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The effects of a self-management program on interns behavior
during a field experience in physical education

Eldar, Eitan, Ph.D.
The Ohio State University, 1987
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THE EFFECTS OF A SELF-MANAGEMENT PROGRAM ON INTERNS BEHAVIOR
DURING A FIELD EXPERIENCE IN PHYSICAL EDUCATION

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

By

Eitan Elder, B.A., M.A.

* * * * *

The Ohio State University

1987

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To My PARENTS
Who Taught Me Self-Management
ACKNOWLEDGMENTS

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I am particularly indebted to my colleagues who so enthusiastically assisted in the collection of data, and to the students who took part in this study as subjects.

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And last, but not least, Orly and Yonatan, who went with me all the way.
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CHAPTER I

INTRODUCTION

What behavior change agent can go with the student to every necessary lesson, at all times, to prompt and reinforce every desirable form of the behavior called for by the curriculum? The student's own "self" can always meet these specifications. (Beier & Fowler, 1984, p. 148)

Self-control (or self-management as it will be termed during this dissertation) is a valued skill in our society. Dewey (1939) suggested that "the ideal aim of education is the creation of self-control" (p. 75). Mahoney and Thoresen (1974) emphasized the importance of self-management in their book Self-Control: Power to the Person. They stated:

We value self-control because of its role in the survival of our society and culture. One measure of a "civilized" society is the degree to which its inhabitants direct, maintain, and coordinate their activities without external coercion. If more individuals could develop effective self-management skills, the need for professional helpers and the number of passive "you help me" patients might be sharply diminished. (p.1)

Students who acquire self-management skills will be able to maintain their appropriate behavior and change it when necessary, even when their teacher or parent are not directly involved. The greater the
extent to which students are able to manage their own behavior, the less time teachers should spend on management related behaviors, and the more time they can spend on improving the quality of instruction.

Although self-management is a valued skill in our society it has rarely been addressed directly by the educational system. Lovitt (1973) and Stephens (1978) have noted the educational paradox: While a major goal of the educational system is the creation of independent and self-reliant individuals, self-management skills are not systematically programmed in this system. In order to achieve the ideal goal of creating self-reliant and independent individuals, teachers themselves should possess and model those skills. Acquiring self-management skills may improve teachers' performance because:

1. Teachers are rarely observed and provided with feedback during their career.
2. Education is a long term process in which teachers are not often reinforced immediately. Successful self-management will provide teachers with immediate reinforcement.
3. The ability to self-manage and control their own behavior, may create new challenges and motivation for teachers and slow down the phenomenon known as teachers' "burn out."
4. Self-management is effective in the generalization of behavior change (Stokes & Baer, 1977). It is a change agent that follows the student/teacher everywhere.
5. Certain kinds of behaviors such as "private events" do not lend themselves to external observers/change agents.
6. Acquiring self-management skills (e.g., self-recording, self-evaluation) may make teachers more reflective.

7. Self-selected contingencies may be more effective than those selected by others (Dickerson & Creedon, 1981).

8. Self-management simply feels good. "It really feels good to get your life under control" (Malott, 1981).

Sledentop (1982) suggested that teachers in field settings can and will change their behaviors, particularly when they have strong reason to believe the suggested alternation will make them more effective or efficient. Skinner (1969) further explained that:

The behavior of a person who has calculated his chances, compared alternatives, or considered the consequences of a move is different from, and usually more effective than the behavior of one who has merely been exposed to the unanalyzed contingencies. (pp. 121-122)

Unfortunately, inservice teachers are not often provided with systematic and accurate feedback from a professional source concerning their work. This kind of feedback is essential for the growth and the development of these teachers. Furthermore, teaching skills that are acquired by students during internship do not automatically transfer to, and maintain themselves in the "real" world of teaching (Sledentop, 1983). In this case, self-management could be a useful strategy for understanding and controlling teaching behaviors. Skinner (1953) suggested that an individual can learn to influence the variables of which his/her behavior is a function. He stated "an adequate explanation of self-control should make it possible to teach relevant techniques as easily as any other technical
repertoire" (p. 241). Teachers can acquire self-management skills as they do any other teaching skill during their preservice education (Hall, 1976). Because the availability of university supervisors in field settings is limited, self-management by their interns may improve the supervisory process. Acquiring self-management "tools" will enable the intern to maintain and refine his/her teaching skills in the future as an inservice teacher.

Statement of the Problem

The purpose of this study was to determine whether or not interns (i.e., pre-service teachers) can manage their own teaching during a secondary school field experience in physical education. Specifically, the following questions were addressed:

1. Can interns implement a self-management program during a fourteen days field experience in secondary school?
2. What effects does the self-management program have on the intern behavior? (i.e., teaching patterns).
3. What effects does the self-management program have on pupil behaviors? (can changes in pupil behaviors be traced to the self-management program?).
4. Can interns implementing a self-management program achieve teaching goals at a level similar to the level achieved by interns experiencing a standard supervision program?
Limitations

1. The experimental subjects in this study were four volunteer physical education majors required to complete fourteen days of field experience in a secondary school. The study was limited to the observation of four physical education classes, in two middle schools in Columbus, Ohio.

2. The observations of teacher and pupil behaviors were limited to specific measurable and observable behaviors.

3. The observations of pupil behaviors were limited to interval recording of one target pupil in each intern's class.

4. The researcher was one of the coders in this study.

5. The maintenance of the self-management program across time (i.e., more than three months) was not assessed during the course of this dissertation.

Basic Assumptions

The following were assumed to be true and relevant to this study:

1. The target pupils selected for observations were representative of the pupils in their class.

2. The interval recording techniques employed in this study constituted a representative sample of pupil behaviors during the lesson.

3. Probe data collected for the control subjects in this study were representative of their general performance during the field
4. All interactions with professional sources initiated by the experimental subjects were indicated in the subjects' logs.

5. The evaluation of the self-management program provided by the experimental subjects reflected their experiences throughout the program.

Definition of Terms

Several terms found in the text of this study have restricted or special meanings. Included (within these terms) are the specific pupil and teacher behavioral definitions used in the observation system which are described in chapter III. The following terms are used frequently in the study:

**ALT-PE**  
The amount of time that a pupil spends engaged in a subject matter motor activity in such a way as to produce a high degree of success.

**Contingency**  
The relationship between a behavior and its consequence.

**Cue**  
An event or stimulus which signals that a certain response will be reinforced.
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<th>Term</th>
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<td>Feedback</td>
<td>Information generated about a response that is used to modify the next response (Siedentop, 1983).</td>
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<td>Interobserver Agreement</td>
<td>The degree to which independent observers agree on what they see and record (Siedentop, 1983).</td>
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<td>Intern</td>
<td>A major in the third year of the Physical Education Teacher Education Program.</td>
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<td>Intervention</td>
<td>Strategies applied to change teacher or pupil behaviors.</td>
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<td>Maintenance</td>
<td>The extent to which the learner continues to perform the target behavior after a portion or all of the intervention has been terminated (Cooper, Heron &amp; Heward, 1987).</td>
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<td>Modeling</td>
<td>A behavior is presented to an individual to induce that individual to engage in a similar behavior (Martin &amp; Peer, 1983).</td>
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<td>Probe Data</td>
<td>Data collected intermittently rather than continuously.</td>
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**Promot**
An antecedent event which helps to initiate a response.

**Punishment**
A stimulus which weakens the behavior that it follows.

**Reinforcement**
A stimulus which strengthens the behavior that it follows.

**Standard Supervision Program**
The systematic observation and collection of data on teacher and pupil behaviors by the supervisor and cooperating teacher, followed by feedback and suggestions given to the intern.
CHAPTER II

REVIEW OF RELATED LITERATURE

The review of literature presents two major and different areas of study that are relevant to the current investigation. First, the supervision area is described, followed by a review of the self-management literature.

Supervision

This section presents a review of literature relevant to the supervisory process in the educational system. Although lagging behind by ten years, research on supervision in physical education has taken its lead from general education. Although there are some topographical differences between the two areas, the accumulating results are more similar than different. Therefore, the major results and the major approaches to supervision from the two areas of study are presented jointly. The review of literature on supervision is organized in five sections as follows:

1. The background and history of the supervisory process.
2. Research on supervision.
3. The various theories of supervision.
4. The future of supervision.
5. Summary of the major findings.

"To read about supervision in 1920 is to read about supervision in 1970" (Mosher & Purpel, 1972). Today, there is no indication of a major move towards changing the "status quo" that has existed in the field of educational supervision for several decades. Locke (1979) indicated that "The literature of this dismal art provides scant hope for any significant change in the next decade" (p. 1). Although there is no doubt among educators about the significant role that supervision can play in the educational system, there is still uncertainty about its implementation. "Supervisors seem almost helpless and paralyzed, whereas opportunity is not only knocking at the door, it is huffing and puffing enough to blow the house in!" (Anderson, in Sergiovanni, 1982, p. 190).

Background
Supervision is a component of most formal organizations. Alfonso Firth and Neville (1981) stated that the classic definition of supervision is "to support and enhance an organization's work system and to ensure productivity, quality and the achievement of organizational goals" (p. 6). This goal can be reached by the constant presence of the supervisor to direct the supervisee in order to ensure his/her effective production. Betts (1968) described the supervisor as responsible for controlling the work of others. "A supervisor may be delegated the authority to engage, transfer, suspend, reprimand or dismiss an employee under his control" (pp. 6-7).
Parekh (1970) defined supervision as "social relationships in which one person is presumed to be an expert and as such, supposed to know everything about a particular activity. He wants to and is expected to suggest 'solutions' to problems" (P. 461). The connotation of the term "super-vision" indicates the supervisor's superiority in the subject matter which leads to superordinate - subordinate relationships between the supervisor and the supervisee.

The roots of educational supervision are authoritarian. In the 18th and 19th centuries supervisors were ministers, superintendents and principal teachers who visited schools in order to control educational standards. The means for achieving this goal was inspection of teachers. During the last century, various theories specific to educational supervision have been developed. Among these theories are the Scientific supervision theory (1920's), the Democratic supervision theory (1930-1950) and the Organizational theory (1970's). The role of supervisors has shifted from inspecting to advising and consulting.

Supervision has played an important role in the field of teacher education. There has been an agreement among educators on the necessity of student teaching in teacher preparation. "The one indisputably essential element in professional education is practice teaching" (Conant, 1963, p. 142).

Research on Supervision

Although the inclusion of supervision in teachers' preparation is well accepted, the findings concerning its implementation are not encouraging (Locke, 1979). There are findings indicating that the supervision process is
Templin (1978) found that student teachers tend to reject the behaviors taught in the training program and teach just as they might have done before the program. Hoffman (1971) suggested that teachers learn to teach only in their first year of service based on past models and trial and error. Morris (1974) reported that there was no difference in performance between student teachers who had and did not have supervision experience. There are studies indicating that the cooperating teacher is the dominant source of changing student teachers behaviors (Evans, 1976; Freibus, 1977; Karmos & Jacko, 1977). There are findings indicating that supervision is perceived by teachers as a threat and that teachers treat their supervisors with open hostility (Blumberg, 1974; Goodlad, 1974). Goldhammer (1969) suggested that during the supervision process teachers have learned to please their supervisors by guessing their expectations and behaving accordingly in order to protect themselves from the supervisor's threat. Books like Supervisors and Teachers: A Private Cold War (Bloomberg, 1974), and Supervision the Reluctant Profession (Mosher & Purpel, 1972) have reflected the problematic situation of supervision at the preservice and inservice levels of teacher education.

Although the picture of supervision as it is practiced for several decades is not encouraging, research has shown that supervision can be very effective. Sledentop (1981) at the Ohio State University (OSU) has lead a systematic replication (Sidman, 1960) of applied behavior analysis studies, implementing the multiple baseline design. Experimental studies dealing with the supervision of student teachers during field experience have been the primary focus of the program. The OSU Teacher Behavior Instrument (Sledentop & Hughley, 1975) was initiated by Hughley (1973).
refined by Rife (1973) and replicated in elementary, middle, and high school level (Darst, 1974; Hamilton, 1974; Boehm, 1974). The OSU studies show a clear progression from the application of an intervention by the supervisor to peer intervention (Dodds, 1975), to the evolution of self-management systems (Dessecker, 1975; Mckenzie, 1976; Hall, 1977), and to the use of the cooperating teacher (Hutslar, 1977; Cramer, 1977).

The major findings from the OSU supervision research were:

1. Teaching behaviors can be defined clearly and observed reliably (i.e., 60% interobserver agreement).
2. The teaching performance of interns can be changed during a ten week field experience.
3. The treatment responsible for the change was a package including goals, explanatory materials, observation, feedback and graphing.
4. Supervisors, cooperating teachers, peers and the interns themselves can serve as effective change agents.

Ocansey (1986) has developed a model for increasing the supervisor's explicit statements during the supervision conference. Taggart and Wilkinson (1985) studied the supervisory behavior of cooperating teachers and their results indicated that cooperating teachers, through self-instruction, can improve as change agents in student teachers behavior. The number of feedback statements of all the cooperating teachers increased following the intervention (i.e., self-instructional module).
The Theory of Supervision

The theory of supervision has derived from various and different philosophical orientations. The major conceptions are described in Table 1.

The clinical approach

The clinical approach to supervision is based on the work of Cogan (1973) and Goldhammer (1969). They both described the operational procedures of clinical supervision as a cycle that emphasizes the quality of practice. The basic model (Goldhammer, 1969) consisted of five stages and is referred to as the "Sequence of Supervision". A collection of such sequences is called the "Cycle of Supervision".

The supervision sequence.

1. Preobservation conference - Re-establishing communication; rehearsal and revision of instructional behavior; explicit contract indicating the responsibilities of the supervisor and the student teacher.

2. Observation - An accurate recording of what happened during the lesson.

3. Analysis and strategy - Making sense out of the observational data and planning the supervision conference.

4. Supervision conference - Providing feedback and giving the teacher the opportunity to deal with the supervisor's analysis and initiate his/her own analysis.

5. Post conference analysis - ("postmortem") Self evaluation of the supervisor/s. "The only truly worthwhile existence is an examined existence" (Goldhammer, 1969).
Table 1

Conceptions of Supervision

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Clinical</th>
<th>Technological</th>
<th>Artistic</th>
<th>Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Orientation</td>
<td>Empiricism</td>
<td>Efficiency</td>
<td>Aesthetics</td>
<td>Individual Growth</td>
</tr>
<tr>
<td>Goals</td>
<td>Knowledge</td>
<td>Skill</td>
<td>Teacher</td>
<td>Self-Actualization</td>
</tr>
<tr>
<td></td>
<td>Acquisition</td>
<td>Acquisition</td>
<td>Appreciation</td>
<td></td>
</tr>
<tr>
<td>Knowledge Based</td>
<td>Pedagogy</td>
<td>Behaviorism</td>
<td>Criticism</td>
<td>Personality Theory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept of Teaching</td>
<td>Intellectual</td>
<td>Patterned</td>
<td>Creative</td>
<td>Personal</td>
</tr>
<tr>
<td></td>
<td>and Social</td>
<td>Interactions</td>
<td>Performance</td>
<td>Role</td>
</tr>
<tr>
<td></td>
<td>Act</td>
<td></td>
<td></td>
<td>Definition</td>
</tr>
<tr>
<td>Role of Supervisor</td>
<td>Analyst</td>
<td>Change Agent</td>
<td>Critic</td>
<td>Counselor</td>
</tr>
<tr>
<td>Supervisor-Teacher-Learner</td>
<td>Teacher-</td>
<td>Master-</td>
<td>Critic-</td>
<td></td>
</tr>
<tr>
<td>Supervisor-Teacher-Apprentice</td>
<td>Learner</td>
<td>Apprentice</td>
<td>Performer</td>
<td></td>
</tr>
<tr>
<td>Supervisor-Teacher-Performers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor-Teacher-Counselor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Note. Adapted from "Impact of the Curriculum on Supervision" (p.142) by Pohland & Cross, in Sergiovanni, 1982.
Garman (in Sergiovanni, 1982) examined 300 supervisors during clinical supervision and identified five modes of inquiry used in the process: (a) discovery, (b) verification, (c) explanation, (d) interpretation, and (e) evaluation. She characterized clinical supervisors as using the cycle as an empirical approach, using the conference in a collaborative way and keeping ethical and collegial relationship with the teacher.

The Technological Approach

The technological approach to supervision is based on the acquisition of discrete skills. Teaching is viewed as the arrangement of contingencies of reinforcement under which students learn (Skinner, 1968). Effective teaching is viewed as the "artistic orchestration of a set of highly developed skills to meet the specific demands of a learning setting" (Siedentop, 1983, p. 4), and should be evaluated according to its impact on the students. The technological approach has been derived from behavioral psychology. From this perspective, teaching is an acquired behavior and is subject to modification or change. The change has to be verified through systematic observation and measurement of teacher and pupil behavior.

A systematic replication of research on technological supervision was conducted at OSU (Siedentop, 1981). The findings of this effort demonstrated the effectiveness of technological supervision in changing teaching behavior.

The Counseling Approach

The rationale for the counseling approach to supervision was presented by Mosher and Purpel (1972). It was based on ego psychology
which assumed that the individual's behavior is organized by the ego. Counseling supervision is focused on what the teacher is personally, rather than on what the teacher does (i.e., behavior) as in clinical and technological supervision. Teaching behavior is viewed as an intellectual and emotional expression of the teacher. Mosher and Purpel (1972) advised that supervisors limit themselves to the secondary ego processes such as logical thinking and problem solving. The limitations of this approach are: (a) few supervisors possess adequate psychoanalytical skills; (b) teachers may treat their supervisors suspiciously, feeling they are being manipulated; and (c) the relationships are sensitive and complicated.

Other Approaches to Supervision

In addition to the conceptions discussed earlier, some other approaches to supervision have been suggested.

Eisner (in Sergiovanni, 1982) has promoted the artistic approach. He claimed that although teaching is regarded as an art, it is most often studied as a science, neglecting the quality of the process and teacher's satisfaction. The artistic approach to supervision emphasizes the sensitivity of the supervisor and the use of poetic and metaphorical language to describe teacher's behavior.

Valverde (in Sergiovanni, 1982) promoted the approach of self-evolving supervisor. In his view, the growth and development of supervisors are essential for teachers' development. Self growth can be achieved by:

1. Reflection, which involves asking questions of oneself (i.e., self-evaluation).
2. Exploration, which includes reading, observing and listening.
3. Stimulation, which involves motivating performance.
4. Experience, which involves application by doing.

The colleagueship approach (Alfonso & Goldsberry, in Sergiovanni, 1982) suggested that supervision should be facilitated by teachers, becoming fuller partners in the enterprise.

**The Future of Supervision**

After drawing a dark picture of supervision in the past, Locke (1979) claimed that there needs to be a change in the future. He suggested:

1. More extensive performance training for the interns.
2. More opportunities for students to clarify and examine their own values about teaching.
3. Extend program responsibility for an induction year (i.e., paid interns).

**Summary**

A review of the supervision literature indicated the following key issues:

1. Supervision of teaching has historically focused on inspection and evaluation. The supervisor's role was aversive and based on bureaucratic power, rather than on expertise. Thus supervision is a "one way" process based on superordinate-subordinate relationship.
2. The cost effectiveness of supervision is high. As a result, teachers and student teachers are observed only a few times during the year or the field experience.

3. Although cooperating teachers are a dominant source of influence, they are not always selected carefully and there is no special training for becoming a cooperating teacher (Brodbelt, 1980).

4. There are findings indicating that supervision, as it is practiced in the educational system is not effective. However, research has shown (Siedentop, 1981) that a behaviorally based supervision process can be very effective.
This section presents a review of the self-management literature that is relevant to the current study and includes the following sub-sections:

1. The theoretical basis of self-management.
2. The various definitions of self-management.

The Theoretical Basis of Self-Management

The assertion that people might control their own behavior as they will anyone else's leads to a very complicated view of the determinants of human behavior. Freud (1922) attributed self-control to the instinct of the ego for self-preservation of the reality principle. The reality principle "demands and enforces the postponement of satisfaction, the renunciation of the manifold possibilities of it, and the temporary endurance of 'pain' on the long and circuitous road to pleasure" (p. 6). In Freudian thought, self-control is linked with the formation of the ego; normal development of the ego should lead to an individual exhibiting great self-control.

Skinner's conception of self-control is based on the principles of operant conditioning:

When a man controls himself, chooses a course of action, thinks out a problem, or strives toward an increase in self-knowledge, he is behaving. He controls himself precisely as he would control the behavior of anyone else ... through manipulation of
variables of which behavior is a function. His behavior in so doing is a proper object of analysis, and eventually it must be accounted for with variables lying outside the individual himself (1953, pp. 228-229).

