule was developed so that each class had physical education daily for four weeks, or for twenty instructional periods. The Project was in operation for nine weeks. During the first week, the student teachers made preparations, became oriented to the system, and visited classrooms, but did not teach. The remaining time was divided into two sessions, each of four weeks duration. Students from six classrooms received instruction during the first session, and students from seven classrooms received instruction during the second session. Class length ranged from twenty-five to forty-five minutes, depending upon the grade level of the students. The amount of time made available for physical education instruction for each pupil increased during the Project by two-and-one-half times. The daily and quarterly timetable is reproduced in the Handbook.

Expanding the Equipment and Supplies

Another major component of a quality physical education program is the kind and amount of instructional materials and equipment available
for use by students. Materials are facilitators for accomplishing objectives and are a necessary part of a physical education program.

The equipment and supplies at the start of the Project were inadequate, both in kind and in quantity. Efforts were made to improve the situation so that established goals could be reached. Some equipment was purchased by the school. For some units, materials were borrowed on short-term loans from the university or from the Columbus Board of Education. Some materials were secured free of charge from business establishments, such as service stations; other items were constructed. Additional shelving, hooks, and hangers were constructed in the equipment room to house the added resources.

Although agreements with university personnel to have Block Three students construct equipment and supplies as part of their independent study failed, arrangements have been made for the completion of these projects during Winter, 1977. Equipment and supplies continuously deteriorate and need to be repaired and replenished, as well as expanded. An inventory of the supplies remaining at the end of the quarter, after borrowed materials were returned, is contained in the Handbook.

**Peer Assessment**

Traditional methods of assisting student teachers improve their teaching skills rely heavily upon the efforts of a school-based cooperating teacher to give directions and feedback. A physical education specialist trained as a cooperating teacher was not available at Thurber.
To rectify this situation, a peer assessment model for student teaching was introduced. This model could be viewed as an extension of Mosston's [1966] reciprocal teaching style and utilizes feedback generated by a fellow student teacher as the major change agent. When combined with competency-based modules and applied behavior analysis techniques, the peer assessment model has been demonstrated to be a viable method for training physical education student teachers at the elementary school level [Dodds, 1975]. Dodds [1975] demonstrated that observer student teaching partners could function reliably as data collectors for teaching peers and could serve adequately as change agents for target teaching skills.

Student teachers were assigned to Thurber in pairs. Each pair, plus the Project Supervisor, formed a team. One pair, consisting of a male and a female, taught during the morning session. Another pair, also a male and a female, taught during the afternoon session. Each session consisted of three classes. One of the partners would teach the first class while the other partner served as observer. The roles were reversed during the second class. Team teaching procedures were used to instruct the third class.

The peer assessment model used at Thurber utilized a systematic data-based approach to developing teaching skills and changing pupil behavior. Each student teacher learned observational techniques such as event recording, time sampling, duration recording, and placheck. Each also learned to identify particular teacher behaviors and pupil behaviors. Definition of teacher behavior categories, recommended observation and recording methods, sample observation scales, and other
techniques for systematically improving teaching performance were provided in Developing Teaching Skills in Physical Education [Siedentop, 1976], the text assigned to student teachers participating in the Project.

Team members decided which individual teaching skills needed to be improved and the order in which they would be presented. Individual qualitative and quantitative criterion levels for teacher and student performance were set, depending upon the individual teacher, the activity being taught, and the class situation. For example, during a particular class a student teacher might work on increasing his frequency of reaction to positive student behavior to a rate of 2.5 per minute. Another student teacher might have reducing management time to 15 percent of the total class time as his goal. The teaching skill and rate or ratio usually changed from class to class.

Prior to teaching a class in which he was being observed, the teaching-partner completed a Target Teaching Skill Card and presented it to his observer-partner. The card indicated the teaching skill he/she was attempting to improve and the target level, usually expressed in frequency, ratio, or rate per minute. The observer-partner, utilizing a Master Observation Sheet, observed and recorded the target behavior during the class. After class, the observer-partner tabulated the results and returned the completed Target Teaching Skill Card and Master Observation Sheet to the teaching-partner. At this time, the observer-partner also provided verbal feedback, and in most instances, praise. Periodically, the Project Supervisor completed reliability checks to ensure accuracy of data collection procedures and
participated in the feedback sessions. When possible, the teaching partners were to graph their teaching performances.

Directions and procedures that student teachers followed are described more elaborately in the Thurber Handbook. Page 144 of the Handbook contains a sample Target Teaching Skill Card and page 145 is a copy of the Master Observation Sheet.

Although the primary function of the observer-partner was to provide immediate and precise feedback to the teacher-partner about his/her teaching performance and the performance of his/her students, they were useful in other ways. For example, they assisted in team teaching, served as models for teaching techniques, produced cues and prompts, gave reinforcement, and when necessary, furnished moral support. Another important use they served is that they were available to assist in emergency situations.

**Measurement and Recording Procedures**

Precise observation and measurement are basic to applied behavior analysis. The student teachers had to be trained as observers and recorders and procedures had to be developed so that accurate information could be obtained. Exact definitions of specific behaviors were of prime importance. Precise definitions for teacher behaviors were obtained from the text [Siedentop, 1976]. For student behavior, team members defined precisely the behaviors that were of concern to them.
Training

A two-hour initial training session was held in the Teaching Learning Center on the university campus the first day of the quarter. Video tapes of interactions in physical education settings were used during this session. After reaching specified criterion on video tapes, the student teachers practiced observing with the Project Supervisor in the natural setting. While one intern was teaching, his/her partner and the Supervisor observed, coded, and pinpointed areas of disagreement until at least 80 percent agreement on individual categories was reached. In addition, the pair assigned to the morning sessions practiced observing and coding during the LBD and EMR physical education classes.

As each intern selected to improve different teaching skills as the quarter progressed and new categories of student behavior were developed regularly, observer training and monitoring continued throughout the duration of the Project.

The student teachers learned four basic observation techniques, including duration recording, event recording, placheck recording, and time sampling [Siedentop, 1976]. With the exception of placheck recording, which was used only to gather information on student behavior, these techniques were used to gather objective data on both teacher behavior and student behavior.

Observation Format

During the project, it was impossible to simultaneously observe and record all the student and teacher behaviors that were of interest.
It was necessary to develop different coding systems so that a variety of behaviors of particular concern could be sampled periodically. These systems have been referred to as multiple observation systems and involved combining event, duration, time-sampling, and placheck recording to yield ample amounts of information on a variety of student and teacher behaviors [Siedentop, 1976]. Classes ranged in length from twenty-five to forty-five minutes. Generally, the teacher-partner was observed for three five-minute sessions, dispersed throughout the class. Student observation segments and rest periods were distributed between these teacher observation sessions. A sample observation format used toward the end of the Project follows:

<table>
<thead>
<tr>
<th>Duration</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 seconds</td>
<td>Placheck student behavior</td>
</tr>
<tr>
<td>20 seconds</td>
<td>Rest</td>
</tr>
<tr>
<td>60 seconds</td>
<td>Event record -- one student, three behaviors</td>
</tr>
<tr>
<td>10 seconds</td>
<td>Rest</td>
</tr>
<tr>
<td>10 seconds</td>
<td>Placheck student behavior</td>
</tr>
<tr>
<td>10 seconds</td>
<td>Rest</td>
</tr>
<tr>
<td>300 seconds</td>
<td>Event record -- student teacher behavior, six-category scale</td>
</tr>
<tr>
<td>10 seconds</td>
<td>Placheck student behavior</td>
</tr>
<tr>
<td>20 seconds</td>
<td>Rest</td>
</tr>
<tr>
<td>60 seconds</td>
<td>Event record -- one student, three behaviors</td>
</tr>
<tr>
<td>20 seconds</td>
<td>Rest</td>
</tr>
<tr>
<td>10 seconds</td>
<td>Placheck student behavior</td>
</tr>
</tbody>
</table>

540 seconds = 9 minute recording cycle

9 minute cycle
1 minute rest
9 minute cycle
1 minute rest
9 minute cycle

29 minute total observation sequence (including rest periods)

This twenty-nine minute sequence of three cycle yielded:
12 Plaches of student behavior
15 Minutes of event recording on the student teacher, using a six-category scale
6 Minutes of event recording for one student on three behaviors.

A pre-programmed cassette tape was used to direct the observer through each cycle. The tape could be rewound during the one-minute rest period. While using this type of format, an observer could also operate two stop watches to gather information about the cumulative amount of time the class spent in managerial and instructional time. The amount of time the class spent in active learning could be calculated simply by subtracting the amount of managerial and instructional time from the total class time.

The above sample is a complex observational format. Much simpler formats had to be used during initial stages of training.

Reliability Checks

To determine the accuracy of the observer-partner's recordings, the Project Supervisor completed independent observations of student and teacher behavior. In instances where a cassette tape was used to signal the observation format, reliability checks were made possible by an additional ear-jack spliced into the ear-jack line used by the observer.

The basic formula used to calculate reliability was:

\[
\frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100 = \text{percent agreement}
\]

Special Recording Procedures

Recording procedures commonly used for observation in classrooms, such as observing unobtrusively from a fixed position at the
back of the room, failed miserably. Compared to the classroom, behaviors in the gymnasium are noisier, more vigorous, and are spread over a much larger area, making accurate data collection difficult. This difficulty is increased when physical education classes are conducted outdoors.

For some observations, it was possible for observers to sit on the stage or off to the side of the gymnasium. But for most, it was necessary that observers be mobile, carrying their observation equipment and recording materials with them. Observers became quite adept at following their teacher-partner around the gymnasium and playing fields while carrying a battery-powered tape recorder, two stop watches, an interval timer, and a clipboard with a pencil and observational sheets attached. When conditions prevented the accurate collection of data, such as when the teacher and class went on a cross-country run through the park, the observer simply turned off the tape recorder and waited until conditions improved. Most data were calculated in rate per minute to allow for comparisons across intervals of different lengths and were affected very little by interruptions in a prescribed format.

Since the observer-partner's task was to help improve the teacher-partners performance, teacher-partners did not object to being followed closely while they were teaching. Frequently, observers were congratulated for their accuracy and excellent pursuit.

Students at Thurber were accustomed to the presence of aids, specialists, and other visitors in their classes. The teacher-partner indicated to them that the observer was in the class to help him/her
become a better teacher. Observers were instructed not to interact with the students; for the most part, students ignored the presence of the observer. This was evident particularly since students would kick, fight, and break other gymnasium rules in the presence of the observer when the teacher-partner's back was turned.

**Student Teacher Behavior Change Techniques**

In addition to observation and measurement procedures, other applied behavior analysis techniques were employed to alter student teacher behavior. These included (1) instructions, (2) goal setting, (3) cueing and prompting, (4) graphic and verbal feedback, (5) reinforcement, (6) modeling, (7) self-monitoring, (8) remedial loops, and (9) mini-studies. A description of each of these techniques follows:

**Instructions**

At a preliminary meeting four weeks before the start of the quarter, the Project Supervisor provided a general explanation of the program. Procedures were explained in detail during the meeting on the first day of student teaching. This meeting involved a discussion on the use of the text, teaching skills that could be selected, peer assessment, procedures involving daily coding, feedback and graphing, and the roles and expectations for the student teachers and the Project Supervisor. An introductory paper describing the Project and detailed information on the procedures to be followed during the first week were given to the student teachers at this meeting. These materials included a check list of tasks to be completed, Classroom Observation Sheets, and Noon Hour/Recess Observation Sheets.
Additional instruction, both written and verbal, were given throughout the quarter as the situation demanded. Many written materials, including checklists, directions, and observation sheets are contained in the Handbook. The text provided information regarding specific generic skills.

**Goal Setting**

Student teachers, with the help of their observer-partner and Project Supervisor, selected specific teaching behaviors for improvement. Quantitative and qualitative goals were also established. These goals were established on the basis of:

1. The teaching competencies of each intern as indicated by baseline data.
2. The school setting and teaching situation.
3. The general behavior patterns of the students.

