EFFECTS OF INTERVENTION ON TEACHER AND STUDENT BEHAVIOUR IN ELEMENTARY GYMNASTICS LESSONS

Larry Bruce Burroughs

Bachelor of Education, University of British Columbia, 1972

A THESIS SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the School

of

Physical Education

ACCEPTED
FACULTY OF GRADUATE STUDIES
[redacted]
DEAN
DATE 1986-11-22

We accept this thesis as conforming
to the required standard

[redacted]
Dr. Mary M. O'Sullivan

[redacted]
Mr. Leslie H. Peake

[redacted]
Dr. Antoinette A. Oberg

[redacted]
Dr. William K. Cross

UNIVERSITY OF VICTORIA
July 1986

Supervisor: Dr. Mary M. O'Sullivan

ABSTRACT

The purpose of the study was to increase class practice time and student Academic Learning Time-Physical Education (ALT-PE) by intervening upon specific teacher managerial and instructional, and learner involvement behaviours.

Four inservice classroom teachers from one elementary school volunteered to teach a modified ETU in gymnastics, using a stations approach. Teachers A (female) and B (female) were experienced while teachers C (female) and D (male) were inexperienced gymnastics teachers.

On average, 14-25 minute lessons were videotaped for each teacher over a 9 week period. Data were coded on the following dependent variables, by teacher: instruction (all); transition (D); corrective feedback (A,B,D); accountability (A,C); wait (A,B,C); off-task (A,C,D); equipment (B,C). Following a minimum four lesson baseline period, specific dependent variables were targeted during one of two intervention meetings. Teachers were unaware of the variables being monitored prior to intervention.

A multiple baseline A-B design, across teachers, was used to determine the effect of intervention upon targeted behaviours. Before coding the data, interobserver reliability of over 80% was achieved on videotaped data.

As a result of interventions, decreases in instruction and off-task time led to increases in practice time and ALT-PE, for teachers A and D. The effect of reducing the instruction time of teachers B and C was minimized by equipment management interventions, which increased transition time but improved teacher confidence in handling equipment. Limited success of interventions to reduce transition and wait time appeared to be a function of the nature and availability of equipment, and the managerial ability of students during independent practice.

An intervention was successful in doubling the baseline rate of corrective feedback for teachers A, B, and D. For teachers A and C, the use of an accountability system led to reduced off-task behaviour.

Pre and post study questionnaires revealed that the inservice process was considered generally to be a positive experience. All teachers considered the ability to organize and manage student involvement to be more critical to the overall instructional process than personal knowledge and expertise in gymnastics.

The study supported the contention that proven instructional and managerial behaviours can be shared with and mediated by classroom teachers through a systematic inservice process, and that resultant practices can increase learner involvement in gymnastics.

Examiners: [redacted]

Dr. Mary M. O'Sullivan

[redacted]

Mr. Leslie H. Peake

[redacted]

Dr. Antoinette A. Oberg

[redacted]

Dr. William K. Cross

CONTENTS

TABLES

FIGURES

ACKNOWLEDGEMENTS

My deepest appreciation is extended to the following people for their unique contribution during the course of my graduate program:

to Dr. Mary O'Sullivan, my advisor, for all her inspiration, guidance and support in the development of this thesis. Her professionalism and consistent high academic standards challenged and motivated me to achieve 'above and beyond';

to Mr. Les Peake, of my supervisory committee, whose numerous, practical suggestions and diligent editing were of extreme benefit;

to Dr. Antoinette Oberg, also of my supervisory committee, for her thoughtful direction and insight regarding methods of 'probing the minds' of my subjects;

to Dr. William Cross for consenting to act as external examiner;

to "Subjects A, B, C, and D", who demonstrated faith and conviction in selflessly dedicating their time and energy to the professional development process. The teaching profession is richer because of you;

to Jim, Ise and especially Eugene, for unravelling the mysteries of the computer;

to Nancy, David and John, who have patiently awaited my return to 'family' life;

to fellow graduate students for sharing common goals and helping me to rediscover my youth!

Chapter I

INTRODUCTION

Context of the Problem

It is widely regarded that what is known from research on effective teaching is not always put into practice in the schools (Griffin & Barnes, 1984). Research has identified effective teaching behaviours, however less success has been achieved in altering teacher classroom practice (Locke, 1984). Reasons for this lack of transfer have been lack of reward for changing behaviour, rigidity of teachers in reconceptualizing their role, and apparent lack of logical connection between craft and research findings (Tikunoff, Ward & Griffin, 1981).

Evidence of the need to upgrade elementary physical education practice was revealed in a recent British Columbia physical education assessment. Low student motor ability, little or no physical education training among regular classroom teachers and a lack of emphasis upon gymnastics were cited as the present day reality (Carre, Mosher, & Schutz, 1982).

Evidence has been provided of inefficient teaching within the actual physical education lesson. Students spent 65% of the total class time in non-productive activities such as waiting in lines, management activities and off-task behaviour (Anderson, 1975). Further, evidence suggests that students demonstrated lowest active involvement and appropriate class behaviour in gymnastics-related activities (Costello & Laubach, 1978; Quarterman, 1978).

Research provides evidence that classroom management techniques can effectively establish student routines (Soar & Soar, 1979), reduce deviant and off-task behaviour (Kounin, 1970) and increase the time during which a student interacts with the curriculum (Rosenshine & Berliner, 1978).

The literature provides evidence of proven teaching practices (Berliner, 1984) which can be successfully transferred by way of staff development and in-service programs (Griffin, 1983; Luster, 1981; Joyce & Showers, 1982; McLaughlin & Marsh, 1978).

Statement of the Problem

There exists a body of research-based knowledge which has identified the characteristics of effective teaching. As well, research has provided evidence that this information can be shared with and mediated by practicing teachers, with

the effect of modifying their behaviour and ultimately, that of the student.

The purpose of this study was to attempt to modify specific classroom management and instructional behaviours of regular classroom teachers, within a gymnastics setting. A second purpose was to determine whether the subsequent modification of classroom management and instructional behaviour would increase class practice time and student Academic Learning Time-Physical Education (ALT-PE).

Research Questions

The following questions were investigated in this study:

1. Can specific classroom management and instructional behaviours of regular elementary teachers be improved and maintained by an intervention procedure?
2. Will the intervention procedure increase class practice time?
3. Will the intervention procedure increase student Academic Learning Time-Physical Education (ALT-PE)?
4. Will an overall inservice process positively influence the attitudes of regular classroom teachers, regarding instruction and management, in a gymnastics setting?

Delimitations

1. The teachers in this study were regular elementary classroom teachers (two primary and two intermediate) from one school in the Saanich School District.
2. The teacher verbal behaviour categories observed and coded were positive and negative group alerting, positive and corrective feedback, praise and accountability.
3. The learner involvement categories observed and coded were wait, off-task, on-task, cognitive, interim, motor appropriate and motor inappropriate behaviour.
4. The class context variables observed and coded were instruction, transition, practice and management time.
5. A modified version of the ALT-PE system (Siedentop, 1982) was used to code Academic Learning Time for three randomly selected students within each class.
6. Each teacher offered their students a seven, two-part lesson modified Experimental Teaching Unit (ETU) over a nine week period, from October to December, 1985 (teachers A and B in the morning and teachers C and D in the afternoon).

Limitations

1. The study was limited by the observers' abilities to reliably interpret and code teacher and student behaviours.
2. The study was limited by the ability of the researcher to ensure minimal interference while observing and collecting data.
3. The study was limited by the previous classroom and gymnastics instructional experience of the teachers.
4. Experimental control in the study was limited by the need to gain the cooperation of the subjects.

Operational Definitions

Academic Learning Time. The amount of time a student is engaged in academically relevant content while experiencing an 80% rate of success.

Academic Learning Time - Physical Education (ALT-PE). The amount of practice time a student is involved in a task while experiencing an 80% rate of success, within a physical education setting.

Behaviours. All observable actions of a teacher or student within a gymnastics lesson.

Experimental Teaching Unit (ETU). Typically a ten lesson unit which includes instructional materials, a rationale, specific performance objectives and a pre and post test (Graham, 1983).

Feedback. Information provided in reaction to a motor response, which is designed to modify or reinforce the response.

Frequency of a behaviour. The number of occurrances of the behaviour within a specified time period.

Inservice teachers. Those certified for teaching and employed on a professional level within a school.

Intervention. The process of modifying a teacher's behaviour through the introduction of a treatment variable.

Lesson Time. The total class time set aside for activities in gymnastics.

Observation. The act of viewing and coding specified videotaped behaviours, demonstrated during the gymnastics lesson.

Observer. The individual who observes and codes the occurrances of the dependent variables in the study.

Placheck (Planned Activity Check). Periodic recording of the behaviour of all members of a group.

Chapter II

REVIEW OF RELATED LITERATURE

Research on Teaching

Research on teaching has been based upon the fundamental belief that the teacher plays a critical role in the learning process.

This chapter will outline those teacher behaviours and characteristics associated with effective instruction. Research on learning time will be identified as it relates to increasing student involvement in instructional content and optimizing achievement. The process of direct instruction will be highlighted as an effective means of structuring the learning environment in order to maximize student learning time.

Research concerned with the classroom management dimensions of monitoring, accountability and group alerting will be related to maintaining student involvement in the learning task. These dimensions will be identified with the effective management of groups, particularly during periods of transition.

Characteristics of Effective Teachers

The primary goal of research on teaching has been that of optimizing student learning and achievement.

Research in the 1920's consisted of identifying personality traits and teacher characteristics which were thought to describe effective teachers. These checklists of perceived traits, produced outside the classroom, were largely based upon testimonials by former students. Medley (1979) summarized that, in the 1920's, an effective teacher was one who had more teaching skill, greater knowledge of the subject and better discipline. Charters and Waples (1929) utilized the opinion of expert critics to produce a master list of teacher's traits. Those qualities considered to be most important to teaching were good judgement, self control, considerateness and enthusiasm. Rosenshine (1979) reported that this initial research yielded inconclusive findings which did not always reflect actual teacher practice.

Research which followed utilized teacher rating scales to identify characteristics of effective teachers (Barr, 1961). Among the personal prerequisites to effective teaching were buoyancy (enthusiasm), considerateness, expressiveness and forcefulness. Barr (1961) summarized that teacher effectiveness research lacked an acceptable theory concerning the nature and structure of teaching ability.

Process-Product Research

Rosenshine's (1971) review of 50 studies of teaching behaviour reflected a significant research shift. The purpose of this review was to report the relationship found between teacher behaviour (process variable) and student achievement (product variable). Clarity, enthusiasm, task-oriented behaviour and student opportunity to learn were found to correlate positively with student achievement (Rosenshine & Furst, 1973). Dunkin and Biddle (1974) produced a text on teaching that compiled most of the process/product studies to that date. Relationships between process variables, and student performance and achievement were identified as the 'heartland of teaching theory'.

Griffey (1981) and Gage (1978) reviewed research studies which indicated that few significant relationships had been established between individual teacher variables and student achievement. Non-significant findings were primarily due to the small sample sizes within research designs and the limited opportunity of the researcher to affect change within the short duration of a study.

While emphasizing that teachers do influence student learning, Brophy (1979) identified that clusters or patterns of behaviour, rather than discrete skills, distinguished between more and less effective teachers. Effective

teachers maintained a business-like learning environment which maximized student engagement in productive activities, organized their classrooms efficiently, and minimized disruptions due to behaviour or classroom management problems. In reiterating the above findings, Locke (1979) reported that the promising shift in research in teacher education (RTE) was based upon the notion that effective teachers did whatever was necessary to improve student achievement.

Research on Learning Time

Rosenshine (1979) stated that among the variables associated with student achievement, coverage of content and task orientation held the most promise. Research investigating the various aspects of instructional time provided the link between 'student opportunity to learn' and 'coverage of content'. The origin of the concept of instructional time was found in Carroll's (1963) model of school learning. Among the factors which influenced school learning were the amount of time a student committed to active learning, the time during which a student was given the opportunity to learn, the amount of time required by the student to master a task (Carroll, 1963).

Fisher, Berliner, Filby, Marliave, Cahen, and Dishaw (1981) found that students most likely to succeed were those engaged successfully in academically relevant content. Beginning Teacher Effectiveness Study (BTES) research found a significant correlation between student achievement and time spent on learning in inductively arriving at the Academic Learning Time (ALT) model. ALT was defined as the time during which a student was engaged with instructional materials at an 80% rate of success. Relevant content was that considered appropriate to an individual's level of ability.

In criticizing the instructional model based upon ALT, Confrey (1982) suggested that singular attention to quantity of classroom time failed to consider the quality of learning time. High success rates without a sufficient measure of challenge rendered the learning experience meaningless. Further, educators were being encouraged to provide more instructional time without consideration of their capacity to fill that time with quality instruction. Confrey (1982) conceded that the ALT model was useful for teaching skills in a task-oriented setting.

In reviewing the theoretical foundation of the ALT model, Metzler (1982) implied that teacher behaviours directly influenced student learning by either increasing or

decreasing academic learning time. Fenstermacher (1982) reported that the BTES research had successfully equated teacher behaviour with student behaviour, then related student behaviour to student learning.

While reporting that engagement rates related significantly to student learning, Caldwell, Huitt and Graeber (1982) identified a curvilinear relationship between student engaged time and achievement. While relationships were generally positive, student achievement declined if engaged time was excessive. The optimum level of academic learning time was thought to be a function of subject matter, classroom characteristics and individual differences (Bennett, 1978). Effective teacher behaviour was seen by Rosenshine and Berliner (1978) as optimizing the students' exposure to curriculum content.

Direct Instruction

The concept of direct instruction, closely associated with 'student opportunity to learn', arose from the process/product research on teaching. Rosenshine (1979) clarified that direct instruction classrooms were teacher directed and academically focused, where the teacher controlled and clearly stated instructional goals. Greater student achievement was realized consistently in highly

structured teacher directed classrooms (Bennett, 1976; McDonald, 1976; Stallings, 1975). It was easier for a student to be attentive and task focused when the teacher structured the learning activity (Bennett, 1976). In research on first and third grade classrooms, Stallings (1975) found that higher scores in reading and mathematics were achieved in highly controlled classroom environments, typified by systematic instruction. Good and Grouws (1979) found that more effective teachers were task focused and expressed higher achievement expectations.

An important aspect of instruction when stating task requirements, was the need to reduce ambiguity (Doyle, 1979). Students felt insecure in situations where learning requirements and rules of conduct were unclear or open-ended. Maneuvering and negotiation were likely to result, whereby clarity of expected performance and limits of conduct were established. Teachers who initially established clear instructional guidelines minimized 'current interaction' with students, that is, the need for students to seek clarification of task expectations (Soar & Soar, 1979). Rosswork (1977) found that specific goal setting enabled student behaviour to be initiated and directed, which led to significant achievement gains in academic performance.

Research on Classroom Management

Classroom management has been described as the dimension of teaching concerned with establishing and maintaining an environment conducive to effective instruction (Freiberg, 1983).

Classroom management will be considered in relation to optimizing student learning by directing and maintaining focus upon the curriculum. Management strategies correlating highly with student on-task behaviour, as well as techniques relating to the dynamics of group instruction will be identified.

Maintaining Student Involvement

The importance of effective classroom management behaviour in establishing and maintaining high levels of student involvement is well documented (Freiberg, 1983; Rosenshine & Berliner, 1978; Dunkin and Biddle, 1974; Good and Brophy, 1973; Kounin, 1970). Effective teacher behaviour was seen by Rosenshine and Berliner (1978) as managing students in order to optimize their exposure to curriculum content.

Kounin (1970) identified successful classrooms as having high degrees of work involvement and low levels of misbehaviour. Teachers who possessed a sufficient range of management skills were more likely to maintain overall work

involvement (Emmer & Evertson, 1981; Locke, 1979). Among these management skills were (a) overlapping: the ability to attend to more than one event or situation at a time, (b) withitness: the ability to perceive overall student behaviour and to communicate this awareness to the student, (c) momentum: the ability to maintain the flow and pace within a learning activity, and (d) smoothness: the ability to move from one instructional phase to another with a minimum of disruption (Kounin, 1970). As well as correlating significantly with student task involvement, it appeared that these teacher behaviours led to a decrease in deviant behaviour. Kounin (1970) concluded that teachers with fewer discipline problems would have more time available for teaching and thus, be more likely to teach successfully.

Monitoring and Supervision

The importance of monitoring and supervision has been highlighted by Emmer, Evertson, Sanford, Clements and Worsham (1982), Good and Brophy (1973), and Kounin (1970). In identifying and linking the supervision traits of teachers to classroom managerial success, Kounin (1970) found that effective teachers monitored students carefully and accurately targeted their responses towards students who disrupted the learning situation. Emmer, Evertson, Sanford,

Clements and Worsham (1982) stated that vigilance and consistency in monitoring students was essential in order to establish a framework of behaviour and conduct. The ultimate purpose of supervision was to establish routines whereby students could manage themselves. Good and Brophy (1973) outlined several principles of classroom management which were thought to reduce the requirements of supervision. Among these principles were to establish clear rules where rules were needed and to let students assume independent responsibility.

Clark and Creswell (1978) suggested that teacher non-verbal communication dictated, to a large degree, student involvement and participation. Teacher facial expression, eye contact and movement about the classroom contributed to the student awareness of teacher monitoring. Brooks, Silven and Wooten (1978) reported from the literature that teacher proximity to students influenced student/teacher interactions as well as student behaviour and performance. Students who sat further from the teacher were less frequently involved in student-teacher interactions.

Monitoring and Supervision During Transition

Effective monitoring and supervision strategies were found to be particularly important during transition from one instructional activity to another (Arlin, 1979; Kounin, 1970). Bennett (1978) observed in 'open plan' schools, that up to 30 percent of the observed time was taken up in transitional activities such as changing areas of instruction, queueing and waiting for the teacher. During transition, teacher behaviours were associated with either impeding the movement of activity (Bennett, 1978), or maintaining momentum and activity flow (Kounin, 1970). Smyth (1981) identified that off-task behaviour increased during transition from one activity to another. Arlin (1979) found that off-task behaviour during transition time was almost double that of regular classroom time. Rutter, Maughan, Mortimore, & Ouston (1979) found that off-task behaviour was minimized when the teacher made advance lesson preparations, and established efficient routines for distributing materials and setting up apparatus.

Maintaining Group Focus

Group Alerting and Accountability.

Kounin (1970) stated that the instructional process primarily involved teacher interactions with small or large groups of students. Several studies (Emmer & Evertson, 1981; Halpin, 1979; Medley, 1979) reported that large, teacher-led group activities correlated with greater student on-task behaviour. Small group and independent seatwork activities were associated with lower student involvement in learning activities. A teacher who successfully organized several small instructional groupings possessed a sufficient range of management skills to maintain overall task focus. The effective manager in this situation simultaneously employed several managerial skills including group alerting and accountability (Kounin, 1970).

Group alerting was defined as the degree to which a teacher attempted to involve non-reciting children in a recitation setting. Randomly selecting students to respond resulted in keeping students 'on their toes', and maintained group focus during a lesson activity.

The dimension of accountability was found to be particularly crucial in maintaining task involvement in a recitation or group setting (Kounin, 1970). Accountability was defined as the degree to which students in group settings were held responsible for their actions or

performance. The accountability process required that the teacher communicate to students an awareness of their performance and actively elicit student responses.

Feedback.

Feedback was defined by Oxendine (1984) as a signal following a response, which provided information regarding the nature of that response. Bilodeau (1969) stated that feedback was the 'strongest, most important variable controlling performance and learning'. The reinforcement of learning through the provision of feedback was regarded as a vital component of behaviour management (Oxendine, 1984). Feedback enabled the the learner to receive information regarding the accuracy or appropriateness of a response. Oxendine (1984) provided evidence that specific information feedback resulted in effective learning. Partial feedback was found to be as effective as continual feedback in contributing to student learning.

Praise.

Praise was viewed as a form of extrinsic reward, commonly associated with reinforcing desirable behaviour (Brophy, 1979). Despite its popular use, indiscriminant, non-specific use of praise was reported to correlate negatively with student achievement. In order for praise to

reinforce behaviour it must be contingent upon a performance, be specific to the behaviour being reinforced, and must be perceived by the recipient as genuine and sincere (Brophy, 1979).

Summary - Research on Teaching

Research on teaching suggested that an effective teacher was concerned with student achievement (Locke, 1979) and maintained a learning environment which maximized student engagement in productive activities (Brophy, 1979). Further, an optimum learning environment tended to be structured and business-like (Bennett, 1976; Stallings, 1975), whereby learning tasks were clearly stated (Doyle, 1979; Soar & Soar, 1979). More effective teaching strategy involved maximizing student opportunity to learn by increasing the quality (Confrey, 1982) and quantity (Fisher et al., 1981) of academic learning time.

An effective teacher utilized a range of classroom management skills in order to maintain student on-task involvement and minimize disruptions (Emmer & Evertson, 1981; Locke, 1979). The skill of monitoring students consistently allowed the teacher to establish a framework of behaviour and conduct (Emmer, et al., 1982). Effective monitoring was particularly critical during periods of

transition (Arlin, 1979; Kounin, 1970), when off-task behaviour increased significantly (Smyth, 1981; Arlin, 1979).

Predominant small and large group interactions in classrooms suggested the importance of maintaining group focus upon the learning task (Kounin, 1970). One such skill was group alerting, defined as the degree to which a teacher attempted to involve non-reciting children in the recitation task (Kounin, 1970). Effective group alerting strategies included developing a system of accountability, whereby the teacher structured clear learning goals and actively solicited student responses (Kounin, 1970). Feedback and praise, described as signals provided following a behavioural response, were associated with student learning. Specific information feedback resulted in effective learning (Oxendine, 1984) while praise must be specific to the behaviour being reinforced, and must be perceived to be sincere (Brophy, 1979).