While Freud viewed self-control as a characteristic of personality, Skinner's view is extremely situational. Self-control behavior will be exhibited in a strength relative to the individual's history of reinforcement and the present situation. Skinner (1953) pointed out the limitation of the personality perspective of self-control. "It is of little help to tell a man to use his 'willpower' or his self-control" (p.241). To Skinner, private psychological events are controlled by the same behavioral processes as are public or overt events (1969). The "willpower" conception of self control based on mystical inner forces has limited the development of sound empirical principles of self-management (Bandura, 1969; Kanfer, 1970; Mahoney and Thoresen, 1974; Skinner 1953).

Premack and Anglin (1973) suggested that the learning of self-control is based on an aviodance paradigm. A child learns to control her or his own behavior in order to avoid withdrawal of the parents' affection. Premack and Anglin assumed that general rules for behavior are internalized in this manner. Another approach to the study of self-control is modeling (Bandura & Walters, 1963). The dynamics of modeling are demonstrated when the child is receiving vicarious reinforcement by performing a response that he or she had previously observed being performed by a person with whom the child associates respect, authority or love. Logan (1973) offered a motivational approach to self-control. He suggested that a self-controlled response may be intrinsically rewarding through the reduction of a hypothesized self-control drive. The self-control drive is a learned one based on the association of fear or
frustration with lack of self-control.

The Definition of Self-Management

Various terms have been used in the literature to refer to the same operation, namely, self-management, self-control, self-modification, self-regulation, etc. For the purpose of this study, self-management will be used as a generic term.

Self-control has been used in the behavioral literature more often than self-management, however, they are used interchangeably and may be viewed as synonymous (Cooper, Heron & Heward, 1987).

Duncan (1971) mentioned that it has been difficult to find a concise term to describe looking at and changing oneself. The term self-control was used to refer to self-application of behavior modification procedures.

However, it soon became evident that the term self was highly biased in our English language. Next we tried personal control. Yet, somehow control evoked images of robots - cold, mechanical 1984isms. With these management tools, people were able to develop an increase in empathy for themselves and others - a warm kindness too dynamic to be described by so mechanical a term...Hence, we have the current descriptive term: personal management. (Duncan, p. 152)

Brigham (1980) indicated that the term self-management is somewhat "less value-laden" and not as "inherently misleading" as the term self-control.

According to Thoresen and Mahoney (1974), self-control is demonstrated when in the "relative absence" of immediate external controls, a person emits a response designed to control the behavior of interest. While this definition limited the criterion of self-control to the
absence of immediate external control, Kazdin (1974) suggested a broader definition. Self-control is the "application of behavioral principles to the management of one's own behavior" (p. 189). Kazdin's definition may include those situations where an individual arranges external contingencies to modify his or her own behavior. Malott (1981) has indicated the difficulty in distinguishing between self-management and management by others and stated that these two procedures are probably on a continuum. According to Malott, self-management can include the involvement of others in one's own contingencies.

Cooper et al. (1987) defined self-management as "the personal and systematic application of behavior change strategies that result in the desired modification of one's own behavior" (p. 517). According to this definition a person is making responses in order to alter the probability that he or she will emit self-specified future responses. Self-management is not demonstrated if the desired change does not occur or if the target behavior would have occurred anyway. Cooper et al. (1987) indicated that self-management can also include more complex behavior change programs in which several contingencies are involved.

Rees, Howard and Rees (1978) suggested that what most people mean by self-management is that given a choice between two conflicting alternatives, we select the one that has long-term benefits for ourselves rather than the one that provides more immediate gratification. Self-control is exercised "when we can identify and manage the variables that control our behavior" (p. 212).
Self-Management Techniques

Self-management techniques are most often employed as a package where combinations of the techniques are put into effect; for example, goal setting with self-reinforcement. However, as discrete techniques, they can be categorized according to the three-term contingency (i.e., antecedent stimulus, response, and consequence):

1. The first class involves several antecedent stimulus control techniques. The individual learns to engage in behaviors that precede the target behavior – the behavior to be changed. These techniques include self-initiated goal setting and self-initiated environmental planning.

2. The second class of self-management techniques involves the target behavior itself and includes self-recording.

3. The third class of self-management techniques involves self-initiated consequential control and includes self-reinforcement and self-punishment.

Stimulus Control Techniques for Self-Management

When a person "arranges the antecedent stimulus conditions in his/her environment to increase or decrease a given behavior, his/her self-management effort involves a stimulus control strategy" (Cooper et al., 1987, p. 521). Stimulus control strategies are sometimes referred to as "environmental planning" in the self-management literature (Bellack & Schwartz, 1976; Thoresen & Mahoney, 1974). Thoresen and Mahoney (1974) suggested that through a process known as "environmental planning", the
Individual can prearrange the environment so that either the cues that precede a behavior or the consequences that follow it are changed. Environmental planning can be done by providing extra cues for desired behavior, or confronting oneself with stimuli that successfully control the desired behavior (Cooper et al., 1987). Skinner provided an example of this strategy:

Ten minutes before you leave your house for the day you hear a weather report: it will probably rain before you return. It occurs to you to take an umbrella (the sentence means quite literally what it says: The behavior of taking an umbrella occurs to you), but you are not yet able to execute it. Ten minutes later you leave without the umbrella. You can solve that kind of problem by executing as much of the behavior as possible when it occurs to you. Hang the umbrella on the doorknob, or put it through the handle of your briefcase, or in some other way start the process of taking it with you. (1983, p. 240)

Situational induction.

Situational induction is changing the environment in such a way that an undesired response is less likely (Cooper et al., 1987). An example is a smoker who throws out her/his cigarettes. Another technique is restricting the stimulus conditions for an undesired behavior. Martin and Peer (1983) reported the successful use of this technique by a smoker who limited his smoking to the bathroom. After one month, he had given up smoking altogether.

Self-initiated goal setting.

Selecting a personal goal is an important step in self-management. Focusing on a single goal improves the chance of success and increases the
probability of working on other goals. The goal to be worked on should be
defined behaviorally so that progress towards it can be measured

**Self-Recording**

Self-recording, self-monitoring, self-observation and
self-assessment are described in the self-management literature almost
synonymously. These techniques refer to systematically observing and
recording one's own behavior. Self-recorded data provide the individual
with concrete feedback regarding behavior. It is cost-effective compared
to hiring trained observers and it is the only method of obtaining
information on private inaccessible behaviors. As Skinner (1974) stated,
"the person with whom we are most familiar is ourself" (p. 7). In addition,
self-monitoring minimizes the unwanted effects of observers being
present in the instructional setting.

In the past, self-recording was used primarily as a means of
gathering baseline data (Kazdin, 1974), however, because of its frequently
produced reactive effect, self-recording can function as a behavior change
technique (Rosenbaum & Drabman, 1979). Reactivity refers to the "effects
on a subject's behavior produced by an assessment or measurement
procedure" (Cooper et al., 1987, p.524). It was suggested by Kazdin (1974)
that, the more obtrusive the observation method, the greater the likelihood
of reactivity.

As a self-management and behavior change technique, self-recording
has been successfully used with a variety of behaviors. Increases have
been noted in paying attention in the classroom (Broden, Hall & Mitts, 1971;
Behavior theorists believe that self-recording is effective in changing behavior because it produces self-evaluative statements that serve either to reinforce desired behaviors or to punish undesired behaviors (Alberto & Troutman, 1986). Self-recording could also prompt an individual to behave in a certain way. Cautela (1971) suggested that self-recording could be followed by covert verbal responses that serve as reinforcement. Malott (1981) suggested that self-recording improves performance because of "guilt control". It produces covert guilt statements that can only be escaped by better performance.

Behavior change through self-recording is likely to be effective if the individual is motivated to change, asked to monitor a limited number of target behaviors, and is provided with feedback related to personal goals or standards (Bellack & Schwartz, 1976; O'Leary & Dubay, 1979).

**Self-Initiated Consequential Control**

Arranging to have one's own behavior receive specified consequences according to self-planned contingencies of reinforcement and/or punishment is a fundamental approach to self-management (Cooper et al., 1987).

**Self-reinforcement.**

Skinner (1953) defined self-reinforcement as the "ad lib" administration of a reinforcing stimulus by the organism to itself,
contingent upon emitting a particular response" (p. 230).

Self-reinforcement is one of the primary ways an individual institutes or shapes self-controlling responses. An individual has available a pool of reinforcing stimuli, but he/she uses reinforcement only when a certain behavior meets the criteria he/she set for reinforcement (Skinner, 1953).

It has been demonstrated repeatedly that self-reinforcement can be effective in producing behavior change. Lovitt and Curtiss (1969) compared the academic response rate of a twelve year old student under a teacher-determined contingency for reinforcement, with his rate under a self-determined contingency for reinforcement. The self-selected contingency resulted in a 44% increase in academic response rate over the teacher-determined contingency. Masters and Santrock (1976) repeatedly instructed children to utter one of a variety of verbalizations each time an externally determined criterion had been met. Persistence on the task was significantly greater when children were told to verbalize pride in their work than when they were told to utter neutral statements. Drabman, Spitalnik and O'Leary (1973) and Turkewitz, O'Leary and Ironsmith (1975) used successive steps to gradually transfer reinforcement responsibilities from the teacher to the student in a token economy. Desired changes were maintained throughout the transfer process and finally were maintained by the students themselves.

Negative reinforcement can also play a role in self-management programs through self-determined escape and avoidance contingencies. Malott (1981) described a simple, but effective self-management effort in which he wrote a behavioral contract that required him to practice his drums each morning for fifteen minutes or pay his secretary $1.00. Malott
(1981) further explained:

Our everyday life is full of such avoidance procedures, and yet they don't make us miserable....Don't hesitate to use an avoidance procedure to get yourself to do something you want to do anyway. Just be sure the penalty is small and the response is easy to make (p. 189).

Self-punishment.

Few studies have focused on self-punishment as a self-management technique. Self-punishment is designed to decrease a target behavior and may take one of two forms:

1. A condition whereby a person optionally self-administers some aversive stimulus following a target response.

2. A condition whereby a person optionally removes a positive stimulus after a target response (Thoresen & Mahoney, 1974, p. 93).

Powell and Azrin (1968) designed a special cigarette case that delivered a one second electric shock to the user when opened. A woman stopped her hair pulling by performing fifteen sit-ups each time she pulled her hair or had the urge to do so (MacNeil & Thomas, 1976). James (1981) taught an eighteen year old man who had stuttered severely to use a time-out from speaking procedure. Whenever he observed himself stuttering, the young man immediately stopped talking for at least two seconds. His frequency of disfluencies decreased markedly.
Self-Management in Physical Education

Having student teachers actually do a behavior change project themselves provided a very strong motivational system for the interns (Siedentop 1981). In this project, interns picked a problem, defined it, observed it, provided an intervention, and noted the resulting changes. The behavior change project enhanced the interns’ confidence in their own abilities and made them more sensitive to the behavioral interventions that were applied to them by the university supervisors. Interns were motivated to “accept and to implement the changes the supervision system was attempting to accomplish with them” (Siedentop, 1982, P. 34).

Dessecker (1975) developed a self-management model in a student teaching field experience. The student teachers wore a small tape recorder at the waist, underneath a teaching jacket. They recorded one lesson per day, coded it the same day, and sent the resulting data to their supervisor. Once per week a seminar was held on campus where the data were used as a basis for consultation and the next week’s goals set. While certain behavior categories could not be used due to the audio recording format, the model accounted for important changes in those categories coded.

A personalized goal-setting technique has been used by a teacher who already had quality teaching skills (McKenzie, 1981). The teacher decided that he would like to reduce his use of “OK”, increase the rate of interaction with students on a first name basis, and increase the amount of positive specific feedback statements. The intervention procedure consisted of goal-setting by the teacher and feedback from an inservice trainer. The intervention was successful for all three behaviors. Follow-up observations one year later indicated response maintenance and
transfer of training for the three behaviors. It should be noted that the intervention in this study included feedback from an "external source" (i.e., inservice trainer).

Rushall and Smith (1976) used a self-recording procedure to change the instructional behavior of a swim coach. The self-recording procedure increased rates of verbal reward and increased rates and variety of feedback statements by the coach. Follow-up observations two months later showed a response maintenance for the target behaviors. Self-recording was used to change the behavior of another swim coach (McKenzie & Rushall, 1980). Results indicated a tremendous increase in the rate of feedback the coach provided to swimmers, the coach's reactions became much more positive, and the coach initiated interactions with a greater number of swimmers. Environmental planning was found effective in improving the instructional performance of swim coaches and a physical education teacher (McKenzie & Rushall, 1974; McKenzie, Clark & McKenzie, 1981).

**Summary**

This section described the various self-management techniques, their theoretical background, and related research. Although each of the self-management techniques was reviewed separately, in practice they have been employed as a package where combinations of the procedures were put into effect. The relative effect of each self-management technique has not been studied intensively and therefore was not reviewed in this section. A review of studies employing self-management techniques in physical education concluded this section.
CHAPTER III

METHODS AND PROCEDURES

This study examined the effects of a self-management program on interns' (i.e., pre-service teachers) pre-specified teaching behaviors, and their pupils' behavior during field experience in physical education. The main principle of the self-management program is shifting the major part of responsibility for the supervision process from the supervisor and the cooperating teacher to the interns. Interns set their own goals, monitor their progress and initiate interaction with other information and feedback sources (e.g., peers, cooperating teacher, supervisor, etc.). A multiple baseline design across different behaviors, and a reversal design were used to assess the effects of the self-management program on selected dependent variables.

The relevant information pertaining to the methods and procedures used in the study is presented in this chapter as follows:

1. A description of the subjects who participated in the study.
2. A description of the setting in which the study was conducted.
3. A description of the process for selecting the settings and the experimental subjects.
4. A general description of the procedures used for implementing the self-management program.

5. A description of the intervention (i.e., self-management program) including the self-management training and self-management conferences.

6. A description of the target behaviors that were included in the self-management program.

7. A description of the accountability system used for the subjects' performance.

8. A description of the observation systems that were used to record the target behaviors.

9. A description of the method and procedure used to ensure reliability of data.

10. A description of the research design used.

11. A description of the system used for interpreting the data.

Subjects

Thirty nine undergraduate students from the Ohio State University (OSU) served as subjects for this study. Students were majors in the Physical Education Teacher Education (PETE) program, enrolled in secondary core (i.e., physical education for secondary school youth - curriculum and instruction) during winter quarter 1987. The 19 females and 20 males ranged from 21 to 43 years of age. Four of the thirty nine students served as experimental subjects and implemented the self-management program (SMP), while the other thirty five experienced the standard OSU supervision
program (SSP). Four of the thirty five SSP students taught at the same schools with the SMP subjects and served as control subjects (SSC). The general characteristics of the students in secondary core including the SMP, SSC, and SSP subjects are listed in table 2.

The PETE is a highly structured course sequence and consists of a science background series, sports skill series, and pedagogical skill series. All of the subjects had taken the course Behavioral Dimensions of Educational Settings which introduced them to basic principles of applied behavior analysis, including self-management in education. Subjects had also taken a Clinical Experience in Physical Education, and Introductory Core, focusing on the development of the following teaching skills:

1. The development of classroom routines.
2. The teaching and maintenance of class rules.
3. The development of preventive management skills.
4. The techniques and strategies of active supervision.
5. The skills necessary for quick transition of students.
6. Skills in providing specific and equitable feedback.
7. Skills in developing and implementing accountability system.
8. Skills in planning for optimal learning time.
9. Skills in modifying activities to match student skill level.
10. Skills in planning progressions that allow for both success and challenge.
11. Skills in evaluating the above through direct observation.
12. Skills in modifying games to reach specific instructional goals.
The researcher was a doctoral candidate in the PETE program at OSU. He had 15 years of teaching experience and served as a cooperating teacher in a high school, and as a supervisor in a PETE program. The researcher had previous experiences in the use of direct observational techniques and had served as a coder in other studies.
### Table 2

**General Characteristics of Students in Secondary Core**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Sex</th>
<th>Age</th>
<th>Grade Point Average&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Introductory Core Grade&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMP 1</td>
<td>F</td>
<td>24</td>
<td>3.168</td>
<td>3.0</td>
</tr>
<tr>
<td>SMP 2</td>
<td>F</td>
<td>23</td>
<td>2.698</td>
<td>3.0</td>
</tr>
<tr>
<td>SMP 3</td>
<td>M</td>
<td>22</td>
<td>2.439</td>
<td>3.0</td>
</tr>
<tr>
<td>SMP 4</td>
<td>M</td>
<td>24</td>
<td>2.681</td>
<td>3.0</td>
</tr>
<tr>
<td>SSC 1</td>
<td>M</td>
<td>24</td>
<td>2.495</td>
<td>2.7</td>
</tr>
<tr>
<td>SSC 2</td>
<td>M</td>
<td>24</td>
<td>2.734</td>
<td>3.0</td>
</tr>
<tr>
<td>SSC 3</td>
<td>F</td>
<td>22</td>
<td>3.070</td>
<td>3.0</td>
</tr>
<tr>
<td>SSC 4</td>
<td>F</td>
<td>22</td>
<td>2.454</td>
<td>2.7</td>
</tr>
<tr>
<td>SSP</td>
<td>16 M &amp; 15 F</td>
<td>M 24.19</td>
<td>M 2.640</td>
<td>M 3.045</td>
</tr>
<tr>
<td>All Subjects</td>
<td>20 M &amp; 19 F</td>
<td>M 23.97</td>
<td>M 2.815</td>
<td>M 3.021</td>
</tr>
</tbody>
</table>

**Note.**

<sup>a</sup>The cumulative point-hour ratio earned until winter quarter 1987.

<sup>b</sup>Grades are based on a 1-4 scale (e.g., A = 4; A- = 3.7; B+ = 3.3; B = 3.0 etc.)

- SMP - Self-management program (4 subjects)
- SSC - Standard supervision control (4 subjects)
- SSP - Standard supervision program (31 subjects not including SSC)

M - Mean
Setting

The secondary core focused on physical education for secondary school youth, and included the following components:

1. A methods course dealing with curriculum and instruction for secondary school.

2. A curriculum clinical experience, conducted at the university. This experience consists of seven weekly sessions in which students practiced: (a) skill testing, (b) planning the introductory phase of the lesson, (c) modifying games, and (d) using stations in units of instruction.

3. A micro-teaching experience conducted in an urban parochial school (grades 6-8). This experience focused on: (a) lesson planning, (b) providing opportunities for pupils to respond, and (c) analysing skills (i.e., critical elements). The pupil-teacher ratio was 4-6:1 and the content taught was volleyball, basketball, field hockey, or gymnastics.

4. A field experience conducted in an urban or suburban middle/high school. Four students were assigned to each school and taught the same class for fourteen days. This experience focused on: (a) preparation of a unit of instruction, (b) management skills (e.g., observation, organization, discipline), and (c) interaction skills (e.g., use of pupils’ names, provision of feedback). The pupil-teacher ratio was 20-30:1 and the content taught was volleyball, basketball, floor hockey, gymnastics, conditioning, archery, or aquatics.
The field experience began with two school visits on week six and seven of the quarter and included fourteen days of teaching during weeks eight, nine and ten. Each student taught at least one class per day alone. In most schools, interns paired up and team taught another class. In experimental school #1, SMP and SSC subjects taught two 30-minute classes per day implementing the same lesson plan for both lessons. In experimental school #2, SMP and SSC subjects taught one 60-minute lesson per day.

The settings for this study were 11 secondary suburban schools and city schools in central Ohio. Schools were selected by the university coordinator for the secondary school field experience. The experimental settings for the SMP subjects were two city middle schools, with an enrolment of approximately 700 pupils each. Pupils were from lower middle socio-economic status, with a racial balance of approximately 40% black, and 60% white. The experimental settings were selected by the coordinator and the experimenter. The criterion for selecting these settings was providing appropriate conditions for the implementation of a self-management program (i.e., the physical education program was flexible enough, and the cooperating teachers were willing to enable the subjects' initiation in setting goals and changing their own teaching).

The Selection of Subjects and Settings

During the first week of winter quarter, students in Secondary Core were informed by their coordinator about the secondary school field experience. During this class meeting, the researcher was introduced and
made a 30-minute presentation describing the self-management program. The presentation included the following guidelines:

1. A brief summary of the development of the OSU supervision model.
2. A brief description of the OSU supervision research, from which the SMP has derived.
3. The concept of self-management.
4. Some advantages and benefits in implementing the SMP.
5. Some disadvantages and drawbacks in implementing the SMP.
6. Technical considerations: Selection, preparation, implementation and accountability system.

Students were given the option to choose the self-management program during field experience in lieu of the standard OSU supervision program. Students had to inform the coordinator and the researcher about their decision within four days from the presentation. During this time period, students could gather more information about the SMP by arranging a clarification conference with the experimenter.

Although five students selected the option of the self-management program, only four became the experimental (SMP) subjects for this study. One of the five had completed the self-management training but was assigned to the SSP group due to procedural considerations (i.e., experimental schools were not included in the school district chosen by the subject).

The SMP subjects were informed that the supervision process in their group would be different from the process used in the other groups. They
were provided with a general description of the self-management program and the related accountability system. Subjects had the option to withdraw from the program during the first four weeks of the quarter, however none of the subjects used this option.