Sufficient data were not available to indicate realistic rates for various categories of teacher behavior in an environment in which the Project was located.

Prior to teaching classes in which they were to be observed, student teachers completed a Target Teaching Skill Card, indicating the skill(s) they were attempting to improve and the rate(s) or ratio(s) they hoped to obtain. This card was given to the observer-partner so that he/she would know which behaviors to observe during that period. The card containing information added by the observer and the Master Observation Sheet used during the class were given to the teacher following the instructional period. The target rates or ratios provided the focus for the discussions in the feedback session that followed.
Cueing and Prompting

Several procedures were used to provide antecedent stimuli that would enable student teachers to alter their teaching behavior. For example, student teachers posted signs around the gymnasium to serve as cues for the behaviors they were to practice. Notes by the Project Supervisor were also written on the teacher-partner's lesson plan that was available to both of them during the class. Sometimes a kitchen timer or a cassette tape recorder, set to signal intermittently, served to cue specific teacher behaviors. A microphone connected to the public address system for the gymnasium was sometimes used to amplify the sounds of the tape so they could be heard above the gymnasium noise.

Another method of cueing involved the observer-partner or Project Supervisor using non-verbal methods to signal the teaching-partner regarding efforts to reach target behavior goals. A red card indicated that the teacher was below the level denoted on the Target Teaching Skill Card, and a green card indicated a performance that was on or above target level. Occasionally, the observer-partner or the Supervisor would point to particular instances of pupil behavior that demanded attention but were not seen by the teacher-partner. Opportunities were also available during which time the observer-partner or Supervisor could speak directly or hand short, written notes to the teacher-partner without interrupting the on-going sessions.

A wireless cueing voice device being developed by a graduate student in the PETE Program was tested during three sessions. During this time, the Project Supervisor wore a transmitter and microphone that was attached to a head-set, while the student teacher wore a belt
receiver to which a "bug-in-the-ear" device was attached.

Verbal and Graphic Feedback

During the post-teaching meeting the observer-partner who coded the teaching-partner's behaviors provided both written and verbal feedback regarding the teaching performance. The completed Target Teaching Skill Card and the Master Observation Sheet containing raw data for sessions were given to the teaching partner. Particular changes, improvements, and decreases on specific behavior categories were discussed at this time. Instances of how these results were obtained, for example, "you spent three minutes and twenty-two seconds getting your class into squads," were pinpointed. Suggestions for improving the teaching performance were also given. When present, the Project Supervisor attended these meetings and provided feedback and suggestions for improvement. The teacher-partner was to graph the results of his/her performance when possible.

Reinforcement

Teaching-partners were complimented and praised for improved performance by their observer-partners and the Project Supervisor at the post-teaching meetings. Specific information was given whenever possible. Positive gestures, such as smiles, silent applauding, and a "thumbs up" signal were provided while the class was in session. Occasionally, for a superior performance or a series of fine performances, a student teacher was provided with a "bonus" card by the Project Supervisor. These "bonus" cards specified the completed performance and entitled the recipient to humorous cost-free privileges. Observer
accuracy and superior feedback performances were also reinforced.

Self-Monitoring

In an effort to change behavior and to promote generalization to other teaching settings after the Project was completed, student teachers were encouraged to practice self-observation procedures while they were teaching. Three different methods of observing and recording their own behavior were attempted. These included using a pencil and a clipboard, using a wrist counter, and recording a segment of a lesson on audio-tape. The self-recording techniques were designed as exploratory strategies only.

Modeling

Occasionally, planned modeling sessions were performed by the observer-partner, but usually they were executed by the Project Supervisor. Most demonstrations were provided either before or after class periods, but sometimes the Project Supervisor taught segments of a class. On four occasions he taught the entire length of the period. The teaching-partner also provided a model for the observer. Classroom teachers served as models for individual class control. Prior to teaching, student teachers were required to make at least two visitations to each class they were to teach. During these visits, student teachers observed teacher and student behavior and completed a classroom observation form.

In addition to live models, written models in the form of handouts and passages from the text were used. Although the Project Supervisor had planned to utilize modeling techniques only to teach
generic teaching skills and behavioral strategies, it was necessary that models for other skills, such as sports skills, refereeing, and lesson planning, be provided.

**Remedial Loops**

When selected teaching behaviors did not change in the desired direction after utilizing the above mentioned procedures, additional remedial strategies were put into effect. These consisted of special help from the Project Supervisor or observer-partner. This help was usually in the form of additional learning activities that often took place away from the actual teaching situation. Some of these remedial loop procedures consisted of mediation techniques [Thoresen and Mahoney, 1974], practicing providing feedback and asking questions without students present, making explanations on audio-tape, role playing, and completing additional reading assignments. One student teacher arranged several sessions in which he was signalled with a bell each time he said, "OK."

**Mini-Studies**

Completing a study has been an effective part of the Responsive Teaching Model [Hall, 1971] since its inception and was incorporated into the Thurber Project. Student teachers were encouraged to carry out an applied behavior analysis to demonstrate a functional relationship between changes in student behavior and the procedures employed. Applied behavior analysis techniques were taught by the Project Supervisor at group meetings and seminars during the first four-week session. Studies were conducted with classes during the second four-week session.
Typically, in the Responsive Teaching Model, studies are completed over a sixteen-week period, but this amount of time was not available during the Thurber Project.

While conducting applied studies, student teachers received practice in defining, observing, and recording behaviors. They also arranged for reliability checks, prepared graphs, employed reversal, multiple baseline, or multi-element baseline designs, and wrote a report of the study.

Sample studies and guide sheets were distributed to the student teachers and readings were assigned. The Project Supervisor helped to define target behavior and assisted in monitoring the progress of each study. The student teachers were encouraged to analyze unsuccessful procedures and to try alternate techniques when their efforts failed. When student teachers were unable to complete a study because of circumstances beyond their control, such as a subject leaving school or an unavoidable change in teaching station, they were instructed to attempt a related study. Procedures for completing the study are outlined in the Handbook.

Summary

In an effort to alter the teaching behaviors of the interns, a wide variety of behavioral techniques were implemented. These included (1) instructions, (2) goal setting, (3) cueing and prompting, (4) feedback, (5) reinforcement, (6) modeling, (7) self-monitoring, (8) remedial loops, and (9) mini-studies.
An attempt to isolate the effects of separate parts of the "package" was not made. Kazdin [1973] has been critical of package applications to promote behavior change in that some aspects of the package may be wasteful. However, Wolf [1973] countered by maintaining that the prime concern is with effects. Most parts included in the package used in the Thurber Project were relatively untried procedures for changing student teacher behavior by physical education settings. One of the goals of the Project was to immerse the student teacher in behavioral change techniques. The use of a package utilizing a wide range of behavioral strategies to change the behaviors of the student teachers themselves helped accomplish this goal. A component analysis, if desired, can form the basis for further research.

**Student Behavior Change Techniques**

Although changes in student behavior undoubtedly resulted from alterations in teacher behavior, many changes were a consequence of direct behavior interventions. The following behavioral techniques were implemented by student teachers during the Project: (1) gym rules, (2) positive reinforcement, (3) extinction, (4) modeling, (5) token economy procedures, (6) behavior games, (7) behavior contracting and punishment techniques, including (8) response cost, and (9) time out. Many of these techniques are commonly used with behavioral approaches in other settings and have been described in Chapter II. A brief account is presented here to indicate adaptations that were made for use in this physical education setting.
Gym Rules

Rules are often used as a behavior control technique. Five rules that were of general nature so that they could be made applicable to all ages, a wide variety of activities and sports, and to classes conducted indoors and outdoors were developed. These rules, posted conspicuously on the gymnasium doors, were read and explained by the teacher-partner. The rules were: (1) Participate, (2) Play Safely, (3) Be a Good Sport, (4) Help your Classmates, and (5) Listen to your Teacher. These rules were reviewed regularly and adaptations for different activities were explained when necessary.

Positive Reinforcement

The student teachers attempted to use positive reinforcement whenever possible. The cost, effectiveness, ease of delivery, social acceptability, and potential for generalization to other settings of various reinforcers were considered.

Social reinforcement was used primarily. To assist in improving their social reinforcing properties, each teacher selected to increase their rates of interaction toward appropriate student behavior (non-skill) and toward student skill attempts. Each also attempted to improve the specificity of these interactions. For example, they would respond to a child's appropriate behavior, not by saying "Good," but by "Great job, Barb, you really tried hard that time."

Student teachers were instructed to extinguish deviant behavior by ignoring it, while at the same time reinforcing the appropriate behavior of another student. Modeling of positive behaviors, that is,
pinpointing the behaviors of a particular student, group, or the entire class and praising them, was also used frequently.

The interns were also instructed to call upon students who were behaving appropriately when dispensing privileges. For example, "John is lined up and ready to go, he can help me put the equipment away," and "Sally tried really hard today, she can be first for the water fountain." Precise group feedback was also used frequently. For example, "That was really great, it took you only six seconds to get into your squads."

Only cost-free reinforcers were used. Lists of possible physical, verbal, and social reinforcers were provided for the interns [see Madsen and Madsen, 1970, p. 116-132]. A list of behaviors suggested for reinforcement was also provided and is included in the Handbook.

In addition to social reinforcement, play activities, access to play materials, and free time were used frequently as contingent reinforcers. Usually, these were employed in combination. By using the Premack Principle [Siedentop, 1976, p. 203] or "Grandma's Law," free time was made contingent upon social or skilled performance. By performing appropriately, students could earn free time during which they could select games and activities.

A variety of procedures for earning and spending free time were used, but Friday generally became "reward" day. During their class on Friday, students could spend the free time they earned during the week participating in supervised activities of their choice. Three choices were permitted each class. The most frequent choices were basketball,
gymnastics, and playing any type of low organized game with a student teacher. Negotiations regarding the Friday class were made with the classroom teachers who agreed to supervise students that did not earn the right to participate on Fridays. Arrangements were sometimes made so that classroom teachers could also regulate access to the Friday physical education class, dependent upon student behavior in the classroom. Generally, criteria were set so that 95 percent of the students could attend at least part of the Friday class. Friday as reward day worked extremely well for grades four through six. More immediate reinforcement seemed necessary for the students in kindergarten through third grade. For these students, a five-minute "free time" period, arranged at the end of class, was extremely effective. During this time, students who had not earned free time sat along the sidelines of the gymnasium or playing field while their classmates participated in the activities of their choice.

Token Economy Procedures

A great variety of token systems were used throughout the Project. Points and checkmarks served as tokens and free time as reinforcers. A point, when earned, was marked beside the student's name listed on a sheet carried by the teacher-partner or on the portable chalkboard present in the gymnasium.

A different procedure was used by one student teacher who carried a felt-tipped pen and administered tokens by marking a point on the name tag worn by a student. This procedure required the student-teacher to interact with students on an individual basis and helped him
learn their names. Physical contact between students and teacher was also enhanced by this method. Initially, a cassette tape, programmed to sound intermittently, cued the student teacher to distribute tokens. Later, the student teacher effectively distributed tokens cued only by appropriate student behavior.

Not all of the classes were placed on a token economy system; and in classes where a token system was established, not all students were administered tokens. Through consistent good behavior some students earned access to free time independent of the system. In one instance, only five students received tokens individually, relieving the teacher-partner of some administrative tasks.

**Behavior Games**

Some tactics which were effective with individual students were also applied in group situations. Procedures were implemented so appropriate behavior could be rewarded through group contingencies, thus relieving the teacher of some administrative duties. In some instances, rewards were dispensed to groups or squads; at other times rewards were contingent upon the performance of the entire class.

Management games with group consequences similar to those instituted by Huber [1973], Young [1973], and Siedentop, et al. [1973] were implemented. These are described in Chapter II. The basic format for the games involved (1) posting and explaining rules, (2) dividing the class into squads, (3) set a criterion for winning the game, (4) establishing a procedure so that a loud signal would be emitted intermittently, (5) observing for target behaviors whenever the signal
occurred, (6) praising each team that earned a point and indicating precisely why other groups did not, (7) maintaining a record of the points earned, and (8) administering rewards (free time). Behavior games with group consequences were used mainly with grades four through six. Systems used with the primary classes generally had individually administered consequences.