In this study feedback and praise will be considered to be dimensions of the group alerting process. It has been suggested that group alerting, or communicating to students that they are being monitored, will maintain group focus by keeping individuals alerted and 'on their toes'. It is hypothesized that successful classroom management practices

will enable the teacher to establish a learning environment which maximizes the learning opportunities for students.

Research on Teaching - Physical Education

Several generic teaching variables, associated with more effective teachers, have been identified from the physical education research (Locke, 1979). Among these variables were monitoring and accountability (Tousignant & Siedentop, 1983), learning time (Godbout, Brunelle, & Tousignant, 1983; Shute, Dodds, Placek, Rife, & Silverman, 1982; Birdwell, 1980; Costello & Laubach, 1978), opportunity to practice (Graham, 1983; Yerg, 1977), feedback (Siedentop, 1983; Fishman & Tobey, 1978), and modeling (Quarterman, 1978).

Monitoring and Accountability

Tousignant and Siedentop (1983) found that student behaviour and performance in secondary physical education classes was influenced more by the degree and consistency of teacher monitoring than by stated task requirements. Further, off-task behaviour was prevented by silent monitoring while a formal grading system of recording achievement improved on-task behaviour. The accountability system, rather than stated task requirements, determined to a large degree what was learned.

Research on Learning Time

Recent studies describing the allocation of time within physical education classes, have utilized various methods to collect and code student behaviours. Using the ALT-PE recording system, Godbout, Brunelle and Tousignant (1983) found that secondary students' involvement in academic learning time was significantly higher (36.5%) than elementary students (31.3%). Further, secondary students spent considerably less time (18.9%) in management, waiting and rest activities than elementary students (34.3%).

Shute et al. (1982) studied the actions of students within 20 elementary movement education classes taught by one physical educator. Using the the ALT-PE recording system, they found that 79% of the total class time was spent in content-physical education (skill practice, games, cognitive activity) while 21% of the time was spent in transition or management activity. It was also noted that, unlike classroom research, few studies in physical education had attempted to discover relationships between class engaged time and student achievement (Shute et al., 1982).

Birdwell (1980) modified the ALT-PE model to study teacher feedback and resultant student behaviour. An intervention procedure, consisting of daily feedback to the teacher, led to significant increases in teacher feedback to

students, and subsequent decreases in class management time. Following the intervention, ALT-PE increased while non-engaged time diminished.

Duration and placheck recording systems were used to study student behaviour within 24 elementary physical education classes (Quarterman, 1978). Students spent 24% of class time engaged in management, 12% in instruction and 54% in participation activities (Quarterman, 1978). Students demonstrated the lowest continuously active involvement (3%) and the lowest appropriate class behaviour (50%) in activities relating to gymnastics. The BEhaviour of STudents in Physical EDucation (BESTPED) system was used to randomly observe students in 20 elementary physical education classes (Costello & Laubach, 1978). Of the total class time, 35.4% was spent waiting or listening to the teacher while 27.5% of time was spent in movement activity related to the lesson content. The lowest percentage of activity time occurred within gymnastics lessons, characterized by short periods of practice time and relatively long periods of resting or waiting time. It was suggested that waiting time might be reduced by organizing activities to maximize student involvement, improving transition procedures, making maximum use of available equipment, and identifying skill related procedures concisely.

Opportunity to Practice

In a review of the experimental teaching unit (ETU) research, Graham (1983) identified that increased student practice time on a criterion skill correlated positively with higher achievement. Students who spent more time in waiting, listening, organizing and management activity achieved lower in skill activities. In an ETU study involving elementary classes in a 30-minute cartwheel lessson, Yerg (1977) failed to find a significant relationship between teacher behaviours (opportunity to practice, task presentation, feedback) and student achievement.

Feedback

In a study of augmented feedback in elementary and secondary physical education classes, Fishman and Tobey (1978) identified that 95% of teacher feedback was auditory. Feedback consisting of modeling or assisting was thought to require a higher level of response specificity, and occurred infrequently (1% of the time). Overall, feedback was largely non-specific, possibly due to a lack of teacher background knowledge in basic motor skill activity (Fishman & Tobey, 1978). Siedentop (1983) noted that student teachers provided limited corrective feedback and rarely responded to

skills that were executed correctly. It was suggested that the use of feedback was important in reinforcing skill performance and in establishing a positive learning atmosphere.

Modeling

Quarterman (1978) found that the frequency of student instructional modeling was highest among older and more experienced elementary physical educators.

Implications of Research on Teaching for Physical Education

Research on teaching physical education clearly suggests the need to reduce the time spent on management, transition and waiting activity (Godbout et al., 1983; Costello & Laubach, 1978; Quarterman, 1978). There is a further need to address the lack of student involvement within activities relating to gymnastics (Costello & Laubach, 1978; Quarterman, 1978). Evidence suggests that successful motor learning requires a sufficient degree of exposure to and practice of specific skills (Kirchner, 1984; Graham, 1983). The concept of academic learning time (Fisher et al., 1981) suggests that individual involvement in a motor skill at an easy level of difficulty is desirable. Maximizing student exposure and appropriate involvement (ALT-PE) in motor

activities can be achieved by: (1) ensuring elementary students realize their full allotment of physical education time daily (30 minutes), (2) allowing maximum individual involvement in activities, (3) breaking down complex skills to enable mastery of individual components and (4) modifying skill development in relation to the age and ability level of the learner.

While these guidelines apply equally within the gymnastics setting, the special nature of gymnastics equipment suggests the need to organize instruction involving small group or station activities in order to ensure maximum student exposure to the lesson content. In order to provide effective gymnastics instruction a teacher should therefore: (1) possess fundamental knowledge and understanding of basic movement concepts relating to gymnastics, and an awareness of safety and spotting techniques (Carr, 1980), (2) clearly identify learning task expectations and model new motor skills in order to reduce ambiguity (Soar & Soar, 1979; Doyle, 1979; Quarterman, 1978; Rosswork, 1977), (3) create efficient routines involving the organization and movement of students and equipment, to minimize disruptions and time lost in management and transition activity (Costello & Laubach, 1978) and (4) consistently monitor the activities of students in group

situations (Tousignant & Siedentop, 1983) and utilize the dimensions of group alerting to maintain overall task focus (Kounin, 1970).

Research on Teacher Education

The primary objective of research on teacher education (RTE) has been to assist preservice and inservice teachers in acquiring or improving effective skills of teaching. RTE has attempted to 'influence what teachers do in the execution of professional tasks' (Locke, 1984). Although RTE has been conducted on many levels (Locke, 1984), this review will focus upon inservice research involving entire staffs (staff development), and with teacher inservice on an individual basis. As well, theory relating to the successful transfer of acquired teaching skills into classroom practice will be outlined.

Teacher Inservice Research

The upgrading of knowledge and classroom practice has been perceived as necessary in view of the ever-changing demands of teaching (Allard & Rife, 1980). Evidence has been provided regarding the theory and nature of effective teaching (Rife, 1983; Earls, 1981; Graham & Heimerer, 1981). Inservice programs involving individual teachers or entire

staffs have traditionally provided the bridge between research on effective teaching and actual classroom practice. In spite of this, many inservice programs have failed to alter the behaviour patterns or classroom strategies of teachers (Griffin & Barnes, 1984; Griffin, 1983; McLaughlin and Marsh, 1978).

In a meta-analysis of 137 inservice research studies, Joslin (1981) identified a number of variables which optimized the effectiveness of inservice education. Programs which took place within the local district, involved self instruction, related to subject matter content and were planned around a highly structured format were more likely to succeed. Further, teachers with less than 10 years experience and who taught at the elementary level were more likely to modify their teaching as a result of inservice.

Staff Development Research

Two major studies regarding staff development and change involving entire schools were conducted in the mid-seventies (McLaughlin & Marsh, 1978; Bentzen, 1974). McLaughlin and Marsh (1978) reported findings based on the RAND study, which examined the nature and role of staff development programs. Elements critical to the success of long term

school change were categorized as institutional (initial administrative support, teacher commitment, collaborative planning), project implementation (specific program goals, teacher participation in decision making), leadership (positive attitude of school principal) and teacher characteristics (receptiveness to change, teachers' sense of efficacy, or capacity to affect student performance).

Staff development programs were more likely to succeed if the following conditions were met: (1) the target audience perceived change as necessary and beneficial, (2) the commitment to change was positively supported at the administrative level, (3) collaborative support was ensured in determining needs, establishing goals, developing implementation strategies and evaluating program features and, (4) program change was undertaken in context with overall educational goals and was regarded as a long term process. It was concluded that teacher commitment to change was the most critical factor relative to program success.

Dillon (1979) developed a model of staff development content delivery, which considered the collaborative input of everyone involved in the educational change. The process involved identifying the focus of activity, the target audience, and the content delivery system within the context of overall educational needs.

More recently, an attempt was made to alter teacher behaviour by targeting intervention at the staff developer level. In the Changing Teacher Practice study (CTP), Griffin and Barnes (1984) attempted to modify staff developer behaviour in order to improve teacher effectiveness and ultimately, pupil achievement. It was suggested that previous unsuccessful attempts to transfer known theory into classroom practice had not considered teachers' desire to change and the 'existential phenomena' of schools (Griffin & Barnes, 1984).

The Theory of Coaching

Inservice training workshops have typically been guided by knowledgeable, successful and exuberant professionals. Educators have often been inspired by such experiences to test newly acquired skills in the classroom. Few teachers, however, have been able to successfully transfer such knowledge to the active classroom environment. Joyce & Showers (1982) advocated a team approach whereby teachers 'coached' one another through a series of strategies associated with the successful implentation of new teaching skills. The major components of coaching were to: (a) acquire a theoretical understanding of the rationale behind the teaching skill, (b) observe expert demonstrations

involving the use of the skill, (c) observe and provide peer feedback during simulated practice outside the classroom setting and, (d) support and coach one another during the transfer of skills to the classroom.

Research on Teacher Education - Physical Education

Research on teacher education in physical education (RTE-PE) has been criticized for its lack of sophistication and complexity (Locke, 1984). While relatively few studies have involved practicing teachers as subjects of inquiry, some recent RTE-PE has been conducted in the areas of teacher inservice and staff development.

Intervening directly with elementary physical education teachers, Faucette (1984) found that skill specific training and the opportunity to practice with feedback contributed to effective inservice. Lack of positive administrative support inhibited the inservice process. Purifoy (1980) determined that a follow-up to inservice training increased junior high school teacher use of classroom management skills. The study suggested that without follow-up support, teachers would return to the baseline behaviour exhibited prior to the intervention process.

Allard & Rife (1980) provided a model featuring teacher peer supervision and feedback during the process of teacher

behavioural change. Successful change was achieved through the systematic establishment of behavioural goals, collection and display of baseline data, identification and modification of teaching strategy and, evaluation of program achievement.

In a study relating to program development within schools, Schwager (1983) found that extensive involvement by elementary physical education instructors in the planning and implementing stages led to improved attitudes towards teaching. Features contributing to program success included fostering teacher ownership and establishing a long term commitment to change.

Anderson (1982) emphasized the importance of establishing mutual respect and trust between teacher and program developer, through regular consultation during and following the implementation process.

Summary - Research on Teacher Education

Practicing teachers have traditionally relied upon inservice programs as a means of ongoing professional development. Despite the fact that many inservice programs have failed to modify the classroom behaviours of teachers (Griffin & Barnes, 1984; McLaughlin & Marsh, 1978), research has identified strategies which have successfully achieved

this goal. It appears that school-based staff development programs which were supported by administrators, perceived to be beneficial by teachers and undertaken in context with overall, long-term educational goals were more likely to succeed. The theory of coaching suggested that skill practice, with peer support and feedback prior to classroom implementation, enhanced the likelihood that newly acquired skills would be internalized for effective classroom transfer (Joyce & Showers, 1982).

Implications of RTE for Physical Education

Limited research on teacher education within the physical education setting has supported the need to involve teachers at all stages of program development or behavioural change (Schwager, 1983; Anderson, 1982). The Allard and Rife (1980) model of peer supervision and feedback, during the process of behavioural change, supported the coaching theory of Joyce and Showers (1982). Lack of research considering the modification and transfer of classroom management skills within a gymnastics setting suggests a need for the present study.

Single Subject Research

Hersen and Barlow (1976) stated that variability in human behaviour was a result of the interaction of many influences. The objective of human behavioural research was to account for human variability by defining and finally measuring observable behaviours (Siedentop & Rife, n.d.; Gold, 1984). One assumption of applied research, or experimentation regarding human behaviour change, was that behaviour could and should be altered (Siedentop, 1975). The most widely accepted methodology for studying individual change has been single subject analysis, identified in the 1970's as the most effective technique for isolating causes in behaviour change (Hersen & Barlow, 1976). Griffey (1981) argued that the single subject design, featuring an intervention strategy, allowed the researcher to observe the immediate effect of the intervention procedure. Further, it allowed the experimental design to be modified to effect change in the subject's behaviour.

The A-B design was suggested as the simplist, albeit one of the weakest single case research designs (Hersen & Barlow, 1976). The A phase involved observing and recording the frequency of naturally occurring baseline behaviours targeted for intervention (dependent variables). The establishment of a stable baseline behaviour pattern

provided a benchmark against which changes following an intervention could be measured. Gold (1984) and Hersen and Barlow (1976) identified that human variability contributed to the difficulty of stabilizing subject baseline behaviour. Hersen and Barlow (1976) recommended that a minimum of three consecutive decreasing or increasing data points was necessary to suggest a behaviour trend.

In the B or intervention phase, the treatment was introduced and subsequent changes in subject behaviour in the dependent variables were noted. Isolating target behaviours, then intervening with discrete treatment variables enabled greater inference to be made regarding the effect of treatment on that behaviour (Gold, 1984; Hersen & Barlow, 1976). However, the intervention upon several target variables concurrently, more closely reflected naturally occurring behaviour patterns (Hersen & Barlow, 1976).

Multiple Baseline Design

It has been argued that the single subject design did not identify causes of B-phase behaviour change (Siedentop & Rife, n.d.). The multiple baseline design, in which treatments were 'systematically replicated' (Hersen & Barlow, 1976) across subjects or settings, was thought to

demonstrate causality (Siedentop & Rife, n.d.). In this design, two or more subjects were initially observed, to identify stable baseline behaviours. Intervention was then provided to subject A while the baseline condition was maintained for the remaining subjects. The strength of the design was realized if, following intervention, behaviour change was evidenced in subject A in the absence of change in the remaining subjects (Gold, 1984).

Generality of Findings

Hersen and Barlow (1976) expressed that random selection of subjects from a population enabled experimental results to be generalized to that population. Within applied research however, practical considerations such as subject availability, cost and time of involvement in data collection have constrained such techniques. It was postulated that generality of findings could be based upon 'logical consideration' (Hersen & Barlow, 1976). Experimental results involving an individual thought to represent a homogeneous group, could logically be generalized to that group. Replicating the experiment across similar subjects enabled the generalization base to be increased, lending external validity to the design.

Generality of results within the present study was limited to the teachers involved in the study. Such generality was assumed through direct and systematic replication of the experimental design across teachers.

Chapter III

RESEARCH METHODOLOGY

Sections in this chapter will describe the purpose of the research, teacher and student subjects, primary and intermediate instructional units, as well as dependent and independent variables. The research design will be presented, including the data collection process, the coding procedure, and the methods used to calculate interobserver agreement.

The initial purpose of this study was to monitor and modify, through intervention, selected management and instructional strategies of practicing classroom teachers. A second purpose was to determine whether the subsequent modification of teacher behaviours would increase class practice time and, ultimately, student ALT-PE. A third purpose was to determine whether the inservice process would positively influence teacher attitudes regarding gymnastics instruction.

The study was conducted in a naturalistic gymnasium setting and involved four elementary inservice teachers. It was hoped that the inservice process would facilitate the

acquisition of basic skills, as well as the transfer of key management and instructional strategies to a gymnastics setting.

Subjects

Four inservice classroom teachers from one elementary school volunteered to instruct their classes in gymnastics over a nine week period.

Teacher A was female and had 16 years teaching experience at the intermediate level. The grade five class, of 14 boys and 17 girls, was described as 'average' in academic ability and behaviour. Physical education was offered three times a week. Teacher A had attended several inservice gymnastics clinics and had 13 years experience in gymnastics instruction.

Teacher B was female and had five years teaching experience, including gymnastics, at the primary level. The grade one class, of 17 boys and eight girls, was described as 'average' in academic ability and behaviour. Physical education was offered three times a week. Teacher B had received preservice training in physical education, as a first year physical education major, and had attended several inservice clinics in gymnastics.

Teacher C was female and had two years teaching experience, including gymnastics, at the intermediate level, and 12 years experience in Special Education. The grade four/five class, of 18 boys and 11 girls, was described as 'non motivated and low performing', and included four students with severe learning problems, six students with severe behaviour problems and three Educatable Mentally Handicapped (EMH) students. Daily physical education was offered. Teacher C had attended one inservice gymnastics clinic. As well, teacher C had 14 years experience in applying systems of direct instruction and classroom management (Carnine & Filbert, 1979; Sprick, 1981).

Teacher D was male had three years intermediate level, and ten years combined middle/junior high school level experience. Teacher D also had 13 years administrative experience including three years as principal of the present school. Teacher D had no training or experience in gymnastics instruction. The grade two/three class, of 16 boys and seven girls, was instructed by teacher D in the afternoon only. This class consisted of children with major learning difficulties and included one special education student and three repeaters. The instructional program offered structured activities in the morning, with a transition to less structured activity (including daily physical education) in the afternoon.

Three students from each classroom, judged by each teacher to be 'regular attenders', were randomly selected from class lists. Each student was observed and behaviours were coded in order to establish a representative degree of learner involvement within each gymnastics lesson. An alternate was randomly selected as a temporary replacement in the event of the absence of an initially selected student.

School Board approval was obtained and consent forms were signed by each teacher prior to the study (see Appendix A).

Experimental Teaching Unit (ETU)

Teachers were provided with a seven lesson ETU which was modified to suit the needs of teachers at both the primary and intermediate levels (see Appendix B). Skill activities were based upon the British Columbia, Premier's Sports Award Program-Gymnastics (Wedmann, 1984). The equipment required for each lesson was set up in advance by the researcher.

Overviews of the ETU and plans for lesson one were presented to all teachers during a 90 minute workshop, ten days prior to implementation. During a second workshop (two days later) teachers observed as eight student models from teacher A and C's classes were trained by the researcher,

regarding correct execution of lesson one skills, modeling responsibilities and station procedures. Within the study, the models were trained by the researcher prior to each two-part lesson.

Intermediate and primary lessons consisted of a whole class warm-up (five minutes), skill instruction and practice (15 minutes) and a whole class concluding activity (five minutes).

Intermediate Lessons

Two-25 minute periods were required to complete each of the seven intermediate lessons. Prior to the first lesson, students were divided into four groups corresponding to the four stations established for each lesson. Students participated at two stations during period one and the remaining two stations during period two of each lesson. This rotational pattern was repeated for each of the following two-part lessons. Station themes were standardized although station activities varied in each lesson.

Primary Lessons

Primary lessons, during phase one (baseline), were characterized by initial whole class instruction (exploratory approach), leading to skill practice at two

independent stations. Following baseline, teacher B introduced a third station of skill activities while teacher D continued to offer two stations.

Dependent Variables

Eighteen dependent variables were coded and classified under the headings of teacher verbal behaviour, class context and learner involvement.

Teacher Verbal Behaviour

1. Positive Group Alerting: Statements which serve to alert (prompt) or hustle (motivate) individuals or groups of students regarding appropriate skill performance or conduct. Examples of prompt statements are "Ready?...Go", "John, please watch carefully". A hustle statement is "Don't stand around. Keep moving". Statements which communicate to students that they are being monitored, "Brian..."; "I'm watching everybody", are considered as positive group alerting.
2. Positive Feedback: A verbal response to a skill-related behaviour. "(the roll)...looks fine". "Great June, that's a terrific sequence of balances".
3. Corrective Feedback: A verbal response to a skill-related behaviour with the intention of modifying that behaviour. "Try to straighten your

body". "Tuck your head to your chest and curl your back like a ball".

4. Praise: A verbal response to non-skill behaviour, such as effort, attitude or taking equipment out. "Thank you for being so cooperative today".
5. Negative Group Alerting: A verbal response to a student or a group with the intention of terminating a deviant behaviour. An example of a negative group alerting statement is, "Jill, only one person on the balance beam at a time". "Barb, take a time out until you can remember the proper way to behave".
6. Accountability: A verbal statement which serves to hold a student accountable for skill performance. Examples of accountability statements are, "Bill, please show me a stork stand", "Mary, would you please demonstrate to the class an inverted hang in the tuck position".

Class Context Variables

1. Instruction Time: The portion of lesson time in which 50% or more students in a class are receiving skill instruction (listening, watching a demonstration) from a teacher or student model (Siedentop, 1983).
2. Management Time: The portion of lesson time in which 50% or more students are being spoken to regarding an inappropriate action concerning behaviour or conduct.

3. Practice Time: The portion of lesson time in which 50% or more students in a class are physically engaged in skill practice relating to lesson content.
4. Transition Time: The portion of lesson time in which 50% or more students in a class are engaged in transitional activities such as setting out or putting away equipment, changing stations, selecting groups or teams, or waiting for a new activity to begin.