Students participating in secondary school field experience were assigned to 11 schools by the field experience coordinator at the beginning of winter quarter. There were two, three or four students assigned to each school. The experimental settings were two secondary schools in Columbus Ohio, suitable to accommodate 4 interns each. A major criterion for selecting the school was whether or not it would enable the SMP subjects to initiate their own goals and work independently. Therefore, after selecting the schools, approval for implementing the program was obtained from the cooperating teachers involved.

Implementation of the Procedures

The thirty nine students enrolled in secondary core were divided by the researcher into three different groups for the study purposes:

1. SMP (Self Management Program) - Subjects implementing the self-management program, and evaluated by the researcher (4).
2. SSC (Standard Supervision Control) - Subjects implementing the OSU standard supervision program, supervised by the experimenter, and teaching in the same setting (i.e., school, gymnasium, age level and subject matter) with a SMP subject (4).
3. SSP (standard Supervision Program) - Subjects implementing the OSU standard supervision program, supervised by OSU supervisors and teaching at different (i.e., not at the same schools with SMP Subjects), yet similar schools (31).

**Procedures for SMP Subjects**

All 39 subjects, took the same courses during winter quarter. In addition to this course load, SMP subjects were involved in tasks related to the self-management program. The intervention package and training were presented to the SMP subjects during the second through seventh week of winter quarter (see intervention section). The SMP was implemented during weeks eight, nine, and ten of the quarter in the secondary school field experience.

Behavior change objectives and intervention strategies had been initiated and implemented by the subjects. All lessons were audio tape-recorded by the SMP subjects using a wireless FM microphone system. Data on pre-specified teachers' behaviors and pupils' behaviors were collected by the SMP subjects (i.e., self-recording), their peers (when requested by the SMP subject), the supervisor (i.e., experimenter) and external observers. Data gathered by external observers and by the researcher were used for the evaluation of SMP subjects and for the study purposes. In addition, the researcher used the audio-tapes (after they were used by the subjects) for recording teacher behaviors.

The SMP subjects did not have an access to data gathered by the researcher and/or observers. However, SMP subjects could use the researcher for coding purposes once per week. In order to use this option, a
SMP subject had to specify a target behavior ahead of time (i.e., at least one day in advance) so the researcher could observe the behavior and provide the subject with appropriate data.

Parties involved in the study (i.e., SMP subjects, and cooperating teachers) were provided with the following guidelines concerning the implementation of the SMP:

**SMP Subjects' Responsibilities**

1. Follow the guidelines for field experience, specified in the course Curriculum and Instruction for Secondary School Youth (see Appendix A).
2. Complete the planning components (i.e., lesson plans; unit plan) of the course.
3. Set goals for improving teaching. Goals should commensurate with management and instructional components specified above.
4. Improve teaching performance by using the appropriate intervention (i.e., self-management technique).
5. Record and graph teaching performance.
7. Keep a log describing any conference conducted with a peer, cooperating teacher or supervisor.

**Cooperating Teacher's & Supervisor's Responsibilities**

1. Check and evaluate lesson plans and unit plans.
2. Observe the SMP Subject teaching twice per week (with no provision of feedback, unless initiated and requested by the
subject).

3. Evaluate (data based) the subject's performance.

4. Consult with the subject when conference is initiated by the subject.

5. Intervene when the subject has difficulties in implementing the program.

6. Keep a log indicating any conference conducted with the subject.

During the secondary school field experience, the supervisor conducted one conference per week with the SMP subjects. In these conferences, the subjects specified self-management techniques they had used to improve their teaching. The feedback provided by the supervisor was limited only to topics raised and initiated by the subjects which were related to the implementation of the SMP. The supervisor could comment and provide further suggestions concerning other topics only if he were asked to do so by the subject (subject's initiation). However, the supervisor or the cooperating teacher would have further intervened in the following circumstances:

1. The objective specified by the subject, or the subject's behavior could endanger the pupils' health.

2. The objective specified by the subject, or the subject's behavior was unethical.

3. The objective specified by the subject, or the subject's behavior contradicted the basic goals of the secondary core.
4. The objective specified by the subject, or the subject's behavior had proven to be ineffective over three consecutive lessons.

Each case of further intervention (in reference to #1-#4 above) by the supervisor was documented in a conference log kept by the supervisor or the cooperating teacher, and in the student teacher log.

**Procedures for SSP Subjects**

While there were only four SMP subjects (two in each school) implementing the SMP, all other subjects were supervised according to the standard OSU supervision model used in the secondary school field experience. All students enrolled in secondary core had been observed during the secondary school field experience (i.e., week eight, nine and ten of winter quarter, 1987). The supervisors, using the standard OSU supervision model observed each SSP subject twice per week. Each observation was followed by a conference in which the supervisor evaluated the lesson and provided the subject with feedback and suggestions for further improvement. Goals specified by the supervisors during these conferences were documented by the supervisors, transferred to the experimenter, and were compared to goals set by the SMP subjects.

**Procedures for SSC Subjects**

Four of the SSP subjects were supervised by the researcher at the same settings with SMP subjects and therefore were considered as SSC. Each SSC subject was paired-up with one of the four SMP subjects supervised by the experimenter. Although teaching different groups of pupils, each pair
taught the same content to the same or similar age group at the same setting. Pairs 1 and 2 taught at school A and had two 30-minute lessons per day during the 14 days of experience. Pairs 3 and 4 taught at school B and had one 60-minute lesson per day during the 14 days of experience. Subjects in each pair taught alternating classes (see Table 3), using the same facilities and equipment. Setting and context characteristics for pairing SMP subjects with SSC subjects are listed in table 3.

The SSC subjects had the same supervision process as the other SSP subjects. However, SSC subjects could not interact with SMP subjects on issues related to their teaching, unless interaction was initiated by the SMP subject. SSC subjects could record SMP subjects' lessons and provide them with data and feedback, whenever requested by the SMP subject. The SSC subjects were observed by the researcher twice per week. Data on teacher behaviors and pupil behaviors were collected for evaluation purpose and also for comparison with SMP subjects' performance.
<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade</th>
<th>No of Pupils</th>
<th>Setting of Teaching</th>
<th>Unit</th>
<th>Periods Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMP 1</td>
<td>7&amp;8</td>
<td>24</td>
<td>Gym A</td>
<td>Volleyball</td>
<td>1&amp;3</td>
</tr>
<tr>
<td>SSC 1</td>
<td>7&amp;8</td>
<td>22</td>
<td>Gym A</td>
<td>Volleyball</td>
<td>2&amp;4</td>
</tr>
<tr>
<td>SMP 2</td>
<td>7&amp;8</td>
<td>22</td>
<td>Gym A</td>
<td>Volleyball</td>
<td>2&amp;4</td>
</tr>
<tr>
<td>SSC 2</td>
<td>7&amp;8</td>
<td>22</td>
<td>Gym A</td>
<td>Volleyball</td>
<td>1&amp;3</td>
</tr>
<tr>
<td>SMP 3</td>
<td>7</td>
<td>17</td>
<td>Gym B</td>
<td>Conditioning</td>
<td>1&amp;2</td>
</tr>
<tr>
<td>SSC 3</td>
<td>8</td>
<td>15</td>
<td>Gym B</td>
<td>Conditioning</td>
<td>3&amp;4</td>
</tr>
<tr>
<td>SMP 4</td>
<td>8</td>
<td>23</td>
<td>Gym B</td>
<td>Gymnastics</td>
<td>3&amp;4</td>
</tr>
<tr>
<td>SSC 4</td>
<td>7</td>
<td>20</td>
<td>Gym B</td>
<td>Gymnastics</td>
<td>1&amp;2</td>
</tr>
</tbody>
</table>
Intervention

The SMP subjects chose the program in the second week of the quarter. The instructional package and training for the SMP were presented during the second through seventh week of the quarter. During this period, subjects completed a self-instructional module on self-management techniques, practiced these techniques during a micro-teaching experience in an elementary school, and practiced self-recording in the PETE research laboratory. In addition, there was a weekly one hour conference, including the researcher and the four SMP subjects, held on Friday afternoons of the fourth, fifth, sixth and seventh week of the quarter. In this conferences, participants had shared ideas and impressions concerning the implementation of the self-management program. This part of the intervention (week 2–7) preceding the field experience was termed "self-management training." Guidance provided by the researcher in the weekly conferences during the field experience period (week 8–10), was termed "self-management conference." Time table for the implementation of intervention is described in Table 4.
### Table 4

**Time Table for the Implementation of Intervention**

<table>
<thead>
<tr>
<th>Week</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Presentation of SMP</td>
</tr>
</tbody>
</table>
| 2    | Completing the self-instructional module  
|      | PS #1 - Clarification conference |
| 3    | Micro-teaching practice #1 |
| 4    | Micro-teaching practice #2  
|      | PS #2 - Mini SM projects |
| 5    | Micro-teaching practice #3  
|      | PS #3 - SM literature |
| 6    | PS #4 - The SM sequence |
| 7    | PS #5 - Self-recording |
| 8    | Within observation conference #1 |
| 9    | Within observation conference #2 |
| 10   | Within observation conference #3 |

**Note.** PS - Practice session conducted at the university laboratory.
**Self-Management Training**

The self-management training included the following components:

2. A clarification conference with the researcher on the self-instructional module, and first practice for the implementation of self-management in teaching.
3. A guided practice of basic self-management techniques in a micro-teaching experience in an elementary school.
4. A guided practice (i.e., practice session) for the implementation of the SMP in teaching.
5. Written materials describing the rationale of self-management in teaching, and examples of implementing the SMP.

In addition, all students in secondary core were trained by the coordinator in observing and coding teaching.

**Self-instructional Module**

The self-instructional module for self-management introduced five basic self-management techniques: (a) self-reinforcement, (b) self-punishment, (c) self-recording, (d) self-initiated goal setting, and (e) self-initiated environmental planning. The module consisted of the following components:
Instructional manual, which provided instructions to students on using the module.

* A study guide, which included instructional materials of the module itself, and feedback on exercises provided in the exercise sheets.

* Enrichment book, which included additional information concerning self-management.

* A collection of hypothetical applied examples describing the use of self-management in teaching.

* Exercise sheets, designed to evaluate students' mastery of the instruction provided in the study guide.

The instructions within these materials were sequenced in a systematic order. They were self-paced so they could be followed consequentially and there were opportunities to review materials until mastery was achieved. Each section in the study guide presented a different self-management technique. Definition and critical elements were provided for each technique. After reading the introductory part, the student was instructed to read some applied examples described on different cards. The reader had to identify the example describing the corresponding self-management technique and specify the appropriate critical elements characterizing this technique on the exercise sheets. From the exercise sheets the reader was "sent back" to the study guide and read the feedback for the exercise. A minimum of 80% mastery allowed the reader to begin the next section, whereas failing to reach 80% mastery resulted in additional reading and retaking the exercise. The enrichment
book includes selective reading and some research findings related to the self-management techniques. The reader was "sent" to the enrichment book for further practice, or as an optional enrichment reading. An example of one section in the self-instructional module is presented in Appendix B.

**Practice Session I - Clarification Conference**

A clarification conference including the researcher and the SMP subjects was held at the end of week 2. The purpose of this conference was to ensure that SMP subjects were familiar with the concept of self-management in teaching and with the various techniques presented in the self-instructional module. In addition, some ideas for using self-management during the micro-teaching experience in elementary school, and for changing everyday behaviors were discussed. A permanent product summarizing this conference was provided by the researcher to the subjects (see Appendix C).

**Self-Management Practice During Micro-Teaching**

All students in secondary core participated in a micro-teaching experience held in an elementary school. Micro-teaching is a teaching practice with a small group of "real pupils", focusing on a limited number of teaching skills. During weeks 2-5 students visited the school once per week and practiced micro-teaching. This experience enabled the SMP subjects to practice basic self-management techniques in a controlled environment (i.e., micro-teaching) under the researcher's guidance. Techniques practiced during this experience were:
1. Goal Setting - Subjects set their own behavior change goals. For example: "During this lesson I shall use each pupil's name at least 4 times"

2. Environmental Planning - Subject arranged their surrounding in the gymnasium in a way that led to a desired change in their behavior. For example - Hanging posters on the wall indicating the exact time for closure of the lesson.

3. Self-Recording - Monitoring and collecting personal data. For example - Using an audio-tape to record the number of specific feedback statements during a lesson.

4. Self-Reinforcement/Punishment - Self-administering a stimulus which strengthened/weakened the behavior that it followed. For example: "If I use all pupils' names today I shall inform my supervisor, and progress to a more advanced goal (self-reinforcement).

Practice Session 2 - Presentation of Mini Projects

In practice session 2, SMP subjects presented their self-management mini projects. These projects dealt with changing everyday behaviors through self-management. Each student had a 10-minute presentation describing the target behavior chosen, and the SM techniques used. Each presentation was followed by a discussion in which feedback and further suggestions related to the project were provided by the participants. Table 5 presents the mini projects and the SM techniques used.
### Table 5

**Mini SM Projects for Everyday Behaviors**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Target Behavior</th>
<th>SM Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improving physical fitness (cardio-vascular endurance &amp; arms strength)</td>
<td>Self-recording, graphing &amp; environmental planning</td>
</tr>
<tr>
<td>2</td>
<td>Reducing &quot;you-know's?&quot; during conversation</td>
<td>Self-recording &amp; Self-reinforcement</td>
</tr>
<tr>
<td>3</td>
<td>Speeding-up quiz taking</td>
<td>Self-reinforcement &amp; self-negative reinforcement</td>
</tr>
<tr>
<td>4</td>
<td>Mastering front hand-spring in gymnastics</td>
<td>Self-negative reinforcement</td>
</tr>
</tbody>
</table>

The mini SM projects were a successful experience for understanding the concept of self-management and practicing the various SM techniques because all subjects reported a significant change in target behaviors.

**Practice Session 3 - Literature on Self-Management**

In this session, Mallot's (1981) autobiography on SM was discussed. Some of the SM techniques described in the autobiography were examined as optional techniques for changing teaching behavior. This specific reading was chosen because it introduces a variety of SM techniques in a
persuasive and exciting way.

Practice Session 4 - The Self-Management Sequence

The SM sequence, introduced before as a reading assignment, was discussed and clarified in this session. The SM sequence (see Figure 1) is based on clinical supervision (Goldhammer, 1969), initiated and implemented by the supervisee.

Figure 1. The SM sequence.
The five stages in the clinical sequence of supervision were modified to self-management as follows:

1. Pre-observation - (a) Set goal, specify and define the target teaching behaviors and/or pupils' behaviors that need change; (b) select observational recording strategy (e.g., mini tape recorder, golf counter, etc.); (c) select SM technique (e.g. self-reinforcement, environmental planning, etc.); (d) specify self-contract and consequence.

2. Observation - (a) Self-record, or have peers record the target behavior/s; (b) implement the self-management strategy.

3. Analysis and strategy - (a) Graph data; (b) analyze data; (c) evaluate performance; (d) specify suggestions for improvement.

4. Conference - Consult peers, cooperating teacher, and supervisor, based on analysis and strategy.

5. Post conference analysis - (a) Self-evaluation of the sequence (reflection); (b) completion of the contract (consequence).

The self-management sequence was adapted by the researcher and designed as a lesson plan for the use of the SMP subjects. The SM plan was presented on one sheet and included all stages of the SM sequence, and two blank graphs for plotting data on target behaviors selected by the subjects. It was used by the subjects as an analysis and intervention "tool" for each lesson taught during the field experience. The SM plan is presented in Figure 2.
Self-Management of Teaching Behaviors

Name_________________ Unit Plan_________ Lesson No______ Subject________ In Class____ Date____

My Goal (specify criterion)............................................................................................................

Definition of Teacher's Behavior...

Definition of Pupils' Behavior...

Recording Strategy...

S.M. Technique...

Contract & Consequences...

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Previous</th>
<th>Today Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Previous</th>
<th>Today Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis...........................................................................................................................................

Evaluation........................................................................................................................................

Contract (Consequence) F E D C B A

Strategy (self).................................................................................................................................

Consultation......................................................................................................................................

Next Lesson......................................................................................................................................

Elder (1987) Subjective Evaluation (Reflection)............................................................................

Figure 2. The self-management plan.
Practice Session 5 - Self-Recording

Self-recording was an essential component in the SMP. Subjects had already practiced self-recording during the micro-teaching experience. However, PS 5 emphasized the use of an audio tape, wrist watch, golf counter, and other aids for self-recording. Each subject self-recorded his/her verbal behavior (e.g., use of OK's in a conversation) while the other subjects observed and recorded the same behavior. Inter-observer agreement checks were conducted among the performer and observers to assess the reliability of the subject's self-recording. After a short practice, subjects achieved high agreement scores (i.e., 90%-100%) and experienced the efficiency of the reactivity effect.

The second part of this session dealt with problem solving through SM. The researcher raised some hypothetical problems, typical to the field experience (e.g., management time is too high, difficulties in remembering and using pupils' names, etc.), and had subjects suggest optional SM techniques that could be used to improve teacher's performance and pupils' performance. Subjects were reinforced by the researcher for appropriate suggestions and were encouraged to demonstrate how they could use the suggested techniques to improve their own teaching.

Communication between the subjects and the experimenter, and some final considerations for the implementation of the SMP were specified at the third part of the session.

Self-Management Conferences

During the secondary school field experience (i.e., observation period), the researcher conducted one conference per week with the SMP subjects.
In these conferences, subjects described their objectives for improving their performance and specified the self-management techniques used in order to achieve these objectives. The feedback provided by the researcher was limited only to topics raised and initiated by the subjects and were related to the implementation of the SMP. The researcher could comment and provide further suggestions concerning other topics only if asked to do so by the subjects (i.e., subject's initiation), or if circumstances oblige (see cooperating teacher and supervisor's responsibilities section).
Target Behaviors

The third year of the PETE program at OSU focuses on pedagogical skills, using a sequence of courses, clinical experiences, and field experiences within which the PE majors practice and refine these acquired teaching skills. The subjects in this study had already taken introductory core, within which they learned the generic knowledge, skills and attitudes that are necessary for effective teaching in physical education, and practiced these skills in peer teaching situations.

The secondary core, in which the subjects were enrolled during the experimental period (i.e., winter quarter) dealt with curriculum and instruction for the secondary school. The secondary school field experience focused on planning and managerial skills, and on basic instructional skills. Therefore the target behaviors for the self-management program were related to managerial and basic instructional skills. During the sixth week of winter quarter, the researcher provided the SMP subjects with a list of teachers' behaviors and pupils' behaviors that were subject to change. These behaviors were derived from the objectives of secondary core, and were observable, measurable and precisely defined. Subjects selected a target behavior from the suggested list in each phase of the field experience, and implemented the SMP in order to change the selected behavior. A "central pillar" of the SMP was the subjects' self-selection of target behaviors, with no guidance from the supervisor and the cooperating teacher. It was the subjects' responsibility to decide on the quantity of target behaviors to be treated, and on the schedule for initiating and terminating each intervention.
**Teacher Process Skills (Teacher Behaviors)**

The following teacher behaviors were the potential dependent variables available for the subjects' selection:

* The use of pupils' names in behavioral interactions.
  (a) The frequency of different pupils' names used by the subject in behavioral interactions during the lesson.
  (b) The rate (per 10 minutes) of pupils' names used by the subject in behavioral interactions.

* The use of positive and negative behavior interactions.
  (a) The rate (per 10 minutes) of verbal positive behavioral interactions used by the subject.
  (b) The rate (per 10 minutes) of verbal negative behavioral interactions used by the subject.

* The use of general and specific feedback.
  (a) The rate (per 10 minutes) of feedback with specific information provided by the subject to an individual pupil, or to a group of pupils.
  (b) The rate (per 10 minutes) of feedback with general information provided by the subject to an individual pupil, or to a group of pupils.
  (c) The ratio of feedback with specific information to total feedback statements.

* The rate of modeling (per 10 minutes) the subject used during the lesson.

**Criterion Process Variables (Pupil Behaviors)**

Percentage of total intervals pupils were engaged in management, transition, waiting, knowledge, activity, and off-task behavior were the
potential dependent variables available for the subjects' selection.

Definitions of Target Behaviors

All parties involved in the SMP (i.e., subjects, observers, supervisors) were provided with printed materials including the definitions of target behaviors.

Teacher Behaviors

Use of pupils names.

Each time the teacher mentions a name of a pupil in behavioral interactions with an individual pupil, or with a group of pupils.

Positive behavioral interaction.

Interaction that is initiated on the basis of appropriate behavior and is "looking for the good" in the pupil. It can be directed toward an individual pupil privately or publicly. It can also be directed toward a group of pupils.

Negative behavioral interaction.

Interaction that is initiated on the basis of inappropriate behavior, and focuses on pupil mistakes. It can be directed toward an individual pupil privately or publicly. It can also be directed toward a group of pupils.