**Behavior Contracting**

In a few instances agreements between individual students and the teacher-partner were formalized and a written contract was signed. A standard contract form prepared by Dardig and Heward [1976] was used. A copy is contained in the Handbook. This contract, signed by each party, specified student behavior and the rewards to be received upon reaching criterion.

**Response Cost**

Although attempts were made to use positive control techniques whenever possible, some punishment techniques were used because of their immediate effectiveness and ease of administration. Response cost or fining involved the removal of points or checkmarks and was used frequently. Several slightly different procedures were used. In one of these, five points were given to each student at the beginning of class. Point removal was contingent upon inappropriate behavior and was scored by the student-teacher drawing a stroke through the checkmark after the student's name. At least one point was necessary for the student to participate in the five-minute free time period at the end of class. During subsequent classes, controls became more rigorous and
students had to have two or three points remaining to earn reward time. A slight modification of this procedure involved the students removing their own checkmarks or points when indicated by the teacher.

Another variation was similar to the "taking of the name" procedure in soccer. Students were told that in order to earn free time they must not have more than point scored after their name. After a rule violation a student was sent to print or write his name on a clipboard. If his name appeared on the sheet more than once he was not entitled to participate in the free time activities at the end of class. A modification of this procedure involved the student participating in a short time out following the second violation. In an effort to develop consistency, procedures to follow when fining students were developed and are contained in the Handbook.

Other forms of response cost were also used. For example, students were asked to replace materials they may have upset, repair equipment they had deliberately destroyed, go to the end of the line for "butting in," and apologize to each other after a fight. In addition, they sometimes had to explain to the teacher-partner why they had lost a point or why they were placed in time out.

**Time Out**

Removing a student from class can be used to reduce teacher and peer attention to disruptive behavior and consequently weaken it. Time out was a mildly aversive consequence arranged to follow disruptive behavior. During time out the student was removed from interaction for a short period ranging from thirty seconds to three minutes. A
short time out period was used so that a student could return to the activities as soon as possible. Research by White, Nielson, and Johnson [1972] showed that short time intervals of one minute may be as effective as thirty minutes for many children.

Time out was applied immediately when an intern noticed disruptive behavior. In most classes time out was contingent upon aggressive behavior, cursing, and non-compliance. For some, it was applied to a wider range of behaviors such as not re-grouping quickly and not following directions (e.g., shooting basketballs during gymnastic activities).

It was necessary to negotiate the use of time out with the principal and individual classroom teachers. In most cases the time out procedure involved the student standing facing a wall of the gymnasium with his toes and his arms, the latter being folded in front of his face, touching the wall. Time out procedure during outdoor classes involved the student standing or sitting approximately fifteen feet away from and facing the activity area. Frequently, a kitchen timer was used to signal the student to return to his regular activities. Interaction with peers increased the length of the time out. Occasionally, after persistent misbehavior, a student was returned to the classroom for the remainder of the period.

Behavioral Instrumentation

The intent of the Thurber Project was to develop a program that served to model procedures effective in changing both student and student teacher behavior. To this end, only procedures that could be implemented in almost any physical education environment were used. The
equipment, materials, and supplies employed in this Project are common to most school systems. They included:

1. Two portable cassette tape recorders (AC/DC powered), one microphone, and an ear-jack modified for independent use by two observers.

2. Eight cassette tapes. Four of these were programmed as cueing devices for the observer-partner or for the teacher-partner to use with behavior games and one was for each of the four student teachers' individual use.

3. Three wrist counters.

4. Two kitchen timers.

5. Three cumulative stop watches.

6. A portable chalk board.

7. Numerous clipboards, observation charts, checklists, and coding sheets.

Summary

This chapter provided a description of the methods, procedures, and processes used in implementing the Thurber Project. Procedures not ordinarily used in changing student teacher behavior were described in some detail. Particulars of alterations of behavioral techniques, used commonly in other educational environments, to the physical education setting at Thurber were recounted. An evaluation of the Project follows in Chapter IV.
CHAPTER IV

PROGRAM EVALUATION

Educational programs, particularly new ones, deserve evaluation. Since new programs have no operational history, the initial evaluation tends to be a descriptive process. Evaluation of a program, especially an innovative program covering as many aspects as the Thurber Project, is multi-faceted. The process is both formal and informal and for the most part, involves continuous assessment resulting in immediate changes.

Several different strategies or forms of assessment were used to evaluate the Thurber Project. They are (1) an evaluation of program structure, (2) process evaluation, (3) outcome evaluation, and (4) cost effectiveness. These evaluation procedures and results are described in this chapter.

Evaluation of Program Structure

This form of evaluation can also be called administrative [McLean, 1974] and is concerned with program resources and their allocation. Indices of resources include opportunities for activities, availability of programs and equipment, etc.

As a result of the Thurber Project, the Division of Physical Education has established firm contact with an inner city elementary
school located near the university. A cooperative effort at this school can serve the students and faculty within the Division in many ways, including permitting graduate and undergraduate students to be actively engaged in learning environments with real students and facilitating the research behaviors that will contribute to the development of scientific knowledge.

The Thurber Project complements other attempts by the Division to establish cooperative programs with public schools and assists the teacher training program to comply with State Standards, which suggests that students should have a variety of field experiences, including urban, available to them.

During its initial quarter of operation, the Project accommodated the following university physical education personnel: four student teachers in their senior year who instructed all the physical education classes at the school, one graduate PETE student (the writer) who served as Project Supervisor, and three other graduate PETE students who visited to observe the operation of the project and to practice coding procedures. Attempts to involve Block Three students in constructing equipment and materials for the school failed, even though contracts were signed with several students.

Vast improvements within the physical education program at the school were evident. During the Project the amount of time allotted for instruction purposes increased by more than 250 percent. Students, previously scheduled for class once a week, participated in physical education daily for four consecutive weeks during an eight-week period. This type of scheduling not only established continuity, but also
helped improve the day-to-day functioning of the program.

Classes in physical education previously instructed by regular classroom teachers were taught by teachers specifically trained for that purpose. The adoption of a curriculum also helped develop continuity and helped establish a developmental physical education program from one that operated haphazardly. An increase in the number and variety of pieces of equipment and materials made available through the Project also improved the physical education services provided to the students at Thurber. Had the Project not been implemented, the students at Thurber would not have had an improved curriculum, additional time for physical education, and more equipment and supplies.

In order to serve as a model, a program should operate on a set of procedures that are systematic and replicable. Procedures for the administration of the Thurber Project were developed by the Project Supervisor and are contained in the Handbook which was prepared for all personnel involved in the program. The Handbook describes the Project, outlines the roles and duties of each person, provides instruction for the operation of specific aspects of the Project, and contains samples of many charts, lists and other materials. The Handbook should be extremely valuable for the continued development of the Project.

**Process Evaluation**

Program process evaluation by clients is not typically used to evaluate the effectiveness of procedures, however, the importance of satisfaction with a program by those involved should not be overlooked. Information from process evaluation allows judgments to be made about
the quality of service and its effectiveness.

The major consumers of the Thurber Project were the student teachers, the pupils they instructed, and the school personnel. Since their cooperation was needed in order for the program to succeed and their satisfaction was of prime concern, each of these groups was assessed. Although the process evaluation procedures were indirect measures, attempts were made to use objective quantitative measures whenever possible.

**Student Teachers**

In addition to daily discussions with the student teachers, three formal but indirect procedures were implemented to evaluate the process in which they were involved. These were:

1. A written evaluation completed at the end of the Project.
2. An evaluation of the Project Supervisor completed during the quarter.
3. An assessment of changes in attitude toward behavior modification during the Project.

**Termination of experience evaluation.** During the final week of the Project student teachers were given a two-page questionnaire containing open-ended questions regarding their experience at Thurber (See Appendix A). Each student teacher completed the questionnaire and returned it to the Project Supervisor at their final individual conference, held after the completion of the field experience. The questionnaire served as the focus of discussions during this meeting in which additional information was gathered about the student teacher's experience. An analysis of the reports of the four student teachers is
summarized below:

1. Each indicated the Thurber Project should be continued.
2. Each favored being assigned to student teaching in pairs.
3. Each was very much in favor of being provided objective feedback by an observer-partner.
4. Each indicated the process of collecting data and providing feedback to a partner to be beneficial in assisting them in learning to teach.
5. Each indicated that collecting data and observing change in student behavior as a result of some intervention was a useful process.
6. Each expressed that the behavioral skills and techniques they learned at Thurber would also assist them in teaching at the secondary level and in suburban schools.
7. Only one person indicated the amount of work involved in the Project to be too great.
8. The two male student teachers indicated they would teach in an inner city school if jobs were available. The two females indicated they would not, and that the Thurber experience had influenced their decision.
9. Two indicated they would recommend the experience to their friends without reservation; the two others expressed concern about submitting some of their friends to the inner city situation at Thurber.

Project Supervisor evaluation. The supervisory skills of the Project Supervisor were evaluated by the interns through the Supervisor Rating Sheet, reproduced in Appendix A. Items on the rating sheet were adapted from an instrument developed by Lloyd and Whitehead [1976] to evaluate supervisors of clinical psychology interns. The thirteen items generally reflected the consultant role of the supervisor, and his ability to function as a professional model and a team leader.
supervisor was rated on each item on a scale ranging from 4 (outstanding) to 0 (completely unsatisfactory). Unsigned rating sheets were deposited in the Supervisor's mail box by the interns during the seventh week of the program.

Ratings for the Project Supervisor on each item by the four student teachers were tabulated. Mean ratings on individual items ranged from 3.0 to 4.0, with the Supervisor having the highest possible score on four different items. The overall mean rating on the thirteen questions was 3.64. The results indicated that the student teachers considered the Supervisor to be performing more than adequately on each of the behavior categories surveyed by the questionnaire.

The evaluation of the Project Supervisor's performance provided a means for identifying some strengths and weaknesses of the Supervisor and the training program. This made it possible to make some procedural revisions during the remaining weeks of the Project.

Attitude toward behavior modification. To determine any changes in disposition toward behavior modification that may have occurred from participating in the Thurber Project, the student teachers were administered an attitude scale at a meeting prior to starting the Project and again following its completion. The scale, developed by Musgrove [1974], was a twenty-item Likert-type questionnaire with a five-point scale of strongly agree, agree, neutral or undecided, disagree, and strongly disagree. Each alternative was numerically equated from 5 to 1 and scored as the sum of the numerical equivalents, weighted so that the higher scores indicated that more favorable (positive) attitude. The scale consisted of thirteen positively and seven negatively worded
statements, the order of which was determined randomly. Responses were kept anonymous. Refer to Appendix A for a copy of the scale.

Scores for the tests are in Table 1. On the first test, scores ranged from 63 to 88, with a mean of 72. Scores on the post-test ranged from 71 to 97, with a mean of 80.25. The results indicate the student teachers were more positive to the use of behavior modification following their participation in the Thurber Project. Using the Wilcoxon rank scores statistic, results for four student teachers were significant at the .17 level.

Evaluation by Students

Students at Thurber rarely hesitated to reflect how they felt about different activities and frequently did so both verbally ("I don't want to play this game, it's no fun") and by non-compliance. However, in a more formal effort to determine how students felt about their physical education class and their instructor, each student teacher administered a questionnaire in one of the classes they taught. This instrument was constructed by the Project Supervisor and consisted of ten questions, which could be answered by yes, no, or ? (See Appendix A). The questionnaire was administered in the student's classroom by the student teacher who taught the class, and was presented neither immediately preceding nor following a physical education class. When necessary, the student teacher read the questions to the students. Thirty-one percent of the classes involved in the Project were sampled.