Learner Involvement

The following student behaviours represented learner involvement within practice time:

1. Off-task: Not involved in a purposeful or task-related activity, or interfering with the activity of another student.
2. Motor-appropriate: Performing a skill at 80% rate of success, or at a control level (two tries look alike).
3. Wait: In position and ready to begin a skill but must wait because the station area is occupied by another performer.
4. Academic Learning Time - Physical Education (ALT-PE): The portion of lesson time in which an individual student is engaged with instructional content at an 80% rate of success (motor appropriate behaviour).

The following learner involvement variables were coded but were not targets of intervention:

1. Cognitive: Either attending to skill instruction (verbal or demonstration), or studying a task chart.
2. Interim: Travelling purposefully from one station area to another or pausing for a short time between a series of stunts.
3. Motor-inappropriate: Properly engaged in skill practice but performing at below a control level of execution (no two tries look alike, erratic).
4. On-task: Preparing to execute a skill (moving to a squat position for a forward roll, preparing the rope for a rope climb), or purposefully engaged in a non-skill activity such as tying a shoe lace or straightening a mat.

Questionnaire

Of interest to the study was the extent to which teacher attitudes, regarding gymnastics instruction and management, were influenced by the overall inservice process. The data collection process included a pre and post study questionnaire (see Appendix C), an attitudinal survey (see Appendix D), and personal conferencing which took place following lessons, during interventions and following the study. Intervention sessions and the post study debriefing

session were tape recorded. A log of daily lesson proceedings was maintained throughout the study.

Independent Variable (Intervention)

The first intervention occurred following a minimum four lesson baseline period, during which all dependent variables were monitored. Teachers were unaware of the variables being monitored during the baseline period. The subsequent intervention process consisted of the provision of feedback, social praise, and goal setting regarding targeted variables. Objective data concerning all variables were presented and discussed privately with each teacher, after which concensus was reached between the teacher and the researcher, regarding the decision to intervene upon a particular variable (see Appendix E).

Following the intervention and after observing each lesson, informal contact was made with teachers, in order to receive feedback on matters relating to the intervention goals. A record of this subjective data was recorded in a daily log, and provided further insight regarding the ongoing feelings and perceptions of teachers.

The second intervention occurred following a phase two period, during which all teachers instructed five lessons. Following a similar process to that in phase one, variables were selected for intervention with every teacher.

Research Design

A multiple baseline A-B design, across subjects, was utilized in order to observe and record change in the nature of the dependent variables. The multiple baseline, across teachers, allowed the researcher to demonstrate the efficacy of the treatment. In the A or baseline phase (a minimum of four lessons in duration), repeated measurements were taken on all dependent variables for each teacher in order to determine stable behaviour. Following the phase one period, both of the B-phase intervention periods (phases two and three) were a minimum of four lessons in duration.

Following each intervention, data collected on dependent variables were compared to a teacher's baseline phase as well as the 'extended baseline' phase of the remaining teachers. In this way it was possible to determine, among teachers, the stability in behaviour of variables in the absence of intervention.

Data Collection

Prior to collecting data, classes were exposed to the 'experimental' conditions of the study (video equipment, limited instructional area, researcher presence) in order to minimize teacher and student reactivity. All lessons were videotaped in order to record the occurrance of behaviours

relevant to the study. The teaching area was delineated to allow complete viewing, through the video camera, of all subjects during the lesson. Teachers wore a cordless microphone in order to transmit verbal responses.

Coding Procedure

The observational recording technique was identified by Cooper (1974) as a relevant procedure for observing and recording the occurrance of socially significant behaviour. Two examples of this technique, event recording and interval recording, were utilized in this study.

Event recording involved tallying the frequency of discrete behaviours when they occurred. This system was used to code all all teacher verbal behaviour variables within continuous 12 second intervals, over an entire lesson. The rate of verbal behaviours was expressed as the frequency of occurrance per ten minutes (Appendix F).

The ALT-PE interval recording system provides an estimate of the occurrance or non-occurrance of a behaviour across and during intervals of time. The measure of occurrance of events is calculated as the number of intervals in which the event is observed over the total number of intervals, and is expressed as a percentage. The time interval should be sufficiently large (10-30 seconds) to allow the observer to reliably observe and record the event (Cooper, 1974).

All class context and learner involvement variables were coded using a modified version of the ALT-PE interval recording system (Siedentop, 1982) (Appendix F). Data were collected within continuous, twelve second intervals over an entire lesson (six seconds observe; six seconds record).

Calculation of Interobserver Agreement

Reliability in observing and recording the occurrences of individual events is achieved through 'simultaneous measurement by independent observers' (Cooper, 1974). Agreement between observers is considered as the extent to which consensus is reached regarding the observed behaviour of the same subject during the same period of observation. Agreement between independent observers is calculated as:

$$\frac{\text{agreements}}{\text{agreements + disagreements}} \times 100\% = \text{percentage agreement}$$

An independent observer was trained to accurately classify and code all dependent variables. An acceptable criterion level of 80% agreement was reached on two consecutive occasions on video-taped lessons, prior to coding the data from the study (Hersen & Barlow, 1976). Two methods of determining interobserver agreement were used:

1. The interval by interval method (I-I) was utilized for class context and learner involvement variables,
2. The mean of the scored interval (S-I) and unscored interval (U-I) method was utliized for teacher verbal behaviour variables. Frequency data were first changed into interval data by categorizing this data into discrete intervals.

Chapter IV

RESULTS

A primary purpose of the study was to examine the effectiveness of intervention on specific classroom management and instructional behaviours of regular elementary teachers within a gymnastics setting. A secondary purpose was to determine whether the subsequent modification of classroom management behaviour would increase class practice time and student Academic Learning Time-Physical Education (ALT-PE). A final purpose was to determine whether the inservice process would positively influence teacher attitudes regarding gymnastics instruction and management.

The reporting of results will include interobserver agreement, baseline and post intervention data regarding all dependent variables monitored, and data derived from questionnaires and interviews given before and after the study.

Interobserver Agreement

All interobserver agreement scores were above the 80% acceptable criterion level (Herson & Barlow, 1976). Mean interobserver agreement scores for class context and learner involvement respectively were 97.6% and 91.3% for teacher A, 97.2% and 92.7% for teacher B, 96.7% and 88.7% for teacher C and, 95.5% and 89.3% for teacher D (see Tables 1 and 2). Mean interobserver reliability scores for teacher verbal behaviour variables were 90.4% for teacher A, 87.8% for teacher B, 83.4% for teacher C and, 89.8% for teacher D (see Tables 3 and 4).

Results of Interventions

Data collected during baseline formed the basis for intervention on the following variables: instruction time for teachers A, B, C, and D; transition time for teacher D; corrective feedback for teachers A, B, and D; student wait time for teachers A, B, and C; off-task time for teachers A, C, and D; equipment management for teachers B and C. All results were categorized in relation to the primary research questions of the study.

Table 1

Interobserver Agreement (%) For Class Context Variables By Teacher (I-I Method)

Teacher	Phase 1	2	3	Mean
A	100.	96.0	96.7	97.6
B	93.8	100.	97.7	97.2
C	95.6	98.2	96.3	96.7
D	97.4	93.9	95.2	95.5

Table 2

Interobserver Agreement (%) For Learner Involvement Variables By Teacher (I-I Method)

Teacher	Phase 1	2	3	Mean
A1	95.8	90.5	90.0	
A2	97.8	92.9	82.5	
A3	93.9	90.2	87.5	
Mean	95.9	91.2	86.7	91.3
B1	92.1	91.7	95.6	
B2	84.2	94.4	90.9	
B3	97.3	97.1	90.9	
Mean	91.2	94.4	92.5	92.7
C1	89.5	83.8	91.7	
C2	92.1	86.5	91.7	
C3	86.8	86.5	90.3	
Mean	89.5	85.4	91.2	88.7
D1	94.9	90.9	88.6	
D2	92.1	93.2	82.9	
D3	92.1	84.1	85.3	
Mean	93.0	89.4	85.6	89.3

Table 3

Interobserver Agreement (%) For Teacher A and B's Verbal Behavior by Experimental Phase ($\bar{x}$ S.I. + U.I.)

	Phase			
Variable	1	2	3	Mean
Teacher A				
Corrective Feedback	92.4	89.7	93.1	91.7
Accountability	82.9	100.	93.6	92.2
Positive Feedback	100.	95.8	93.8	96.5
Positive Group Alerting	86.3	87.1	82.5	85.3
Negative Group Alerting	92.4	69.0	87.0	82.8
Praise	100.	*	*	100.
Lesson	1A	4B	6B	90.4
Teacher B				
Corrective Feedback	81.2	84.8	83.5	83.2
Accountability	100.	94.5	100.	98.2
Positive Feedback	94.5	84.6	86.9	88.7
Positive Group Alerting	80.6	88.3	86.0	85.0
Negative Group Alerting	95.6	91.1	90.9	92.5
Praise	100.	49.6	*	74.8
Lesson	1A	3B	6A	87.8

* no occurances

Table 4

Interobserver Agreement (%) For Teacher C and D's Verbal Behavior by Experimental Phase ($\bar{x}$ S.I. + U.I.)

	Phase			
Variable	1	2	3	Mean
Teacher C				
Corrective Feedback	88.4	95.8	92.9	92.4
Accountability	89.6	94.2	86.6	90.1
Positive Feedback	88.3	88.0	90.6	89.0
Positive Group Alerting	85.7	84.3	81.8	83.9
Negative Group Alerting	79.9	73.9	82.2	78.7
Praise	65.8	49.7	*	57.8
Lesson	2A	3A	7A	83.4
Teacher D				
Corrective Feedback	100.	91.1	90.5	93.9
Accountability	*	49.5	100.	74.8
Positive Feedback	88.0	93.2	100.	93.7
Positive Group Alerting	95.6	81.1	90.6	89.1
Negative Group Alerting	100.	92.3	100.	97.4
Praise	74.5	*	*	74.5
Lesson	1A	2B	5B	89.8

* no occurances

Research Question One

Can specific classroom management and instructional behaviours of regular elementary teachers be improved and maintained by an intervention procedure?

Class Context Variables

Instruction

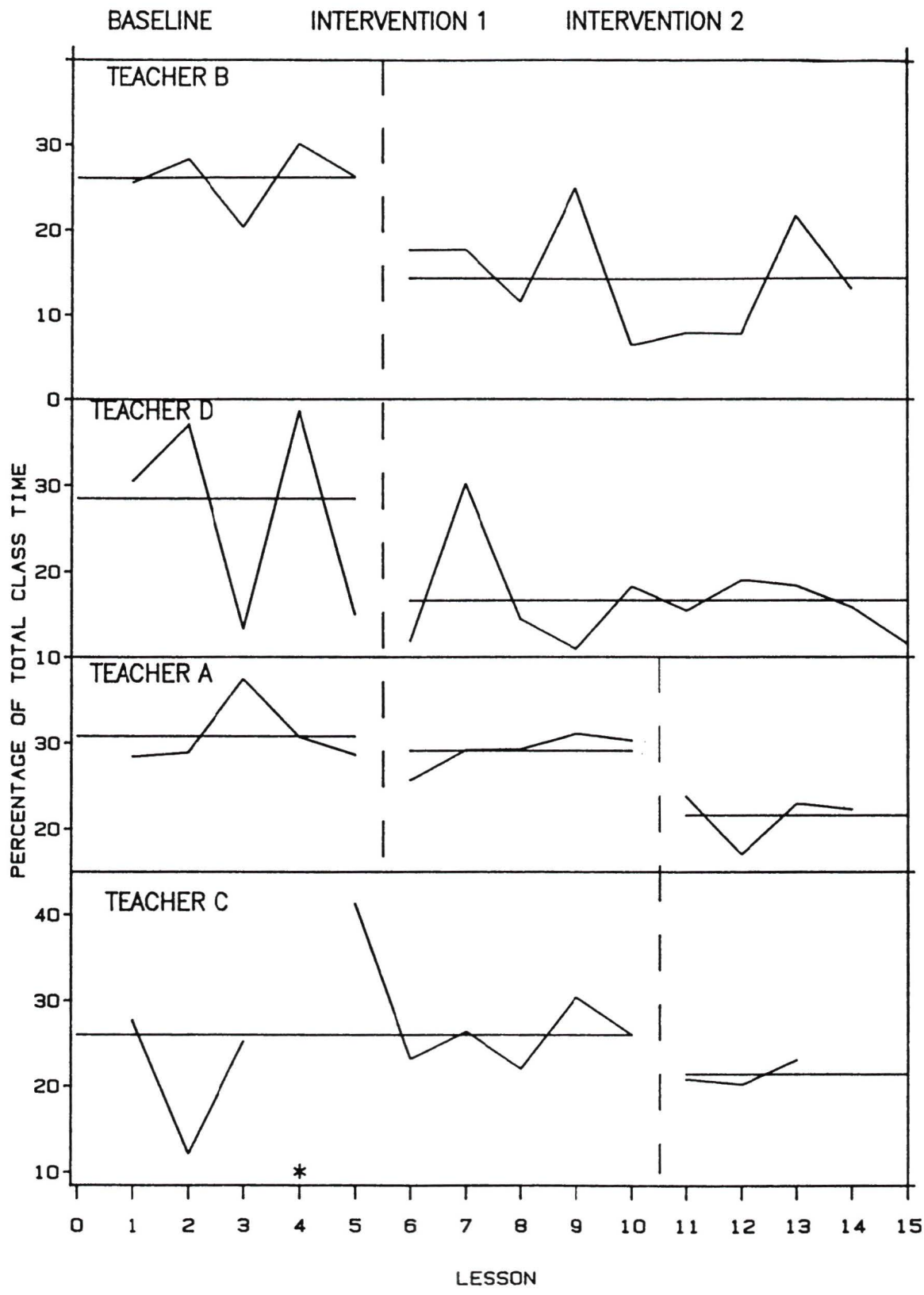
Analysis of phase one baseline data indicated that mean instruction time represented 28.0% of total lesson time for teachers A, B, and D. As a consequence, the goal of the first intervention was to reduce instruction time by intervening upon the pacing of instruction, for teachers B and D, and upon the preparation and prompting of student models for teacher A. A similar intervention, involving the preparation of teacher C's models, was initiated in response to baseline (phase one and two) instruction time which represented 26% of total lesson time. The teachers' data are reported in the order of their intervention conferences.

Teacher B. Within phase one, 26.1% of total lesson time was involved in instruction (see Figure 1). Lessons were characterized by frequent but brief episodes of both instruction and practice. A goal of the first intervention was to reduce the frequency of instructional episodes and to increase the length of practice intervals. Following

intervention the mean instruction time decreased to 14.3% of lesson time.

Teacher D. During the phase one baseline period 28.5% of total lesson time was involved in instruction. In comparison with teacher B, instructional episodes were less frequent but were of greater duration. A goal of reducing the length of instructional intervals to allow more practice time was established for teacher D. Following intervention, the instruction time was reduced to 16.6% of total lesson time (see Figure 1).

Teacher A. Prior to the first intervention, instruction time comprised 30.8% of lesson time. A goal of the intervention was to reduce instruction time by selecting 'expert' models at each station. The models were provided with skill practice sheets to study prior to each lesson and, during training sessions, were prompted to provide more concise instruction. Following the first intervention, instruction time decreased to 29.1% of lesson time. A goal of the second intervention was to limit the models' instruction time. During instruction time, students were also prompted to watch their models more carefully. Following intervention two, instruction time decreased to 21.6% of lesson time (see Figure 1).



* NO DATA

FIGURE 1. PRECENTAGE OF CLASS TIME IN INSTRUCTION

Teacher C. Baseline (phase one and two) instruction time represented 26.0% of total lesson time. Indecision and delays during the models' demonstration of skills were evident within this period. A goal of intervention two was to retain the original randomly selected models, and to provide them with skill practice sheets. Teacher C attended training sessions for models, in order to become more familiar with skill requirements. Instruction time following the intervention was reduced to 21.4% of lesson time (see Figure 1).

Transition

Teacher D. During baseline, transition time represented 18.2% of total lesson time. Students were slow in responding to teacher signals, which were intended to gain their attention. A goal of the first intervention was to reduce transition time by introducing a signal ("5..4..3..2..1") to motivate students to attend more quickly. Following the intervention, transition time, on average, decreased to 16.3% of lesson time (see Figure 2).

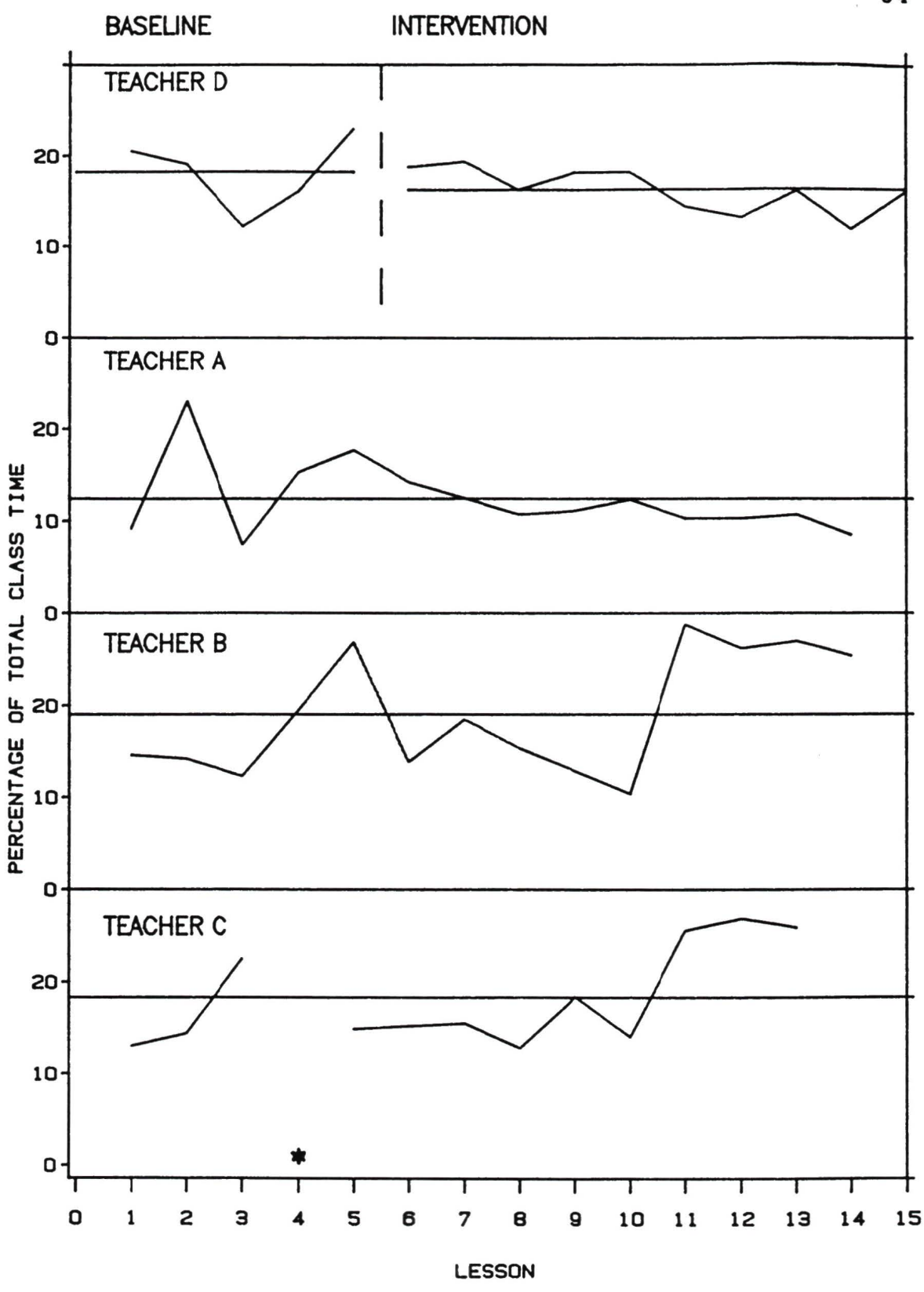


FIGURE 2. PERCENTAGE OF CLASS TIME IN TRANSITION

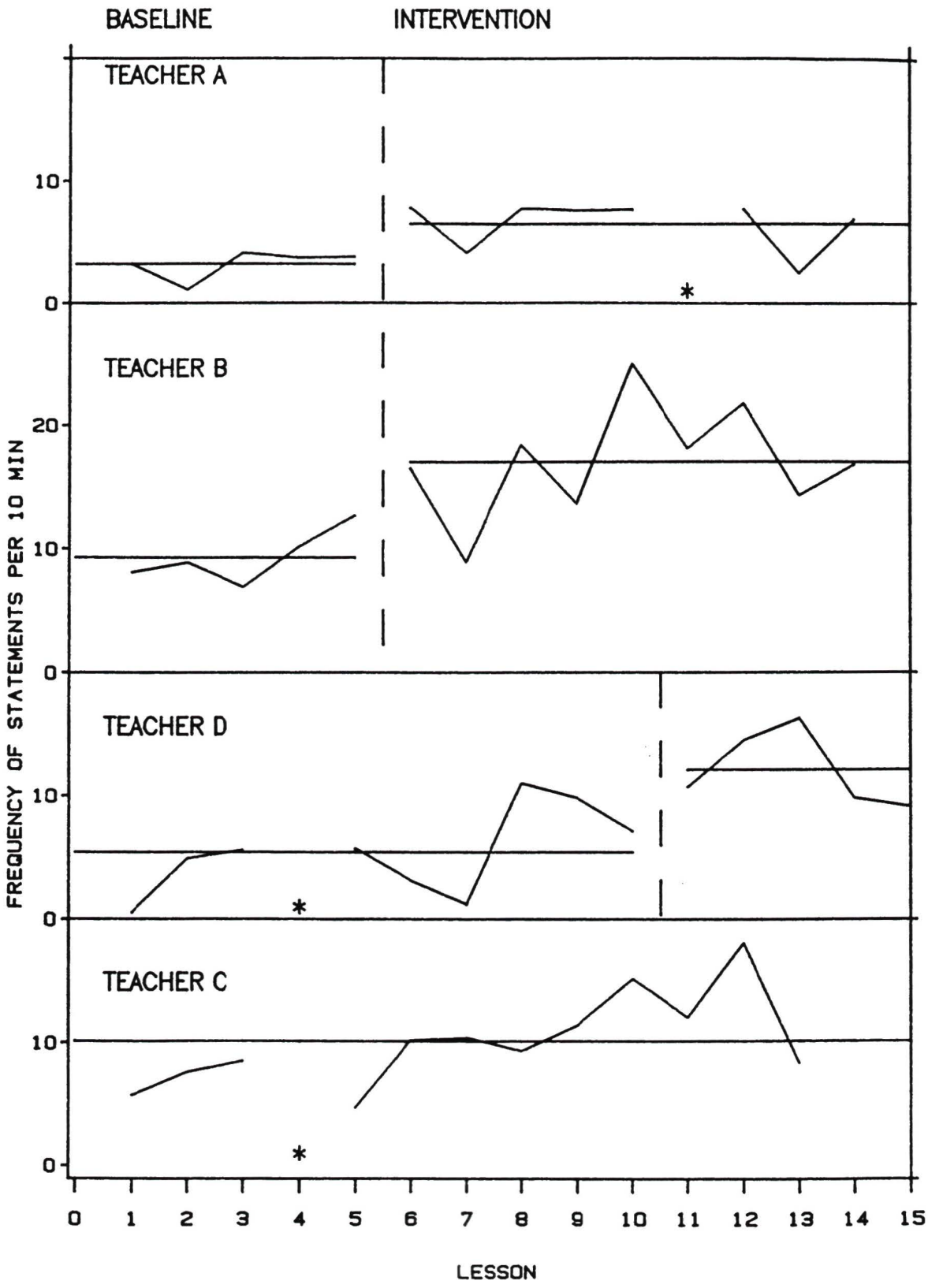
Teacher Verbal Behaviour

Skill Feedback

Teacher A. Analysis of baseline data indicated that teacher A provided an average of 3.2 corrective feedback statements per ten minutes (see Figure 3). A goal of the first intervention was to provide more specific skill feedback during practice. Following the intervention, the average rate of corrective feedback doubled to 6.5 statements per ten minutes.