General feedback.

Teacher's statement relates to pupil's behavior but does not include precise and specific information (e.g., good job, way to go, etc.).

Specific feedback.

Precise information generated by the teacher about the pupil's behavior (e.g., great job of keeping your arms straight).
Modeling (demonstration).

Using the behavior of an individual (i.e., teacher or pupil) or a group (of pupils) as an example for others to imitate or to avoid.

Pupil Behaviors

Management.

Organizational non-academic tasks, unrelated to instructional activity. During managerial episodes no demonstrations are made, no practice is done, and no observation of performance is made. Pupils have no opportunity to learn the subject matter (Siedentop, 1983). Examples of managerial activities are roll taking, and discussing school events.

Transition.

A managerial episode that occurs within or between activities and is related to instruction. Examples of transitional episodes are moving from one drill to another, and returning a "lost ball".

Waiting.

The period during instructional and practice activities, of no activity and no transition. In this period, pupils are doing nothing that contributes to the goals of the lesson, but are not involved in disruptive behavior. An example is standing in a line prior to performing the straddle vault.

Knowledge.

Listening to instructions, watching a demonstration, questioning and discussing instructional matters. An example is observing the teacher or a pupil demonstrating the forward roll.


**Activity.**

Engaging in motor tasks, or supporting and spotting motor tasks that are related to instruction. An example is dribbling around the gymnasium following the teacher's signal.

**Off-task.**

Engaging in activities that were not instructed or demonstrated by the teacher. Engaging in activities prior to or after practice time allocated by the teacher. Examples of off-task behaviors are talking with a friend while the teacher is lecturing, and shooting to the basket during a passing drill.

**Accountability System**

Accountability refers to "keeping an account of another to see whether it meets specifications" (Skinner, 1974, P. 84). Alexander (1982) and Tinning (1983) had further suggested that in student teaching, the accountability system should consist of three components: (a) keeping an account, (b) comparing performance with specifications, and (c) applying consequences.

All students in the secondary school field experience (i.e., SMP, SSC and SSP subjects) were evaluated by their supervisors at the end of the field experience. A letter grade was assigned to the students, contingent upon the achievement of objectives specified by the course coordinator. Achievement of objectives was assessed by an ongoing recording of students' performance (i.e., teacher behaviors and pupil behaviors observed during the lesson) and reported on the field experience evaluation form (see
Although not provided with ongoing feedback from their supervisor, SMP subjects were evaluated according to the same system used by the other supervisors. SMP subjects were provided with blank evaluation forms prior to the field experience to familiarize them with the criteria for evaluation. It was clarified and agreed (between the subject and the experimenter) that subjects will use SM techniques in order to achieve the specified criteria. The SMP subjects accepted the responsibility for observing and changing their teaching performance. However they were encouraged to use any available source (i.e., peer, cooperating teacher, supervisor, and others) for advice and support.

Observation System

An observation system should always be created for specific purposes within a local program (Seldentop, 1983). The observation system developed for this study reflected the major objectives of the secondary core. The observational techniques used in this study were event recording and interval recording. The target behaviors and their corresponding observational techniques are specified in Table 6.
Table 6
Target Behaviors and their Corresponding Observational Techniques

<table>
<thead>
<tr>
<th>Target Behaviors</th>
<th>Observational Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>The use of pupils' names</td>
<td>Event recording</td>
</tr>
<tr>
<td>The use of behavioral interactions</td>
<td>Event recording</td>
</tr>
<tr>
<td>The use of feedback</td>
<td>Event recording</td>
</tr>
<tr>
<td>The use of modeling</td>
<td>Event recording</td>
</tr>
<tr>
<td><strong>Pupil behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>Management, transition, waiting</td>
<td>Interval-recording</td>
</tr>
<tr>
<td>knowledge, activity, off-task</td>
<td>recording</td>
</tr>
</tbody>
</table>
**Event Recording**

Event recording is a method used for recording the frequency or rate of a well defined behavior. It is frequently done by counting or tallying (i.e., placing a mark) on a coding sheet every occurrence of the target behavior within the observation period (Tawney & Gast, 1984).

Cooper et al. (1987) suggested the following considerations for using event recording:

1. Event recording is an appropriate measurement method for discrete target behaviors that have a clear beginning and ending (e.g., verbal behavior such as praising a pupil).
2. Target behavior should not occur at high rates (e.g., dribbling in basketball).
3. Target behavior should not occur for extended time periods (e.g., staying on task).
4. If observation periods are not constant, the rate of behaviors (i.e., number per minute) should be calculated.

Event recording was used in this study to record SMP subjects’ verbal behaviors and modeling. All lessons were audio-taped by the subjects using the wireless microphone system. After the subjects had used the tapes for self-recording and graphing their behaviors, tapes were delivered to the experimenter. Three trained observers listened to the tapes and recorded the pre-specified verbal behaviors.

Modeling was recorded on-site during all lessons by trained observers. Each time a modeling behavior occurred it was tallied by the
observer on the coding sheet. Coding procedures are further discussed in the "coding instrument" section.

**Interval Recording**

Interval recording is a method used for estimating the number of occurrences and the duration of behaviors. It yielded data on the percentage of intervals in which each behavior occurred during an observational period. Interval recording is used successfully in observing teacher behavior, pupil behavior, and academic learning time and has proven to be highly reliable (Siedentop, 1983). In interval recording, the total observation period is divided into small equal intervals of time and the occurrences or nonoccurrences of a target behavior during each interval are recorded (Tawney & Gast, 1984). A variation of interval recording is the use of behavioral codes when several target behaviors are observed. In this case, interval recording can be defined as observing the behavior in short time periods and deciding what behavior best characterizes that time period (Siedentop, 1983).

In this study, six pupil behaviors were observed. A code was assigned to each target behavior (see observation instrument section). If the target behavior occurred during the interval, observers recorded the appropriate code. Only one behavior that best characterized the time period was recorded for each interval. One target pupil from each class was observed throughout the field experience. The target pupil was selected by the cooperating teacher and was an average pupil in terms of performing and behaving in physical education lessons. Another pupil was selected as a substitute in case of the target pupil's absence or inability to participate.
In order to mark the beginning and end of each interval, an audiotape with one hour "observe" and "record" signals was used. Each observer used a tape recorder with an ear jack and listened to the cueing tape during the entire observational period.

**Observation Instrument**

The observation instrument used in this study was based on the standard ALT-PE coding sheet used for supervision at the Ohio State University (Wilkinson & Taggart, 1984). It was modified by the researcher to reflect the major goals of secondary core. The observation instrument was adopted by the secondary core coordinator for supervision purposes. Supervisors and students in secondary core were trained to use this instrument.

**Observation Codes**

An observation code is a series of symbols or abbreviations used for recording the presence or absence of classes of behaviors or events (Twaney & Gast, 1984). Table 7 describes the target behaviors and their corresponding codes.
### Table 7

**Target Behaviors Codes**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>Use of pupils' names</td>
<td>N</td>
</tr>
<tr>
<td>Positive interaction</td>
<td>+</td>
</tr>
<tr>
<td>Negative interaction</td>
<td>-</td>
</tr>
<tr>
<td>General feedback</td>
<td>G</td>
</tr>
<tr>
<td>Specific feedback</td>
<td>S</td>
</tr>
<tr>
<td>Modeling (demonstration)</td>
<td>D</td>
</tr>
<tr>
<td><strong>Pupil behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>M</td>
</tr>
<tr>
<td>Transition</td>
<td>T</td>
</tr>
<tr>
<td>Waiting</td>
<td>W</td>
</tr>
<tr>
<td>Knowledge</td>
<td>K</td>
</tr>
<tr>
<td>Activity</td>
<td>A</td>
</tr>
<tr>
<td>Off-task</td>
<td>O</td>
</tr>
</tbody>
</table>
The Coding Sheet

The coding sheet used in this study was designed specifically to address the research question. However, it also contained sufficient space for anecdotal comments used for the study and for supervision purposes. The coding sheet presented three types of information: (a) situational, (b) performance, and (c) summary (see Figure 3, 4, & 5).

Situational Information

The situational information presented in the coding sheet included the subject's name, date of observation, setting (i.e., school) for observation, grade taught by the subject, starting and stopping time of observation period, number of pupils in class, observer's name, and other comments related to the content taught and the target pupil observed. A segment of the coding sheet for reporting situational information is presented in Figure 3.

Teacher________Date____School_________Grade___Start___Stop___

No of Pupils_____Observer_________ Comments__________________________

______________________________

Figure 3. A segment of the coding sheet reporting situational information related to the lesson observed (figure was reduced to fit within the required frame).
**Performance Information.**

The performance information presented in the coding sheet provided data on the subject's teaching performance. It included three types of information: (a) teacher behaviors, observed through the event recording method; (b) pupil behaviors, observed through the interval recording method; and (c) observer's anecdotal comments related to the lesson. All three types of data were recorded on the performance information section of the coding sheet. This section consisted of a ten rows time line (five rows on each side of the sheet). Each row is divided into five 1-minute units (see Figure 4-1). Each 1-minute unit is divided into six 10-second boxes (see Figure 4-2) that are used for the recording of pupil behaviors. Six rows above the time line are used for the recording of teacher behaviors (see Figure 4-3). The space at the top of each 1-minute unit (see Figure 4-4) was used to indicate the time and for a brief description of the actual activity. The space at the left side of the time units (see Figure 4-5) was used for anecdotal comments related to lesson.

Pupil behaviors were recorded by observing the target pupil for 5 seconds followed by 5 seconds for recording the behavior that best characterized this period. To be scored as an occurrence, the behavior had to be present during the major part of the "observe period" (i.e., more than 2.5 seconds).

Teacher target behaviors were tallied in the appropriate row (see Figure 4-3). Coding verbal behaviors from an audiotape, coders started a stopwatch and turned the tape recorder on simultaneously. This procedure enabled the coders to tally the target behaviors above the interval recording time line. Modeling was live-coded by the observers and tallied
Pupil behaviors were coded on-site by the observers in the appropriate box on the time line. The code for behavior that best characterized each interval was marked within each box.

A brief description of the actual activity and anecdotal comments related to the lesson were written in the appropriate spaces. These comments provided the researcher with further information about the context of the lesson and any exceptional events that occurred during the lesson.
1 - 1-minute unit
2 - 10-second box
3 - Teacher behavior space
4 - Time and Information space
5 - Anecdotal comments space

**Figure 4.** A segment of the coding sheet reporting performance information during five minutes of the lesson (figure was reduced to fit within the required frame).
Summary Information

The summary information presented in the coding sheet reported the data collected on the performance information section. The summary included the total time of the lesson in seconds, the total time and percent of intervals of each pupil behavior, and the number and rate of teacher behaviors. Figure 5 is a segment of the coding sheet for reporting summary information.

<table>
<thead>
<tr>
<th>Total</th>
<th>Modeling</th>
<th>Interactions</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Sc</td>
<td>Rate</td>
<td>Positive</td>
</tr>
<tr>
<td>T</td>
<td>Sc</td>
<td>Rate</td>
<td>Negative</td>
</tr>
<tr>
<td>W</td>
<td>Sc</td>
<td>Rate</td>
<td>Ratio</td>
</tr>
</tbody>
</table>

Figure 5. A segment of the coding sheet reporting summary information. (figure was reduced to fit within the required frame).

Observation Procedures

All class periods taught by the SMP subjects during the 14-day field experience were recorded by the observers. The observation of pupil behaviors and modeling was done at each one of the two experimental schools as the subjects taught. Coding of teacher behaviors was done at a later time using the audio-tapes obtained from the subjects.
Observers were provided with an observation schedule three weeks before the field experience began. They were expected to arrive at the school 10 minutes before the first observation period. Observers began their coding for each lesson at the time designated by the cooperating teacher as the start of the class. This did not include 5-minute locker changing time. Coding was terminated on the dismissal of the pupils by the subject. Completed coding sheets were delivered by the observers to the researcher at the end of each week.

Audio-tapes used by the SMP subjects were submitted to the researcher at the weekly conference. These tapes were used to record subject's verbal behaviors by two trained observers and the experimenter.

The FM Wireless Microphone System

Subjects participating in the SMP recorded all their lessons using a "Realistic" wireless microphone system (Catalog number 32-1221, Radio Shack) borrowed from the PETE department lab. The system consisted of a crystal-controlled transmitter, a clip-on mike, and a dual conversation receiver which was connected to an audio-tape recorder.

The SMP subjects were responsible for the arrangement and operation of the wireless microphone system in the gymnasium. Because the two subjects assigned to each experimental school taught intermittently, only one system was used in each school. The receiver and the tape-recorder were connected to an AC outlet in the gymnasium. Subjects inserted their marked tapes into the recorder and linked themselves to the system a few minutes before their lesson started. They wore the transmitter on their belt and clipped the mini microphone on their shirt. The observers turned
the tape-recorder on when coding started and turned it off when coding was terminated. Observers also verified that subjects were linked to the system and that reception was clear. At the end of each lesson, subjects took out their tapes and used them for self-recording their verbal behavior at home, before submitting them to the experimenter.

Back-up units and spare batteries were placed in the gymnasium and were used as a guard against equipment failure. Subjects were trained in replacing batteries and checking the system in case of equipment failure or bad reception.

**Reliability of Observation Data**

Reliability of observation data is an essential component of applied behavior analysis. The term reliability has different uses in the literature (Gay, 1981). In this study it was referred to as “The degree to which independent observers agree on what they see and record” (Siedentop, 1983, p. 265). The use of human observers to record the occurrence of certain behaviors requires stringent procedures for determining and reporting the reliability of observations (Baer, 1977; Hawkins & Fabry, 1979). Siedentop (1983) identified the following reasons for insure reliability of observation:

1. To ensure that target behaviors are defined adequately and clearly, enabling other researchers to replicate the study.
2. To control for observer’s bias and observer’s drift (i.e., make sure that changes in target behaviors are due to the intervention and not to observer).
3. To ensure that observational data really reflect the occurrences in class.

Five observers assisted the researcher in coding the SMP subjects. Three observers and the researcher recorded pupil behaviors and modeling on-site in the two experimental schools. Two observers and the researcher coded teacher behavior from the audio-tapes.

The following steps were taken in order to ensure reliability of observation data:

1. Observers learned definitions of target behaviors from printed materials (see Appendix E).
2. Observers familiarized themselves with the coding system and practiced the use of categories and symbols in the coding instrument. The coding instrument (see Appendix F) was similar to the basic ALT-PE system used for supervision of teaching in the PETE program at OSU. Because all the coders participated in this study have completed the course “Supervision of Teaching in Physical Education” including a self-instructional module for using the basic ALT-PE system (Wilkinson & Taggart, 1984), only a minimal training was required on the slightly modified system.
3. Observers practiced observation on a videotape in order to achieve observer accuracy (i.e., the degree to which an observer agrees with pre-coded standards). The tape was coded by the researcher and another experienced observer (reaching 100% inter-observer agreement) so that coders could compare their
data with pre-coded standards. Practice sessions lasted until all observers have met a minimal accuracy criterion of 90%.

4. During the field coding, inter-observer agreement (i.e., the degree to which two independent observers record similar data) was calculated once per week for each observer to ensure that data obtained was reliable.

Results of accuracy checks during practice, and inter-observer agreement checks during field coding are presented in chapter IV.

**Establishing Inter-Observer Agreement**

Inter-observer agreement measures are widely used in applied behavior analysis in order to evaluate the quality of data collected. This study used two different observational recording techniques namely, interval recording, and event recording.

**Inter-observer agreement in interval recording.**

ALT-PE was used in this study as a criterion measure for pupil learning. Interval recording was the method used to measure ALT-PE. Inter-observer agreement in interval recording is calculated by the number of intervals in which the observers agreed or disagreed on the occurrence or nonoccurrence of a behavior (Cooper et al., 1987). The total number of agreement intervals, divided by the total of agreements plus disagreements multiplied by 100 percent, yields the percent of agreement.

\[
\frac{\text{agreement intervals}}{\text{agreement+disagreement intervals}} \times 100 = \text{percent of agreement}
\]
This basic method for calculating inter-observer agreement is commonly referred to as the interval by interval or point by point (Twaney & Gast, 1984).

In this study, pupil behaviors (i.e., management, transition, waiting, knowledge, activity, and off-task) were recorded by trained observers and by the researcher using interval recording. In order to establish inter-observer agreement, two observers (i.e., the researcher and one of the trained observers) recorded the same lesson. The occurrences of behaviors were recorded independently and simultaneously by the two observers looking at the same target pupil. Sitting 3 feet apart, observers could not detect each other's coding, yet used the same timing device (i.e., tape recorder) to synchronize recording. Furthermore, interaction among observers was prohibited during observation periods to avoid the provision of visual or auditory cues.

The scored interval method (Hawkins & Dotson, 1975), also referred to as occurrence agreement was used in this study to establish interobserver agreement. In this method, those intervals in which at least one observer recorded the presence of the target behavior are identified as scored intervals. Those intervals in which neither observer recorded the presence of the target behavior were ignored. The scored interval method uses the basic formula (i.e., agreement intervals, divided by agreement + disagreement intervals, multiplied by 100 percent) to compute interobserver agreement. In this study, percent of agreement was calculated for each target behavior separately. Results of inter-observer agreement for recording pupil behaviors are presented in chapter IV.
Inter-observer agreement in event recording.

Event recording requires tallying all the target behaviors that occur during a certain time period. When two observers record the same behaviors at the same time period, percentage of inter-observer agreement is typically computed by dividing the smaller total by the larger total and multiplying by 100%.

\[
\text{\frac{\text{smaller total}}{\text{larger total}}} \times 100 = \% \text{ of agreement}
\]

This method has often been referred to as the Gross Method for calculating reliability (Tawney & Gast, 1984). The Gross Method should be interpreted cautiously because it does not guarantee that both observers were recording the same occurrences of the behavior (Cooper et al., 1987; Tawney & Gast, 1984).

In this study, modeling (i.e., the use of demonstration) and verbal behaviors were recorded by trained observers and by the researcher using event recording. In order to establish inter-observer agreement, two observers (i.e., the researcher and one of the trained observers) recorded the same lesson. The Gross Method was used to compute the percentage of inter-observer agreement.

The occurrences of modeling behavior were recorded independently and simultaneously by the two observers. In order to overcome the limitation of the Gross Method, occurrences of modeling were tallied on the interval recording coding sheet. This time-sequencing system enabled the researcher to determine whether observers recorded the same behaviors.
The occurrences of verbal behaviors were recorded independently by
the two observers listening to tapes returned from the SMP subjects.
Simultaneous recording of the tapes was not essential because as
permanent products, the tapes could be recorded repeatedly. Occurrences
of verbal behaviors were tallied on the interval recording coding sheet (see
observation instrument section, Figure 4). Observation periods were broken
down into 10-minute intervals. Percentage of inter-observer agreement
was calculated for each 10-minute interval separately. This consideration
assisted the researcher in estimating whether the two observers recorded
the same behaviors (Cooper et al., 1987).

Results of inter-observer agreement for recording verbal behaviors
and modeling are presented in chapter IV.

Research Design

A single subject experimental design was utilized in studying the
change in target behaviors. Single subject designs monitor the
performance of individual subjects during the manipulation of an
independent variable. Single subject design is based on what Sidman
(1960) and others have referred to as baseline logic: The repeated
measurement of behavior under baseline and intervention conditions.
Baseline logic entails three elements: (a) prediction, (b) verification, and
(c) replication. The basic design used in this study was the multiple
baseline. The multiple baseline design was presented by Baer, Wolf and
Risley (1968) as an alternative to the reversal design. This design was
suggested in order to study behaviors that are not likely to be reversed
(e.g., acquired behaviors) or to avoid the withdrawal of an effective intervention. The multiple baseline design is a time lagged series of A-B designs with the baseline condition (A) extended for each succeeding behavior until the intervention (B) is applied. The effect of the intervention may be studied across:

1. Different behaviors of the same subject.
2. Different subjects displaying the same behavior under the same stimulus conditions.
3. Different settings in which the behavior of an individual is performed.

In this study, the effect of the intervention was studied across behaviors. The intervention could not be studied across settings because the implementation of the program for each subject was limited to one setting (i.e., one class in one secondary school).

The reversal design also used in this study entails repeated measurement of the target behavior in a baseline phase and in intervention phase. Experimental control is demonstrated if, whenever a certain variable is applied, the behavior is produced, and whenever this variable is removed, the behavior is lost (Baer, Wolf, & Risley, 1968).

**Multiple Baseline Across Behaviors**

The secondary core coordinator provided the students (i.e., SMP, SSC, and SSP subjects) with a list of objectives they were expected to master during the secondary school field experience. Baseline data on target
behaviors for SMP subjects were gathered by the researcher and the observers. The selection of the dependent variables (i.e., target behavior) from a pre-specified list, and the application of the independent variable to the behavior were initiated by the SMP subjects. It was the subjects' decision to intervene on another behavior, when the level of performance for the behavior under intervention condition reached pre-stated criterion. Because the researcher had no control over the selection of target behaviors, and the order of treatment conditions, continued baseline data were taken for all optional target behaviors.