Basically, the questionnaires provided information pertinent to individual classes and specific student teachers, but when combined, their responses reflected the feelings of the pupils in the school toward
TABLE 1

STUDENT TEACHER SCORES ON ATTITUDE SCALE FOR BEHAVIOR MODIFICATION

<table>
<thead>
<tr>
<th>Pre-Project</th>
<th>Post-Project</th>
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<tr>
<td>63</td>
<td>71</td>
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<td>64</td>
<td>76</td>
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<td>73</td>
<td>77</td>
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<tr>
<td>88</td>
<td>97</td>
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<tr>
<td>( \bar{x} = 72 )</td>
<td>( \bar{x} = 80.25 )</td>
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NOTE: Maximum score = 100.
the Project. There were 815 total responses to items on the questionnaire. Of these, 726, or 89 percent, were positive responses, 34, or 4 percent, were negative, and 55, or 7 percent, were marked as not sure. Only 1 percent of the students questioned noted they did not enjoy their physical education classes, indicating the activities of the Project were highly endorsed by the students of the school.

**Evaluation by School Personnel**

One of the major concerns of a program implemented in a public school by a university is that the program and its activities be accepted by the regular school personnel. To determine the acceptability of the Thurber Project, formal evaluation by regular classroom teachers who were immediately responsible for the care and instruction of the students and by the school administrative personnel were conducted.

Classroom teachers. A questionnaire (See Appendix A), prepared by the Project Supervisor, was distributed to each of the thirteen regular classrooms during the final week of the Project. This questionnaire contained ten statements about the physical education student teachers and the classes they taught, and were to be responded to by a checkmark indicating yes, no, or unsure. Two additional open-ended questions about the Project were asked.

The questionnaire was returned by eleven teachers. Information provided by responses to the first part of each instrument was pertinent to the student teacher who instructed the class, but when combined, the responses reflected the feelings of the classroom teachers toward the Project.
Responses to each item were very positive, indicating the classroom teachers were pleased with the performance of the student teachers and the activities they were conducting. All indicated that the Project should be continued. There were no consistent answers to requests for suggestions regarding how to improve the physical education program; four teachers indicated complete satisfaction with the way it was being conducted.

**Administrative personnel.** The physical education coordinator for the school, a classroom teacher appointed by the principal, at several meetings and during a final interview, expressed pleasure with the Project and its results and indicated that she hoped it would continue during the 1976-77 school year.

The school principal was also extremely pleased with the Project and hoped that it could be continued at Thurber, even though she was leaving. She approved the administrative guidelines set up (See Handbook) and during the quarter, made special efforts to publicize the program, including arranging for two of the student teachers to make a brief television appearance. She also made certain that state officials viewed the program in operation during their annual inspection of the school. Written reports of the inspection are not available at the time of writing. However, at a post-inspection evaluation meeting, the inspectors indicated strong support for the program and inquired into the possibilities of similar programs being implemented in other city schools. An invitation to the Division of Physical Education by the principal of Thurber to establish a program in her newly assigned school is perhaps the best indication of the success of the Project in
establishing a cooperative relationship between the university and the Columbus public school system.

**Evaluation by Outcome**

Outcome information in terms of observable behavior change is generally regarded as the most fundamental and significant kind of evaluation data. Yet, behavior change that is directly or indirectly the result of an intervention process is extremely difficult to document, particularly when new programs are being implemented. The main problem is in determining what behaviors to look for, which ones to change and in what order, and in how to continue to measure the behaviors after one intervention is completed and another is underway.

Since the Thurber Project was implemented as an alternative process for training student teachers, one method of evaluating the program is to assess actual changes in student teacher behavior occurring during the Project. A second and more direct method for evaluating student teacher effectiveness is to appraise changes in student behavior resulting from alterations in the performance of the interns. The present section deals with these specific observable and directly measurable behavior changes.

**Student Teacher Behavior Change**

 Alterations in student teacher behavior were directly measured by permanent products (e.g., lesson plans), and by observation completed by the observer-partner and the Project Supervisor. For the most part, the types of behaviors being observed and recorded changed daily, depending upon the target teaching skill indicated by the
student teacher before each class. In addition, the Project Supervisor observed from ten to sixteen entire classes taught by each student teachers during the quarter and coded these according to a prepared consistent format. In each of the classes, the following behavior categories were measured:

1. Percent of class time spent in management, instruction, and active learning.
2. Frequency of teacher reactions to positive and negative student behavior.
3. Frequency of positive and corrective feedback to student skill behavior.
4. Frequency of the teachers interactions using the first names of students.

The amount of data collected through this procedure was enormous and is presented in a condensed form in Table 2.

The data in Table 2 indicate wide variability both on a day-to-day basis for individuals, as well as between student teachers on each category. For example, Management Time for Intern D ranged from 13 to 53 percent, with a mean of 31.4 percent. Meanwhile, management time for Intern B ranged from 4 to 25 percent, with a mean of 11.7 percent. Similarly, in reference to Total Reactions, Intern A on one day had a rate of only .80 per minute, while on another day had a rate of 3.39 per minute, with a mean of 16 days of 2.27 total reactions per minute. Intern C had much higher rates of reacting to student skill and non-skill behavior, having a low rate of 2.40 per minute, a high for one day of 4.14 per minute, and a mean of 3.32 reactions per minute. This variability, which is also evidenced in each of the categories, concurs with the findings of other studies on the verbal behavior of physical
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<tr>
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<td>42 - 87</td>
<td>10</td>
<td>80.2</td>
<td>42 - 91</td>
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<td>13</td>
<td>1.30</td>
<td>.07 - 4.67</td>
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<td>+/- Min</td>
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<td>.32</td>
<td>.00 - 1.00</td>
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<td>.38</td>
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<td>.92</td>
<td>.00 - 4.07</td>
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<td>.13 - 2.28</td>
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<td>.07 - 2.70</td>
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<tr>
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<td>.47</td>
<td>.13 - 1.57</td>
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<td>.74</td>
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<td>.00 - 1.38</td>
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<td>.74</td>
<td>.07 - 1.60</td>
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<td>.38</td>
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<tr>
<td>Total Reactions/Min</td>
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<td>.74 - 4.00</td>
<td>15</td>
<td>2.57</td>
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education student teachers [Dessecker, 1975; Dodds, 1975].

These data indicate that the student teachers responded differently to student skill behavior than they did to student non-skill behavior. Only one student teacher, Intern C, responded more frequently to student positive behavior (appropriate) than to student negative behavior (inappropriate). She had a positive/negative ratio of 1.3. All others had a positive/negative ratio of less than 1.0. On the other hand, in reaction to student skill behavior, each student teacher had a positive/negative corrective ratio of 1.0 or greater.

The data compressed into Table 2 demonstrate variability, but do not actually show student teacher behavior changing as a result of the Project or any particular intervention. A few examples are included for this particular purpose.

Figure 1 shows that Intern D reduced his rate of responding to inappropriate student behavior and increased his responding to appropriate student behavior during the project. Similar findings were evidenced for two of the other student teachers. The data also illustrate that Intern D responded more frequently to the behaviors of first graders than to those of fifth graders. Other data, collected during the Project but not presented in this paper, are in accord; that is, the student teachers reacted more frequently to the behaviors (non-skill) of the younger elementary students than the older ones. On the other hand, the student teachers provided feedback to the skill attempts of older students more frequently than to the skill attempts of younger students.
Figure 1. A record of reactions to appropriate and inappropriate behavior for Intern D.
Figure 2 shows that Intern A reacted much more frequently to the behaviors of second grade students than to those of sixth graders. These reactions were mostly to inappropriate student behavior. Although this intern reduced her reactions to inappropriate student behavior, she failed to increase responding to appropriate student behavior. Efforts to change her behavior in this direction, although momentarily successful, did not result in generalization after interventions (e.g., audio-taped cueing, wrist counter) were removed.

Figure 3 illustrates the favorable results of the efforts of Intern A to reduce class management time and increase the time spent in active learning. The results were obtained through the application of behavioral techniques using behavior games with free time as a reinforcer. Similar results, although not quite so dramatic, were obtained by the other student teachers.

These examples provide some evidence that student teacher behavior change actually did occur during eight weeks of teaching. An example of a failure to change student teacher behavior in the desired direction was also provided. The absence of behavioral research designs, such as reversals, multiple baseline designs, and multi-element baseline designs, should be noted. In reality, no baseline data were collected. Parts of the "package" intervention were initiated before the student teachers actually began teaching, which was during the second week of the Project. For example, during the first week they completed readings and practiced observation and coding techniques.

The concern of the Project Supervisor was to have the Thurber Project a success clinically, and this often interfered with
Figure 2 A record of reactions to appropriate and inappropriate student behavior for Intern A.

Figure 3 Percent of class time spent in management and active learning for Intern A.
demonstrating whether it was a success experimentally. Training was often begun immediately; that is, when a problem was noted steps were taken to remedy the situation rather than collect sufficient data that would eventually become experimental evidence of actual change. Teaching in an inner city environment was not only a new experience for the student teachers, but also an aversive one. Their previous experiences had taken them only to suburban schools where students were well behaved. After being unable to control the students using traditional methods, one intern threatened to withdraw from student teaching. In the judgment of the Project Supervisor, the withholding of services in order to obtain experimental data, would have seriously contributed to the deterioration of the situation.

As a result, evidence of most behavior change can be demonstrated only by AB designs. That is, a behavior would undergo a short baseline measurement, perhaps only for one session, and then an intervention would take place. This intervention would be continued or be replaced by another one until the target rate was reached. Measurement of that behavior might then be discontinued altogether or only spot checks would be taken. Some examples of how this measurement procedure suited the reality of student teacher supervision follow.

Intern B was noticed to deal with misbehavior by threatening to send individuals or the entire class back to the classroom and not let them come back to physical education the following day. During fifteen minutes of one class, he made fourteen threats of this nature. Following class he was provided this information, an explanation of why threats were ineffective, and some alternative procedures for dealing
with misbehavior. During fifteen minutes of observation on each of the following two days he was observed to threaten the students three and two times, respectively. He was praised and given further instructions after these classes. After two more days and no further indication of the student teacher threatening his students, observations on this behavior were discontinued.

The student teachers initially eliminated the problems that misbehaving students were causing by sending the students or the entire class back to the classroom for the rest of the period. For example, during one day a kindergarten, a second grade, and a fifth grade all had their physical education class terminated early, each by a different student teacher. This procedure for dealing with inappropriate behavior, although solving the student teacher's problem, was unfair to the classroom teacher and to students who were behaving appropriately. In addition, students were taught only which behaviors were inappropriate and in their absence did not get to practice behaviors appropriate to a physical education setting. Following an intervention, only one instance of returning the entire class to the homeroom occurred; this took place when the Project Supervisor was absent.

Another example of an AB design involved the modification of a student teacher's frequency of interacting with his students by using their first names. Observations during three classes indicated Intern D rarely used the first name of a student when he interacted with them (.04 names per minute). He was instructed to provide name tags for the students in one class. The following day he used first names at a rate of .53 per minute and on the next, 2.1 per minute. Observations
taken periodically during the remainder of the quarter indicated his lowest rate of interacting personally with students by using their first names to be 1.2 per minute. This student teacher was delighted with the results of the intervention and required the students in his other classes to wear name tags until the end of the quarter.

The excessive use of "OK" became the target behavior for one student teacher. While being observed during one class, Intern B used "OK" at the rate of 4.21 per minute during instructional time and 2.13 during management time, with a mean rate of 2.35 per minute. Intervention involved the student teacher taping and listening to parts of classes he instructed, and participating in two short segments (approximately six minutes) during which the intern's use of "OK" during a class was followed by a signal from a bell. Students were told to ignore the bell, and after a few signals did not attend to it. Subsequent measures, with a mean of 1.5 "OK's" per minute, indicated the student teacher had improved somewhat, but still used "OK" excessively.