Teacher B. During the baseline period, teacher B provided an average of 9.3 corrective feedback statements per 10 minutes (see Figure 3). A goal of intervention one was to increase skill activity from two to three stations. Teacher B expressed the wish to offer more corrective skill feedback at one station, while supervising the remaining stations. Following the intervention, the rate of corrective feedback increased to an average of 17.0 statements per ten minutes.

Teacher D. A concern regarding unsafe skill practice led to an intervention following phase two. The goal of the intervention was for teacher D to teach the proper progressions involving rolls and landings, and then to provide more corrective feedback. Students were also to be instructed regarding personal control and safe movement



* NO DATA

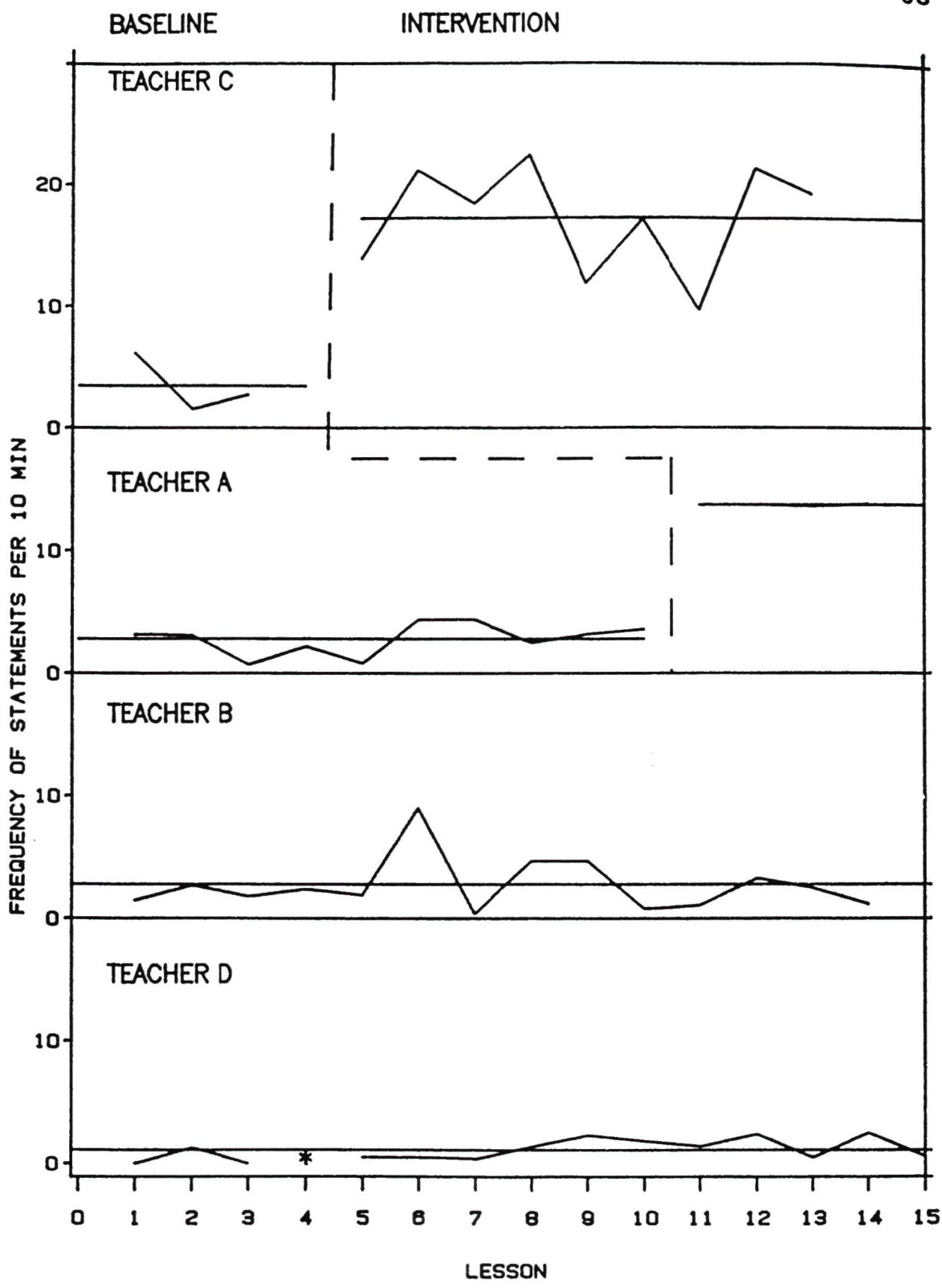
FIGURE 3. FREQUENCY OF CORRECTIVE FEEDBACK ACROSS TEACHERS

about the gymnasium. Following the intervention, the average rate of corrective feedback more than doubled from a baseline rate of 5.4 statements per ten minutes to 12.1 statements per 10 minutes (see Figure 3).

Accountability

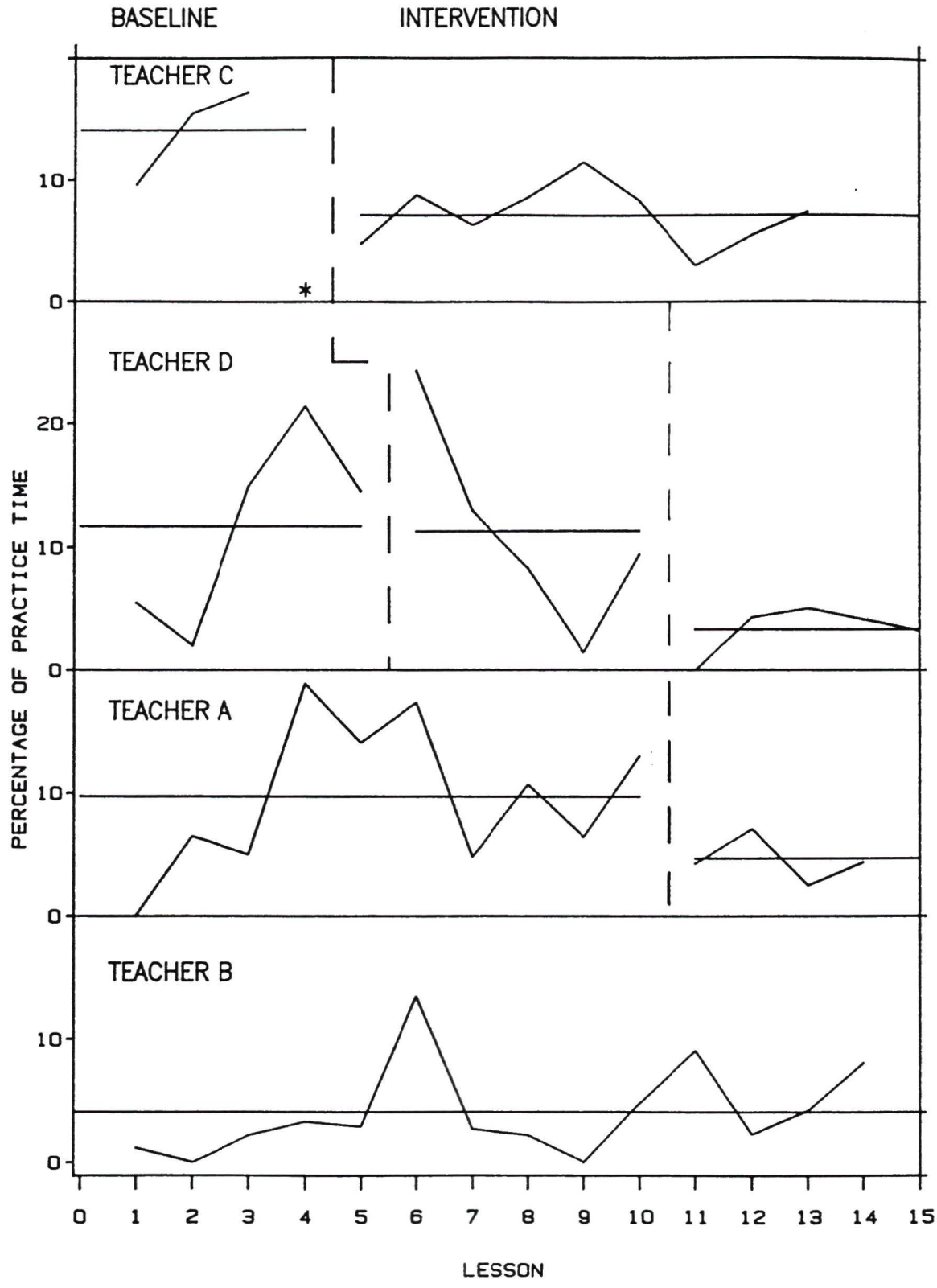
Teacher C. In an attempt to reduce off-task behaviour, a goal of the first intervention was to introduce an accountability system where students would be randomly chosen to demonstrate a skill during practice time. Following the intervention, the rate of accountability statements increased from a baseline mean of 3.4 to 17.3 statements per ten minutes (see Figure 4). Student off-task behaviour declined from a baseline mean of 14.1% to 7.1% of practice time (see Figure 5).

Teacher A. A concern for off-task behaviour (9.7% of phase one and two practice time) prompted an attempt to hold students accountable for skill performance during practice time. Teacher A agreed to circulate during practice, randomly ask students to demonstrate a skill and record the performance on a check list. Following the second conference, the average rate of accountability statements increased from a baseline rate of 2.8 to 13.7 per ten minutes (see Figure 4) and student off-task behaviour was reduced to 4.7% of practice time (see Figure 5).



* NO DATA

FIGURE 4. FREQUENCY OF ACCOUNTABILITY STATEMENTS ACROSS TEACHERS



* NO DATA

FIGURE 5 . PERCENTAGE OF STUDENT OFF TASK BEHAVIOUR ACROSS TEACHERS

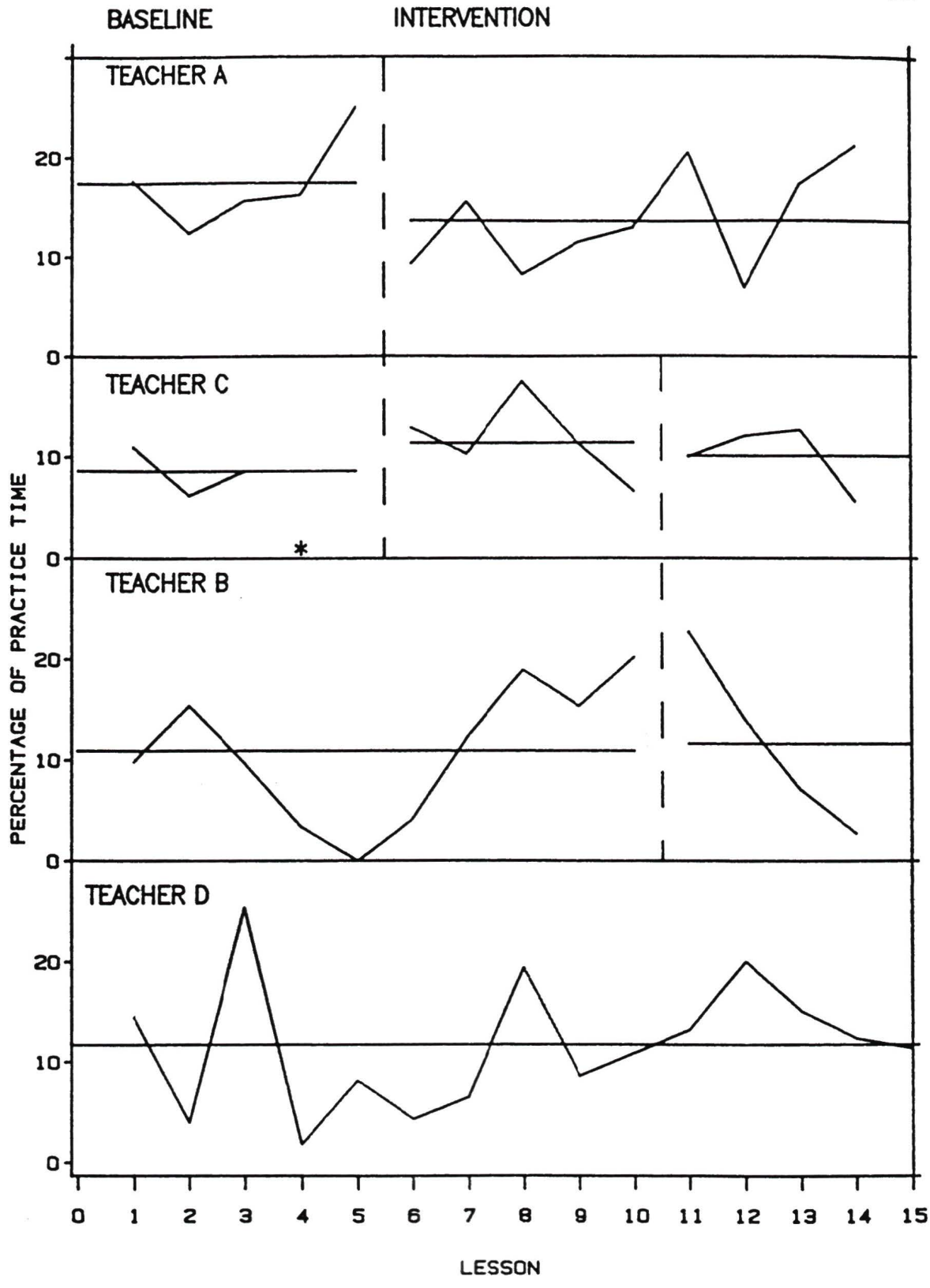
Learner Involvement

Off-task Time

Teacher D. During the baseline phase, student off-task behaviour represented 11.7% of practice time (see Figure 5). A goal of intervention one was to reduce student off-task behaviour by initiating a two minute 'time-out' for inappropriate behaviour. Following the intervention, off-task behaviour decreased to 11.3% of practice time. As a consequence, reducing off-task behaviour became the goal of a second intervention. A merit system was established for proper conduct, in addition to a 'time-out' strategy for inappropriate behaviour. Following the second intervention, student off-task behaviour was reduced to 3.3% of practice time, almost a quarter of the baseline rate.

Wait Time

Teacher A. Following baseline, a concern for low levels of student involvement (Ma) during skill practice, resulted in setting a goal to decrease wait time from a baseline rate of 17.4% during practice time (see Figure 6). The intervention consisted of adding a third section of mats to the 'roll' station in an effort to minimize lineups. Following intervention, mean wait time decreased to 13.6% of practice time.



* NO DATA

FIGURE 6. PERCENTAGE OF STUDENT WAIT TIME ACROSS TEACHERS

Teacher B. Student wait time increased in teacher B's class during the latter part of baseline (phase two). On average, student wait time comprised 10.9% of practice time. A strategy of increasing teacher monitoring and encouraging students to avoid lineups and move to 'free equipment' was adopted. Following the intervention, however, student wait time represented 11.6% of practice time (see Figure 6).

Teacher C. A similar strategy of encouraging students to avoid lineups and to select 'free' equipment was implemented with teacher C. Following the first intervention, student wait time, however, increased from a baseline average of 8.6% time to 11.5% of practice time. Wait time was again addressed through a second intervention, by making 'active participation' (avoiding lineups, choosing alternate tasks) a component of accountability. Following the intervention, student wait time declined to 10.1% of lesson time but remained above a baseline value of 8.6% (see Figure 6).

Equipment Management

Teachers B and C. Prior to intervention, the researcher set out the equipment required for each lesson. The purpose of the second intervention was to allow teachers and students to experience more 'realistic' lesson conditions of setting the equipment out, and to determine the impact of this intervention upon baseline transition time. Following

the intervention, the average transition time increased from 15.9% to 26.9% of lesson time for teacher B and from 15.6% to 26.1% of lesson time for teacher C (see Figure 2).

Research Question Two

Will the intervention procedure increase class practice time?

The second purpose of this study was to determine if the intervention process would result in increased student practice time and thus, provide greater opportunity to learn. While practice time was not directly intervened upon, the ultimate goal of the intervention process was to increase practice time by modifying the instructional behaviour of all teachers, and the managerial behaviour of teacher D. In each paragraph, the percentage practice time for each teacher will be reported by phase.

Teacher A. Prior to the first intervention on instruction, baseline practice time represented, on average, 54.7% of lesson time. Following the intervention, the mean practice time for phase two increased to 58.2% of class lesson time. Following a second intervention on instruction, phase three practice time increased further, to an average of 68.5% of lesson time (see Table 5). Over the entire study, practice time represented an average of 59.9% of total lesson time (see Figure 7 and Table 6).