The three elements of the baseline logic were operationalized as follows: (a) prediction was made when a stable baseline of a target behavior was demonstrated, (b) verification was made if little or no change was observed in the untreated behaviors, and (c) replication was done by applying the treatment to the other behaviors.

Interpretation and Analysis of Data

In single subject designs, data are typically represented graphically throughout the experiment. This allows the researcher and the consumer to analyze the raw data of an individual's behavior as they occur. The visual analysis of graphic data may also yield "serendipitous findings" (Skinner, 1956; Sidman, 1960) which may not be directly related to the original research question.

Visual inspection of graphic data was used in this study to analyze the functional relationship between the treatment package and changes in dependent variables. Twelve optional dependent variables (i.e., six pupil
behaviors and six teacher behaviors) were measured consecutively for each SMP subject throughout the 14-day field experience. Data collected on all twelve behaviors were presented on a separate summary sheet (see appendix G) for each subject. The line graph was the graphic format used for the display of data. Data for each behavior on the summary sheet were plotted graphically for communicating and analyzing the various aspects of behavior change. The function of the graph is to "communicate, in a readily assimilable and attractive manner, descriptions and summaries of data that enable a rapid and accurate analysis of facts" (Parsonson & Baer, 1978, p. 134).

Graphs were analyzed visually to determine whether a meaningful change in the dependent variables (i.e., target behaviors) had occurred, and to what extent any change could be attributed to the manipulation of the independent variable (i.e., SMP). In analyzing the data, the following characteristics of behavioral data were considered:

1. The extent and the type of variability or range in data point values.
2. The level change within the same condition.
3. The level change between baseline and intervention phases.
4. The slope or trend direction of the data path across time.

Although there are no formal rules for inspecting data, the confidence in intervention effectiveness is greater when the effect is replicated a number of times, there are fewer overlapping points between baseline and intervention phases and the effect is abrupt and observed immediately.
following the introduction of intervention (Martin & Peer, 1983; Tawney & Gast, 1984; Cooper et al., 1987).

The qualitative data collected (i.e., observer comments, researcher and subject's logs, goals set by supervisors and subjects) were used by the researcher to aid in interpreting the quantitative data.

Selection of Goals

An important question investigated in this study was whether or not the SMP subjects could set appropriate goals for improving their teaching. In order to address this question, goals set by the SMP subjects were documented and compared with goals specified by the supervisors for the SSP subjects. All supervisors documented the goals they specified to interns under their supervision throughout the field experience. At the end of the experience, goals were submitted to the experimenter. The researcher categorized the goals according to the period in which they were specified, and the unit taught. Comparison and discussion of goals are described in chapter IV.

Self-Evaluation

One component of the self-management sequence was a daily self-evaluation and a summary evaluation of the overall experience. The SMP subjects graded (i.e., letter grade) their daily lessons based on the analysis of data. They also wrote a reflective analysis of their daily performance. The final self-evaluation was based on the list of objectives specified for the secondary core. The SMP subjects graded their performance on each objective, and wrote a summary statement evaluating
their overall performance during the field experience. Self-evaluation of SMP subjects is discussed in chapter IV.

**Evaluation of the Program**

All students in secondary core had the option of choosing the SMP during the first week of the quarter. At the end of the second week, students were given an anonymous questionnaire pertaining to their decision. Students reported whether or not they chose the program, specified two reasons for their decision, and noted other comments relating to the SMP. Information obtained from the questionnaire is discussed in chapter IV.

Each of the four SMP subjects completed a subjective evaluation form at the end of the field experience. In this form, subjects described their own experience, and specified advantages and disadvantages of the program.

The cooperating teachers in the experimental schools completed a form in which they rank ordered the SMP and SSC subjects according to their performance. They also commented on the progress each subject made throughout the field experience. Cooperating teachers' and subjects' comments are discussed in chapter IV.
Summary

This chapter presented the methods and procedures utilized in the implementation of the self-management program. As a summary it can be stated that the program was designed to teach interns self-management skills and reinforce the implementation of these skills in teaching. Interaction between the subjects and their peers, cooperating teacher and supervisor was controlled to determine whether subjects can play a major role in changing their own behavior. Four subjects implemented the self-management program and were observed during a field experience in two middle schools in central Ohio.

The concept of self-management and some basic techniques were introduced to the subjects through a self-instructional module. A series of practice sessions in a laboratory setting and in micro-teaching experience in the field, preceded the implementation of the self-management program in the 14-day field experience.

Six trained observers recorded pre-specified teacher behaviors and pupil behaviors in the subjects' lessons. The methods used for observing these behaviors were event recording and interval recording. Inter-observer agreement was calculated periodically to ensure that data obtained were reliable. A multiple baseline design across behaviors and a reversal design were used to analyze the functional relationships between the treatment package and changes in dependent variables.

Goals set by the subjects were compared with those of other students participating in the field experience under the standard supervision process. Subjects in the self-management program and their cooperating
teachers provided the researcher with a written and verbal evaluation of the program.
CHAPTER IV
ANALYSIS AND DISCUSSION OF DATA

This chapter reports the effect of the self-management program on the teaching performance of four interns. It is divided into six major parts:

1. Quality and reliability of data - The quality of the wireless recording system and results of interobserver agreement calculations are reported, followed by a short discussion.

2. Presentation and analysis of dependent variables - The effect of the SMP on teacher and pupil behaviors is reported followed by discussion of data. A multiple baseline design across behaviors and a reversal design are used to allow visual analysis of the data and to highlight the functional relationship between the independent and dependent variable(s).

3. Goal setting - Goals set by the SMP subjects, and goals specified by the SSP supervisors are reported, compared and discussed.

4. Self-management techniques - The SM techniques employed by the subjects during the field experience are described and discussed.
5. Extension of the program - The extension of the SMP to
   elementary core is described and discussed briefly.

6. Evaluation of the program - Results obtained from a
   questionnaire and evaluation forms are reported and discussed.

Quality and Reliability of Data

Johnston and Pennypacker (1980) suggested the following guidelines
when choosing an observational strategy:

1. The instrument should allow continuous and complete data
   collection.

2. Devices which are sensitive to changes in the response of
   interest are recommended.

3. If human observers are used, they should be well trained and
   periodically recalibrated.

In this study, both human observers and recording devices were used.
In order to ensure that good data were obtained, the following section
describes the quality of the wireless recording system used. Results of
reliability checks are reported and discussed.

Quality of the Wireless Recording System

The purpose of the wireless recording system was to enable the SMP
subjects to record their own verbal behavior during all lessons. Subjects
used the audio-tapes for recording, graphing and analyzing their verbal
behavior. At the end of each week the researcher collected the tapes and
used them for the recording of pre-specified teacher verbal behaviors.

The wireless recording system functioned reliably throughout all lessons. Reception was clear and no interference occurred throughout the field experience. At the beginning of each lesson, the researcher or the assigned coder checked whether the subject was linked to the system, and the system was functioning properly. During each lesson, coders made frequent checks to ensure appropriate functioning of the system.

The transmitter was lightweight (80 g) and did not appear to disturb the subjects' behavior. Subjects had practiced the operation of the system in the practice sessions. Therefore, putting on and checking the equipment before each class took no more than one minute. After the first day of teaching, all subjects reported that they felt comfortable with the cordless microphone. Subjects informed their pupils the equipment worn to improve their own teaching and indicated that the pupils themselves could take part in the SMP by providing their teacher with feedback on certain behaviors.

**Reliability of Data Recording**

In order to ensure that the data obtained were reliable, interobserver agreement checks were conducted both during the observer training and data collection. Observer training was terminated when all observers met a criterion level of 95-100% agreement.

During data collection two teams of observers were used. One team recorded (on-site) pupil behaviors and modeling, and the second recorded teacher behaviors from audio-tapes. The researcher collected data on all the behaviors. This enabled the researcher to conduct interobserver
agreement checks on all coders in the two teams. Methods and procedures used for establishing interobserver agreement are described in chapter III.

Pupil Behaviors

Three trained observers and the researcher recorded pupil behaviors during the 14-day field experience. The researcher conducted three interobserver agreement checks with observer #1, and two checks with observer #2 and observer #3. Checks were conducted once per week when the researcher and the coder were at the school site at the same time.

Interobserver agreement on each one of the six target behaviors was calculated for each observer separately. Table 9 provides a summary of interobserver agreement percentages for all coders, showing the score that each coder attained for each behavior.

Modeling

Interobserver agreement percentages for the three observers who coded modeling behavior were 100% in all reliability checks.

Teacher Behaviors

Two trained observers and the researcher recorded teacher behaviors from audio-tapes. Three interobserver agreement checks on randomly selected tapes were conducted for each observer. Tapes were selected only for subjects (i.e., subject two, three and four) who chose to intervene on at least one teacher behavior. Table 10 provides a summary of interobserver agreement percentages for the two coders, showing the score that each coder attained for each behavior treated by the subjects.
Table 8

Percent Interobserver Agreement of Coders for Pupil Behaviors During Data Collection

<table>
<thead>
<tr>
<th>Coder</th>
<th>Week</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>K</th>
<th>A</th>
<th>O</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>98</td>
<td>87</td>
<td>89</td>
<td>94</td>
<td>88</td>
<td>100</td>
<td>92.7</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>100</td>
<td>82</td>
<td>86</td>
<td>90</td>
<td>85</td>
<td>100</td>
<td>90.5</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>100</td>
<td>80</td>
<td>83</td>
<td>89</td>
<td>90</td>
<td>100</td>
<td>90.3</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>100</td>
<td>92</td>
<td>94</td>
<td>93</td>
<td>94</td>
<td>98</td>
<td>95.2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<td>85</td>
<td>94</td>
<td>99</td>
<td>92</td>
<td>92.2</td>
</tr>
</tbody>
</table>

Note. M = management; W = waiting; T = transition; K = Knowledge; A = activity; O = off-task.

*Both observers agreed that the behavior did not occur during the whole period.*
Table 9

Percent Interobserver Agreement of Coders for Teacher Behaviors During Data Collection

<table>
<thead>
<tr>
<th>Coder</th>
<th>Check</th>
<th>Use of Names</th>
<th>Use of OK's</th>
<th>Specific Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>88</td>
<td>92</td>
<td>96</td>
</tr>
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<td>93</td>
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<td>99</td>
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</tr>
<tr>
<td></td>
<td>3</td>
<td>95</td>
<td>95</td>
<td>99</td>
</tr>
</tbody>
</table>

Note. Interobserver agreement was calculated for each 10-minute interval separately. Results presented in this table are the mean score of intervals for a complete observation period.
**Discussion of Reliability Data**

Based on the results of the interobserver agreement percentages for pupil behaviors, modeling and teacher behaviors, it appears that the observation systems used in this study produced reliable data. All of the interobserver scores were at, or above the criterion level of acceptance (i.e., 80%).

In coding teacher behaviors, observers had six optional categories to choose from. Observers had to decide which behavior best characterized the major portion of a given interval. This timing aspect may account for some disagreements among observers. Throughout the study, agreements on transition and waiting were lower than all other behaviors. This may be explained by the similarity in the definition of the two behaviors. In cases where the two observers did not record a certain behavior throughout the observation period, agreement was considered 100% because both observers agreed on the non-occurrence of that behavior in all intervals. The high agreement scores reported for observer two in week two were a result of the "aerobic" lesson recorded. This type of a lesson was characterized by a very high activity time with minimal transition, waiting, and knowledge, and therefore resulted in 100% agreement.

Teacher and pupil demonstrations were easily identified. The low rate of demonstrations and the teacher's supporting explanation before, during and after performance, contributed to the complete agreement on this category.

Teacher verbal behaviors were recorded from a permanent product and enabled the observers to repeat coding in case of uncertainty. This may account for the relative high agreement scores for teacher behaviors.
It is assumed by the researcher that interobserver agreement percentages for other data collected during this study would have been similar to those inspected. Therefore, it may be concluded that the data on pupil behaviors, modeling, and teacher behaviors, recorded by all observers were reliable.

Presentation and Analysis of Dependent Variables

The main purpose of this study was to determine whether or not interns can self-manage their own behavior during a field experience in physical education. In order to address this research question, the influence of other parties involved in the supervision process was controlled, allowing the SMP subjects to set their own goals, monitor their progress and change their own behavior. This consideration affected the research design by eliminating the option of a planned manipulation of the independent variable by the researcher. Because the SMP subjects were responsible for selecting the target behaviors and initiating and terminating the intervention, the researcher could design the multiple baseline only after data collection. Consequentially, in some cases intervention was applied by the subjects when baseline showed a slight therapeutic (i.e., improving) trend, or intervention was terminated in a countertherapeutic trend.

During the field experience, SMP subjects intervened on three or four target behaviors. In the following section, results of intervention are displayed and analyzed for each subject across different behaviors. Experimental control was determined by comparing target behaviors that
had been intervened upon with those that had not yet been intervened upon. If level was maintained in the baseline phase until the SMP was introduced, and level and trend improved after the introduction of the SMP, then cause-effect relationships were drawn. The strength of the SMP effect was judged by analyzing the following properties of a data series:

**Within Condition Analysis**

1. **Condition length** - The number of data points in each condition.
2. **Estimate of trend direction** - Slope line is accelerating (↗), decelerating (↘), or parallel (—). Trend is therapeutic (+), countertherapeutic (−), or neutral (=).
3. **Trend stability and range** - Generally, if 80-90% of the data points fall within a 15% range of the mean level of all data point values, data may be considered stable (Twaney & Gast, 1984). Range is the difference between the lowest and the highest ordinate values within condition.
4. **Level change** - First and last data points of the condition are identified. The smallest ordinate value is subtracted from the largest value. Change may be therapeutic (+), countertherapeutic (−), or zero (=).

**Between Condition Analysis**

1. **Change in trend direction** - Trend direction is compared between adjacent conditions. The slope of the second condition (B) is compared to the slope of the first condition (A) to determine whether the introduction of B had a positive, negative, or no
effect.

2. Change in trend stability - Trend stability is compared between adjacent conditions.

3. Change in level - The last value recorded under condition A is compared with the first value of condition B. The smallest value is subtracted from the largest, and change direction (i.e., +, -, or 0) is determined.

4. Percentage of overlap - The number of data points in condition B that fall within the range of condition A are divided by the total number of points in B, and multiplied by 100.

**Multiple Baseline Across Behaviors**

The analysis within condition and between condition for each behavior is followed by assessing the replication of effect across the different behaviors displayed for each subject. Probe data for the parallel control subject are displayed, followed by a discussion of data for each subject.

Data presentation and discussion for subject one are somewhat more detailed than for the other three subjects (for exemplifying the visual analysis). Analysis and discussion for the other subjects are based on the same format used for subject one.

**Subject One**

**Data presentation.**

The effects of the intervention on pupil behaviors for subject one are presented in Figure 6. Behaviors treated by the subject are displayed in the first, second and third tier. Behaviors shown in the fourth tier were not treated by the subject.
Figure 6. A multiple baseline across behaviors design showing different pupils’ behaviors for subject 1. Behaviors shown in the fourth tier were not “self-managed” by the subject.
For management (tier 1), the self-management intervention resulted in a positive level change between conditions of \(-14\%\) (from 27.5\% to 14.5\%) of intervals and by the lack of overlap in data points. A stable decelerating-therapeutic trend was maintained during intervention with a more variable trend during maintenance (i.e., graphing only).

The data for off-task behavior provide a good replication of effect as indicated by the level change between conditions (from 7\% to 0\%), with no overlap of data points. This data series is convincing because the baseline trend as evidenced by the last six data points showed high stability and a slight countertherapeutic trend prior to introducing intervention. Furthermore, upon intervention, there was an abrupt change and data stabilized at a 0\% level.

The effect of intervention is replicated again for waiting. Level change between conditions was \(-18\%\) (from 38\% to 20\%) of intervals and there was no overlap of data points between conditions. The introduction of intervention (as evidenced by the first four data points) resulted in a decelerating-therapeutic trend, followed by an almost zero trend with a slight countertherapeutic trend (as evidenced by the last four data points).

Behaviors shown in the fourth tier were not intervened upon (i.e., "self-managed") by the subject. These uninterrupted baseline data series show no abrupt changes in the three untreated variables (except of lessons 5 & 6 in activity). A stable gradual-accelerating trend was maintained for percent of intervals in knowledge. Transition data were variable during the first twelve lessons, stabilizing during the second half of the field experience. The general trend of transition throughout the experience was zero-accelerating. A similar pattern was demonstrated in pupils' activity.
However trend had stabilized at a higher mean level. The increase in percent of intervals in activity demonstrated in lessons five and six may be attributed to the abrupt change in management (see tier 1). In summary, the visual analysis of the four tiers indicates that intervention produced the desired change in target behaviors. Furthermore, baseline behaviors in tiers 2 and 3 changed only when intervention was applied.

**Pupil behaviors for control subject one.**

Pupil behaviors for SSC subject one are presented in Figure 7. This Figure includes behaviors that were treated by the parallel SMP subject (i.e., management, off-task, and waiting). The probe data for the control subject were plotted on the SMP subject’s graphs for comparison purpose. It should be noted that using probe data rather than collecting data on a continuous basis should be interpreted and analyzed carefully.

For management (tier one), probe data for the control subject indicate a direction similar to the SMP subject’s trend. High percentage (36) in lesson one is followed by a gradual therapeutic decrease. The probe data for the SSC subject appear to be more variable than those for the SMP subject. However when abrupt change occurred, it seemed to be reflected in both subjects’ data (as shown in lesson 14, 17, 18, 21, and 22).

The similarity in data direction indicated for the two subjects for management is replicated for off-task and waiting. The probe data for the control subject are more variable and similarity in abrupt changes is replicated in waiting (lesson 5, 9, 10, 13, 14, and 18). The increase in off-task intervals (lesson 14, 17, and 18) for the SSC subject should be noted. During this period, data for SMP subject had stabilized close to zero
Figure 7. A comparison of the performance of subject 1 in the SSC and subject 1 in the SMP. Circles represent probe data for the SSC subject. Dotted line graph represents the SMP subject’s data during baseline, intervention, and maintenance.
percent.

Discussion of data for subject one.

The multiple baseline across behaviors design for subject one indicated that the self-management intervention was effective in changing the percent of intervals in which pupils were engaged in management, off-task, and waiting.

Attributing the decelerating-therapeutic trend in management to the intervention should be interpreted cautiously. Teachers are advised to spend more time on management in the first few lessons in order to establish routines and rules in the class. Therefore it may be argued that the decrease in management was a result of a time lag and completion of the managerial components of the unit. Although the probe data for the SSC subject may support this argument, two points should be highlighted. First, decrease in management was discussed with the SSC subject both by his supervisor and cooperating teachers during supervision conferences. This intervention was believed to have an effect similar to the SM effect in reducing management intervals. Second, the introduction and termination of intervention is followed by abrupt changes in the level of management intervals. Furthermore, the stable therapeutic trend of data during intervention may suggest that the SMP subject had control over the behavior change.

The introduction of intervention to off-task behavior seemed to strengthen the magnitude of change in management (lesson 12, 13, and 14). In order to reduce off-task behavior the subjects minimized activities that were unrelated to the lesson, thus, reducing management behavior. Both the SMP subject and the SSC subject taught the same content and utilized a
similar lesson plan every day. This could explain the similarity in changes described in the data presentation section.

Subject one reported some difficulties in controlling her class during the first few days of the field experience. In order to overcome these difficulties she directly and respectively intervened on management, off-task, and waiting. At the last week of the experience all three behaviors met the secondary core requirements. Moreover, a visual analysis of the behaviors that were not intervened upon by the subject also indicates an acceptable level. Some changes in activity may be attributed to minimizing behaviors that were not related to the content taught. As shown in Figure 6, each reduction in a treated behavior (management, off-task, and waiting) was followed by an increase in activity. Furthermore, when all three treated behaviors were kept at a low level (lessons 15 through 22) activity stabilized at the highest level.

In summary, data indicate that both the SMP subject and the SSC subject had changed pupil behaviors successfully and met the field experience requirements. However, the trend in SMP subject data was more stable and level change between condition was abrupt. These differences can be explained by the type of intervention involved. The SMP subject intervened on each behavior at a time, whereas the SSC subject was exposed to ongoing feedback (on several behaviors) from the supervisor and the cooperating teachers throughout the field experience.
Subject Two

Data presentation.

The effects of the intervention on teacher behaviors for subject two are presented in Figure 8.

The rate of OK's (tier 1) was treated by subject two from the first lesson of the field experience, therefore, no baseline data were taken. The presentation of intervention was followed by a stable and clear decelerating-therapeutic trend that lasted until lesson 6. Level change at this period was -15 (from 20 OK's per 10 minutes to 5). Lessons 7 and 8, and the maintenance condition yielded more variability in data. The termination of intervention resulted in level change (+6) between conditions, followed by a gradual accelerating-countertherapeutic trend.