The preceding examples are included in order to illustrate the actual use of observation and measurement procedures by a supervisor to initiate interventions and to demonstrate that change in student teacher behavior occurred. By using these procedures, clinical success or failure was demonstrated. AB designs do not produce experimental evidence of functional behavior control, however, they are extremely useful in situations where control over major experimental variables is difficult.
Student Behavior Change

The most valid measure of teacher effectiveness is one that indicates change in student behavior. One of the tasks for each student teacher involved in the Thurber Project was to complete a mini-study to demonstrate that student behavior changed as a function of a teacher intervention. Three of these studies are presented here. Each indicates that the student teacher learned to apply behavioral techniques and that these techniques were effective in altering student behavior. (See Mini-Studies on pages 101-108)

Summary of mini-studies. The following mini-studies indicate that the student teachers implemented behavioral techniques to effectively change student behavior. The student behavior altered was that which was of concern to the teacher-partner. In each of these three studies, the target behavior was of a social nature and not of a physical or motor skilled nature, the development of which is usually the main concern of physical education. A reduction in deviant behavior, however, enables teachers to spend more time giving students individual attention and permits the students more time to engage in active learning.

The experiments the student teachers conducted often were inadequately designed. All lacked baseline and intervention periods of sufficient length. This is mainly due to the small number of class periods that were available and to the goals of the project which were to involve the student teachers in a wide variety of behavioral strategies.

Many experiments attempted could not be pre-planned, but emerged after data collection procedures began. The difficulty of
controlling experimental variables when researching natural environments was evidenced regularly. For example, the time of intervention was often influenced by school holidays, adverse weather conditions, teaching-partner absenteeism, and special school events, such as the art festival, the music festival, and the play day.

Even though the Project Supervisor was available to assist the student teachers in planning experiences, such as helping to define behavior and suggesting reinforcement procedures, the application of strategies were made by student teachers themselves. Their behavior was responsible for the success or failure of an intervention. Throughout the Project, they made several mistakes. The most frequent was not being consistent. For example, they would sometimes forget to give points, to ignore an inappropriate behavior, to pinpoint precisely why groups received or did not receive a checkmark, and to give social praise when awarding a point. Occasionally, they were unable to award free time because "the last five minutes just slipped away." But despite these inconsistencies, interventions were usually successful and improvements in student behavior were noted.

A major consideration for including mini-studies into the Thurber Project was to involve student teachers in collecting comprehensive data and in examining the impact of different teaching strategies. Additionally, the implementation of a particular strategy required student teachers to change his/her teaching behavior in order to change student behavior.
MINI-STUDY ONE

CLASS: Room 101, First Grade

BEHAVIOR: Loud verbalizations by first grade boy

Population and setting: Andy, a seven-year old boy enrolled in a regular first grade class, had a habit of talking-out and making other unintelligible loud sounds that disrupted the physical education class and irritated the student teacher.

Behavior measured: An event recording procedure was used by the observer-partner to record the frequency of talk-outs and loud sounds made by Andy during managerial and instructional time. Normal conversation during this time and verbal behaviors during active learning periods were not recorded. The Project Supervisor made three independent observations; agreement being calculated at 78, 84, and 80 percent.

Experimental procedures and results: Baseline one. During the baseline phase, Andy's rate of talking-out ranged from 2.19 to 2.33 times per minute (See Figure 4).

Checkmarks on cards. During this phase, the student teachers praised Andy for not talking-out and placed a checkmark on his name tag after various intervals of time, signalled by a tape recorder, had passed. Other students were also rewarded for appropriate behavior in the same manner. Five minutes of extra gym time were contingent upon a student earning at least five checkmarks during a class. Andy's rate for two days was .00 and .32. Baseline two. The student teacher was instructed to ignore Andy's talk-outs during this phase. During three days his rate was .60, .85, and 1.54 inappropriate verbalizations per minute.

Checkmarks on a chalkboard. During this phase the student teacher praised appropriate behavior, including not talking-out ("Andy, you've been so good...you haven't interrupted once today"), and at various intervals scored a checkmark after the names of selected students posted on a portable chalkboard when they behaved appropriately. Five minutes of extra gym time was contingent upon a student earning five checkmarks during the class. Andy's rate of talking-out for two days was .09 and .22 verbalizations per minute.

Discussion: This study showed that annoying and irrelevant verbalizations by a first grade boy could be decreased by making five minutes of extra gym time contingent upon not talking-out. The study also demonstrated two behavioral procedures (token economy systems) that could be easily and effectively administered by student teachers in a physical education setting.
Figure 4. Rate of inappropriate verbalizations for a first grade boy during managerial and instructional time in a physical education class.
MINI-STUDY TWO

CLASS: Room 206, Sixth Grade

BEHAVIOR: Inappropriate gymnasium behavior

Population and setting: During the first few days of their scheduled four-week session for physical education class, students in a sixth grade class were noted to exhibit high levels of inappropriate behavior. Students frequently did not attend to the teacher, did not follow her directions, and generally did not participate in the activities scheduled for that period (coed soccer). Fights between students occurred frequently.

Behavior measured: A dichotomous appropriate/inappropriate behavior classification was developed. Inappropriate behavior was defined as student behavior that detracted from the educational goals of any specific situation [Siedentop, 1976], and included not attending to the teacher when she was talking, not following the directions, playing with unassigned materials, not participating, fighting, etc. The observer-partner completed ten placechecks throughout each class, taking ten seconds to scan the class from left to right and then recording the number of students behaving inappropriately and the total number in class. The mean percent of students behaving inappropriately for each was calculated. The Project Supervisor completed reliability checks on three occasions; the mean percent of agreement was 88 percent.

Experimental procedures and results: Baseline. During the final two days of the first week, inappropriate behaviors were 27 percent and 34 percent. (See Figure 5) Squads and Softball. On Monday of the next week students were placed into four different squads and a new activity unit, softball, was started. The squad system and the activity unit remained the same for the rest of the quarter. On Monday, inappropriate behaviors were reduced to 12.7 percent. Behavior Game. On Tuesday, students were told that each squad had to earn access to Friday's physical education class, during which they could participate in activities of their choice. Squads were administered points by the teaching-partner who was cued by a cassette tape programmed on a variable interval schedule. For the rest of the quarter, Tuesdays and Thursdays were behavior game days, while Mondays and Wednesdays were regular days. The frequency of inappropriate behavior decreased both on regular days (13, 14, 6, 6, and 5) and on behavior game days (9, 14, 4, 3). The level of inappropriate behavior was lowest during behavior game days. Although earning points was made more difficult during later stages, students adapted and all squads earned access to Friday classes.

Discussion: This study demonstrated inappropriate behaviors could be reduced by the use of a simple behavior game, even when administered poorly by a student teacher. Since the squad system was begun at the
same time the new activity unit was started, it is impossible to determine the relative effects of each of these conditions. Both were initiated at the same time in an effort to help a student "survive." For example, during the first week fighting among students was frequent. One boy had a major fight each day he attended class and was sent back to his classroom on three different days. Fighting, other than the occasional verbal battle, did not occur during intervention or on reward day. The student teacher preferred teaching by a squad system and adopted this method in her other classes.
Figure 5. Percent inappropriate behavior for sixth grade students in physical education class.
MINI-STUDY THREE

CLASS: Room 202, Second Grade

BEHAVIOR: Aggressive behavior

Population and setting: A second grade class, noted for its disruptive and aggressive behavior, was scheduled for physical education during the second four-week period. Five students designated by the classroom teacher served as subjects. Conditions were in effect for all students in the class.

Behaviors measured: Aggressive behaviors of five students were measured daily by the observer-partner, using a time sampling procedure. Aggressive behaviors were defined as hitting, kicking, pushing, tripping, destroying the materials of a classmate, taking equipment from another student, and throwing equipment at a peer. Reliability checks, made by the Project Supervisor on three occasions, yielded a mean agreement of 92 percent.

Experimental procedures and results: Baseline one. Instructions and verbal reprimands were provided to students exhibiting aggressive behaviors. During this phase the frequency of aggressive behaviors, averaged for the five subjects, ranged from .67 to 1.33 for each student per minute, with a mean of 1.0. (See Figure 6) Observer intervention one. On the fifth day, the teaching-partner informed the class that a student would be given a time out by the observer-partner or Project Supervisor for aggressive behavior listed above. The mean number of aggressive behaviors was reduced to .40 per minute. Baseline two. Aggressive behavior during this three-day period steadily increased, averaging .46, .75, and .80 per student for each minute. Observer intervention two. During this one-day period, the observer-partner and the Project Supervisor again placed class members in time out. No aggressive behaviors were observed for the five subjects. Baseline three. During this one-day session, aggressive behavior increased to 1.0 per minute. Behavior game-punishment. On the eleventh day, a behavior game in which points were removed for aggressive behaviors was implemented. A five-minute free time period was contingent upon a student having at least one point remaining at the end of class. The frequency of aggressive behavior was reduced to .46 per minute. Behavior game-positive reinforcement. During this game on the twelfth day, individual students received checkmarks for not demonstrating aggressive behaviors during time periods of short variable duration. Access to free time activities was contingent upon a student receiving at least three checkmarks. Aggressive behaviors were emitted at a rate of .58 per minute. Baseline four. During the final four days of the experiment, no special contingencies were in effect. Aggressive behaviors ranged from .40 to .50 per minute, with a mean of .43.
Discussion: The intent of the Thurber Project was to involve student teachers in a wide variety of behavior change techniques. This study showed that aggressive behaviors during a physical education class could be decreased by several procedures, the most effective being a method in which students were placed in a time out by outside observers. Two types of behavior games utilizing a free time reward contingency were also effective. The teaching-partner preferred using the punishment contingency because it was easier to administer than the reward contingency. The teaching-partner actually did a poor job in administering the positive reward game, possibly accounting for a slight increase in aggressive behavior. Even though the rate was much lower during baseline four (average .43), the final week of school, than during baseline one (average 1.0), .43 aggressive behaviors per minute for each subject remains as evidence of an extremely disruptive class.
Figure 6 Mean rate per minute of aggressive behaviors for 5 second grade students in a physical education class.
Cost Effectiveness

This form of evaluation examines the economic feasibility of the Thurber Project to the Division of Physical Education. First of all, the Project was initiated without the addition of new staff members. During the first quarter of operation, the Project Supervisor, a Teaching Associate, earned the normal work load credits (3) for supervising the four student teachers at Thurber and two additional assignments. Dissertation (999) credit was given for the additional work involved in implementing the Project. Apart from the use of low cost materials (paper, stencils, etc.) and secretarial help, no other expenses were incurred by the Division.

The Project should be able to be continued at a similar low cost; or even without cost if the Division of the Columbus School Board agrees to sponsor a Teaching Associate to supervise the physical education program at the school. Directing the program is a full-time (twenty hours/week) responsibility for a Teaching Associate, and unless the person assigned to Thurber can receive academic credit, no other assignments should be delegated to him.

In order to function more effectively as a model training program, some additional equipment and supplies should be obtained. A reasonable estimate of the cost of these materials is $100 per quarter. In the opinion of the writer, when compared to the benefits accrued from the Project, this cost is minimal.
Summary of Evaluation Procedures

Program evaluation has been described as that portion of a program which formalizes feedback from consumers [Windle and Bates, 1974]. The present chapter examined several formal procedures used to evaluate the Thurber Project. These were (1) an evaluation of program structure, (2) an evaluation of the process, (3) an evaluation of outcome, and (4) cost effectiveness. The Thurber Project has stood the test of each of these formal measures.

In addition, much of the input from program evaluation is informal and is reflected in incidental information and expressed attitudes. Many of the results of the program were transmitted to the student teachers and the Project Supervisor while the program was going on. Invitations to go on field trips with classes, "thank you" notes from children and teachers, the occasional apples and pictures from students, and the friendly greeting "will you play with me at recess," all supported the formal evaluation procedures.