Table 5

Mean % of Practice Time By Phase

Teacher		Phase 1	Phase 2	Phase 3	Overall Mean
A	Mean	54.7	58.2	68.5	59.9
	SD	5.1	1.2	2.9	6.7
	Range	62.4-48.2	60.0-56.6	72.6-65.9	72.6-48.2
B	Mean	56.3	69.8	60.5	62.3
	SD	8.2	8.3	6.2	9.4
	Range	67.4-46.9	83.2-62.1	66.2-51.8	83.2-46.9
C	Mean	61.7	55.8	54.2	56.7
	SD	10.8	8.4	4.0	7.8
	Range	73.5-52.3	65.1-44.0	60.0-50.9	73.5-44.0
D	Mean	54.5	61.7	69.0	61.7
	SD	13.3	11.7	3.1	11.4
	Range	74.4-44.0	69.3-42.6	72.3-64.5	74.4-42.6

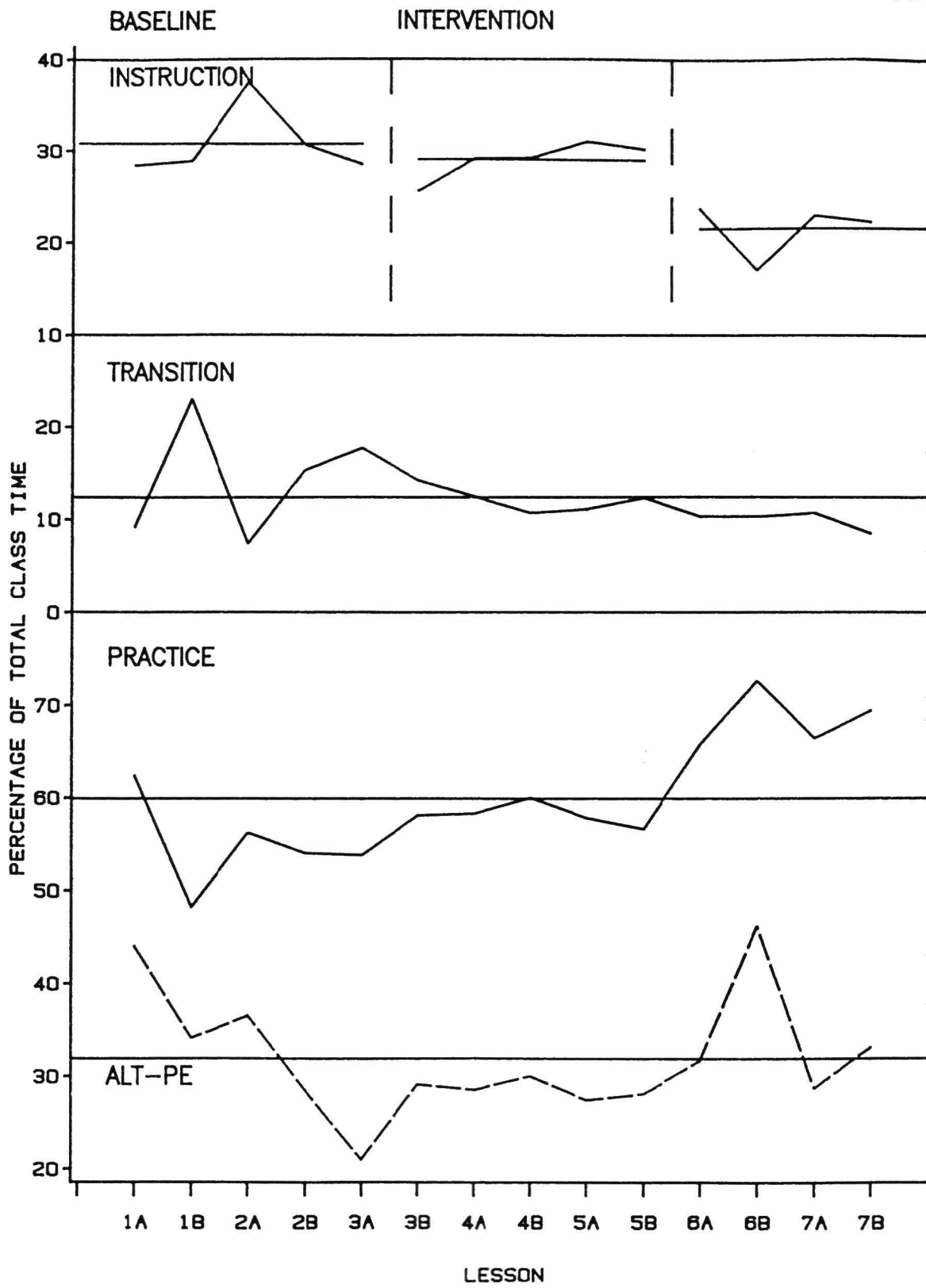


FIGURE 7. MEAN PERCENTAGE OF CLASS TIME FOR CLASS CONTEXT VARIABLES AND ALT-PE: TEACHER A

Table 6

Mean % of Class Time for Class Context Variables and ALT-PE: Teacher A

			Intervention	
		Baseline	1	2
Variable		%	%	%
Instruction	Mean	30.8	29.1	21.6
	SD	3.8	2.1	3.0
	Range	37.5-28.4	31.1-25.7	23.8-17.1
Transition	Mean	12.4		
	SD	4.1		
	Range	23.0-7.4		
Practice	Mean	59.9		
	SD	6.7		
	Range	72.6-48.2		
Management	Mean	*		
	SD			
	Range			
ALT-PE	Mean	31.9		
	SD	6.7		
	Range	46.2-21.0		

* no occurances

Teacher D. Baseline practice time accounted for, on average, 54.5% of lesson time (see Table 5). After the first intervention on both instruction and transition time, phase two practice time increased to an average of 61.7% of lesson time. Phase three practice time increased further, to an average of 69.0% of lesson time. Practice time for the entire study represented an average of 61.7% of total lesson time (see Figure 8 and Table 7).

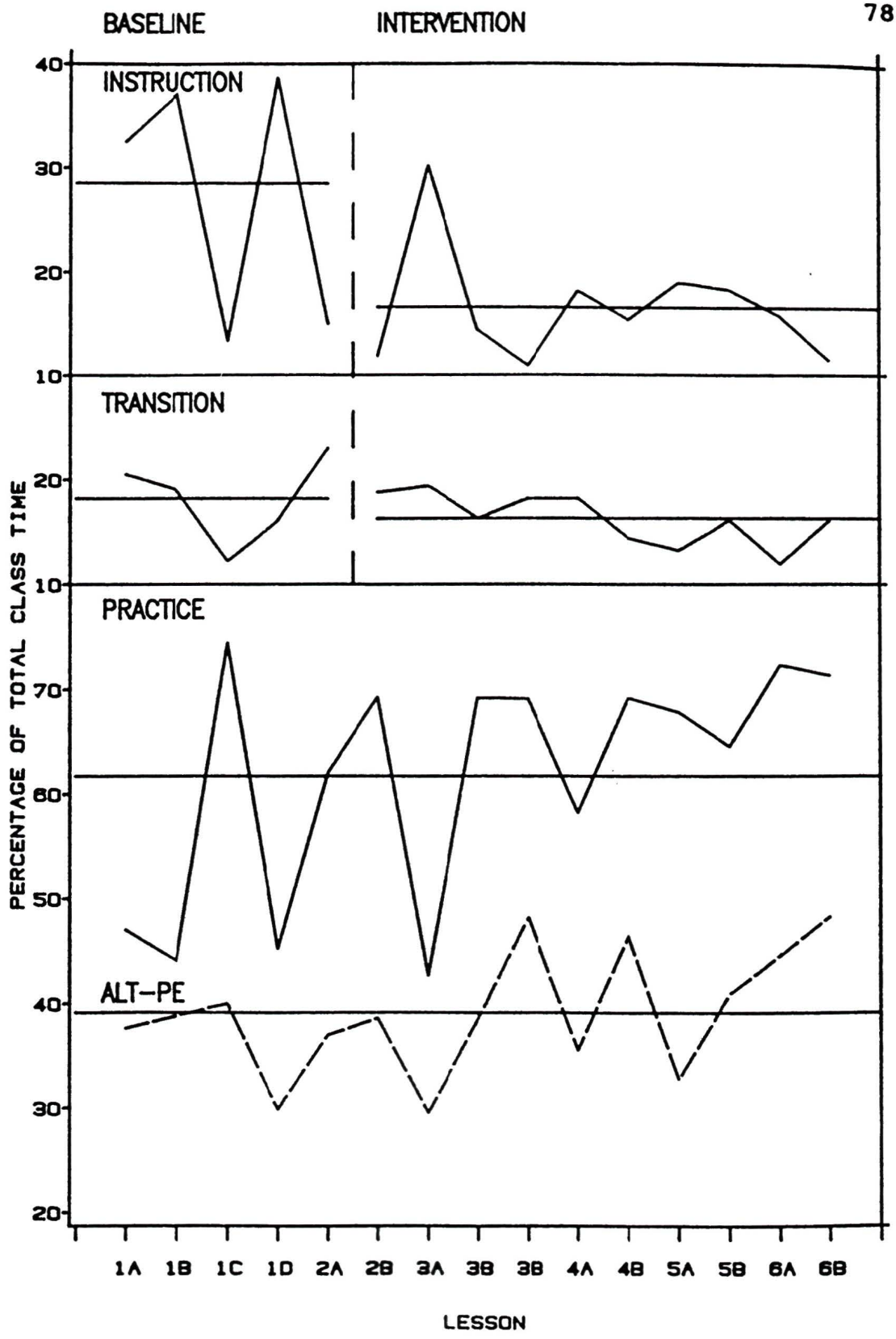


FIGURE 8. MEAN PERCENTAGE OF CLASS TIME FOR CLASS CONTEXT VARIABLES AND ALT-PE: TEACHER D

Table 7

Mean % of Class Time for Class Context Variables and ALT-PE: Teacher D

Variable		Baseline %	Intervention %
Instruction	Mean	28.5	16.6
	SD	12.1	5.6
	Range	38.7-13.3	30.2-10.9
Transition	Mean	18.2	16.3
	SD	4.2	2.5
	Range	23.0-12.2	19.4-11.9
Practice	Mean	61.7	
	SD	11.4	
	Range	74.4-42.6	
Management	Mean	1.1	
	SD	2.3	
	Range	7.8-0.0	
ALT-PE	Mean	39.1	
	SD	6.0	
	Range	48.3-29.5	

Teacher B. Prior to the first intervention on instruction time, baseline practice time represented an average of 56.3% of total lesson time (see Table 5). Following the intervention, mean phase two practice time increased to 69.8% of lesson time. Phase three practice time decreased to an average of 60.5% of lesson time, following an intervention on equipment management. Over the course of the study, practice time accounted for 62.3% of total lesson time (see Figure 9 and Table 8).

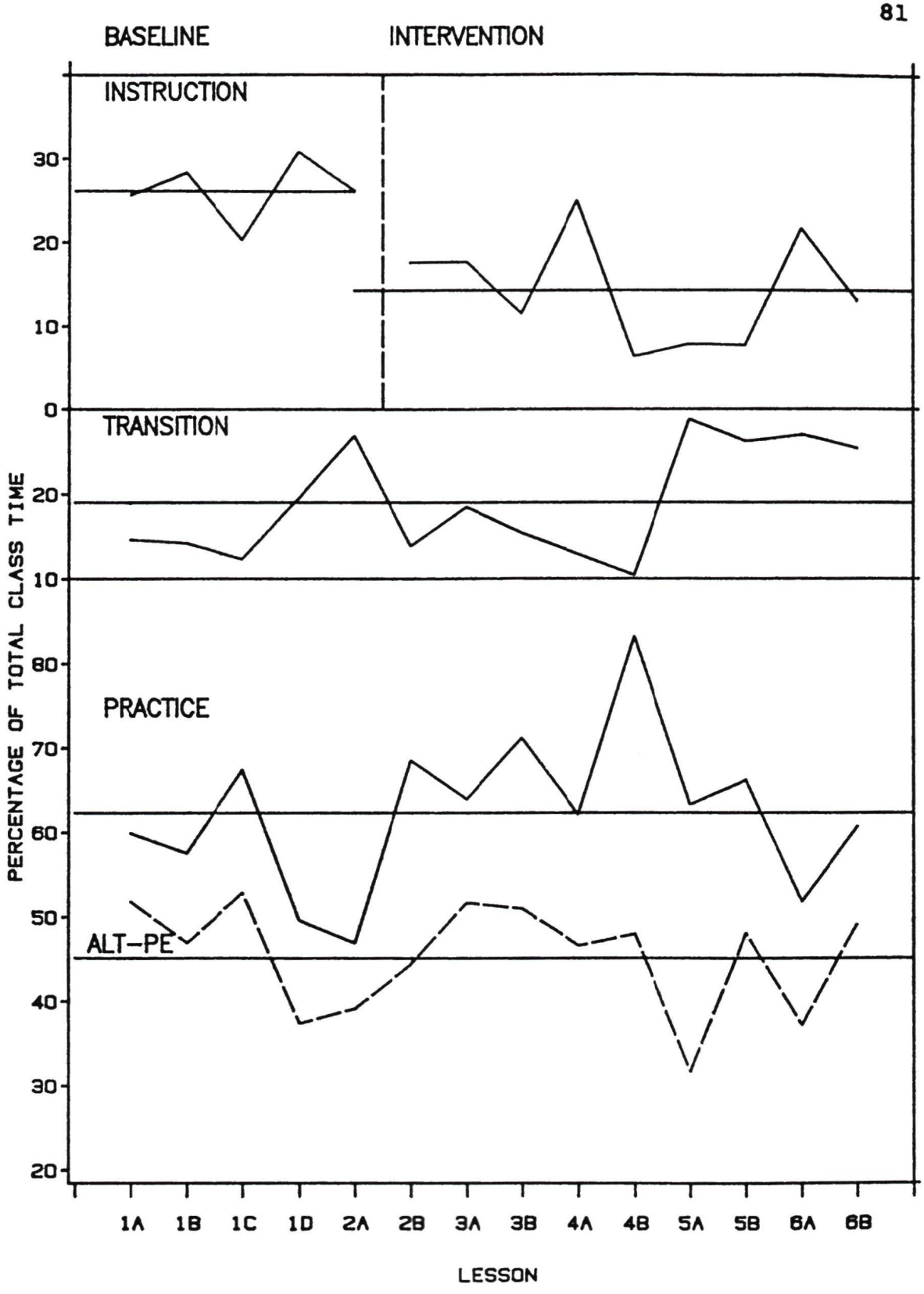


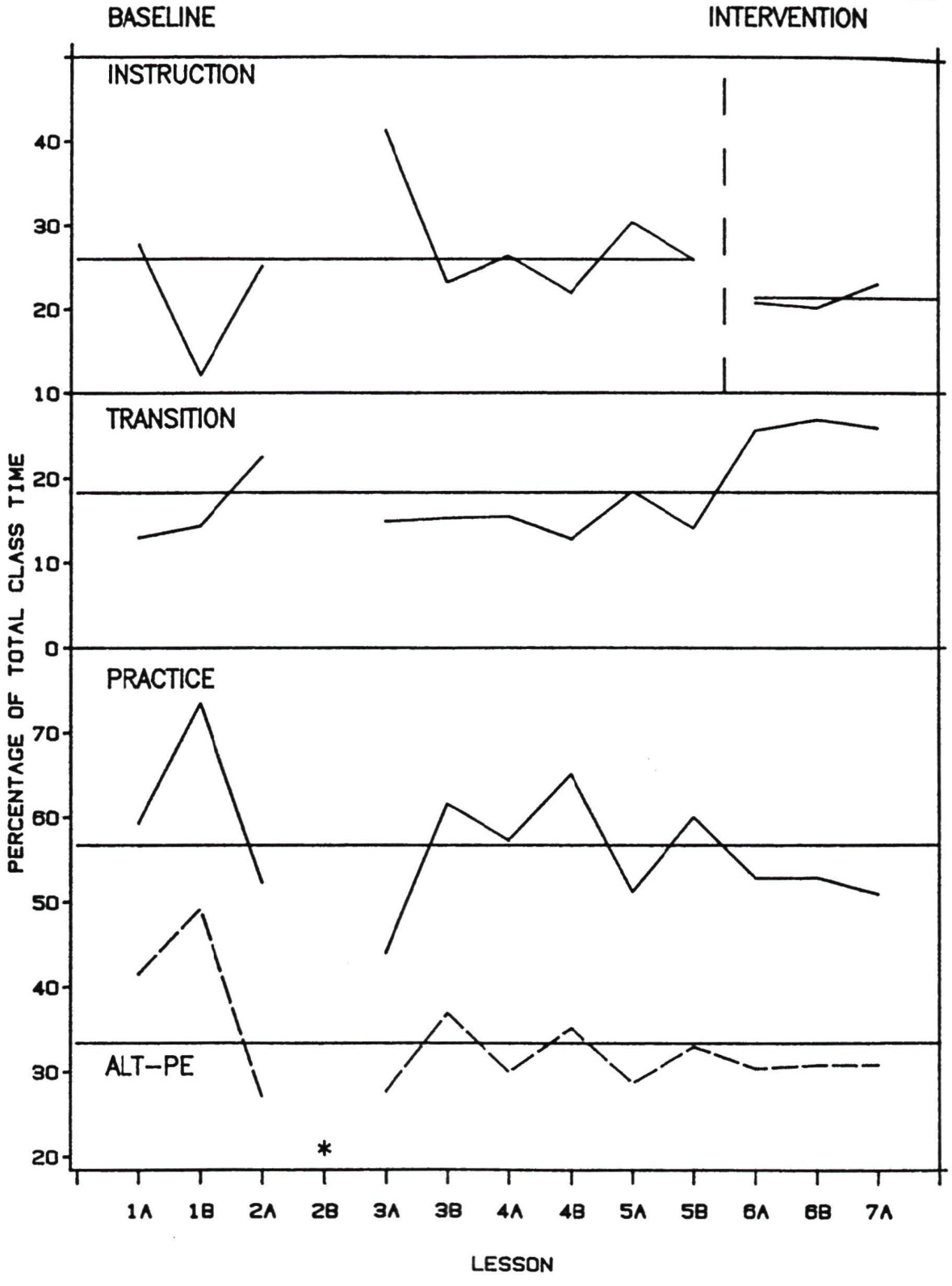
FIGURE 9. MEAN PERCENTAGE OF CLASS TIME FOR CLASS CONTEXT VARIABLES AND ALT-PE: TEACHER B

Table 8

Mean % of Class Time for Class Context Variables and ALT-PE: Teacher B

Variable		Baseline %	Intervention %
Instruction	Mean	26.1	14.3
	SD	3.7	6.6
	Range	30.1-20.3	25.0-6.4
Transition	Mean	19.0	
	SD	6.5	
	Range	28.8-10.4	
Practice	Mean	62.3	
	SD	9.4	
	Range	83.2-46.9	
Management	Mean	0.12	
	SD	0.3	
	Range	0.8-0.0	
ALT-PE	Mean	45.1	
	SD	6.5	
	Range	52.9-31.7	

Teacher C. During phase one, practice time accounted for an average of 61.7% of lesson time and, therefore, was not a focus of the first intervention (see Table 5). Within phase two, practice time decreased to an average of 55.8% of lesson time. Following an intervention on the instructional behaviour of models and equipment management, phase three practice time declined further, to 54.2% of lesson time. Over the entire study, the average practice time represented 56.7% of total lesson time (see Figure 10 and Table 9).



* NO DATA

FIGURE 10. MEAN PERCENTAGE OF CLASS TIME FOR CLASS CONTEXT VARIABLES AND ALT-PE: TEACHER C

Table 9

Mean % of Class Time for Class Context Variables and ALT-PE: Teacher C

Variable		Baseline %	Intervention %
Instruction	Mean	26.0	21.4
	SD	7.7	1.5
	Range	41.3-12.1	23.1-20.2
Transition	Mean	18.3	
	SD	5.4	
	Range	26.9-12.8	
Practice	Mean	56.7	
	SD	7.8	
	Range	73.5-44.0	
Management	Mean	0.1	
	SD	0.2	
	Range	0.8-0.0	
ALT-PE	Mean	33.4	
	SD	6.5	
	Range	49.2-27.0	

Research Question Three

Will the intervention procedure increase student Academic Learning Time (ALT)?

The third purpose of the study was to determine whether the intervention process would result in increased student involvement in appropriate motor behaviour (ALT-PE). Beyond the initial strategy of reducing instruction and transition time, it was thought that ALT-PE could be maximized by by increasing learner involvement within practice time. Thus, reducing student wait time became an intervention goal for teachers A, B, and C while reducing off task time was targeted for teachers A, C, and D. In the following paragraphs, the percentage of ALT-PE will be reported by phase.

Teacher A. Prior to the first intervention on student wait time, baseline ALT-PE represented, on average, 32.8% of lesson time (see Table 10). Following the intervention, mean ALT-PE for phase two decreased to 28.6% of lesson time. Following a second intervention, in which an accountability system was introduced, phase three ALT-PE increased to an average of 34.9% of lesson time, or 2.1% above the baseline rate. Over the entire study, an average of 31.9% of total lesson time was represented by student ALT-PE (see Figure 7).

Table 10

Mean % of Class Time in ALT-PE By Phase

Teacher		Phase 1 %	Phase 2 %	Phase 3 %	Overall Mean %
A	Mean	32.8	28.6	34.9	31.9
	SD	8.6	1.0	7.7	6.7
	Range	44.0-21.0	30.0-27.4	46.2-28.7	46.2-21.0
B	Mean	45.6	48.3	40.3	45.1
	SD	7.1	3.0	7.5	6.5
	Range	52.9-37.4	51.7-44.4	49.2-31.7	52.9-31.7
C	Mean	39.2	31.7	31.3	33.4
	SD	11.3	4.1	1.2	6.5
	Range	49.2-27.0	36.9-27.7	33.0-30.4	49.2-27.0
D	Mean	36.6	38.1	42.6	39.1
	SD	4.0	6.8	6.2	6.0
	Range	40.0-29.8	48.2-29.5	48.3-32.7	48.3-29.5

Teacher C. During phase one, student ALT-PE represented 39.2% of total lesson time (see Table 10). At the first conference, student wait time was addressed and an accountability system was introduced. Following the intervention, phase two ALT-PE decreased to an average of 31.7% of lesson time. Following the second conference, at which wait time was again addressed and an equipment management strategy was introduced, phase three ALT-PE remained unchanged at 31.3% of lesson time. Over the entire study student ALT-PE represented, on average, 33.4% of total lesson time (see Figure 10).

Teacher D. Prior to the first intervention on off task time, baseline ALT-PE represented, on average, 36.6% of lesson time (see Table 10). Following the intervention the average ALT-PE increased to 38.1% of lesson time. During the second conference off task time was again addressed, following which, phase three ALT-PE increased to 42.6% of lesson time. Over the course of the study the average ALT-PE accounted for 39.1% of total lesson time (see Figure 8).

Teacher B. Neither wait nor off task time were targets of the first intervention. Phase two ALT-PE increased from a phase one average of 45.6% to 48.3% of lesson time (see Table 10). While wait time was a target of the second

conference, an equipment management strategy was also introduced at this time. Following the intervention, average phase three ALT-PE decreased to 40.3% of lesson time. On the whole, the average ALT-PE represented 45.1% of lesson time (see Figure 9).

Research Question Four

Will the overall inservice process positively influence the attitudes of regular classroom teachers regarding instruction and management in a gymnastics setting?

Major findings of both the quantitative and qualitative data collection process will be presented in separate sections for each teacher.

Quantitative Data: Pre and Post Study Questionnaire

The pre/post study questionnaire consisted of 35 questions, thought to represent seven factors which influenced gymnastics instruction. These were, 1) equipment management, 2) safety concerns, 3) personal competency in gymnastics, 4) administrative support, 5) personal attitude toward physical education and gymnastics, 6) student attitude toward physical education and gymnastics, and 7) management ability in the gymnasium. Major shifts in attitude relating to these factors will be reported.

Teacher A. Prior to the study, teacher A felt positive about all factors, and very positive concerning personal attitude and competency in gymnastics instruction and management, and student attitude towards gymnastics.