For specific feedbacks (tier two), the SMP resulted in a positive level change between conditions of +5. Although there was no overlap in scores between baseline and intervention, three different trends may be identified during intervention. First (lesson 5-17), data had stabilized around a rate of 10, with three exceptions (lesson 11, 12, & 17). The second trend (lessons 18-20) was significantly accelerating-therapeutic. A decrease in the rate of feedback statements was evidenced in the last two lessons (21 & 22).

A replication of effect was provided for demonstrations (tier 3). A stable zero-celelerating baseline trend was followed by gradual acceleration-therapeutic intervention trend. There was no overlap of scores between the two conditions.
Figure 6. A multiple baseline across behaviors design showing different teacher behaviors for subject 2.
Teacher behaviors for control subject two.

Teacher behaviors for control subject two are presented in Figure 9. The probe data for the control subject are similar to the data presented for the SMP subject on all three behaviors. Most probe data points "fall" within data paths of the SMP subject. For OK's (tier 1) only two probe data points were presented (i.e., coded by the experimenter) because this behavior was not treated by SSC subject two.

Discussion of data for subject two.

The multiple baseline across behaviors design for subject two indicated that each time the SMP was introduced, a positive change occurred in the target behavior, while untreated baselines did not improve until intervention was applied.

Although no baseline data were taken for the use of OK's, the following may attribute the change in OK's to the SMP: (a) a noticeable improvement had occurred when intervention was applied; and (b) when intervention had been withdrawn, a countertherapeutic change in level occurred, followed by a decaying trend. The variability in OK's (lessons 7&8) during intervention could be a result of a new intervention (on specific feedbacks) applied simultaneously. Subject two had struggled for a while, trying to increase the rate of feedback statements. This may be the reason for neglecting the maintenance of a low rate of OK's.

The variability in trend during the intervention on specific feedbacks reflected the subject's efforts to implement the most effective SM technique. The abrupt change in lessons 18-20 correlated with the subject's report on finding a useful combination of techniques.
Figure 9. A comparison of the performance of subject 2 in the SSC and subject 2 in the SMP. Circles represent probe data for the SSC subject. Dotted line graph represents the SMP subject’s data during baseline, intervention, and maintenance.
The decrease in the last two lessons may be explained by the "game oriented nature" of these two lessons which usually yields less feedback statements than a drill oriented lesson. The same trend was identified in the SSC subject's data.

A visual analysis of demonstrations (tier 3) does not indicate an impressive change. However, changing a very stable low rate (0-1) to a rate of four demonstrations per ten minutes was very significant for subject two.

Both SMP subject two and SSC subject two were considered average students and were graded the same at the end of the field experience. This may indicate that their teaching performance and progress were similar. The data presented in this section deal only with three target behaviors. However, data indicate that similar progress may be achieved through self-management as well as through the standard supervision process.

Subject Three

Data presentation.

Figure 10 describes three teacher behaviors treated by subject three. Baseline for names (tier 1) and OK's (tier 2) showed a slight countertherapeutic trend, whereas for demonstrations (tier 3), baseline trend was zero-celerating. The presentation of the SMP resulted in a positive effect over baseline as evidenced by level change between conditions of +6 in names, -10 in OK's, and +2 in demonstrations. There was no overlap in scores between baseline and intervention conditions in all three behaviors. A stable therapeutic trend was maintained during intervention until intervention was terminated. During maintenance the
Figure 10. A multiple baseline across behaviors design showing different teacher behaviors for subject 3.
Figure 11. A comparison of the performance of subject three in the SSC and subject three in the SMP. Circles represent probe data for the SSC subject. Dotted line graph represents the trend of the SMP subject's data during baseline intervention and maintenance.
trend for names was variable with the lowest (9-10 names) data points overlapping the lowest intervention point and the highest point (29) exceeding the highest intervention point (20). For OK’s and demonstrations maintenance followed the stable intervention trend (it should be noted that demonstrations maintenance included only one data point).

Teacher behaviors for control subject three.

Teacher behaviors for SSC subject three are presented in Figure 11. For names, the highest (10 names) data points of the SSC subject overlap with the lowest points of the SMP subject. For OK’s, only three observations were conducted in which all scores were between 14 to 19. This relatively stable rate contrasts the gradual therapeutic-deceleration in the SMP subject’s data throughout the field experience. In the first lesson, SMP subject three used 30 OK’s per 10 minutes whereas in the last lesson he used only 3. Probe data for demonstrations show no change for the control subject, and they remained less than 1 in lessons 10-14, when data for the SMP subject had leveled between 3 to 4.

Reversal design for feedback provision.

The analysis of data on specific feedback provision yielded an interesting outcome. According to the SM plan of subject three, he decided to intervene upon the rate of specific feedbacks only three separate times (lesson 2, 8, & 14). Although this kind of non-consecutive intervention contradicted the SMP guidelines, a visual analysis of the graphed data (see Figure 12) showed a strong effect of the SMP. Each brief presentation of intervention resulted in an abrupt increase in the rate of specific
feedbacks. Increase was +12 in lesson 2, +11 in lesson 6, and +3 in lesson 14. The withdrawal of intervention resulted in an abrupt decrease (-11 in lesson 3, and -5 in lesson 9). Each brief intervention was followed by a stable five data point trend. After the first intervention, trend was slightly accelerating—therapeutic (lesson 3–7) and ranged between 1.5 to 3 feedback statements per 10 minutes. After the second intervention, trend had stabilized on an average level of 7.

**Specific feedback for control subject three.**

Probe data on specific feedback for SSC subject three are presented in Figure 13. Only one data point (day 2) “fell” within the parallel SMP subject’s intervention phase. In day two, the SSC subject’s rate of feedback was 2, whereas the SMP subject’s rate was 13. Unfortunately, data on specific feedback were not taken for the control subject during the other two interventions of the SMP subject (day 8, & 14). Probe data for the control subject show a variable rate with a minimum of two, and a maximum of five specific feedback statements per ten minutes.
Figure 12. Reversal design showing the rate of specific feedback per 10 minutes for subject 3.
Figure 13. Reversal design comparing the rate of specific feedback for SSC subject 3 and SMP subject 3. Circles represent probe data for the SSC subject. Dotted line represents the SMP subject’s data.
Discussion of data for subject three.

Planning activities by SMP subject three during the field experience were well done. This portion included a unit plan and daily lesson plans. Being well prepared for the field experience enabled subject three to direct his intervention to teacher behaviors and to use his pupils as helpers in the SMP (see section "SM techniques"). Good planning and management of the lesson reduced inappropriate pupil behavior and freed more time for the implementation of the SMP during the lesson. As a result, the introduction of the SMP was followed by an immediate positive change as evidenced in all three behaviors (i.e., names, OK's, and demonstrations) treated by the subject.

The low rate of OK's for SMP subject three during maintenance was impressive, especially when compared to the unsuccessful maintenance of SMP subject two. The difference between the two subjects was probably due to the SM technique used. Subject three used his pupils as reminders; a behavior that had generalized to the maintenance condition because it was very reinforcing to the pupils. Subject two had not used this technique and therefore had more difficulties in maintenance.

The probe data for control subject three indicated no major change throughout the field experience. During conferences the subject was encouraged by the supervisor and the cooperating teachers to use more names and demonstrations. However, for these two behaviors, self-management was more effective for SMP subject three than the standard supervision was, for his control subject.

The rate of OK's was not treated during supervision conferences of SSC subject three and therefore was recorded three times only. The
unchanged high rate (14-18) in these three probes may increase the believability of the SMP effect demonstrated in figure 10.

Treating the rate of specific feedbacks by SMP subject three could be considered as a variation of a reversal design. Instead of a brief return to baseline for evaluation and verification of effect, the subject briefly (i.e., one lesson) introduced the independent variable. However, and although not maintained, these three intervention probes showed a powerful effect. It was assumed by the researcher that applying the intervention for three or four consecutive lessons would have stabilized the feedback rate on a higher level. Furthermore, after the second intervention (lesson 8), feedback had stabilized on a much higher level (+5) than before. This increase may be attributed to the brief presentation of the SMP. Because the influence of the supervisor/researcher was controlled during the field experience, he did not intervene or even questioned the subject about his decisions. However, when the experience was terminated, the subject indicated that due to the fitness unit taught, he intervened on specific feedback only in the three lessons where feedback was essential.

The multiple baseline design across behaviors and the reversal design demonstrated the effectiveness of the SMP for improving the teaching behaviors of subject three. A comparison of changes between the SMP subject and the control subject was not appropriate because the timing and length of interventions were not controlled. However, the overall progress of SMP three during the field experience was more impressive according to the data obtained and the final evaluation (see section “grading of teaching performance”).
Subject Four

Data presentation.

The effects of the SMP on teacher behaviors and percent of intervals in activity for subject four are presented in Figure 14. It should be noted that for teacher behaviors the scale of the vertical axis represents rate per ten minutes, whereas for activity it represents percent of intervals.

The multiple baseline design demonstrates the positive effect of the intervention. Level change between baseline and intervention was +10 in names, +14 in activity, -6 in OK's, and +3 in demonstrations. Each presentation of the SMP is followed by a therapeutic change in the target behavior while the other untreated baselines remain stable and zero-celerating.

During maintenance, trends in names and activity had stabilized on a level overlapping with intervention level. In OK's and demonstrations a countertherapeutic change was evidenced.

Teacher behaviors and activity for control subject four.

As presented in Figure 15, the performance of SSC subject four was not impressive. A very low and unchanged rate is evidenced in tier one (names) and four (demonstrations). The rate of names for the SMP subject had stabilized on a much higher average level (i.e., 14-15) than the SSC subject's average rate (4-5). The rate of demonstrations for both subjects was low with a slight increase towards the end of the field experience. Activity data for the control subject were variable, lower, yet similar to the trend for the SMP subject. The use of OK's (24 per 10 minutes) was observed only once because it was not treated during the supervision.
Figure 14. A multiple baseline across behaviors design showing teacher behaviors (i.e., use of names, use of OK's and demonstrations) and pupils behavior (i.e., activity) for subject 4.
Figure 15. Data for SSC Subject 4 compared to performance of SMP subject.
conferences.

**Discussion of data for subject four.**

The multiple baseline design for SMP four indicated a positive effect of intervention. The analysis of tier one (use of names) should be done cautiously because only one data point is presented for baseline. Comparing activity data for the two (SMP & SSC) subjects is interesting because activity time was the major focus in the control subject’s conferences throughout the field experience. Both the supervisor and the two cooperating teachers provided intensive feedback on activity in order to improve the control subject’s performance. Despite this intensive intervention, the change produced by the SMP subject was even more convincing. Therefore it may be concluded that self-management was at least equivalent to standard supervision in improving percent of intervals in activity.

**Summary**

Visual analysis of data for all four SMP subjects indicated that self-management had a positive effect on changing teacher and pupil behaviors. In the multiple baseline design, the positive effect was evidenced by a level change between conditions (especially baseline and intervention) and by the lack of overlap in scores. In most behaviors, a stable therapeutic trend was maintained during intervention. Experimental control was demonstrated for all four subjects because each time they applied the SMP, change occurred in the treated behavior but did not occur in the untreated behaviors. Experimental control was also demonstrated in
a reversal design for subject three. In this design, the introduction of the SMP resulted in an abrupt improvement in the target behavior, and intervention withdrawal was followed by an abrupt deterioration.

Probe data presented for the SSC subjects enhanced confidence that changes produced by the SMP subjects were not due to history or maturation. In addition, these probe data suggested that the effectiveness of the SMP in changing behavior was at least equivalent to the effectiveness of the SSP.
Goal Setting and Consultation

This section describes the major goals set by the SMP subjects during the field experience and objectives discussed in consultation conferences initiated by the subjects and documented in the subjects' logs. Major goals set by the subjects were specified and graphed in their daily SM lesson plans. Minor goals that were not graphed and intervened upon directly are not described in this section. Some goals were set repeatedly until a final criterion was achieved; however, this section describes the terminal criterion only. Goals were cited from the subjects' logs and are given in their words.

The discussion in this section is based on observations of SMP subjects conducted by the researcher, trained observers, and the cooperating teachers. Data and anecdotal comments related to the lesson events are used to discuss the appropriateness of goals set by the subjects.

**Subject One**

Subject one set the following goals during the 14-day field experience:

1. I will use at least 10 different pupil names during the lesson.
2. Reduce management time to 5% or less.
3. Reduce off-task behavior to 0%.
4. Reduce waiting time to 10% or less.
The following were the mutual outcomes of conferences initiated by the SMP subject and conducted with peers, supervisor, or cooperating teacher (the conference partner chosen by the subject is indicated in brackets):

1. Use more demonstrations when presenting a new drill and a new skill (peer).
2. Sit pupils down when changing activities (cooperating teacher).
3. Work on routines in order to have control over the whole class (supervisor).
4. Pupils did not understand the new drill. Stopping the pupils and explaining the drill again could help (peer).
5. In order to enhance control and motivation: Make drills competitive, sit pupils down until quiet, make expectations known to class (peer).
6. Need to look around more and observe the whole class during drills (peer).
7. Provide pupils with feedback on correct performance in a game situation (supervisor).

Discussion of Goals and Consultation for Subject One

All major goals set by subject one dealt with improving management and interaction. Using pupil names was achieved easily by using name tags. By minimizing management, waiting and off-task behavior, subject one established good control and ran the lesson smoothly in an even pace. This approach was effective because it withheld pupils' attempts to "try the new teacher" and transferred their energy to instruction.
Objectives discussed in the conferences reflected the major goals set by subject one. Most objectives related to managerial skills which were the focus of the field experience. Out of seven conferences, four were conducted with the parallel SSC subject, two with the supervisor and only one with one of the two cooperating teachers available. The use of information sources are further discussed in the section "consulting others".

Subject Two

Subject two set the following goals during the field experience:
1. Reduce OK's to less than one per minute.
2. Increase specific feedback statements to one per minute.
3. Increase demonstrations to more than ten per lesson.

The followings were the conferences' outcomes for subject two:
1. Use a list of feedback statements in hand (supervisor).
2. Clear position during game presentation so all pupils can observe (supervisor).

Discussion of Goals and Consultation for Subject Two

All major goals set by subject two were appropriate and reflected her teaching performance. However, it was agreed by the researcher and the cooperating teachers that too much intervention time was devoted to OK's and specific feedback. The subject indicated in her SM plan that reducing OK's will improve her interactions and she will appear more confident. Increasing specific feedback statement was the subject's major goal for the
field experience and therefore was treated for an extended period. Despite the disagreement on timing, it was clear that achieving her goals was a powerful reinforcer for subject two and will probably contribute to her performance in the future.

Only two consultation conferences were conducted by the subject. Both conferences were conducted with the supervisor, and none with the cooperating teachers or peer. These data correlated with the subject's individuality (i.e., minimal interaction with others) demonstrated during the field experience.

Subject Three

The following goals were set by subject three during the field experience:

1. During the lesson I will give 80 specific feedback statements.
2. Minimize management time to less than 10 minutes.
3. In the next lesson I want to mention pupil names at least 100 times.
4. I want to use each pupil name at least one time during this period.
5. I will reduce my OK statements to under 45 during the lesson.
6. I wish to increase the number of demonstrations that I use during the lesson to 20.

The outcome of a consultation conference was:

1. Use another SM technique in addition to the golf counter in order to increase the use of names (supervisor).
Discussion of Goals and Consultation for Subject Three

All goals set by subject three were appropriate and stated in measurable way. Goals reflected the subject's desire to bring interaction with his pupils to an optimum. The subject indicated in his SM plan that achieving these goals resulted in a great improvement in pupil performance. Subject three had set more goals than the other SMP subjects because achieving goals was immediate. This can be attributed to the outstanding planning of subject three.

Only one consultation conference was conducted by subject three during the field experience. The lack of more conferences may be explained by the subject's successful field experience.

Subject Four

Subject four set the following goals during the field experience:

1. I will use 50 specific feedback statements during the lesson.
2. During instruction, I will use pupil names when getting their attention or giving feedback 75 times (attendance does not count).
3. I will increase activity time to 40%.
4. I will reduce OK's to 75 during the lesson.
5. I will use 20 demonstrations during the lesson.

The following were the conferences outcomes for subject four:

1. Make tasks more explicit and pair pupils during practice (field experience coordinator).
2. Plan games and competitions to increase motivation (supervisor).
3. Arrange the gym for better supervision of pupils (supervisor).
4. Make pupils active instead of transition and waiting time (supervisor).
5. Make sure that pupils spot each other (supervisor).

**Discussion of Goals and Consultation for Subject Four**

Subject four made an effort to set as many goals as possible during the field experience. Although too demanding, the goals set were appropriate and reflected the typical problems related to teaching gymnastics (e.g., low activity and high transition and waiting; need for demonstrations). The goals were clearly defined in the subject's SM plan and reasonable criteria for achieving the goals were specified.

Five consultation conferences were conducted by subject four. None of the five was conducted with a cooperating teacher or a peer. Although relationships were outstanding, the cooperating teachers and the parallel SSC subject were not considered by SMP subject four as valuable information sources and therefore were not consulted. All issues discussed in the conferences were related to minimizing transition and waiting and maximizing activity. These goals were well achieved toward the last week of the field experience.

**Consulting Others**

Table 11 indicates which information sources were consulted by the SMP subjects and the number of times used. Analyzing the data in table 11, the following "picture" was drawn: (a) The supervisor was the major information source used by the subjects (10 times); (b) the cooperating teachers were used only once; (c) although the supervisor was used more frequently, data for subject one show that the peer can serve as the major
information and feedback source; (d) the four subjects initiated only fifteen consultation conferences throughout the field experience; (e) the frequency of using others and the type of information source used varied from one subject to another.

Table 10
Information Sources Used by the SMP Subjects During the Field Experience

<table>
<thead>
<tr>
<th>Subject</th>
<th>Supervisor/ Coordinator</th>
<th>Cooperating Teacher</th>
<th>Peer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>1</td>
<td>4</td>
<td>15</td>
</tr>
</tbody>
</table>

The ability to use others effectively was an essential component of the SMP. Therefore, the data presented in this section were very disappointing. Also, according to the SMP, the peer and the cooperating teachers should have been used more frequently. It seemed that "who was"
the peer made the difference in using him/her for consultation. However, contacting the supervisor/coordinator rather than the cooperating teachers could be explained by the supervisor/researcher's direct relation to the SMP and the secondary core program.

Although the use of others was stressed and encouraged several times during the SMP training, it seemed that the subjects perceived fewer initiations as exhibiting greater self-control. This conception may be implicit in the terms self-management and self-control and therefore, much more attention should be paid to explaining, modeling, and practicing the use of others.

Comparison With SSP and Summary

The goals (specified in written documents) most frequently set by supervisors in the SSP were: (a) increase the use of pupil names, (b) increase specific feedback statements, (c) decrease waiting time, (d) vary the pitch of voice, (e) increase demonstrations, (f) insure pupil comprehension of explanation, and (g) increase positive interactions. Less than 50% of the goals specified criterion for mastery. Less than 10% of the goals included intervention strategy and value content (e.g., if you will conduct a skill analysis of the serve, you will be able to vary your feedback statements and increase the rate of specific feedback as a result).

All goals set by the SMP subjects were commensurable with goals set by the SSP supervisors. Furthermore, all goals set by the SMP subjects included criterion for success and intervention strategy.
It may be concluded that all SMP subjects set appropriate goals for improving their teaching performance. Goals were derived from the secondary core requirements, were similar to goals set by the SSP supervisors, and reflected the subjects' concept of teaching and the typical characteristics of the subject matter taught.

**Self-Management Techniques**

The self-management techniques used by the SMP subjects to improve their teaching performance were specified in their daily SM plans. All subjects used the wireless tape-recording system daily to self-record teacher behaviors and other verbal events in the lesson.

For the use of pupil names all subjects self-recorded names with a golf counter and specified a self-contract (e.g., "if I use 15 pupil names this lesson, next lesson I will try to use all pupil names"). Subjects three and four asked their pupils to notify them at the end of the lesson if their name was not mentioned. Names not mentioned were checked in the subjects' list so they could be memorized for the next lesson.

For minimizing the use of OK's during verbal interactions subject two, three and four used self-recording and contract. Subject three and four used their pupils as reminders and asked them to signal each time the subject mentioned "OK".

Increasing the rate of feedback statements was self-managed by self-recording and specifying contracts. Both subject two and three hung posters on the gym walls cueing the provision of feedback. In addition subject two listed optional feedback statements on a clipboard, and set the
watch timer to beep frequently so that feedback statements were prompted. Subject three taped two fingers together so that the strange sensation during the lesson will remind him of providing feedback. Questions from the pupils who wondered about the taped fingers also served as an effective prompt.

To increase the rate of demonstrations subjects used golf counters, self-contracts and posters with the word "Demo". Subjects three and four used their pupils as reminders and asked them to count demonstrations during the lesson.