The application of relatively simple behavior management techniques to physical education settings can have a beneficial effect on the level of service delivered to the student, particularly when service is equated with the amount of time students can spend in instruction and in active participation.
The value of teaching applied behavior analysis techniques to prospective physical educators cannot be overly emphasized. The adoption of the behavioral model to the training of preservice physical educators offers an educational approach to the delivery of physical education and recreation services to students, principles upon which new techniques can be developed, and an emphasis on continuous evaluation as an integral part of teaching. Setting behavioral goals, implementing behavioral techniques, and measuring accomplishments promises to increase the effectiveness of educational services. A behavioral approach also sensitizes the physical educator to the importance of operationalizing and continually evaluating programs.

Model programs where students could observe behavioral techniques being applied in physical education settings and opportunities for preservice physical educators to actually make behavioral interventions have not been available. The Division of Physical Education at The Ohio State University has expressed interest in establishing a variety of innovative field experiences in cooperation with nearby public schools, particularly inner city schools within easy access to the university.
The purpose of the present project was to develop a model behaviorally-based teacher training center for preservice physical educators. The center, established in an inner city elementary school in Columbus, Ohio, accommodated four student teachers enrolled in their senior year at The Ohio State University and was directed by a graduate PETE student who served as the university supervisor for the student teachers.

A team approach involving a peer assessment model to develop teaching skills was utilized. The student teachers were assigned in pairs and observed, analyzed, and provided feedback to their partners regarding his/her teaching performance. Each student teacher participated in a variety of modules implemented to systematically improve specific teaching skills. Changes in both student teacher and pupil behavior were documented by the observer-partner.

The student teachers participated in a behavioral workshop and implemented a variety of behavioral techniques to alter student behavior. These included (1) gym rules, (2) positive reinforcement, (3) extinction, (4) modeling, (5) token economy procedures, (6) behavior games, (7) behavior contracting, (8) response cost, and (9) time out.

A variety of behavioral techniques were also used to alter the behavior of the student teachers. In addition to precise observation and measurement, these included a behavioral "package" consisting of (1) instructions, (2) goal setting, (3) cueing and prompting, (4) feedback, (5) reinforcement, (6) modeling, (7) self-monitoring, (8) remedial loops, and (9) mini-studies. Most parts of the package were
relatively untried procedures for changing student teacher behavior in physical education settings. The mini-studies required each student teacher to complete an applied behavior analysis and demonstrate a functional relationship between student behavior and procedures he/she employed.

The development of the Project has led to a valuable increase in both the quality and quantity of services available to the students and staff at Thurber School. In addition, the Project improved the logistics for data collection and added to the growing file of practical behavior modification procedures that can be used to train teachers and to modify student behavior in physical education settings.

The student teachers who participated in the Project became involved in a variety of valuable activities ordinarily not part of a student teaching experience. Not only did they participate in an assortment of behavioral techniques useful in developing and controlling behavior in physical education settings, but they also became involved in a series of activities that should be extremely useful for their further development as professional teachers. These activities included the collection of objective and reliable data to demonstrate the effects of teacher behavior on student behavior change. By using behavior analysis techniques, these student teachers should be capable of demonstrating measurable and recognizable results of their teaching and be able to face the demands for accountability. They were also involved in a team approach that centered on the development of specific teaching skills. Perhaps the effects of this process will generalize to their inservice experiences.
Several formal methods were used to evaluate the Project. These included (1) an evaluation of program structure, (2) an evaluation of the change processes, (3) an outcome evaluation, and (4) an evaluation of the cost. The Thurber Project stood the test of each of these measures. It provided a service to both the university and the public school; was accepted by both university and school personnel, including the student teachers and their pupils; resulted in positive changes in both pupil and student teacher behavior; and was inexpensive to operate.

Informal evaluations were also positive. Reactions by children, classroom teachers, administrators, and student teachers to the Project were nearly unanimous—they liked it, they preferred it to their experiences with the traditional methods, and they thought it was educationally sound.

**Recommendations for the Thurber Project**

Based on the results of the first quarter of operation, the Project Supervisor proposes the following recommendations for the Thurber Project. The Project provided a valuable service to both The Ohio State University and Thurber School. It should not only be continued, but expanded. The provision of additional service to the students at Thurber will provide additional valuable field experiences for university students.

In addition to the formal student teacher directed physical education classes, additional informal free play activities could be provided. These sessions could promote generalization and could be
held before school, at noon hour, and after school. In addition to being designed to promote gross and fine motor coordination, the sessions could help promote language usage, appropriate social interaction, active use of materials, and compliance with rules. More formal intramural activities could be held for the older students. The EMR and LBD classes should be incorporated into the program.

Student teachers should continue to be assigned to Thurber in pairs and the peer assessment model should be maintained. In an effort to enhance their experience and to reach the criteria suggested by the State Standards, the student teachers should be assigned to the school for a full day. In addition, the nature of the Project should be explained fully before a student teacher commits himself to the program. Because of the heavy demands of the Project, it is unwise that those enrolled for additional academic credit and those who are athletes participating in their competitive season be permitted to complete their student teaching at Thurber.

The four student teachers experienced difficulties in learning observational and measurement techniques and in implementing behavioral strategies effectively in only nine weeks. Many of these techniques should be taught in previous Blocks. Although the Teaching Strategies of Block I for Spring, 1976 was an effort in this direction, additional behavioral procedures should be taught in subsequent Blocks. Practical experiences in behavioral applications should also be provided in these Blocks.

A Handbook for the administration of the Thurber Project has been developed and should provide for the smooth operation of the
program. In addition, several procedures, not implemented during the first quarter of operation of the Project, might prove valuable. For example, a contract between the student teachers and the Project Supervisor could be developed, standardizing the privileges, responsibilities, bonuses, and sanctions for each. Specific rates and ratios for teacher behavior could be agreed upon and contracted for.

The present Project Supervisor was hampered in promoting student teacher behavior change by the difficulty of finding powerful reinforcers. Student teachers at the university were graded on a S/U (satisfactory/unsatisfactory) basis. The student teachers at Thurber had a much greater workload than those completing their internship at other schools. No visible reinforcers were present to promote these additional tasks.

The problem of identifying which student teacher behaviors to reinforce also existed. Some behaviors relate directly to teaching, such as using high rates of praise for appropriate student behavior. Other behaviors, such as being on time for meetings, filling out data forms, gaining the cooperation of individual classroom teachers, and preparing adequate lesson plans, are only indirectly related to teacher effectiveness but, nonetheless, important. A practicum point system similar to the one developed for psychology students by Lloyd and Whitehead [1976] could be developed for physical education interns.

Another means for improving the accountability of the student teachers and the Project would be the adoption of the Standard Behavior Chart, a precision-teaching tool [Lindsley, 1974; Pennypacker, et al, 1974] that would be useful in the precise measurement and recording of
both student teacher and pupil behavior. The Standard Behavior Chart would not only allow for direct comparisons among variables across a variety of situations, but would also permit comparisons to be made from quarter-to-quarter and year-to-year, providing direct evidence of long range improvement in student behavior. The adoptions of the Standard Behavior Chart to measure student teacher behavior could also be useful in assessing the preservice program at the university.

The person most involved in the day-to-day functioning of the Thurber Project is the Project Supervisor. The specialist who serves as Project Supervisor should be familiar with the organizational patterns and instructional programs of both Columbus Public Schools and the Division of Physical Education. The following criteria are recommended for the person serving as Project Supervisor:

1. Masters degree --second year in PETE program.

2. Advanced professional certificate in physical education.

3. Three years of consistently successful teaching or experience at the elementary school level.

4. Experience in working with student teachers.

5. Experience with behavior analysis applications in physical education settings.

For Project Supervisor, a graduate student in the second year of the PETE program is recommended. During the first year in PETE the person could gain experience in working with student teachers and become familiar with applied behavior analysis techniques in physical education. In order to gain personal experience and provide continuity in the Project, this person should serve as Assistant Project Supervisor during the quarter preceding his appointment as Project
Supervisor. Academic credit for this experience could be arranged by enrolling in Physical Education 789.

The Project Supervisor should be employed for a minimum of ten months, the length of the public school year. The salary of this person should be 20 percent above the established salary scale for Teaching Associates within the Division of Physical Education.

The Division, who pays the salary, should be reimbursed by the Columbus Board of Education. The Board of Education should also make reimbursement for monies spent in purchasing materials for the development of equipment and supplies that will be donated to Thurber School. A yearly cost of materials for this equipment that will be developed by Block Three students is estimated at $300.

**Recommendations for Future Research**

Physical educators have produced virtually no published literature describing even data collection systems, not to mention experimental studies regarding the effects of programs or their components. Perhaps the efforts of the Thurber Project, while clearly preliminary in nature, will stimulate further development of applied behavior analysis techniques for training teachers and modifying student behavior in physical education settings.

Two areas demand immediate attention. First of all, procedures for the collection and recording of reliable data in noisy and highly active physical education settings need to be further developed. And, secondly, in an effort to ensure adequate training and supervision, acceptable levels of performance expressed in rates per minute,
percentages, and ratios for preservice and inservice physical educators need to be determined.

In addition, a post hoc analysis of the data collected during the initial operation of the Thurber Project seems to indicate the following trends:

1. Student teachers react more frequently to the behavior of elementary students at lower grade levels than at higher grade levels.

2. Managerial time increases during classes held in outdoor settings.

3. Inappropriate student behavior occurs more frequently during managerial and instructional time than during active learning time.

4. Inappropriate student behavior occurs more frequently during classes held outdoors.

5. Inappropriate student behaviors occur more frequently during the end of class than at the beginning.

Each of these trends should become the focal point of further applied behavior analysis research. Linkages between student behavior and teacher performance should be the main concern of these investigations.
THURBER PROJECT

Evaluation by Student Teachers

As this is the first quarter for The Thurber Project, you are the first student teachers to go through this experience. Information from you can be of value in the future development of the program. Your responses to the following questions will in no way influence your student teaching grade.

1. Do you think the Thurber Project should be continued?

2. How do you compare the Project to the traditional type of student teaching supervision you have also experienced?

3. What were some of the benefits of this experience to you?

4. What aspects of the program do you think should be changed?

5. How do you feel about:
   a. Being assigned to student teaching in pairs?
   b. Being provided feedback about your teaching by your partner?
   c. Collecting data on your partner and giving them feedback?
   d. Collecting data and observing change in student behavior?
6. Do you think the behavioral techniques you implemented at Thurber will benefit you in teaching:
   a. at the secondary level?
   b. in suburban and rural schools?

7. Do you plan to teach in an inner-city school? Why?
   Has the Thurber experience influenced this decision?

8. Was the work load (including preparing, observing, teaching, etc.) at Thurber too demanding?

9. Would you recommend the experience of participating in the Thurber Project to your friends? Why?

10. Additional Comments:

Name ____________________________

Thank you
Thom
Supervisor Rating Sheet

Supervisor's Name________________________________ Date

Please do not put your name on this form. Rate your supervisor on each of the items below. Circle the number which you think represents the quality of the supervisor's performance.

4 represents "outstanding" performance
2 represents "adequate but minimal" performance
0 represents "completely unsatisfactory" performance

You may add specific examples of the supervisor's behavior to support your rating.

4 3 2 1 0 (1) Supervisor encourages the free flow of ideas in meetings through the use of positive reinforcement.

4 3 2 1 0 (2) Supervisor allows and encourages the intern to give feedback to team members.

4 3 2 1 0 (3) Supervisor gives adequate guidance for activities in which team is engaged.

4 3 2 1 0 (4) Supervisor directs team members to relevant materials and resources.

4 3 2 1 0 (5) Supervisor shares his/her past experiences with team when they are relevant to the situation.

4 3 2 1 0 (6) Supervisor provides a professional model for the team by bringing up relevant ethical and professional issues.

4 3 2 1 0 (7) Supervisor encourages professional behavior in team members through the use of behavioral processes (e.g., modeling, shaping, fading, feedback, reinforcement).

4 3 2 1 0 (8) Supervisor treats the team members as professionals, especially in their interactions with students, parents, teachers, administrative and other personnel.