Post study analysis indicated continuing positive attitudes in all areas, while increased confidence was expressed regarding personal skill competency (plus 4) and aspects of student safety (plus 3) (see Table 11). Teacher A identified that student attitude toward gymnastics remained very favorable.

Table 11

Summary of Pre and Post Study Questionnaire Scores By Factor

	Teacher							
	A		B		C		D	
Factor	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	17	19	17	18	16	20	13	13
2	18	21	21	24	16	14	21	19
3	20	24	19	23	10	16	12	12
4	15	14	17	17	17	14	17	18
5	24	24	25	25	23	20	24	22
6	22	23	24	22	21	17	19	17
7	23	23	20	24	20	19	15	16

Teacher B. Prior to the study, teacher B expressed very positive feelngs regarding personal and student attitude towards gymnastics, and aspects of student safety. Positive feelings were indicated on all other factors.

Following the study, teacher B indicated continued positive attitudes on all factors, and increased confidence in personal skill competency (plus 4), management and organizational ability (plus 4) and in the ability to address student safety needs (plus 3). In particular, teacher B expressed less hesitancy towards organizing and managing large equipment. Teacher B also perceived a decreased but still positive student attitude toward gymnastics (minus 2).

Teacher C. Before the study, teacher C felt very positive regarding personal and student attitudes towards gymnastics. Teacher C also felt positive regarding all other factors with the exception of personal skill competency, where a negative feeling was expressed.

Analysis of post study data indicated a notable improvement in attitude regarding personal skill competency (plus 6) although teacher C still felt dependent upon the advice of others regarding instruction. Increased confidence was noted regarding the ability to manage and organize large equipment (plus 4). While teacher C remained

confident regarding personal management and organizational ability, it was also indicated that off-task behaviour seemed to increase in gymnastics lessons. Teacher C expressed increasing concern regarding aspects of student safety (minus 4). It was also suggested that personal (minus 3) and student attitude (minus 4) toward gymnastics diminished but still remained positive.

Teacher D. Prior to the study, teacher D expressed very positive feelings towards physical education and gymnastics and with regard to aspects of student safety. It was felt that student attitudes towards physical education were positive. Teacher D expressed a lack of confidence regarding personal skill competency and equipment managerial ability, and was unsure of personal management and organizational ability.

Following the study, teacher D retained a very positive attitude towards physical education but remained unchanged on the remaining factors. Teacher D indicated a less positive attitude regarding student safety (minus 2) and remained uncertain of personal skill competency. An increased awareness of the difficulty of managing children was expressed, but also a slightly improved ability to manage and involve them in learning tasks (plus 1). The organization and management of equipment remained a concern.

Personal and student attitudes (minus 2) towards physical education and gymnastics remained positive.

In summary, following the study all teachers retained very positive personal attitudes towards physical education and gymnastics. All agreed that physical education was important to the physical development of the student, and that daily physical education should be offered. All teachers felt that there was positive school administrative support for physical education, but that the school did not offer a coordinated gymnastics program.

Teachers A and B (experienced) remained very positive regarding personal skill competency and managerial and organizational ability. While teacher D remained unsure of personal skill competency, teacher C expressed greater confidence in this regard. Both teachers C and D still felt the need to seek advice regarding gymnastics instruction. However, all teachers felt that personal skill proficiency was not an essential requirement for gymnastics instruction. Teacher C remained very concerned of student safety aspects involving gymnastics. While all felt that students still regarded physical education positively, teachers B, C, and D felt that student attitudes diminished relative to this area.

Qualitative Data

Teacher A. As a result of previous experience, teacher A felt very comfortable working with the skill content of the instructional unit. It was expressed that, "the skills chosen should be fairly easy to follow for any classroom teacher". Analysis of data, however, revealed little increase in teacher knowledge of gymnastics instructional content except for "a few routines on the climbing apparatus which I have tended to use minimally". Teacher A's ability to teach gymnastics did not improve as a result of the study because, "I won't be using this technique, and therefore, won't have a transfer of teaching techniques". Further, Teacher A found the lesson activities, "not very easy to apply because of the total number of tasks, four stations to set up, and the training of the models". The accountability system, of circulating and keeping track of the skills, was also found to be difficult to implement. Teacher A, "found it really difficult going around to four stations and keeping track of how every single kid was doing on every single skill".

Lesson content was described as generally less than appropriate, relative to both the students' ability level, and to teacher A's instructional ability. "Many of my students would have benefitted from more difficult

activities, for example, vaulting". Frustration was expressed, knowing "that the students would have reached a higher level of competence during the same period with my usual techniques". Teacher A would have been more satisfied, "if I could have done a month of this unit and a month of my own thing". In spite of this, it was felt that student attitude remained positive during the study.

Finally, teacher A felt constrained by the 'experimental' conditions of the study, which included "....overcrowding because of the necessity of having a small viewing space", "problems with video equipment, including the microphone" and, "....starting the lessons late because of setting up the equipment".

Teacher B. No difficulty was expressed in working with the skills provided in the instructional unit. "I had done the same sorts of activities before so it was not difficult at all to teach in this way". While teacher B did not feel that knowledge of gymnastics content or instruction increased as a result of the study, the process helped to improve personal organizational skills and to raise the awareness of, "what I'm doing and saying".

It was felt that lesson content, "was perfect for grade one" but that, "the motivation of the students was lost (as was mine) due to the length of the unit". "I have never had

kids not liking P.E. and had several complaints from parents about this". "I was feeling tired of doing the unit by the second intervention and really felt resistant to make changes by then". It was noted that the gymnastics unit was the students', "total P.E. for the 2 1/2 months". Teacher B would, "do it again but just condense it".

Teacher C. Teacher C's commitment to the study was, "very strong", and was "enhanced by an interest to become an effective, basic gymnastics teacher". It was expressed that lesson content was just right relative to both student ability and personal gymnastics teaching expertise. As a result of the study teacher C felt, "more comfortable with gymnastics and with the number and variety of activities that can be done at stations". Further, teacher C expressed, following the study, that, "I could confidently and competently teach the activities covered in the study". Teacher C, however, felt "very reliant on the materials" and "felt most confident teaching those lessons for which I observed the models being trained". It was felt that the availability and support of a P.E. specialist would benefit regular classroom teachers who wish to develop a gymnastics program. Teacher C felt that, "models enhanced the instructional process" and that, "it was worth the time to train them".

Prior to the study, teacher C expressed no difficulty in managing and organizing children. During the study, teacher C, "felt comfortable looking for certain skill proficiency and grading students as she circulated about the stations". The study, "reinforced my belief that accountability is essential". Finally, it was expressed that the students enjoyed the unit. "Some of my resistant students participated quite actively, especially the Native students".

Teacher D. Prior to the study teacher D had, "minimal gymnastics teaching experience, and minimal experience teaching at the primary level". Teacher D stated that, "the project gave me some confidence and necessary feedback, both of which are necessary in establishing a beginning competency". As well, "the study has been very helpful in improving my confidence in practice of management and instructional strategies". Teacher D felt able to, "carry on and progress from the basics the project has taught me".

Teacher D's personal involvement and commitment to the study increased as the challenges of managing children and implementing adequate skill instruction grew. "As time went on I became more interested in improving my teaching. The challenge was to try to improve the management of the gymnastics lessons so that I felt I was being successful in

teaching the class the skills planned." Teacher D noted that, "the students were moderately interested and committed" to the study. "Controlled situations were difficult for some of them to adjust to", and they, "tend to respond more enthusiastically in play or minor game activities where a more active role is required".

In summary, all teachers expressed that the ability to organize, manage and control the movement and behaviour of children was more critical to successful gymnastics teaching than knowledge and expertise in this area. All teachers felt, to varying degrees, that personal knowledge and practice of classroom management strategies increased as a result of the study.

Chapter V

DISCUSSION

This chapter will include a discussion of the interobserver agreement results, the effects of intervention upon all dependent variables, and the effect of the overall inservice process upon teacher attitudes, regarding gymnastics instruction and management. Finally, the implications and recommendations arising from the study will be considered.

Interobserver Agreement

The mean overall interobserver agreement scores were above the 80% acceptable criterion level (Hersen & Barlow, 1976) for class context, learner involvement and teacher verbal behaviour variables (see Tables 1-4). On a number of occasions, interobserver agreement scores fell below the criterion level. This was due to the low frequency of occurrences, specifically, for praise and accountability.

Research Question One

Can specific classroom management and instructional behaviours of regular elementary classroom teachers be improved and maintained by an intervention procedure?

An important consideration in the study was to intervene upon those variables which were thought to maximize student opportunity to learn. One such class context variable, instruction time, was the target of intervention for all teachers while transition time was the target of intervention for teacher D.

Class Context Variables

Instruction

It appears that the intervention procedure was successful in reducing overall class instruction time for all teachers. In lessons following the interventions, all teachers consistently maintained instruction time below average baseline rates, with the exception of teachers A and D, each of whom exceeded the average baseline rate on one occasion. While post intervention rates of instruction decreased for all teachers, the effects of the intervention were most pronounced with teachers B and D, whose instruction time was reduced by 11.8% and 11.9% respectively, when compared with 4.6% for teacher C and 1.7% (phase two), and 7.5% (phase three) for teacher A.

It is suggested that these differences were a result of intervening directly upon the pacing of instruction for teachers B and D, while for teachers A and C, the strategy focussed primarily upon the instruction-related behaviour of the models, and to a lesser degree, that of the teachers. Teachers appeared to be more successful in changing their personal instructional behaviours than those of their students.

Intermediate Teachers

While teachers A and C were successful in reducing baseline instruction time, the primary factor contributing to this reduction was less apparent. It is likely that the selection and training of 'expert' models (first intervention), in combination with limiting the time of instruction (second intervention), contributed to a 9.2% reduction of teacher A's baseline instruction time. The extent to which the provision of skill practice sheets and the attendance of teacher C at the model's training sessions, contributed to a 4.6% reduction in baseline instruction time is not clear. Following the study, however, teachers A and C agreed that selecting 'expert' models, providing them with skill practice sheets, and training them in a systematic manner were necessary in ensuring that clear task demonstrations be given.

Primary Teachers

During baseline, it was apparent that teacher B was interrupting the flow of class practice with a series of short instructional episodes. Once this was clarified during the first intervention, teacher B responded by providing longer practice episodes following instruction. During baseline, teacher D often provided the students with clear, but lengthy skill instructions. Following the intervention, teacher D became very skilled at quickly establishing practice routines, and became more proficient in maintaining task involvement with two independent activity groups. The success of the instruction intervention lends support to McLaughlin and Marsh's (1978) contention that, once teachers receive reliable information on what they do, and receive appropriate coaching on effective teaching strategies, they can and do modify their behaviour.

Transition

Teacher D. In spite of the intervention teacher D's baseline transition time only decreased by 1.9%. Following the intervention, however, teacher D more consistently reinforced expectations by reprimanding the class on seven occasions for responding slowly to the transition signal. As a result the maximum length of transition episodes was

reduced from 108 seconds in phase one, to 96 seconds in phase two, to 72 seconds in phase three. The data suggested that teacher D began to effect a stable and decreasing trend in transition time over the course of the study, a behaviour characteristic of a well organized teacher (Bennett, 1978; Kounin, 1970). A factor limiting further success, however, appeared to be that "controlled situations were difficult for some students to adjust to" because of the expectation that physical education was a more 'active' time.

Teacher Verbal Behaviour

Skill Feedback

An intervention procedure was successful in approximately doubling the baseline rate of skill feedback for targeted teachers A, B, and C.

Teacher A. The strategy to provide 'coaching points' sheets was effective in increasing rates of corrective feedback as well as in refocusing teacher A's role during practice time, from that of prompting students to watch their models and hustling them to maintain lesson focus, to providing more direct instruction and feedback to students.

Teacher B. Increases in baseline rates of skill feedback were due, in part, to the restructuring of lesson plans which enabled teacher B to establish more independent

activity with other groups and then concentrate upon providing greater skill instruction to the remaining group. Peaks in the rate of skill feedback occurred, consistently, during the second half of each two-part lesson. Teacher B endorsed the repetition of lessons, in stating that the first lesson was needed to organize students and explain skills, while more teaching could be accomplished in the second lesson.

Teacher D. Following the first intervention, lesson 3A featured a distinct drop in instruction time, during which teacher D quickly established class practice routines, then spent a greater amount of time coaching, as opposed to giving directions. This trend continued for the remainder of the study, as teacher D became more proficient in managing and providing skill feedback to two independent instructional groups.

Teacher C. A distinct phase three increase in the rate of skill feedback was evident for teacher C, in spite of not intervening upon this variable. This increase was due, in part, to the increased subject matter knowledge gained as a consequence of observing the training of the student models. Teacher C took the initiative to learn the new skills, knowing that they should be reinforced in the following lesson. Teacher C, in fact, expressed more confidence in

teaching those lessons prior to which the models were observed being trained.

Positive Feedback

While not a target of intervention, phase three rates of positive feedback increased noticeably for teachers A and C and, to a lesser degree, for teacher D relative to corresponding increases in rates of corrective feedback (see Appendix G). It appears that teachers, having contacted individuals and provided them with corrective feedback, responded to the subsequent skill attempt with positive reinforcement. This act of providing positive feedback distinguished them from student teachers who, according to Siedentop (1983), rarely respond to skills which are executed correctly. Teacher A felt that the sharp increase in positive feedback was partially due to an improvement in skill performance. Brophy (1979) considered such praise to be effective because it was contingent upon performance and specific to the behaviour being reinforced.

Accountability

The initiation of a skill checklist system resulted in increases in the baseline rate of accountability statements for teacher A, from 2.8 to 13.7 statements per ten minutes, and teacher C, from 3.4 to 17.3 statements per ten minutes.

The strategy was successful, in part, because it was accepted as an essential evaluative component by both teachers. Peak rates of accountability statements occurred consistently within the second of each of teacher C's two-part lessons. It is suggested that teacher C felt less distracted with instructionally related aspects of the lesson at this stage, and was more able to concentrate upon the accountability task.

Learner Involvement

Off-Task Time

Linking student behaviour to a system of monitoring and accountability may have accounted for successfully halving baseline student off-task rates for teacher A, to 4.7% of practice time, and for teacher C, to 7.1% of practice time. The accountability system appeared to become a contingency of reinforcement which, according to Skinner (1969), assumed the function of discipline. The present findings support those of Tousignant and Siedentop (1983) who suggested that active supervision and a formal accountability system increased the rate of secondary student on-task behaviour in a physical education setting. The findings also support Kounin's (1970) notion that an accountability system was particularly crucial in maintaining student task involvement in a group setting.

Teacher D. In spite of implementing a 'time out' strategy for inappropriate behaviour, no change in baseline off-task time occurred. An analysis of the data, however, suggested a declining trend in off-task behaviour beyond the first lesson following intervention (lesson 2B). As well, following lesson 3B, teacher D's perception of student behaviour was the topic of a meeting to discuss how several incidents of off-task behaviour were being ignored. The researcher expressed that this behaviour reduced an individual's opportunity for practice and should be addressed. Teacher D's reaction toward off-task behaviour in subsequent lessons resulted in more vigilent monitoring and desisting of inappropriate behaviour. It appeared that improvement in teacher D's managerial ability was positively associated with student on-task involvement, a notion supported by Brophy (1979) and Good (1979).

A second intervention, consisting of a merit system for appropriate conduct in addition to the 'time out' strategy, contributed to an 8.0% decrease in off-task time. As well, a target student, who was frequently off-task, was disciplined with a two minute time-out during the first phase three lesson (lesson 4B). For the remainder of the study, this student's off-task behaviour was reduced to one incident. The design of the study did not allow the

researcher to determine which variable contributed more to reducing off-task behaviour. Research does associate a positive classroom climate with student achievement, in suggesting that a merit system is an effective reinforcement strategy (Soar & Soar, 1979).

Wait Time

Teacher A. A strategy of adding a third section of mats to the roll station to minimize lineups, contributed partially to a 3.8% reduction in baseline wait time for teacher A. Following the intervention, however, an increasing trend in wait time was observed. It appears that a shortage of mats in lesson 6A and a restricted practice area in lessons 7A and 7B minimized the effectiveness of the intervention strategy, as students were often required to wait for others to vacate the practice area.

Teacher C. Neither intervention contributed to a reduction in the baseline rate of wait time for teacher C. It appears that the decision to intervene upon wait time was an error in judgement, considering that the baseline rate of 8.6% was well below that of other teachers. Again, however, a shortage of mats in lessons 6A (12.1% wait time) and 6B (12.7% wait time) impacted negatively upon the practice opportunity of students.

Teacher B. A strategy of encouraging students to avoid lineups and to select 'free' equipment was followed by a phase three increase in wait time by 0.7% over the baseline rate. While an increase in phase three wait time was evident, a steady declining trend in this behaviour was noted. It appeared that the addition of a third, independent activity station interfered with teacher B's ability to monitor and maintain overall task involvement, a finding supported by Emmer and Evertson (1981), Halpin (1979), Medley (1979) and Kounin (1970).

In general, attempts to minimize wait time by encouraging students to "move to an open space" were unsuccessful. Good (1979) noted from the research that primary age students have undeveloped managerial ability and that more effective teachers structure and monitor their learning activities. The expectation that students select 'free' equipment may have placed unrealistic demands upon students' capacity to manage themselves. While it was desirable to allow students to assume independent responsibility (Emmer et al., 1982; Good and Brophy, 1973), a longer time period might be required to achieve this goal.

It appears that student wait time was influenced to a large degree by the nature and availability of equipment. For example, students chose to line up at the more popular

springboard, rather than moving to another unoccupied 'flight' activity at the same station. While extra mats reduced lineups at the 'roll' station, a shortage of mats necessitated transfering them to another activity area.

Equipment Management

Teacher B and C. Allowing students to set out and organize equipment resulted in an increase in baseline transition time, from a mean of 15.9% to 26.9% for teacher B, and from a mean of 15.6% to 26.1% for teacher C. Analysis of a post study questionnaire however, suggested that for both teachers, this strategy resulted in positive shifts in attitude regarding the ability to organize and manage large equipment.

In summary, it appeared that the most successful intervention strategies were those whose primary targets were teacher behaviours, namely instruction (teachers B and D), skill feedback (teachers A, B, and D), and accountability (teachers A and C). Other studies support the contention that instructional behaviours can be improved when physical education teachers receive clear and accurate feedback, form judgements about personal performance and practice in a real setting (Ratliffe, 1986; Williamson, 1985; McKenzie, 1981; Siedentop, 1981; Allard & Rife, 1980). Teacher D initiated a transition signal with limited

success, its impact being diminished by the difficult nature of the class. Teachers A and C successfully reduced student off-task behaviour through the use of an accountability system. The impact of intervention upon student wait time for teachers A, B, and C was constrained by the nature and availability of equipment. Finally, more positive attitudes were gained by teachers B and C as a result of the experience of organizing and managing the equipment required for their lessons.

Research Question Two

Will the intervention procedure increase class practice time?

The degree to which class practice time, and thus student opportunity to learn, was influenced by interventions upon the instructional behaviour of all teachers, and the transition management behaviour of teacher D will now be discussed.

Teacher A. After the first intervention, phase two instruction time decreased by 1.7%, in comparison with a 2.3% decrease in transition time, a variable not intervened upon. The 3.5% increase in practice time within the same period could not be solely attributed to the intervention upon instruction time. The second intervention, however,

was more successful in reducing phase three instruction time by 7.5% and effecting a 10.3% increase in practice time.

Teacher B. An 11.8% decrease in baseline instruction time contributed to a 9.4% increase in practice time in phases two and three. The effect of the strategy to reduce instruction time was diminished, however, by the equipment management intervention, which increased phase three transition time by 9.6%.

Teacher C. With no initial intervention upon class context variables, baseline practice time decreased by 5.9%. Contributing to this was a large increase in lesson 3B's instruction time (41.3% of lesson time) during which the intervention of an accountability system was explained and repeated to late students. Practice time declined further by 1.6% despite a second intervention strategy to reduce instruction time. The effect of the instruction intervention, however, was negated by a second strategy to initiate an equipment management routine.

Teacher D. While combined instruction and transition time was reduced by 13.8% following interventions, class practice time increased by 10.9% over the same time period. The tendency of the class to engage in unproductive activity necessitated that teacher D spend 2.9% of lesson time in management activity, which reduced the effectiveness of the

interventions upon instruction and transition time. The remaining teachers were involved in management activity for less than 1% of lesson time.

With the exception of the equipment management interventions for teachers B and D, strategies which focussed upon reducing the time of instruction and transition, ultimately resulted in increased student practice time. Despite conscious attempts to minimize instruction and transition time, mediating circumstances prevented teachers from implementing strategies with complete success. The need to adjust equipment during lesson 2A contributed to 26.9% transition time for teacher B. Appropriate decisions were made by teachers A, B, and D to provide more deliberate instruction of new skills, which increased their instruction time by 37.5% (lesson 2A), 25% (lesson 4A) and 30.2% (lesson 3A) respectively. In these instances teachers felt that new skills could be reinforced more effectively in a whole class setting, before returning to independent practice. In contrast, brief and careless skill demonstration by teacher C's models contributed to a 12.1% rate of instruction time within lesson 1B. While it is not within the scope of the present study to recommend an optimum time of instruction in gymnastics, it is suggested that a balance must be maintained between providing clear,

quality instruction and doing so in a smooth and efficient manner.

Research Question Three

Will the intervention procedure increase student Academic Learning Time - Physical Education (ALT-PE)?

It appeared that specific interventions were successful in increasing the practice time and overall ALT-PE of teachers A, D, and B (phase two), although student ALT-PE within practice time did not always follow this trend. Factors contributing to the relationship between practice time and ALT-PE will be discussed.