In order to decrease management, transition, waiting, and off-task, SMP subjects used self-contract, graphing of peer-recording, and public posters. In addition, subject one asked her partner (i.e., SSC subject) to provide her with ongoing feedback related to her performance during the lesson. The partner provided subject one with reinforcing cues (e.g., whispering "well done" or nodding with head) when the lesson was managed effectively, and corrective cues (e.g., pointing at the watch to signal time) when objectives were not achieved.

Increasing activity was managed by conducting a self-contract, graphing data recorded by peers, and hanging cuing posters (e.g., "AT") on the walls of the gym. Subject four taped his arm and drew X's on the floor of the gym. These cues reminded the subject to promptly implement his lesson plan stressing high pupil participation in challenging activities.

Discussion of Self-Management Techniques

As noted in chapter II, in practice, self-management techniques have most often been employed as a package where a combination of techniques
is put into effect. This study investigated the ability of interns to change their own behavior during a field experience. The independent variable was a package of self-management techniques differing somewhat from one subject to another. No attempt was made to study the relative effect of each discrete technique in order to keep the research design as simple as possible, thus controlling for extraneous/confounding variables (e.g., researcher intervention) that could have influenced the subjects.

The wireless tape-recording system was the major self-recording strategy used by the SMP subjects. In addition, subjects had used golf counters and similar checking strategies (e.g., checking events on a piece of paper) to record their behavior. The advantages of the wireless system were high reliability, the production of a permanent product that could be used repeatedly, and the low intrusiveness of the system during the lesson. On the other hand, listening to the tapes at home was time consuming and the system was not sensitive to the non-verbal behaviors of the teacher. Although the golf counters were not highly reliable, collecting data on a specific behavior (e.g., rate of feedback statements) by pressing the counter had an immediate reactive effect on that behavior. Golf counters proved to be useful in recording and changing non-verbal behaviors such as demonstrations. All SMP subjects had tried the combination of the two recording strategies (i.e., wireless system and golf counter) frequently. Although noting that it was time consuming, all subjects indicated that the combination of immediate feedback provided on-site and the delayed verification at home enabled them to better analyze their performance and set appropriate goals for the next lesson.
The self-contract specified by the SMP subjects for each goal included several components of self-management. Subjects defined their goal in observable and measurable terms and set a specific criterion for mastery. Progressing to a more advanced goal was contingent upon achieving the specified criterion. All subjects had indicated that mastery of criterion was a powerful reinforcer for them and failing to attain criterion served as a punisher. They had all agreed that setting their own criterion made reinforcement/punishment even more powerful than criterion set by their supervisor; As subject one stated "now I have nobody to blame but myself".

Using others to manage one's own behavior was an essential component of the SMP. In addition to using others as information sources, SMP subjects had used their pupils and their peers as reminders and reinforcing/punishing sources. For example, questions from the pupils who wondered about the subject's taped fingers or arm were very effective in improving the subject's performance. These kind of experiences were very useful in demonstrating the effectiveness of involving others in the SMP. The subjects learned quickly to share their own SM projects with their pupils. They indicated their own goal at the beginning of each lesson (e.g., today I should use everybody's name at least once) and asked the pupils to help them achieve these goals. All subjects admitted that they hesitated to share their goals at the beginning because they feared it might contradict their image as confident teachers. However, a short statement at the beginning of the lesson saying "we are doing our best so you (i.e., the pupils) can learn more" solved the "confidence problem" and also motivated the pupils as active participants.
During the training period, the SMP subjects were guided (i.e., examples of modifying techniques were provided and discussed) by the researcher to modify the basic SM techniques so they fit their specific goals. Flexibility in the implementation of techniques was also important, as subject two described: "My main emphasis was on specific feedback. At first I tried to use reminders and prompts, but then I realized that I simply did not know what to say. I then tried using a list of critical elements but still had difficulties. This took me to the point of writing down the actual feedback statements, looking at them just before class and using reminders and prompts during the lesson. This worked finally, and my specific feedback statements went up". This example from subject two shows that after learning the basic techniques, one can vary them and select the appropriate one for him/herself. Creativity in self-management had also been proven to be effective. Using special cues (e.g., taping fingers, writing notes, using posters etc.) was effective as a reminder for the interns as well as for motivating pupils. Pupils in interns' classes were looking forward to participate in the next SM project that brought some innovations to their gym.

Extension of the SMP

The SMP subjects had the option to extend the program and implement it partially during Elementary School Field Experience in spring quarter. During this experience all students were assigned to Columbus elementary city schools for eight days, in which they taught at least one lesson per day. The elementary school field experience focussed on planning an
instructional unit, arranging learning environment, and providing skill and behavioral feedback. Because there are no physical education specialists in these schools, students were supervised by the university supervisors only. The SMP was used by the subjects in addition to the supervisor’s feedback and input. Supervisors of the SMP subjects were notified by the researcher about the extension of the SMP. All four supervisors were very supportive and agreed to provide the researcher with feedback on the SMP subjects’ progress. The SM format used by the subjects is described in Appendix H.

All SMP subjects chose the option of self-managing their teaching behavior in conjunction with the standard supervision process. Feedback obtained from the supervisors about the extension of the SMP was very positive. They indicated goals chosen by the subjects were appropriate and commensurable to the goals set by them (i.e., the supervisors).

In two cases the use of SM was extremely significant. The first case was disagreement between the subject and the supervisor about the rate of pupil names used during the lesson. The subject claimed that more names than recorded were used. Self-recording by the subject in the following lessons yielded improving results: The rate of names (as recorded by the supervisor) used by the subject increased, and the subject agreed with the results obtained. This example demonstrated the reactivity effect of self-recording and its effectiveness in the supervision process. The second case involved a setting (i.e., three interns in one school) of a supervisor who had some communication difficulties (as defined by the course coordinator) that limited the quality of the supervision process. The use of SM by the SMP subject assigned to this group was described as very useful in the subject’s log: “Overall I feel that the use of SM has helped me the
most this quarter because of the communication problem regarding the professional to which I was assigned. Despite the problem I was able to have a positive and rewarding experience due largely to the knowledge of self-management.

In summary, the purpose of extending the SMP to the elementary school field experience was to observe the subjects' performance in a less controlled settings where they were provided with feedback from the supervisor and peers as well as managing their own behavior. According to the supervisors' evaluation, all SMP subjects met the field experience requirements successfully (i.e., three were graded "A" and one was graded "B+`). All subjects indicated that the combination of self-management and standard supervision was successful and prepared them well for the final field experience - student teaching.

Evaluation of the Self-Management Program

The evaluation of the SMP is based on feedback obtained from the major consumers of the program - the SMP subjects. This section includes the following components:
1. A description of reasons for selecting/not selecting the SMP by the students in secondary core.
2. Grading of students' teaching performance during the core year.
3. An evaluation of the program by the SMP subjects.
4. An evaluation of the SMP by the cooperating teachers.
5. Discussion of the four components.
Selecting the Self-Management Program

All students in secondary core had the option of selecting the SMP after it was introduced in a short presentation in class. Five students informed they would like to take part in the program (however, only four were included, as explained in chapter III) and the other thirty four decided not to select this option. In a questionnaire given a few days after decisions were informed, students were asked to specify two reasons (some students specified only one reason) for selecting or not selecting the SMP. Twenty five different reasons were specified by the thirty four students who did not select the SMP. The following were the most common reasons for not selecting the program (The number in brackets represents the number of students that specified the same reason):

1. I was not sure what will be involved in the SMP. It was not stated very clear (8).
2. Too time consuming (6).
3. I am not ready to be independent (6).
4. I want feedback from someone who is trained to provide it (5).
5. I want to be more sure that I am doing things properly before trying it on my own (3).
6. I want to have the feedback/critic available now, whereas later I will not have it. Than I can practice SM (3).
7. I want to gain experience before being "self-managed" (2).
8. I want feedback from people who have much more experience than me (2).
9. I was not sure how this would affect my grade (2).
Each of the other sixteen reasons was specified by one student only. Although most of these sixteen reasons were similar to the nine reasons described above, some were exceptional. For example: "I want some structure in this field experience, after all I am paying for it"; "I have felt like an item for someone else's research and I would rather not this time"; "It is my belief that god can help me in SM".

The five students who selected the SMP specified eight different reasons for their decision:
1. I will challenge my talent as a physical educator (2).
2. I want to be able to help myself in the teaching program before I start to apply for a teaching job (2).
3. I am my own worst critic and feel I tend to react more readily to self-generated criticism.
4. I am interested in behavioral psychology.
5. I work better on an individualized basis.
6. I need to learn better SM skills.
7. It will help me to be more organized.
8. I will get feedback on my own teaching without someone coding me.

Grading of Teaching Performance

During the core year (i.e., the third year of the PETE program) all students were graded on their teaching performance in peer-teaching during Introductory Core (Autumn), a field experience in a secondary school (Winter), and a field experience in an elementary school (Spring). Table 12 describes the subjects' cumulative grade point average before Winter quarter and their teaching grades in introductory core, secondary core and
elementary core. Individual grades for SMP subjects and SSC subjects are described separately. Means of grades are displayed for SSP subjects separately and for all (SMP, SSC, & SSP) subjects.
Table 11

Teaching Performance Grading of all Subjects During the Core Year

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Grade Point Average(^a)</th>
<th>Introductory Core Grade(^b)</th>
<th>Secondary Core Grade(^c)</th>
<th>Elementary Core Grade(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMP 1</td>
<td>3.168</td>
<td>3.0</td>
<td>3.3</td>
<td>4.0</td>
</tr>
<tr>
<td>SMP 2</td>
<td>2.698</td>
<td>3.0</td>
<td>3.0</td>
<td>3.7</td>
</tr>
<tr>
<td>SMP 3</td>
<td>2.439</td>
<td>3.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>SMP 4</td>
<td>2.681</td>
<td>3.0</td>
<td>3.7</td>
<td>3.3</td>
</tr>
<tr>
<td>SSC 1</td>
<td>2.495</td>
<td>2.7</td>
<td>3.3</td>
<td>3.7</td>
</tr>
<tr>
<td>SSC 2</td>
<td>2.734</td>
<td>3.0</td>
<td>3.0</td>
<td>2.3</td>
</tr>
<tr>
<td>SSC 3</td>
<td>3.070</td>
<td>3.0</td>
<td>3.3</td>
<td>4.0</td>
</tr>
<tr>
<td>SSC 4</td>
<td>2.454</td>
<td>2.7</td>
<td>2.3</td>
<td>3.7</td>
</tr>
<tr>
<td>SSP</td>
<td>M 2.840</td>
<td>M 3.045</td>
<td>M 3.419</td>
<td>M 3.748(^d)</td>
</tr>
<tr>
<td>All Subjects</td>
<td>M 2.815</td>
<td>M 3.021</td>
<td>M 3.382</td>
<td>M 3.749</td>
</tr>
</tbody>
</table>

Note.

\(^a\)The cumulative point-hour ratio earned until winter quarter 1987.

\(^b\)Grades are based on a 1-4 scale (e.g., A = 4; A- = 3.7; B+ = 3.3; B = 3.0 etc.)

\(^c\)Grades for field experience only.

\(^d\)SSP subjects (33) in elementary core included the SSC subjects (4), and excluded two SSP subjects that did not take this course.

SMP - Self-management program (4 subjects)

SSC - Standard supervision control (4 subjects)

SSP - Standard supervision program (31 subjects not including SSC)

M - Mean
Self-Evaluation

A comparison of SMP subjects' self-evaluation and supervisor's evaluation is presented in Table 13. Subjects' self-evaluation included grades assigned for all lessons taught (i.e., average of daily grades), and a final grade assigned at the end of the field experience. The supervisor's grade for each SMP subject included the evaluation of the cooperating teachers.

Table 12

A Comparison of Self-Evaluation of Teaching Performance by the SMP Subjects and Supervisor's Evaluation

<table>
<thead>
<tr>
<th>Subject</th>
<th>Average of Daily Grades</th>
<th>Final Grade&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Supervisor's Final Grade&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMP 1</td>
<td>3.7</td>
<td>3.8</td>
<td>3.3</td>
</tr>
<tr>
<td>SMP 2</td>
<td>2.0</td>
<td>3.6</td>
<td>3.0</td>
</tr>
<tr>
<td>SMP 3</td>
<td>3.7</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>SMP 4</td>
<td>3.8</td>
<td>3.9</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Note.
<sup>a</sup>Average of grades for achieving secondary core objectives.
<sup>b</sup>Supervisor's grade includes the cooperating teachers' evaluation.
Evaluation of the Program by the SMP Subjects

All four SMP subjects provided the researcher with written feedback concerning their experience in the SMP. The major issues raised by the subjects are summarized in this section and followed by some citations brought in the subjects’ own words.

All subjects noted that the implementation of the SMP required an extra amount of work — “Long hours of extensive planning, thoughts, research and extra material and work were needed to complete the SMP” (subject three); “I thought that it was quite a bit of work (subject one).” Regarding the amount of work, all subjects indicated that they felt they were doing it for themselves rather than for someone else and that it increased their confidence in teaching — “It was for my own benefit” (subject four). “I was able to teach effectively without an individual looking over a shoulder and helping, correcting, and simply taking over the class in hard times or troubled situations” (subject three).

All subjects indicated that the SMP helped them to achieve the teaching objectives required for the field experience — “In regards to the seven questions that were given at the beginning of the experience, I feel that I fulfilled each of them” (subject three); “When I was dealing with SM I improved the number of names used during instruction, increased activity time, increased specific feedback, and decreased my OK’s during instruction” (subject four). Subjects noted the importance of setting goals for themselves and learning how to achieve those goals — “I learned how to set and achieve my own goals without being pushed or directed” (subject two).
The two subjects assigned to school B indicated that the SMP was very effective because it helped them overcome some "differences of opinions" (subject three & four) with the cooperating teachers - "Ever since day number one when we had to observe the classes being taught, I was surprised to see the class ran by the two cooperating teachers yelling at pupils, having about 10% activity time during the hockey game that was being played, and throwing out negative feedback statements while engaging in many backgammon games during the whole period. I was not sure just how the pupils were going to act when we took over the class and started giving positive general and specific feedback statements....I almost received the idea that there were not any good pupils in the class. With the 'fact of all bad pupils in the class', I planned my conditioning unit so that it was different and challenging....The pupils seemed to enjoy the different activities that were planned. This contradicted the statements of the cooperating teachers that the pupils would get bored and not work unless everything was the same and there were weights involved. Thus, I planned the opposite and omitted weight lifting due to my lack of experience and access to only free weights" (subject three).

The overall evaluation of the SMP by the subjects was extremely positive. They all indicated that the program taught them how to control their pupils' behavior as well as their own behavior - "I think that this SMP was a very helpful program. It has taught me different ways to intervene on my own behavior without the help of anyone. So if needed, I can monitor myself without any help and change and correct my teaching behaviors" (subject one). "My overall experience was great....I am glad I went with the SMP because it has changed the way I look at solving problems with my
behavior" (subject two). “I was very glad that I volunteered for the SMP.... I feel that it bettered my skills on how to change my behavior on my own, effectively....In closing, I would like to thank those who introduced me to the 'real' world of teaching through the use of self-management techniques” (subject three). “Due to the use of SM I established myself as a competent teacher who cared about physical education for all pupils and had no major problem in teaching them” (subject four).

**Evaluation of the Program by the Cooperating Teachers**

The two cooperating teachers in each one of the two experimental schools provided the researcher with a written feedback concerning the SMP. Generally, the feedback provided by both teachers in each school was very much alike.

Both teachers in school A indicated that the SMP was very effective. They were both impressed with the "drastic improvement" of the SMP subjects. However, they specified some suggestions for further improvement of the program. Teacher one wrote: "For it to be more successful the students must be more aggressive in initiating interaction with cooperating teacher....There were times when I felt my hands were tied, wanting to offer suggestions. They need to initiate more discussion!”. Teacher two added: "I felt more comfortable with the normal approach than the SM approach. The students do not seem experienced enough in actual situations to evaluate their own teaching. They improved noticeably, however, and I was satisfied with their work”.

Both teachers in school B rated the SMP subjects' progress during the field experience as outstanding. They indicated that the SMP can be very
effective but "it really depends on the kind of student you have". Teacher two added: "It might work but they (the interns) will never be able to make it without the cooperating teacher's help"

Discussion of the Program Evaluation

Selecting the SMP

Eight (20.5%) of the students in secondary core indicated that they had not selected the SMP because it was not quite clear to them. This reason is highly acceptable because (a) the program was introduced in a 30-minute presentation which was not sufficient to provide them with a comprehensive knowledge of its components, and (b) students were not ready to try a new experience when their grades were contingent upon their performance. Although the researcher and the secondary core coordinator foresaw this limitation ahead of time, they had decided to allocate the minimal time for the presentation because of the hectic schedule and the small number of subjects required for the study. An additional and more comprehensive presentation was planned in case of insufficient number (i.e., less than three) of volunteers to the SMP.

Most other reasons for not selecting the SMP were related to the conception that feedback from a professional source is essential at this stage of the program. Although the SMP stresses the use of professionals, many students admitted during the conference that they prefer the supervisor's or the cooperating teacher's initiation not only because they "know better" but also because "they are going to grade us after all". This standpoint supports Goldhammer's (1969) notion that student teachers learn how to please their supervisor in order to improve their grade.
Eight different reasons were specified by the five students who selected the option of SMP. Four of the eight reasons suggest a tendency to rely on the self rather than on others. The other four do not indicate any commonality. A possible explanation of reliance on oneself could be in the students' past experience in the educational system. This assumption is supported by data obtained from the questionnaire: All five SMP subjects claimed that they have not been evaluated objectively in some cases during their studies while only 50% of the other subjects claimed the same.

Grading of Teaching Performance

Grades of all SMP subjects correlated with the mean grade for all students in introductory core. This may indicate that SMP subjects have acquired the basic teaching skills and were ranked as average prior to the secondary core. The SMP subjects' grades for secondary core were not identical as in introductory core. However, grades indicate that all subjects achieved the field experience objectives while implementing the SMP. Furthermore the average grade of the SMP subjects (3.500) was higher than the average of the SSP subjects (3.419). Similar results were obtained in elementary core where SMP subjects' grades averaged (3.750) slightly higher than the average grade of all SSP subjects (3.748). In this experience SMP subjects were assigned to four different groups and were graded by four different supervisors. The successful experience of the SMP subjects in elementary core may suggest that the SMP in secondary core contributed to their progress as well as the SSP did for the other students.
Self-evaluation.

As shown in Table 13, the average daily grade was lower for all subjects than the final grade. The relatively lower grades for the first few lessons contributed to these differences. Subject two graded "zero" three of her initial lessons (which affected her average) because she did not attain a satisfactory criterion for specific feedbacks. However, her final evaluation reflected the significant improvement in provision of feedback, and other behaviors.

Table 13 indicates that subjects' 1, 2, and 4 grades were higher than the supervisor's grade. These differences could be explained by the accountability system involved (see chapter III). Although the SMP subjects were encouraged by the researcher to grade their own performance, no further training for self-evaluation was provided. It is assumed by the researcher that self-evaluation training (e.g., reliability checks during training) could improve the reliability of self-evaluation.

Evaluation of the Program by the SMP Subjects

The positive evaluation of the SMP by all subjects was enhanced by extending the program to elementary core voluntarily. Although all subjects noted the intensive work involved in the program, they dedicated additional time for writing evaluation documents that were thoughtful and well planned. The evaluation was specific and included value content. Subjects described their gains from the program by specifying their criteria for success.

The additional amount of work for the SMP subjects was a result of the special circumstances of the study. The SMP subjects had to learn a
new concept and techniques that were not an integral part of the secondary core curriculum. In a program where SM is inherent, the concept and the techniques involved should be presented gradually and consecutively with the presentation of basic teaching skills.

The extended quotation of subject three was used in this section in order to demonstrate his analytic ability of a teaching situation. In addition it shows the importance of SM in developing the intern's concept of teaching. As demonstrated in this case, the consequences (i.e., pupils seemed to enjoy...) were reinforcing enough to strengthen the subject's determination for the direction chosen. Eventually, the evaluation of the cooperating teacher was reinforcing too - "Subject three had the kids involved in a real experience that had never existed before. He is great at motivating students".

Evaluation of the Program by the Cooperating Teachers

The feedback obtained from all the cooperating teachers can be characterized by two factors. The high effectiveness of SMP on the one hand, and the need for more intensive interactions with the interns on the other hand. Although the SMP subjects had open access to their cooperating teachers, they did not use this option frequently (for further discussion see the section "goal setting and consultation"). However, all cooperating teachers were highly pleased with the subjects' performance. The limitation of "one way" initiation of interaction was forced by the research methodology. This limitation contradicted the cooperating teachers' past experience and created some discomfort. A more rigorous preparation of the teachers prior to the field experience could have eased the problem.
Summary

This chapter reported the results of the self-management program on teacher and pupil behaviors for the four subjects who participated in the program. Results of inter-observer agreement checks showed that data obtained were reliable.