4 3 2 1 0 (9) Supervisor is willing to discuss problems, if necessary, at times other than scheduled team meetings.
<table>
<thead>
<tr>
<th>4 3 2 1 0 (10)</th>
<th>Supervisor observes the team for sufficient amounts of time.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 3 2 1 0 (11)</td>
<td>Supervisor is enthusiastic about the program.</td>
</tr>
<tr>
<td>4 3 2 1 0 (12)</td>
<td>Supervisor provides adequate feedback to team members on how well they are performing their duties.</td>
</tr>
<tr>
<td>4 3 2 1 0 (13)</td>
<td>Supervisor listens to and, if necessary, suggests alternative program and teaching strategies; he/she helps the team see long-term consequences of various activities and approaches.</td>
</tr>
</tbody>
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Additional Comments Regarding the Activities of your Supervisor:
Attitudes Toward Behavior Modification

Please do not put your name or any other identifying information on this questionnaire. YOUR RESPONSES ARE TO BE KEPT ANONYMOUS.

We are interested in your feelings about the following statements concerning Behavior Modification. Read each statement carefully and decide how you feel about it. PLEASE respond to each item, whether or not you have had direct experience with Behavior Modification.

If you strongly agree with the statement, encircle SA to the right of the statement.
If you agree, encircle A to the right of the statement.
If you are undecided or uncertain, encircle ? to the right of the statement.
If you disagree, encircle D to the right of the statement.
If you strongly disagree, encircle SD to the right of the statement.

1. The benefits of Behavior Modification have been exaggerated.
2. Behavior Modification has unlimited possibilities.
3. I wish my education was accomplished under Behavior Modification methods.
4. Behavior Modification is unable to meet the demands of a complex social order.
5. The extra time involved in dispensing rewards is worth the improvement seen as a result of using Behavior Modification.
7. Behavior Modification helps a child to learn how to cope with his environment.
8. More money should be spent on Behavior Modification Programs.
9. Behavior Modification makes a child stop working when rewards are not available.
11. Behavior Modification will advance education to a higher level.

12. More people would support (favor) Behavior Modification if they knew about it.

13. Behavior Modification enables us to make the best possible use of our lives.

14. All teachers should be prohibited from using Behavior Modification in the classroom.

15. Behavior Modification is just another name for tyranny.

16. The added expense involved in purchasing rewards is not worth the eventual gain from a program of Behavior Modification.

17. Behavior Modification improves overall classroom conditions.


20. Behavior Modification helps to produce desired behavior.
My Physical Education Class

Please place a circle around the answer that best indicates how you feel about your physical education class. If you are not sure, circle the question mark.

Yes  No  ?  1. Do you enjoy your physical education class?
Yes  No  ?  2. Do you learn a lot in physical education class?
Yes  No  ?  3. Do you like your physical education teacher?
Yes  No  ?  4. Does your physical education teacher know your name?
Yes  No  ?  5. Does your physical education teacher let you know when you do things well?
Yes  No  ?  6. Does your physical education teacher enjoy teaching your class?
Yes  No  ?  7. Do you know the rules of your physical education class?
Yes  No  ?  8. Does your physical education teacher keep good discipline?
Yes  No  ?  9. Does your physical education teacher tell you why you do certain things?
Yes  No  ? 10. Do you have lots of time to be active in your physical education class?
The purpose of this questionnaire is to obtain information from the classroom teacher about the physical education program conducted at Thurber this quarter. Hopefully, the information provided by you can be used when making decisions about the future development of the program.

I. Directions: Please respond to each item by placing a checkmark under Yes, No, or Unsure. If yes, check column 1, 2, or 3 (1 = usually, 2 = often, 3 = seldom).

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My students respect their physical education teacher.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The physical education teacher(s) relate well to my students.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The physical education teacher(s) set a good example for my students.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. My students know what is expected of them.</td>
<td></td>
<td></td>
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<tr>
<td>5. There is enough equipment so that my students do not have to wait too long for a turn.</td>
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<td></td>
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<tr>
<td>6. The physical education program includes a wide variety of activities.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. My students enjoy their physical education classes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The physical education classes are well organized.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. The activities are appropriate for most of my class.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. My students benefit from participating in the physical education program.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

II. Please list two things you liked about the physical education program.
III. Do you think the physical education program at Thurber should be continued? _____ If yes, what changes would you like to see made? Please be specific.

Additional Comments:

Thank you

Thom McKenzie
APPENDIX B

HANDBOOK FOR STUDENT TEACHING AT
THURBER ELEMENTARY SCHOOL
HANDBOOK FOR STUDENT TEACHING AT
THURBER ELEMENTARY SCHOOL

1. Introduction to Student Teaching
2. Guide to the Administration of the Thurber Project
3. Guidelines for Student Teacher (First Week)
4. Classroom Observation Form
5. Recess/Noon Hour Observation Form
6. Guideline for Subsequent Weeks
7. Target Teaching Skill Card
8. Master Observation Sheet
9. Mid-Term Reminder
10. Outline for Behavioral Seminars
11. Mini-Study Outline
12. Example of Behaviors to Reinforce
13. Fining Procedures
14. Equipment and Materials Inventory
15. List of Curricular Materials
Welcome to your student teaching experience at Thurber Elementary School. This is a somewhat unique period in your professional preparation in which you can put together all the ideas and techniques you have assimilated during your previous course work at the university. For most of you, this will be your first real opportunity to practice teaching skills with real pupils over an extended period of time. The procedures and processes you go through this quarter may be somewhat different than you have anticipated. This is due to the characteristics of Thurber School and the particular model of student teacher supervision used here.

Basically, being a student teacher at Thurber School demands that you accept greater responsibility than your classmates at other schools. Your cooperating teacher here is a regular classroom teacher and cannot be available to give you constant direction and feedback regarding your teaching. But do not abandon the ship. Remember Mosston’s reciprocal teaching? This experience will be an extension of the reciprocal teaching concept. You and your student teaching partner will be responsible for helping each other develop effective teaching skills. This will involve making observations, recording data, preparing graphs, and providing feedback to each other regarding specific teaching skills. This is an opportunity for you to utilize the behavioral coding and recording skills you learned in PE. 289.01. The data collected will provide information to anyone who asks how you are progressing toward your goal of being a competent teacher. The data will also assist you in deciding when it is time to concentrate on a different teaching skill.

Good teaching results from large numbers of behavioral skills. All of these have not yet been identified. As well, ten weeks is insufficient time for you to develop all those that have been isolated. But you can get off to a great start. Remember shaping? You can develop your teaching skills in small and manageable steps. To accomplish this, we will utilize a competency-based modular system. This simply means that at any one time you will concentrate intensively to develop a single group of only a few related teaching behaviors.

A module involves a set of written instructions designed to indicate exactly what you are to learn to do. Each module includes definitions and examples of the behavior class you will be working on, learning activities to help you acquire the teaching behaviors, and assessment procedures to determine whether you have met the terminal behavioral objectives (TBO) for that module. These end goals are very specific so you will know exactly when you have to meet them.

Certain sets of teaching behaviors have been demonstrated to be effective in establishing an environment in which students can acquire and improve their physical education skills. Other teacher behaviors can
help mold a positive, warm, and congenial atmosphere which can be enjoyed by both teacher and students. And additional teacher actions contribute to efficient class management so maximum learning really has a chance to occur. The modules that are available to you will help you develop these behaviors. Since previous blocks have covered behavioral recording techniques, behavioral objectives, lesson plans, and unit plans, these will be emphasized less during this experience. Major consideration will be given to helping you develop efficient managerial, instructional, and interpersonal skills.

Not every student teacher at Thurber will be working on the same skill at the same time. Each has already developed individual competencies. Each also has a unique rate of skill learning and, thus, some will progress faster than others. When you demonstrate your skill in performing the teaching behaviors required in reaching the TBO in one module, you may go on to the next. Your primary job is to develop your own teaching skills to the highest level possible. This task is not easy, but it is important. Student teachers who demonstrate competency in teaching will get good recommendations, the kind that will help in finding a job after graduation. Also, people generally feel greater satisfaction with themselves when they have made a strong effort to accomplish an important task. As well, seeing students learn is very reinforcing. Seeing your students improve in their movement skills greatly may not be so noticeable during this short time, but any improvement is only a small indication of the tremendous power you have in improving the lives of other students you will be teaching.

You have not been abandoned to fight the battle alone. Several people are available to you as resource persons, including the classroom teachers in the school, the cooperating teacher, the principal, and your university supervisor. They will give frequent and specific feedback during the quarter in a variety of ways. Please feel free to call on them for help any time you feel you need it.

Your university supervisor plays a unique role in this experience. In addition to providing continuity in the program from quarter-to-quarter, he helps you set goals regarding improving your teaching skills. Together, you will select modules, their sequence, and specific target rates. He will also complete periodic reliability checks to assure that you and your partner are recording each other’s behavior correctly and that each of you is receiving accurate feedback. In addition, he will conduct a weekly seminar and assist you in applying the behavioral strategies you learn here to your own classes.

We believe that you are a mature adult who can accept the unusual responsibilities required of a student teacher at Thurber School. We believe you can work closely with your student-teacher partner in an assisting relationship. And we believe you can learn a great deal from and with each other about teaching by completing the carefully planned modules. Most other student teachers do not have the responsibilities that go along with this experience at Thurber. But neither
do they have the accompanying privileges of making many decisions about their experience. These are usually left entirely up to the cooperating teacher and university supervisor. You will no doubt have to work harder than some other student teachers you know, but the benefits and gains will also be greater and more easily seen by all those who care to investigate. As is true with most things we do, the greater the effort put into an experience, the greater will be the result. Together, we can make this a valuable and worthwhile experience for all of us.
Guide for the Administration of the Physical Education Program at Thurber School

I. Classroom Teacher

Since the instructional program is operated on the assumption that the classroom teacher is responsible for the experiences of the students in her/his room, it is necessary that she/he becomes involved with the physical education program. The following are desirable:

1. Meet with the student-teacher at the beginning and end of each physical education period so that pertinent information about students can be exchanged as the class changes hands.

2. Discuss with the student teacher any students who need special help or consideration.

3. Observe a part of the time each class, so that students can be observed in another situation and, thereby, understand them better. Supply helpful feedback to the student teachers so they might improve their performance.

4. Notify the student teacher, preferably a day in advance, if it is necessary to miss a scheduled class due to a field trip or other interruption of the daily program.

5. Refrain from keeping pupils out of the physical education period for disciplinary or other purposes unless pre-arranged through conference with the student teacher and principal.

6. Support the physical education program the student teacher is endeavoring to carry on (e.g., by posting schedules, making announcements, providing lists of pupils, providing name tags for students).

II. Principal

1. Designate a staff member as cooperating teacher to assist in the administration of the physical education program within the school.

2. Interpret to the staff all policy pertaining to the physical education program.

3. Orient the student teachers to administrative details of the school and the philosophy of the system.
4. With the cooperating teacher and the university supervisor, arrange for a physical education schedule.

5. Arrange any necessary conferences between classroom teachers and student teachers.

6. Assist the student teachers and university supervisor in setting up the type of after-school program which will best meet the needs of the school and community.

7. Share with the university supervisor in the evaluation of the physical education program in the school.

III. University Supervisor

1. Administrative duties
   a. Serve as liaison between Thurber School and The Ohio State University.
   b. Arrange for the assignment of student teachers to the school.
   c. Interpret program to school and university personnel.
   d. Develop curriculum materials.
   e. Develop syllabi.
   f. Develop plans for evaluating the total physical education program.
   g. Develop plans for individual student evaluation.
   h. Orient new student teachers to the system.
   i. Provide continuity in program from quarter-to-quarter and year-to-year.
   j. Devise observational materials and procedures to aid the system in serving as a model behavioral based program.
   k. Prepare a written report on the development and progress.

2. Duties pertaining to facilities, equipment and supplies
   a. Evaluate facilities, equipment, and supplies, including inspection for safety hazards and cleanliness.
   b. Evaluate and select all types of instructional materials.
c. Develop plans for purchase of equipment and supplies.

d. Provide plans for inventory of equipment, including cleaning storage and identification.

e. Provide plans for issue and return of equipment and supplies used by pupils.

f. Prepare directions on care and use of equipment.

g. Develop plans for the construction of homemade equipment. Consult with Dr. Herkowitz regarding Block III and individual student projects for constructing materials and equipment and analysis of usage.

h. Participate in the planning of new facilities and play areas.