A relationship existed between increased practice time and subsequent increases in ALT-PE for all teachers. It appeared that the primary contributors to increased practice time and, as a consequence, ALT-PE were those interventions which minimized instruction time. Maximum practice time and overall ALT-PE were realized in phase three for teachers A and D, in phase two for teacher B and in phase one for teacher C (see Figures 7, 8, 9, and 10). It was likely that the equipment interventions eliminated any possibility of phase three increases in practice time and ALT-PE for teachers B and C. It was, however, important to the study to discover that these teachers could confidently and

expediently oversee the management of the large equipment required for their lessons.

Overall ALT-PE was considerably higher in the primary lessons of teachers B and D (42.1%), than in the intermediate lessons of teachers A and C (32.5%). Findings suggest that differences were due to both the nature of instruction and the characteristics of practice activities. Intermediate lessons were characterized by the whole class attending to student models before engaging in discrete station activities, while the primary lessons featured small group instruction during class practice and student involvement in more continuous circuit movement. Whaley (1980) and Ratliffe (1986) determined that ALT-PE was influenced more by changes in activity (dance to basketball) than by specific interventions. While the present findings support this contention, ALT-PE was also increased by intervention strategies.

The mean overall ALT-PE of all teachers represented 37.3% of lesson time, and compared very favourably with recent studies in elementary physical education settings (Godbout et al., 1983; Placek, 1986). Placek (1986) reported that the proportion of ALT-PE in five studies, from 1979 to 1986, ranged from 15% to 38% of lesson time.

In spite of the relative success of teachers in raising levels of ALT-PE, evidence from the present study supports those who suggest that a large gap exists between the time actually spent in physical education instruction and practice, and that which can be considered quality learner involvement or ALT-PE (Placek, 1986; Birdwell, 1980). Birdwell (1980) reported that increases in management, wait, off-task and interim time contributed to decreased ALT-PE. Similar patterns in the present study were discovered in analysing learner involvement within practice time.

Variables which reduced the effects of intervention in the intermediate classes were wait, interim and on-task time for teachers A and C (see Figures 11 and 12). On-task time appeared to increase as a result of the extra time required to prepare for more difficult skills such as the tucked handstand, rope climb and combinations of rolls. Increases in interim time were most evident in phase three as students began, at times, to assume the role of "competent bystander" (Tousignant & Siedentop, 1983). That is, students who engaged in this behaviour tended to avoid skill practice by wandering between activity areas. While this behaviour was not common, it suggested a gradual waning in enthusiasm toward the latter stages of the study.

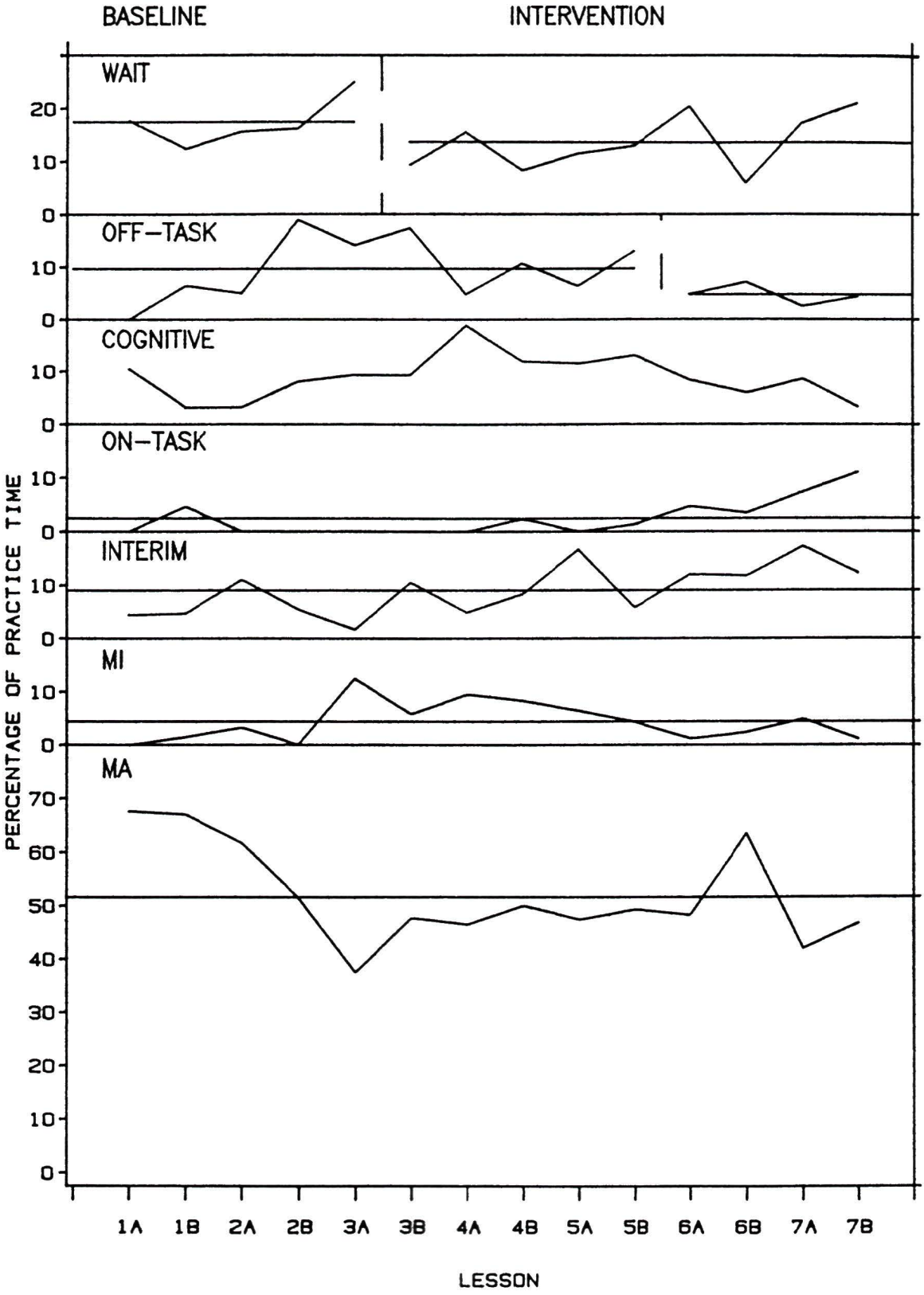
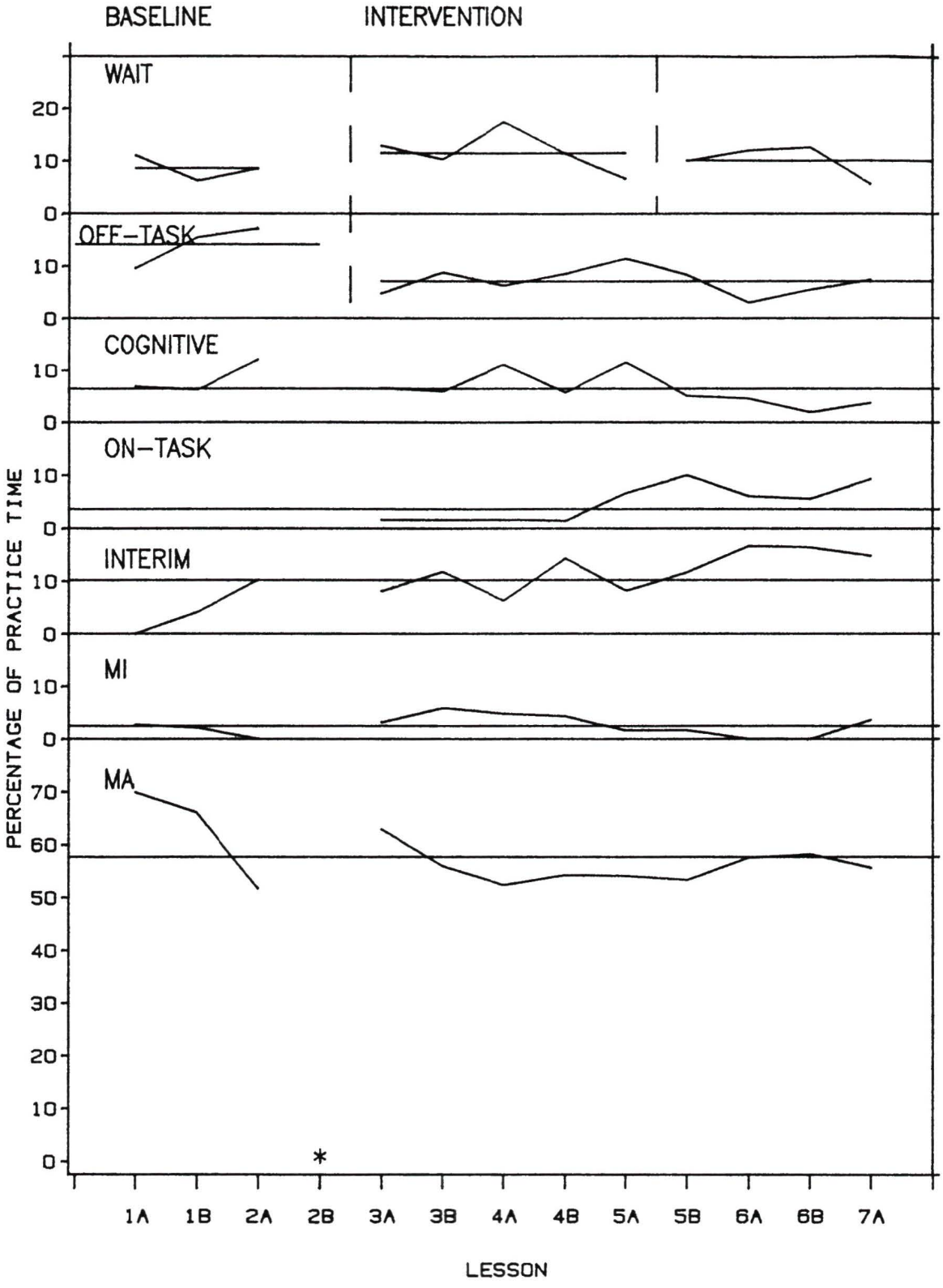


FIGURE 11. MEAN PERCENTAGE OF PRACTICE TIME FOR LEARNER INVOLVEMENT : TEACHER A



* NO DATA

FIGURE 12. MEAN PERCENTAGE OF PRACTICE TIME FOR LEARNER INVOLVEMENT : TEACHER C

Factors which reduced learner involvement in the primary grades were wait time for teacher B, and cognitive and off-task time for teacher D (see Figures 13 and 14). Both teachers were able to sharply reduce wait and off-task time, following interventions, through more vigilent monitoring of student practice. The increase in cognitive time reflected teacher D's increased instructional behaviour during practice, as students were observed attending to specific skill instruction at this time.

With the exception of teacher C, overall ALT-PE increased for all teachers in phase two and for teachers B and D in phase three, as a result of intervention. However, mean rates of ALT-PE as a percentage of practice time did not increase beyond phase one for any teacher (see Figures 11 to 14). For teachers A, C, and D this rate of learner involvement declined throughout phase one before stabilizing for the remainder of the study. For teacher B this initial decline in ALT-PE extended into phase two before recovering. It is suggested that ALT-PE became a function of student interest or valence (Kounin, 1970), which was initially high due to the novelty of the activities, then decreased sharply as the lessons began to be regarded as routine. This finding supports Kirchner (1984) who suggested that variety in activity is an important consideration when planning daily physical education programs at the elementary level.

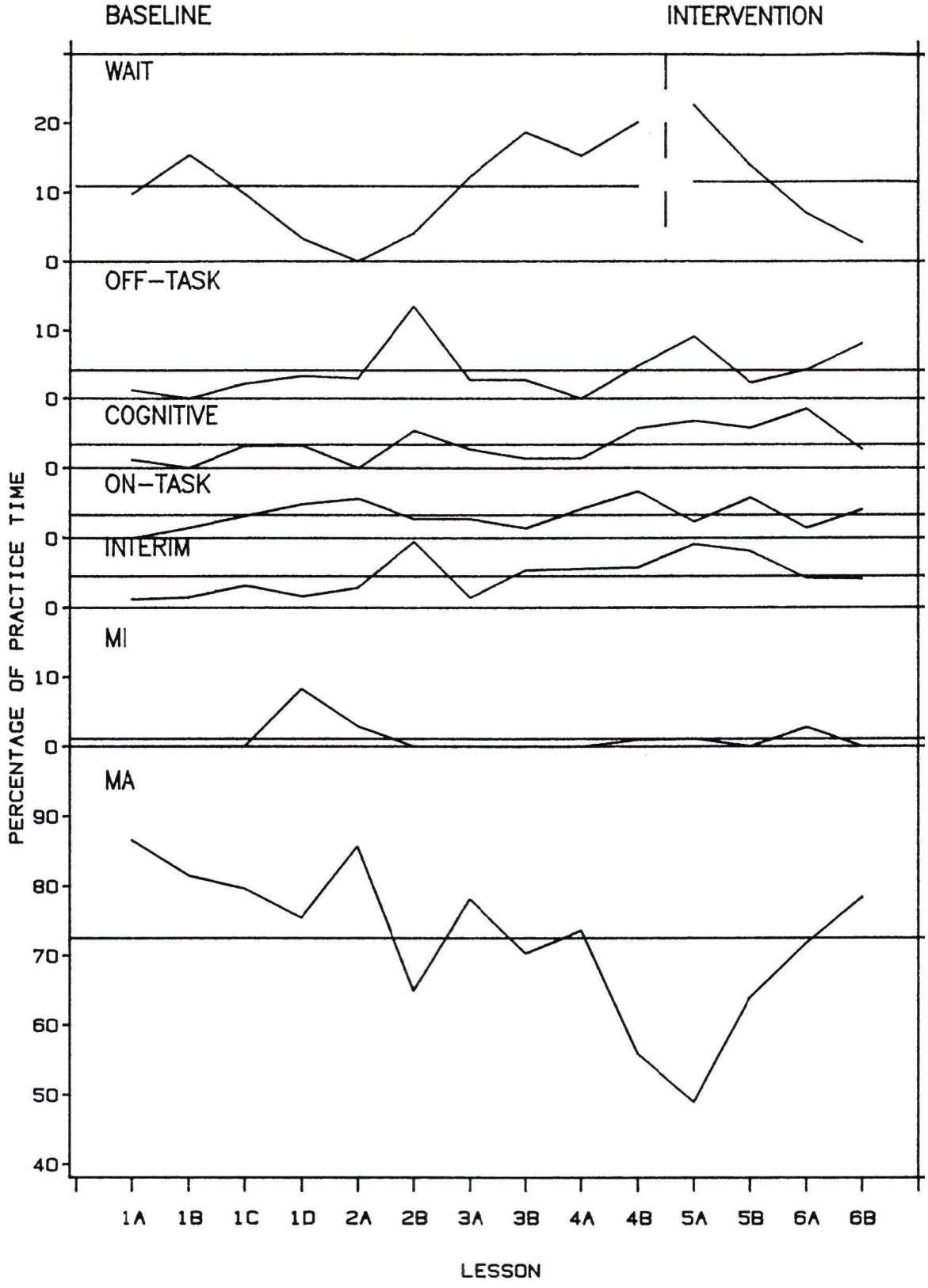


FIGURE 13. MEAN PERCENTAGE OF PRACTICE TIME FOR LEARNER INVOLVEMENT : TEACHER B

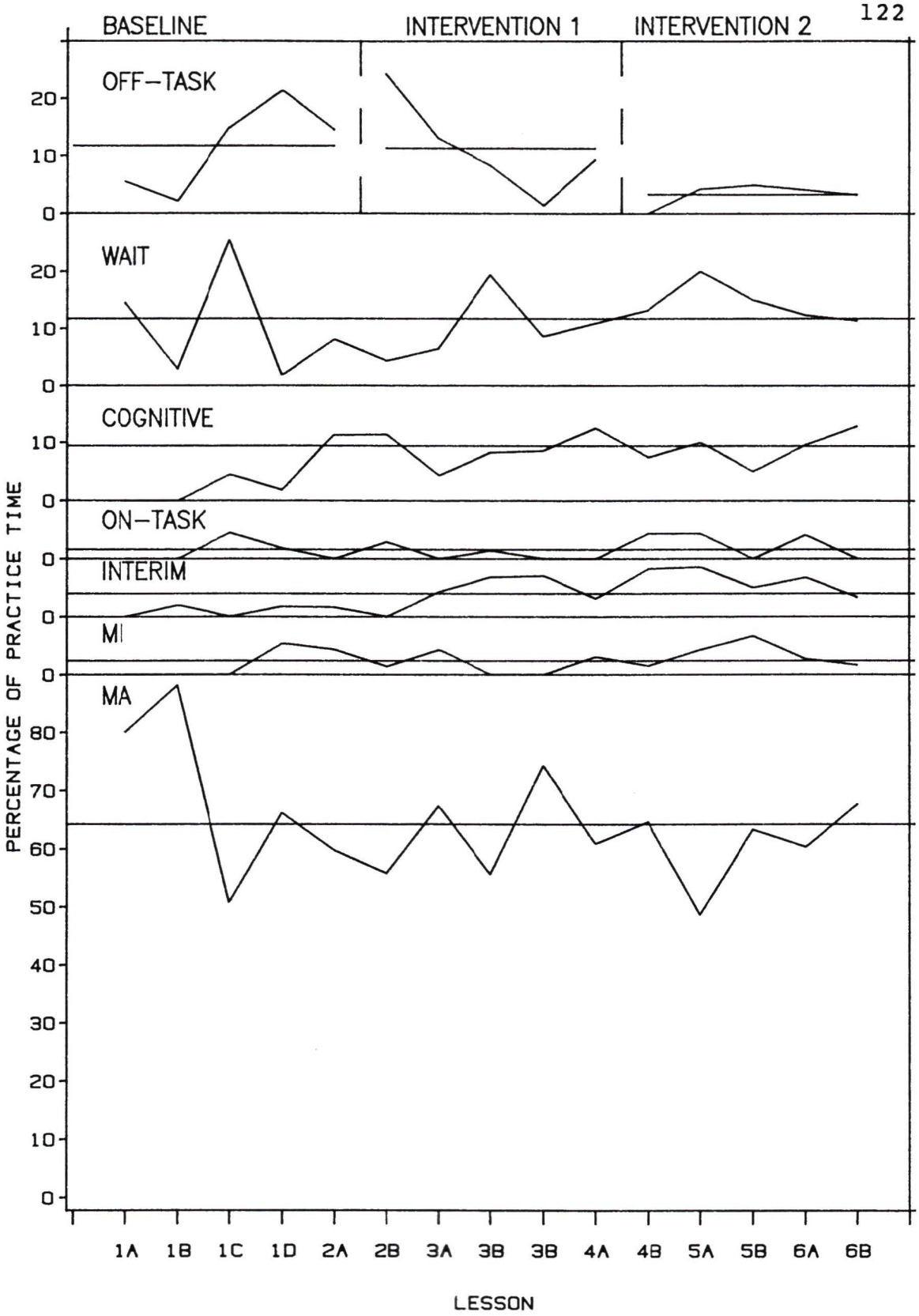


FIGURE 14. MEAN PERCENTAGE OF PRACTICE TIME FOR LEARNER INVOLVEMENT : TEACHER D

In some cases the largest increases in practice time did not result in similar peaks in ALT-PE. Caldwell et al. (1982) support this finding by suggesting that student achievement may decline if practice time is excessive. Pieron (1980) found that the quality rather than the quantity of practice time was linked more closely with student achievement. Students of more effective teachers were involved in practice for less time but demonstrated more quality learner involvement during practice.

Variability in practice and ALT-PE, reflecting similar trends in instructional behaviour, were noted for teachers B and C, where instruction time was consistently reduced within the second of each two part lesson.

Research Question Four

Will the overall inservice process positively influence the attitudes of regular classroom teachers regarding instruction and management in a gymnastics setting?

The degree to which the inservice process positively influenced teacher attitudes and perceptions regarding gymnastics instruction and management will now be discussed.

It was initially evident that teachers A and B were experienced physical education teachers, while teachers C and D were novices. While teachers A and B did not feel

that personal competency or ability to teach gymnastics had noticeably improved as a result of the study, both remained extremely positive and confident regarding these areas.

Although teacher C felt that personal skill competency had increased, a continuing dependency upon the advice of others regarding skill instruction was expressed. Teacher D remained uncertain of personal skill competency despite noticeable growth in instructional behaviour during the study. The findings suggest that, beyond the initial implementation stage, coaching and follow up support are necessary in order to consolidate newly acquired teaching skills (Joyce & Showers, 1982; Purifoy, 1980). It is suggested that regular classroom teachers can capably instruct and manage children in gymnastics provided they receive proper skill coaching and follow up support, most likely from an on-site physical education specialist or community resource person.

Teacher A. It appeared that many requirements of the study were frustrating to teacher A, whose instruction and managerial styles were very much compromised. Teacher A's categorical statement that, "I won't be using this technique...(in the future)" suggests a lack of ownership in the unit. Schwager (1983) contended that teacher involvement in the planning and implementation stages of the inservice

process was necessary to its success. The decision, prior to the study, to implement a modified ETU precluded teacher input although their advice regarding lesson modification was encouraged once the study was in progress.

Teacher B. In contrast, teacher B's instructional style complemented that required for the unit, which resulted in the effective transfer of teaching behaviours. As well, teacher B felt that the process helped to improve personal organizational skills. The success of teacher B in implementing program and intervention goals was, in part, evidenced by the high level of ALT-PE (45.1%) achieved. Although teacher B expressed that the unit length negatively influenced personal and student attitudes regarding gymnastics, phase three ALT-PE within practice time tended to improve.