A visual analysis of a multiple baseline design across behaviors for all SMP subjects and a reversal design for SMP subject three indicated a positive effect of the SMP on changing teacher and pupil behaviors. Comparing the performance of SMP subjects to the performance of SSC subjects showed that the change produced by the SMP is at least equal to the change produced by the SSP. The SMP subjects set appropriate goals for improving their teaching performance. Goals were derived from the secondary core requirements, were similar to goals set by the SSP supervisors, and included criteria and value content.

The SM techniques used by the subjects were presented and discussed in this chapter. Evaluation of the SMP by the subjects and their cooperating teachers was described and discussed. All subjects evaluated the program as highly effective and indicated the great contribution it had to their development as competent teachers.

In chapter V, the study will be summarized, followed by a discussion of the research questions. Conclusions, and recommendations for further research will conclude that chapter.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The ability to self-manage the important events occurring in one's life is probably among the most important skills a person should possess. However, self-management skills are not systematically programmed in the educational system. In order to achieve the ideal goal of creating self-reliant and independent individuals, teachers themselves should possess and model those skills. If interns could acquire self-management skills during their pre-service education, they would be able to better maintain and refine their teaching skills in the future.

Summary

The main purpose of this study was to determine whether or not interns (i.e., pre-service teachers) can manage their own teaching during a secondary school field experience in physical education. A comprehensive program was designed to teach interns self-management skills and reinforce the implementation of these skills in teaching. Interaction between the experimental subjects and their peers, cooperating teachers and supervisor was controlled to determine whether the subjects could
play a major role in changing their own behavior. The effectiveness of the self-management program was evaluated by addressing the following questions:

1. Can interns implement a self-management program during a fourteen days field experience in secondary school?
2. What effects does the self-management program have on the intern behavior? (i.e., teaching patterns).
3. What effects does the self-management program have on self-selected pupil behaviors?
4. Can interns implementing a self-management program achieve teaching goals at a level similar to the level achieved by interns experiencing a standard supervision program?

The review of literature for this study focused on the educational supervision literature and the self-management literature. In the educational supervision section, several major approaches to supervision were described, and contemporary studies on teacher preparation were reviewed. The self-management section described the theoretical basis, and several definitions of self-management. The various self-management techniques were presented, exemplified, and categorized into three groups. A short review of research on self-management in physical education concluded the review of literature.

The methods and procedures utilized in the implementation of the self-management program were outlined in Chapter III. Four subjects implemented the self-management program (SMP) and were observed during
a field experience in two middle schools in central Ohio. Four subjects taught at the same schools but were in the standard supervision program and served as control subjects (SSC). The other students in secondary core were in the standard supervision program (SSP) and taught in other schools. The concept of self-management and some basic techniques were introduced to the SMP subjects through a self-instructional module. A series of practice sessions in a laboratory setting and in micro-teaching in the field, preceded the implementation of the self-management program in the 14-day field experience. Six trained observers recorded pre-specified teacher behaviors and pupil behaviors in the SMP and SSC subjects' lessons. The methods used for observing these behaviors were event recording and interval recording.

Chapter IV described the effects of the self-management program on teacher and pupil behaviors for the four subjects participated in the SMP, and data on the control subjects' performance. Results of inter-observer agreement checks showed that data obtained were reliable.

A visual analysis of a multiple baseline design across behaviors for all SMP subjects and a reversal design for SMP subject three indicated a positive effect of the SMP on changing teacher and pupil behaviors. Comparing the performance of SMP subjects to the performance of SSC subjects showed that the change produced by self-management was at least equal to the change produced by the standard supervision.

The SMP subjects set appropriate goals for improving their teaching performance. Goals were derived from the secondary core curriculum, were similar to goals set by the SSP supervisors, and included criteria and value content. All subjects evaluated the program as highly effective and
Indicated the great contribution it had to their development as competent teachers.

Conclusions

In this section, conclusions, based on the analysis of the results are presented. The conclusions are discussed within the limitations of this study and according to each of the research questions posed in Chapter I.

**Question 1.** Can physical education interns implement a self-management program during a fourteen days field experience in secondary school?

The results of this study indicated that the four SMP subjects implemented the self-management program successfully. All subjects completed the training part of the program easily and noted that it was valuable and motivating. As reported by their supervisor and cooperating teachers, all SMP subjects achieved the objectives of the secondary core field experience successfully. The successful experience was reflected in the subjects' grades (B, B+, A-, & A).

Both the SMP subjects and their cooperating teachers evaluated the program as very effective. The subjects stated that the SMP was helpful in achieving the required teaching objectives, and the cooperating teachers emphasized the significant progress of all the SMP subjects.
Question 2. What effects does the self-management program have on the intern's teaching behavior?

Subject two, three and four had used self-management to change their teacher behaviors. The multiple baseline design and the reversal design presented in Chapter IV demonstrated the effectiveness of the SMP in changing teacher behaviors. Therefore it may be concluded that the use of self-management by the three subjects resulted in a desired change in their teaching behavior.

Question 3. What effects does the self-management program have on pupil behaviors?

Subject one and four had used self-management in order to change their pupil behaviors. The multiple baseline design presented in Chapter IV showed that the application of self-management by the subjects resulted in a positive change in pupil behaviors. Furthermore, a visual analysis of the data for subject one (see Figure 6) indicated that changing one pupil behavior (e.g., management) may produce a positive change in another untreated pupil behavior (e.g., activity). The data presented for subject one and four demonstrated that the use of self-management had a positive effect on changing pupil behaviors.

Question 4. Can interns implementing a self-management program achieve teaching objectives at a level similar to the level achieved by interns experiencing a standard supervision program?

Comparing the data for the SMP subjects with data for their parallel SSC subjects should be done carefully because: (a) data for the SMP
subjects were collected continuously, whereas only probe data were collected for the SSC subjects; and (b) some target behaviors treated by the SMP subjects were not treated directly by the SSC subjects' supervisor and cooperating teachers. However, for changing behaviors that were treated both by the SMP subjects and by their control subjects (in their supervision conferences) self-management was proven to be equal or superior to the standard supervision.

The distribution of grades (i.e., B, B+, A-, A) achieved by the SMP subjects at the end of the field experience correlated with the general distribution of grades for the SSP subjects. Moreover, the average grade of the SMP subjects (3.500) was higher than the average grade of the SSC subjects (2.975), and from the average grade of the SSP subjects (3.419).

All four cooperating teachers in the two experimental schools indicated that the progress the SMP subjects made during the field experience was significantly greater than the progress of their control subjects.

Based on the data presented in this section, it was concluded that the SMP subjects achieved the field experience objectives in a level that was similar (i.e., at least equal) to the level achieved by the SSC and the SSP subjects.

Recommendations

Self-management and self-direction should be a major goal of teacher education. Teachers eventually should be in control of their own professional development. The external mechanisms for specific
accountability in teaching are weak, and in most cases irrelevant to pupils learning. Therefore, teachers should acquire internal accountability mechanisms, namely - self-management skills. These skills should be taught in the teacher preparation programs as one other teaching skill.

The typical supervision process usually emphasizes the supervisor as the main change agent (Pohland & Cross, 1982). However, the systematic supervision research program at OSU (Siedentop, 1981) showed that each one of the parties involved (i.e., intern, peer, cooperating teacher, and supervisor) can serve as an effective change agent in the supervision process. This study supported the notion that interns can play an important role in changing their own teaching behavior. It is suggested by the researcher that the major responsibility for the supervision process will be shifted from supervisors to interns. According to this conception, the supervisor should play an important role in teaching the interns pedagogical skills. Both the supervisor and the cooperating teacher should assist the interns in implementing these skills during a sequence of field experiences in schools. However, it is suggested that setting teaching goals, and using the supervisor and the cooperating teacher as information and feedback sources (during the field experience) will be initiated by the interns.

Acquiring self-management skills can also enable interns to serve as feedback sources for their peers. By using planning, recording, and evaluating skills, interns can provide valuable information to peers teaching with them at the same school.
Due to the logistical limitations of this study, and in order to strengthen the generality of its findings, the following recommendations are suggested:

1. This study should be replicated with different subjects in different settings.
2. The self-management program should be studied as a course or a partial course offered in the teacher education program.
3. The self-management program should be studied more thoroughly (i.e., interactions with others, selection of goals, decision making etc.) with a single subject.
4. Programmed generalization and follow-up should be an essential part of a similar study.
5. The effects of changing teacher behavior on pupil behaviors should be studied (i.e., can changes in teacher behaviors be traced to changes in pupil behaviors?).
6. The relative effect of each discrete technique in the self-management package should be studied.
This study has been the initial step in a systematic replication of similar investigations planned to demonstrate the effectiveness of self-management in the teacher education program. The conception of self-management has derived from the researcher's past experience as a cooperating teacher and supervisor for the last ten years. During this period, a model has been developed in which interns and their peers served as the major change agent during their teacher preparation program. The cooperating teacher and the university supervisor became information and feedback sources, available upon interns' initiation. This study was a successful verification of what has been developed in the field in the course of time. It is the researcher's hope that the foreseen systematic replication will strengthen the suggested model and contribute to bettering our future teachers.
APPENDIX A

GUIDELINES FOR THE SECONDARY CORE FIELD EXPERIENCE
Tasks for 3-week teaching practice - secondary core
Read carefully and note task 7.

1. Attend your school on all days for the required time period. Any days missed will be made up by arrangement with myself and your cooperating teacher.

2. Report absences to the school (before first period - speak with cooperating teacher, if possible) and the P.E. office at OSU before 8:30 A.M.

3. Attend final meeting of sec. core Friday, March 13, 10:30 in Pomerene 306. Come prepared to discuss your school’s physical education program:
   1. type of program (sport education model, multi activity combination, other?)
   2. orientation of the P.E. staff (skill focus, fitness, other?)
   3. Major management routines used by P.E. staff (attendance, lates, teaching aids)
   4. other dimensions of P.E. program (intramurals, outdoor pursuits, etc.)
   5. other aspects of the program.

4. Complete lesson plans for all classes to be taught. Have them available for cooperating teacher and supervisor to view before class. Have a copy of the lesson plan available for supervision on their arrival. Observe a lesson of one of your peers each day.

5. Complete observation forms (3) for your peer giving coded information (summarized) of one class each week. Critique the strengths of the lesson. Highlight what you think they might improve upon and one or two strategies on how to do that. It is your responsibility to have your peer do this for your class. You will retain the data from your class.

6. Bonus option (5 pts. - P.E. 647) - self-evaluate your performance at the end of the 3-week experience. Assign yourself a grade and justify this grade with particular reference to the 7 management objectives set. Be sure to consider the school context and the established structures in the class you taught (approx. 600 words).

7. Include tasks 4, 5, and 6 (if you opt for the bonus) in a folder and deliver to Dr. O’Sullivan by Tuesday March 17th, 5:00 P.M.

P.S. Good luck and enjoy your experience. Drop in and see me whilst you are on practicum.
APPENDIX B

THE SELF-INSTRUCTIONAL MODULE FOR SELF-MANAGEMENT
SELF MANAGEMENT IN TEACHING
STUDY GUIDE AND MANUAL
for
STUDENT TEACHERS
by
EITAN ELDAR
The School of Health, Physical Education and Recreation,
College of Education
The Ohio State University
Columbus, Ohio
1986
Self-Goal Setting

Self-goal setting is a personal selection and definition of a behavioral target objective so that progress towards it can be measured.

Remember, self-goal setting occurs when:

1. The target objective is self-selected and defined by the individual.
2. The target objective is stated in behavioral and measurable terms.

Please revise the definitions above before you read exercise G.

Now let's see how Tom uses goal setting to manage his own behavior... Read white Card no. 4, then do exercise G on the exercise sheet, see you later.

Feedback for exercise G

Goal Setting

Card no. 4 is an applied example of goal setting. In this example:

1. The target objective is: using at least five specific feedbacks.
2. The target objective was self-selected and defined by Tom.
3. The target objective was measurable. Tom specified the minimum amount of feedbacks he has to use during the next lesson.

If you have met a criterion of 100% accuracy on exercise G (correct answers for three items) please read page no 18 now —

▲ If you have not met a criterion of 100% accuracy please read page no 9 in the "Enrichment book", then read page no. 16 in the study guide and redo exercise G.
Now let's try to identify an applied example of goal setting.

In Exercise H you will be given two examples, only one describes goal setting correctly. Remember, the correct example should include the two critical elements mentioned on page 16 of the study guide.

You can take a moment and revise these critical elements.

- Now read white cards no 9 and 11 and do Exercise H on the exercise sheets, enjoy your work.

---

Feedback for exercise H

1. The example that describes goal setting correctly appears on card no. 11.

2. The critical element that appears in example no 11 and does not appear in example no 9 is: definition of the target behavior. In example 11 Mary defined interaction as each time she talks directly to Jim for more than a sec. during the lesson, while in example no 9 Sandy did not define individual feedback.

If you have met a criterion of 100% accuracy on exercise H (correct answers for 2 items) please read page 160 now.

▲ If you have not met a criterion of 100% accuracy please read page no 16 in the study guide and redo exercise H.
Now you can identify goal setting and understand its function as a self-management technique. This is the right time to learn about the last self-management technique included in this module.

See you on page 21, where you will learn about self-environmental planning.

White card No 4

Analysing the data sheets Tom realized that he has not used specific feedback at all. Tom has decided that during his next teaching period he will use at least five specific feedbacks. Tom defined specific feedback as any precise information generated about students' behavior that is used to modify the next behavior.
Exercise G  
Goal-setting

Card no. 4 is an example of goal setting.
In this example:

1. The target objective is _____________________________
2. Was the target objective selected and defined by Tom? yes / no.
3. Was the target objective measurable? yes / no.
   explain: _____________________________

Now go back to the Study guide and read the feedback for exercise G on page no 17.

Exercise H  
Goal-setting

1. The example that describes goal setting correctly appears on card no
2. The critical element(s) that appear in the correct example and do not appear in the incorrect example is / are _____________________________

Now go back to the Study guide and read the feedback for exercise H on page no 19.
January 19, 1987

To:

Fr: Eitan Eldar

Re: Self-management training

Welcome to the "self-management group". As your supervisor for the Secondary Core Field Experience I would like to do my best to ensure your success. During weeks 4-7 we shall focus on refining your self-management skills. During the field experience you will set your own teaching goals and initiate most of the behavior change intervention. However, you are strongly encouraged to use your peers, cooperating teacher and supervisor as guidance and feedback sources. You are more than welcome to call me at home (2317021) any time. Remember, self-management means using any available "tool" or resource in your surrounding environment to improve your own performance.

After completing the self-instructional module you can practice some self-management techniques yourself. For example, at St. Mary's you can manage your behavior by:

1. Carefully selecting and defining your teaching objective (e.g. next lesson I shall use each pupil's name at least 3 times). Always specify the criterion (i.e. 3 times).

2. Selecting some cues or reminders (e.g. place a poster or a list of pupils' names so you can see it often.

3. Setting some contingencies to your performance (e.g. if I won't achieve criterion I shall stay in school 10 more minutes and practice pupils'
names). Letting one of your peers/supervisor know about your self-contract.

4. Self-recording your behavior (e.g. check on a piece of paper each time you use a pupil's name). Asking the pupils to count how many times you use their names. (this is a very powerful technique).

5. Plotting the data on a graph for future analysis.

You can use similar techniques for everyday behaviors you would like to change. For example: Performing 30 push-ups per day, reducing the amount of sugar consumption, etc. Please let me know how your little projects are going. It could be nice to share some ideas and impressions.

Starting this week, we shall have a weekly conference every Friday, right after class. We shall meet at the lab (310) and share some of our own ideas and experiences in self-management.

I wish you a nice and fruitful experience...

sincerely

Eitan Eldar
APPENDIX D

FIELD EXPERIENCE EVALUATION FORM (SECONDARY CORE)
SECONDARY CORE FIELD EXPERIENCE

Student: ____________________  Grade Level: ____________________  Supervisor: ____________________

School: ____________________

Cooperating Teachers: ____________________

Context of Field Placement:

Achievement of objectives

A. Professional Component
   1. Lesson plans: prepared, detailed, quality
       
   2. Attendance, punctuality, other?

B. Management Component
   1. Reduce management time

   2. Reduce transition time

   3. Increase activity time

   4. Establish and maintain appropriate student behavior

   5. Cope with and remediate class disruptions
6. Teach students self-management skills

7. Use student names

8. Increase positive behavior interactions

C. Instructional component
   1. Maximize student participation

   3. Monitor appropriateness of critical cues and provide specific skill feedback to student skill responses

D. Overall Summary Statement: (including cooperating teacher comment)


Grade: _______  Supervisor's Signature: ____________________
APPENDIX E
DEFINITIONS OF TARGET BEHAVIORS
February 10, 1987

To: Field Coders for the Self-Management Program
Fr: Eitan Eldar
Re: Practice session, Friday 2/13/87, 12:00-02:00

Thank you for joining the self-management program. Observations will be conducted at Woodward Park Middle School and Monroe Traditional Middle School. The basic A.L.T.-P.E. (interval recording) will be used to record the pupils' behaviors during the Secondary Core Field Experience. In addition, some teacher's behaviors will also be recorded (event recording) on the same coding sheet (example enclosed).

We shall meet on Friday, February 13 (12:00-02:00) at the lab to practice the coding sheet and to ensure reliable coding. This coding sheet was designed to suit the Secondary Core objectives. Your comments and suggestions will be gratefully considered.

Schedule
12:00-12:15 The self-management program (brief introduction).
12:15-12:30 Introduction of the secondary core observation sheet.
12:30-01:45 Practice of observation using a videotape to establish observer accuracy and inter-observer reliability.
01:45-02:00 Discussion.

Definition of Behaviors

Use of pupils' name [N] - Each time the teacher mentions a name of a pupil in behavioral interaction with an individual pupil or with a group of pupils. Each pupil's name should only be checked once during the lesson.

Positive Behavioral Interaction [+] - Interaction that is initiated on the basis of appropriate behavior and is looking for the good in the pupil. It can be directed toward an individual pupil privately or publicly. It can also be directed toward a group of pupils.

Negative Behavioral Interaction [-] - Interaction that is initiated on the basis of inappropriate behavior and is looking for the bad in the pupil. It can be directed toward an individual pupil privately or publicly. It can also be directed toward a group of pupils.

General Feedback [G] - Relates to the behavior but does not include precise and specific information (e.g., good job, way to go, etc.).

Specific Feedback [S] - Precise information generated about the behavior (e.g., great job of keeping your arms straight).
February 17, 1987

To:
Fr: Eltan Eldar
Re: Field coding of teaching

Thank you for participating in the coding practice last Friday. Your comments and feedback during the session have had a major impact on the final refinement of the coding process. In order to achieve reliable data, the following distinctions will be made:

**Interval Recording**

* The time intervals direct you to observe the target pupil for 5 Sec. and then to record the dominant behavior that occurred during that 5 Sec. An O.T.R. occurring during the first 5 Sec. of an interval (observe), will be counted as an "A" only if it lasts about 2.5 Sec. or more.
* Start coding on the official start of class (don't include the specified locker room time 4-5 Min.). If the lesson starts before official time, please indicate it on the coding sheet.
* Waiting time will be coded when pupils are assigned to activity. If between activities, it should be coded - [T]. In case of returning a ball etc. the pupil returning the ball will be coded - [T], other members of the group - [W].

**Event Recording**

* Verbal behavior (i.e., event) that is repeated by the teacher more than once during the same interaction (e.g., the teacher uses the name of a certain pupil more than once; more than one positive statement; more than one specific feedback with the same content etc.) should only be coded once.
* Modeling - Using the behavior of the teacher or a pupil/a group of pupils as an example for other pupils to imitate.

During the observation you are expected to code the A.L.T. data & demonstration events. Other events will be available on a tape one day after observation day. Synchronizing A.L.T. data with audio taped data will be done by turning the tape recorder on at the same second you start coding.
APPENDIX F
CODING SHEET (FRONT SIDE)
APPENDIX G
SUMMARY REPORT OF TEACHING PERFORMANCE
### Secondary Core Field Experience Summary Report of Teaching Performance

<table>
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APPENDIX H

SELF-MANAGEMENT PLAN FOR ELEMENTARY CORE
LESSONS

□ O _____________________________________
□ □ _____________________________________
△ _________________________________

Definitions of Behaviors

□ O _____________________________________
□ □ _____________________________________
△ _________________________________

Self-Management Techniques Used

Day 4

Day 5

Day 6

Day 7

Day 8

1. Select 3 target behaviors. Graph baseline data on 3 behaviors for 3 consecutive days.
2. On the fourth day, start SM intervention on one behavior of your choice.
3. Graph data on all 3 behaviors for the following 5 consecutive days.
* Plot data on all 3 behaviors on the same graph (use key).
* Use your supervisor and peers for data collection.
REFERENCES


Association for Supervision and Curriculum Development.