3. Duties pertaining to student teacher supervisor

a. Arrange observation and teaching schedules.

b. Evaluate completed module and observation forms.

c. Monitor lesson and unit plans.

d. Provide instructions and feedback to student teacher regarding their teaching and observation skills.

e. Assist student teachers in selecting teaching skill modules, their sequence, and rate of target behavior.

f. Complete reliability checks on data collected by student teacher partners.

g. Demonstrate (model) teaching skills.

h. Evaluate the student teaching performance.

i. Complete university grade card.

j. Complete College of Education Supervisor's Statement Concerning Performance in Student Teaching.

4. Duties pertaining to special activities

a. Direct special events such as play days, demonstrations and exhibits.

b. Assist the student teachers and principal in setting up the type of after-school program which will best meet the needs of the school and community.
5. Duties pertaining to the behavioral seminar
   
   a. Arrange for a time and place to conduct the seminar weekly.
   
   b. Provide for materials and equipment.
   
   c. Conduct the seminar.
   
   d. Supervise individual experiments.
   
   e. Conduct reliability checks on data collection as necessary.
   
   f. Assist students in writing up their studies.
   
   g. Compile completed research.

IV. Project Director

1. Serve as a liason person between the Center and University, particularly the Division of Physical Education.

2. Appoint Project Supervisor.

3. Confer with the Project Supervisor regularly to discuss programs, problems, progress, innovations, research and experimentation.

4. Assist the Supervisor in locating and utilizing needed resources.

5. Serve as a curriculum and teacher education resource consultant to the Project.

6. Exercise leadership in introducing innovation and experimentation.
GUIDELINES FOR STUDENT TEACHERS AT THURBER SCHOOL
DURING WEEK ONE

(Check When Completed)


2. Determine with your supervisor and cooperating teacher your time table for teaching and observing. Make note of any holiday and special events.

3. Visit each class you will be teaching. (At least twice) Complete a classroom observation form during each visit.

4. Obtain yearly program materials from supervisor and review the activities taught to your classes during the two preceding quarters.

5. Obtain individual student physical education records from classroom teacher and review.

6. Determine with your supervisor the activity units you will be teaching during the quarter.

7. Prepare activity units. Present to supervisor by Monday of week two.

8. Visit the playground during a primary and an intermediate recess or during two noon hours. Complete a recess/noon hour observation form on each occasion.

9. Be prepared to interpret, to staff members and public, the goals of the physical education program.

10. Complete an equipment inventory.

11. Become familiar with all teaching stations and equipment you will be using.
CLASSROOM OBSERVATION FORM

NAME__________________________
DATE___________________________
TIME IN_________ OUT___________
GRADE_________________________
TEACHER_______________________

1. STUDENTS

1.1 How many are in attendance?
1.2 Are they free to move about the room?
1.3 What do they do if they wish to leave the room?
1.4 Do they interact with each other?
1.5 Observe the students (placheck) on three different occasions. Record

   # on task | # off task
   1
   2
   3

2. TEACHER

2.10 Observe the teacher for five consecutive minutes. Record a check mark:

2.11 Each time the teacher addresses a pupil by his/her first name

2.12 Each time the teacher asks a question

2.13 Each time the teacher praises a student

2.20 Observe the teacher for an additional five minutes. Record a check mark:
2.21 Each time the teacher provides feedback to a student, decide whether this feedback is positive or corrective.

| Positive | Corrective |

2.22 Each time the teacher reprimands a student

2.3 What is the ratio of praises to reprimands? (2.13/2.22)

3. MOTIVATION

3.1 Is there a contingency management system in operation?

3.2 If yes, describe it briefly.
RECESS/NOON HOUR OBSERVATION

NAME_________________________
DATE_________________________
TIME IN_____________OUT_______

1. STUDENTS
   1.1 Generally, what are they doing?
   1.2 Are they assigned to specific areas?
   1.3 How many are on the playground equipment?
   1.4 How many are playing basketball?
   1.5 How many are using the lined spaces for games?
   1.6 What games are they playing?
   1.7 What types of balls are they using?
   1.8 What other materials are they playing with?
   1.9 Who owns these materials?

2. TEACHERS
   2.1 How many are on duty?
   2.2 Where are they located?
   2.3 Generally, what are they doing?
   2.4 What are they supposed to be doing?

3. INTERACTIONS
   3.1 Are the teachers interacting with each other?
   3.2 Are the teachers interacting with students?
   3.3 Are teachers and students playing together?
   3.4 Are boys and girls playing together?
   3.5 Are younger and older students playing together?
   3.6 Are black and white students playing together?
   3.7 Are any students fighting?

4. OTHER
   4.1 Are students allowed in the park?
   4.2 How do the students return to their classroom?
   4.3 Do they return promptly?
   4.4 What do they do with their play materials?
During Subsequent Weeks

1. Prepare a lesson plan for each class at least one day in advance. Make it available for observers during the lesson.

2. Observe your student teacher partner for one full class each day. Record data on the appropriate forms. Provide information to partner upon completion of this class.

3. Meet the classroom teacher before and after the physical education class so that pertinent information about the students can be exchanged.

4. Notify the classroom teacher, preferably a day in advance, if the class cannot be taken at the usual time.

5. Have available an alternate plan for each class (i.e., for indoors in case of inclement weather; for classroom in case gymnasium cannot be used).

6. Be prepared to teach the classes of your partner in case of emergency.

Improving Teaching Skill

1. Write notes on the index cards provided indicating the particular teaching skills you are attempting to improve. Indicate the particular target rate or ratio for each skill.

2. Just prior to teaching verbally relate this information to your partner. Also indicate the positive consequences for attainment of the goals and the possible negative consequences for failing to meet the criterion level.

3. Post cues around the gym to remind you of the skills you are attempting to improve.

4. Designate some method by which your partner can indicate if you are on target.
TARGET TEACHING SKILL CARD

TEACHER_________________________ DATE_________________________
CLASS_________________________ STATION_________________________

TARGET TEACHING SKILL:

GOAL (Percent, rate/min., ratio):

PERFORMANCE:

COMMENTS
## Behavior Reactions Table

<table>
<thead>
<tr>
<th>TIME</th>
<th>BEHAVIOR REACTIONS</th>
<th>PLAYCHECKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Sec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Skill Feedback Table

| TIME | SKILL FEEDBACK | |
|------|---------------||
| Min  | Positive | Corrective | |
| Sec  |          |          | 1 | 1 |

### Time and Special Conditions

- Teacher: 
- Class: 
- In: 
- Out: 
- Special Conditions: 

### Observer and Station Notes

- Observer: 
- Station: 
- Min: 
- Activity: 
- Sec:
To: Thurber Physical Education Staff
From: Thom
Re: MID-TERM REMINDERS

I. FOR CLASSES YOU TEACH

1. Have your unit plan completed by 5/16/76.

2. Prepare lesson plans at least 2 days in advance.

3. Have the plan for the lesson you are teaching available for inspection.

4. Complete a card indicating the teaching skill you are emphasizing during the lesson, including the rate of target behavior, and present it to your observer partner.

5. Demand some Feedback about your lesson.

II. FOR CLASSES YOU OBSERVE

1. Have the observational materials you need (recording sheets, watches, timer, pencil, etc.) ready before class begins.

2. Consult with your teacher partner regarding the teaching skill you are to monitor.

3. Rehearse the format you are using to record student behavior.

4. Provide graphic and verbal feedback to your partner regarding the teaching skill(s) you were observing.

5. Record on the master sheet the data you collected on student behavior. Graph when possible.
SEMINARS

Student Teacher - Thurber School

These seminars, conducted weekly by the university supervisor, are designed to:

1. Teach practical measurement and recording techniques which can be used in physical education settings.

2. Present basic learning theory principles which form the basis for behavior change.

3. Present information on previous research and applications in physical education.

4. Have the student teachers carry out studies in their own classes.

5. Provide contact for the student teachers with others carrying out studies and with someone skilled and knowledgeable in making behavioral applications.

Resources


Additional materials to support selected projects
INDIVIDUAL PROJECT - THURBER SCHOOL

MINI-STUDY

Steps

1. Select population
2. Define behaviors precisely
3. Select intervention procedures and research design
4. Select method for data collection
5. Select method for reliability measures
6. Practice data collection
7. Rehearse intervention procedures
8. Implement study (collect baseline data, intervention data, etc.)
9. Graph data
10. Write up study [Hall, Part III, 1971]
Examples of Behaviors to Reinforce

1. Sitting (playing) quietly
2. Listening (looking at teacher)
3. Following directions
4. Not talking out
5. Not bothering neighbors
6. Waiting quietly
7. Playing with proper materials
8. Not playing with improper materials
9. Re-grouping quickly
10. Smiling
11. Not laughing at classmate's mistake
12. Speaking so the teacher can hear
13. Responding quickly
14. Looking at classmates while they demonstrate
15. Waiting for a turn
16. Sharing equipment
17. Assisting each other (e.g., spotting)
18. Putting away equipment
19. Following gymnasium rules
20. Following rules of the game
21. Trying hard
22. Persisting at tasks
FINING PROCEDURES

With highly disruptive classes, it may be necessary to use a fining procedure, whereby students or teams lose points for inappropriate behavior. This management system is very similar to receiving a fine for a traffic violation.

The fine can be made by placing a check mark beside the name of the student on the class list. The class list can be easily attached to the clipboard with your lesson plan or another list may be made on the blackboard. When fining a pupil, the following points should be observed:

1. Provide a short verbal signal when you fine a pupil. It should be loud enough so that other pupils can also hear it. Use the following procedure:

   (a) State the pupil's name.
   (b) Say, "You are being fined for...."
   (c) Describe briefly the inappropriate behavior.
   (d) Place a check mark beside the pupil's name on the class list.

   Examples:

   (i) "Daryl, you are being fined for kicking Jeff." (plus check mark)

   (ii) "Dianne, you are being fined for pushing Jan over while she was doing a headstand." (plus check mark)

2. The fine should be given in an unemotional, neutral tone of voice, not one that implies anger.

3. Give the fine while the pupil is still emitting the inappropriate behavior, or immediately after he/she has stopped.

4. Do not argue with a pupil about the fine. Once you have initiated the fining procedure, continue until a checkmark is recorded.
THURBER SCHOOL

Physical Education Equipment and Materials Inventory

31 bean bags
26 jump ropes
  24 short
  2 long
2 table tennis paddles
8 bowling pins
3 bowling balls
  (2 small; 1 large)
1 tennis racquet
11 soccer balls
1 kickball (18"
37 playground balls
  11 - 10 inch
  17 - 8-1/2 inch
  3 - 7 inch
  6 - 5 inch
8 softballs
1 volley ball
4 basketballs
2 footballs (rubber)
11 whiffle balls
  4 large
  7 small
18 bats
  15 wooden
  3 plastic
6 tennis balls
12 tetherballs
1 floor hockey set
1 parachute
13 paper wands
6 bases
1 home plate
12 hoops (damaged)
8 balance boards
2 balance beams (low)
1 air pump
9 directional cones
9 used car tires
16 wooden pins (Indian clubs)
1 shuffle board set
1 tug-of-war rope
1 catcher's mask
1 chest protector
3 ball bags
1 inner tube (truck)
1 tambourine
3 wooden stake targets
11 rope rings
13 horse shoes (rubber)
2 plastic scooters
1 nylon parachute
4 tumbling mats (8' x 5')
2 volleyball nets (damaged)
CURRICULAR MATERIALS

1. Physical education for elementary children [Dauer]

2. Movement experience for children [Schurr]

3. Movement orientation [Stanley]

4. Introduction to movement education [Kirschner]

5. Educational gymnastics [London Educational Authority]
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