Teacher C. Teacher C expressed very positive feelings regarding the overall inservice process. It appeared that teacher C was very successful in transfering previous classroom management and organizational abilities to the gymnastics setting. Although it was recognized that off-task behaviour seemed to increase in gymnastics lessons, teacher C felt comfortable in administering the accountability system which helped to reduce this behaviour. While student safety remained a concern, teacher C

nevertheless expressed confidence in the ability to teach gymnastics using a stations approach. Teacher C felt that lesson content was "just right" relative to both student ability and personal gymnastics expertise, and that some of the previously resistant students were sorry to see the unit end.

Teacher D. In reacting positively towards the inservice process, teacher D felt that a commitment to establish more effective instructional and managerial strategies grew as the challenges of teaching the students increased. Following the study teacher D expressed greater concern regarding the safety and supervision aspects of teaching gymnastics but also more confidence in the ability to deal with them. Teacher D's strong commitment regarding self improvement supported the opinion that intrinsic, professional rewards are much more important than extrinsic rewards, in motivating teachers (McLaughlin & Marsh, 1978).

To a degree, teacher opinion was negatively influenced by several 'experimental' aspects of the study namely: a) the use of a standardized Experimental Teaching Unit (ETU) which did not accomodate the restructuring of intermediate lessons to permit whole class instruction of particular skills, b) lack of feedback during the baseline phase which left

teachers 'on their own' longer than they desired, c) the unit length which was dictated by the number of data points required in each phase. This was viewed negatively by teachers A and B, whose only physical education for the nine week study period was gymnastics, and d) the confined teaching area which resulted, at times, in overcrowding. It is assumed that most of these constraints would be eliminated in a non-experimental inservice process.

Conversely, several factors existed which, according to Joslin (1981) and McLaughlin & Marsh (1978), were critical to successful teacher behavioural change: a) the inservice process took place within a local school and involved elementary level teachers, b) there was strong school administrative support, and c) the units related to subject matter content and supplemented existing curricula. The most important factor, however, related to teacher commitment towards personal change. Prior to the study all teachers considered that physical education played an important role in the overall development of the child. To this end, all teachers maintained strong involvement throughout the study. Without question, all teachers displayed professionalism in steadfastly following through with strategies developed during intervention meetings. The undeniable success of many project outcomes was positively

associated with this degree of teacher commitment (McLaughlin & Marsh, 1978).

Implications and Recommendations

This study suggests that regular classroom teachers can acquire the competencies necessary to teach gymnastics, through an intervention process of feedback, goal setting and follow up. In order to be successful, the staff development process must consider the distinct instructional and managerial needs of both experienced and inexperienced gymnastics teachers.

Interventions upon the duration and pacing of instructional episodes appeared to yield the most consistent and positive results regarding increases in student practice time and subsequent ALT-PE. The collection and coding of videotaped data provides teachers with a more objective diagnosis than simple reflection, and allows them to make better judgements regarding instructional behaviours. The necessary data can be collected by mounting and operating a video camera from a gymnasium corner during the physical education lesson.

All teachers considered the ability to organize and manage student activity to be more critical to the overall instructional process than personal knowledge and expertise in gymnastics, a finding supported by Placek (1986). The

use of a system of accountability (skill check list) was successful in minimizing off-task behaviour at the intermediate level, while vigilence in monitoring and a use of 'time outs' reduced primary off-task time.

The study suggests that a functional relationship exists between a teacher's ability to monitor and manage student involvement, and the number of independent activity groups as well as student internal locus of control (Graham & Heimerer, 1981). It is suggested that efficient instructional and management routines should be first established in a whole group setting (Soar & Soar, 1979; Kounin, 1970) before offering gymnastics skill practice with a maximum of three independent activity stations.

There can be no doubt that feedback plays a significant role in the learning process (Williamson, 1985; Oxendine, 1984; Bilodeau, 1969). In the present study, the use of corrective feedback was increased by focusing teacher attention upon student performance through the medium of skill 'coaching points' sheets.

It was apparent that, once knowledgeable classroom practictioners were provided with appropriate instructional content, they were able to transfer that knowledge into effective classroom practice. Schools must provide for this by hiring physical education specialists to oversee the

training of classroom teachers, and to lend follow up support in subsequent efforts to implement newly acquired competencies.

Finally, evidence from the present study indicated that teachers possessed considerable knowledge regarding the practice of teaching but did little to share this expertise with each other. The apparent success of providing feedback and support through peer coaching (Joyce and Showers, 1982) suggests the need to act upon this area of promise. It is recommended that the professional development process embrace the principle of peer coaching, to encourage and accomodate those teachers wishing to modify their instructional or classroom management behaviours.

REFERENCES

Allard, R., & Rife, F. (1980). A teacher directed model of peer supervision in physical education. *The Physical Educator, 37* (2), 89-94.

Anderson, W. G. (1975). Videotape data bank. *Journal of Education and Recreation, 46,* 31-34.

Anderson, W. G. (1982). Working with inservice teachers: Suggestions for teacher educators. *Journal of Teaching in Physical Education, 1* (3), 15-21.

Arlin, M. (1979). Teacher transitions can disrupt time flow in classrooms. *American Education Research Journal, 16,* 42-56.

Barr, A. S. (1961). *Wisconsin studies of the measurement and prediction of teacher effectiveness: A summary of investigations.* Madison, Wisconsin: Dembar Publications.

Bennett, N. (1976). *Teaching styles and pupil progress.* London: Open Books Publishing.

Bennett, S. N. (1978). Recent research on teaching: A dream, a belief, and a model. *British Journal of Educational Psychology, 48,* 127-147.

Bentzen, M. (1974). *Changing schools: The magic feather principle.* Toronto: McGraw-Hill.

Berliner, D. C. (1984). The half-full glass: A review of research on teaching. In P. L. Hosford (Ed.), *Using what we know about teaching* (pp. 51-77). Alexandria, Va.: Association for Supervision and Curriculum Development.

Bilodeau, I. (1969). Information feedback. In E. A. Bilodeau & I. Bilodeau (Eds.), *Principles of skill acquisition* (pp. 255-285). New York: Academic Press.

Birdwell, D. M. (1980). The effects of modification of teacher behaviour on the academic learning time of selected students in physical education. *Dissertation Abstracts International, 41,* 1472A.

Brooks, D. M., Silven, S. B., & Wooten, M. (1978). The ecology of teacher-pupil verbal interaction. *The Journal of Classroom Interaction, 14* (1), 39-45.

Brophy, J. E. (1979). Teacher behaviour and student learning. *Educational Leadership, 37* (1), 33-38.

Caldwell, J. H., Huitt, W., & Graeber, A. (1982). Time spent in learning: Implications from research. *The Elementary School Journal, 82* (5), 470-480.

Carnine, D., & Filbert, J. (1979). *Direct instruction reading.* Toronto: Charles E. Merrill Pub.

Carr, G. (1980). *Safety in gymnastics.* Vancouver: Hancock House Publishers.

Carre, F. A., Mosher, R. E., & Schutz, B. W. (1980). *British Columbia assessment of physical education: General report.* Victoria: Ministry of Education.

Carroll, J. (1963). A model of school learning. *Teachers College Record, 64,* 723-733.

Charters, W. W. & Waples, D. (1929). *The commonwealth teacher-training study.* Chicago: University of Chicago Press.

Clark, B. M., & Creswell, J. L. (1978). Participants' versus nonparticipants' perception of teacher nonverbal behaviour, *Journal of Classroom Interaction, 14* (1), 28-38.

Confrey, J. (1982). Review of time to learn: Subject-matter specialists. *Journal of Classroom Interaction, 17* (2), 32-36.

Cooper, J. O. (1974). *Measurement and analysis of behavioural techniques.* Columbus, Ohio: Charles E. Merrill Publishing.

Costello. J., & Laubach, S. A. (1978). Student behaviour. In W. G. Anderson & G. T. Barrette (Eds.). What's going on in the gym: Descriptive studies of physical

education classes. Motor Skills, *Theory into Practice Monograph 1.*

Darst, P. W. (1974). The effects of a competency-based intervention on student-teacher and pupil behaviour. *Dissertation Abstracts International, 35,* 5092A.

Dillon, E. A. (1979). Staff development content delivery. *Journal of Teacher Education, 30* (1), 42-43.

Doyle, W. (1979). Classroom tasks and student's abilities. In P. L. Peterson & H. J. Walberg (Eds.), *Research on teaching* (pp. 183-209). Berkeley: McCutchan.

Dunkin, M. J., & Biddle, B. J. (1974). *The study of teaching.* Toronto: Rinehart and Winston.

Earls, N. F. (1981). Distinctive teachers' personal qualities, perceptions of teacher education and the realities of teaching. *Journal of Teaching in Physical Education, 1* (1), 59-70.

Emmer, E. T., & Evertson, C. M. (1981). Synthesis of research on classroom management. *Educational Leadership, 38* (4), 342-347.

Emmer, E. T., Evertson, C. M., Sanford, J. P., Clements, B. S., & Worsham, M. E. (1982). *Organizing and managing the junior high classroom.* Research and Development Centre for Teacher Education. Austin: University of Texas.

Faucette, N. (1984). Implementing innovations: A Qualitative analysis of the impact of an inservice program on the curricula and teaching behaviours of two elementary physical education teachers. *Dissertation Abstracts International, 45,* 1683A..

Fenstermacher, G. D. (1982). On learning to teach effectively from research on teacher effectiveness. *Journal of Classroom Interaction, 17* (2), 7-12.

Fisher, C. W., Berliner, D. C., Filby, N. N., Marliave, R., Cahen, L. S., & Dishaw, M. M. (1981). Teaching behaviours, academic learning time and student achievement: An overview. *Journal of Classroom Interaction, 17* (1), 2-15.

Fishman, S., & Tobey, C. (1978). Augmented feedback. In W. G. Anderson & G. T. Barrette (Eds.). What's going on in the gym: Descriptive studies of physical education classes. *Motor Skills: Theory into Practice Monograph 1.*

Freiberg, H. J. (1983). Consistency: The key to classroom management. *Journal of Education for Teaching, 9* (1), 1-15.

Gage, N. L. (19). Reviewing what we know: The results of recent research. In N. L. Gage, *The scientific basis of the art of teaching,* (pp. 13-41).

Godbout, P., Brunelle, J., & Tousignant, M. (1983). Academic learning time in elementary and secondary physical education classes. *Research Quarterly for Exercise and Sport, 54* (1), 17-19.

Gold, J. A. (1984). *Principles of psychological research.* Homewood, Ill.: Dorsey Press.

Good, T. L. (1979). Teacher effectiveness in the elementary school. *Journal of Teacher Education, 30* (2), 52-64.

Good, T. L., & Brophy, J. E. (1973). *Looking into classrooms.* New York: Harper & Row.

Good, T. L., & Grouws, D. A. (1979). Teaching and mathematics learning, *Educational Leadership, 37* (1), 39-45.

Graham, G. (1983). Review and implications of physical education experimental teaching unit research. In T. J. Templin & J. K. Olson (Eds.), *Teaching in physical education* (pp. 244-253), Champaign, Ill.: Human Kinetics Publishers.

Graham, G., & Heimerer, E. (1981). Research in teacher effect- iveness: A summary with implications for teaching. *Quest, 33* (1), 14-25.

Griffey, D. C. (1981). What is the best way to teach? *Journal of Teaching in Physical Education, 1* (Introductory Issue), 18-24.

Griffin, G. (1983). Implications of research for staff development programs. *The Elementary School Journal, 83* (4), 414-425.

Griffin, G. A., & Barnes, S. (1984). School change: A craft-derived and research-based strategy. *Teachers College Record, 86* (1), 103-123.

Halpin, D. (1979). Accountability, answerability and the reporting of active learning time. *British Journal of Teacher Education, 5* (3), 199-217.

Hersen, M., & Barlow, D. H. (1976). *Single-case experimental designs: Strategies for studying behaviour change.* Toronto: Pergamon Press.

Joslin, P. A. (1981). Inservice teacher education: A meta-analysis of the research. *Dissertation Abstracts International, 41,* 3058A. (University Microfilms No. 81-02,055)

Joyce, B., & Showers, B. (1982). The coaching of teaching. *Educational Leadership, 40* (1), 4-10.

Kirchner, G. (1984). *Physical education for elementary school children* (5th ed.). Dubuque, Iowa: Wm. C. Brown.

Kounin, J. S. (1970). *Discipline and group management in classrooms.* New York: Holt, Rinehart and Winston.

Locke, L. F. (1979). Learning from teaching. In J. J. Jackson (Ed.), *Theory into practise* (pp. 133-152). Victoria: Morriss Printing Company.

Locke, L. F. (1984). Research on teaching teachers: Where are we now? *Journal of Teaching in Physical Education,* Monograph 2 (Summer).

McDonald, F. J. (1976). Report on phase II of the beginning teacher evaluation study. *Journal of Teacher Education, 27(1),* 39-42.

McKenzie, T. L. (1981). Modification, transfer, and maintenance of the verbal behaviour of an experienced physical education teacher: A single-subject analysis. *Journal of Teaching in Physical Education.* Introductory Issue, 48-56.

McLaughlin, M. W., & Marsh, D. D. (1978). Staff development and school change. *Teachers College Record, 80* (1), 69-94.

Medley, D. M. (1979). The effectiveness of teachers. In P. L. Peterson & H. J. Walberg (Eds.), *Research on teaching* (pp. 11-27). Berkeley: McCutchan.

Metzler, M. W. (1982). Adapting the academic learning time instructional model to physical education teaching. *Journal of Teaching in Physical Education, 1* (2), 44-55.

Oxendine, J. B. (1984). *Psychology of motor learning,* Englewood Cliffs: Prentice-Hall.

Pieron, M. (1979). Process analysis of teaching physical education. *FIEP Bulletin, 49* (4), 33-42.

Placek, J. H., & Randall, L. (1986). Comparison of academic learning time in physical education: Students of specialists and nonspecialists. *Journal of Teaching in Physical Education, 5* (3), 157-165.

Purifoy, T. J. (1980). In-service follow up: Impact on the teaching behaviour of the classroom teacher. *Dissertation Abstracts International, 41,* 4684A. (University Microfilms No. 81-09,228)

Quarterman, J. (1978). A descriptive analysis of teaching physical education in the elementary schools. *Dissertation Abstracts International, 39,* 754A.

Ratliffe, T. (1986). The influence of school principals on management time and student activity time for two elementary physical education students. *Journal of Teaching in Physical Education, 5* (2), 117-125.

Rife, F. N. (1983). Staff development and the study of teaching. In T. J. Templin & J. K. Olsen (Eds.), *Teaching in physical education* (pp. 152-160). Champaign, Ill.: Human Kinetics Publishers.

Rosenshine, B. V. (1971). *Teaching behaviours and student achievement.* London: National Foundation for Educational Research in England and Wales.

Rosenshine, B. V. (1979). Content, time, and direct instruction. In P. L. Peterson & H. J. Walberg (Eds.), *Research on teaching* (pp. 28-56). Berkeley: McCutchan.

Rosenshine, B. V., & Berliner, D. C. (1978). Academic engaged time. *British Journal of Teacher Education, 4* (1), 3-16.

Rosenshine, B. V., & Furst, N. (1973). The use of direct observation to study teaching. In R. M. Travers (Ed.), *Second handbook of research on teaching* (pp. 122-183). Chicago: Rand McNally.

Rosswork, S. G. (1977). Goal setting: The effects on an academic task with varying magnitudes of incentive. *Journal of Educational Psychology, 69* (6), 710-715.

Rutter, M., Maughan, B., Mortimore, P., & Ouston, J. (1979). *Fifteen thousand hours.* Cambridge, Mass.: Harvard University Press.

Schwager, S. M. (1983). Planning, implementation, and analysis of a program development project in elementary physical education. *Dissertation Abstracts International, 44,* 1377A. (University Microfilms No. 83-22,242)

Shute, S., Dodds, P., Placek, J., Rife, F., & Silverman, S. (1982). Academic learning time in elementary school movement education: A descriptive analytic study. *Journal of Teaching in Physical Education, 1* (2), 3-14.

Siedentop, D. (1981). The Ohio State University supervision research program. *Journal of Teaching in Physical Education, 1* (Introductory Issue), 30-38.

Siedentop, D. (1983). *Developing teaching skills in physical education* (2nd ed.). Palo Alto, California: Mayfield.

Siedentop, D. (1975, March). *Behaviour modification.* Paper presented at the National Convention of the American Alliance for Health, Physical Education and Recreation, Atlantic City, N. J.

Siedentop, D., & Rife, F. (n.d.). *Basic elements of behavioral research.* Unpublished manuscript, Ohio State University, Ohio.

Siedentop, D., Tousignant, M., & Parker, M. (1982). *Academic learning time-physical education: Coding manual.* Ohio State University, Ohio: College of Education.

Skinner, B. F. (1969). *Contingencies of reinforcement.* New York: Meridith Corporation.

Soar, R. S., & Soar, R. M. (1979). Emotional climate and management. In P. L. Peterson & H. J. Walberg (Eds.), *Research on teaching* (pp. 97-119). Berkeley: McCutchan.

Smyth, W. J. (1981). Research on classroom management: Studies of pupil lengaged learning time as a special but instructive case. *British Journal of Teacher Education, 7* (2), 127-148.

Sprick, R. (1981). *The solution book: A guide to classroom discipline.* Chicago: Science Research Associates.

Stallings, J. (1975). Implementation and child effects of teaching practises in follow through classrooms. *Monographs of the Society for Research in Child Development, 40* (7-8, serial No. 163).

Tikunoff, W. J., Ward, B. A., & Griffin, G. A. (1981). Interactive research and development as a form of professional growth. In K. R. Howey, R. Bents & D. Corrigan (Eds.), *School-focussed inservice descriptions and discussions.* Reston, Va.: Association of Teacher Educators.

Tousignant, M., & Siedentop, D. (1983). A qualitative analysis of task structures in required secondary physical education classes. *Journal of Teaching in Physical Education, 3* (1), 47-57.

Wedmann, W. (1984). *Gymnastics.* British Columbia: Ministry of Provincial Secretary and Government Services.

Whaley, G.M. (1980). The effect of daily monitoring and feedback to teachers and students on academic learning time - physical education. *Dissertation Abstracts International, 41* (4), 1477A.

Williamson, K. M. (1986). *Effects of monitoring on the verbal feedback of student teachers in secondary school physical education.* Unpublished master's thesis, University of Victoria, British Columbia.

Yerg, B. J. (1977). Relationships between teacher behaviours and pupil achievement in the psychomotor domain. *Dissertation Abstracts International, 38,* 1981A.

Appendix A

INFORMED CONSENT

School District No. 63 (Saanich)

SCHOOL BOARD OFFICE
2125 KEATING CROSS ROAD, VICTORIA, BRITISH COLUMBIA Telephone (604) 652-1151
MAILING ADDRESS: POST OFFICE BOX 2000, SAANICHTON, B.C. V0S 1M0

1985-07-08

Mr. Larry Burroughs
c/o School of Physical Education
University of Victoria
P.O. Box 1700
Victoria, B.C.
V8W 2Y2

Dear Mr. Burroughs:

I acknowledge your letter of June 25, 1985.

You have my permission to approach elementary teachers through their principal to determine if they wish to participate in your study "The Effects of Intervention on Teacher Classroom Management Behaviour, Engaged Time and Student Motor Activity in Elementary Gymnastics."

It is important that participation on the part of teachers be voluntary.

Yours truly,

A.C. Campbell,
Superintendent of Schools.

ACC:em

P.S. When you approach principals, please show them a copy of this letter.

UNIVERSITY OF VICTORIA

P.O. BOX 1700, VICTORIA, BRITISH COLUMBIA, CANADA V8W 2Y2
TELEPHONE (604) 721-7211, TELEX 049-7222

School of Physical Education
721-8373

INFORMED CONSENT

I UNDERSTAND THAT THE PURPOSE OF THIS STUDY IS TO LEARN MORE ABOUT TEACHING GYMNASTICS.

I CONFIRM THAT MY PARTICIPATION AS A SUBJECT IS ENTIRELY VOLUNTARY. NO COERCION OF ANY KIND HAS BEEN USED TO OBTAIN MY COOPERATION.

I UNDERSTAND THAT I MAY WITHDRAW MY CONSENT AND TERMINATE MY PARTICIPATION AT ANY TIME DURING THE INVESTIGATION.

I UNDERSTAND THAT ALL OF MY RESPONSES WILL REMAIN COMPLETELY ANONYMOUS, AND THAT IF REQUESTED THE VIDEO TAPES WILL BE DESTROYED AFTER ANALYSIS.

I WISH TO GIVE MY CO-OPERATION AS A SUBJECT.

SIGNED: _____

DATE: _____

Appendix B

SAMPLE GYMNASTICS LESSON PLANS

Primary Gymnastics Unit (Lesson 2A-2B)

Warm-up activity (5 minutes)

a) Perform 20 stride jumps; rest; repeat. b) Start with ear to one shoulder and circle head forwards and down to tuck chin to chest. Continue circling until other ear touches opposite shoulder. Repeat 4-5 times in each direction. c) Hold bridge shape for 5 seconds, turn over and hold opposite bridge shape for 5 seconds.

Exploratory(own space on or beside mat) (5 minutes)

1. Travel around/across your mat making different HOPPING shapes i.e. hop like a frog, rabbit, kangaroo.

2. Hop on one foot around/across your mat, then hop back to your spot on the other foot.

3. Walk 2-3 steps away from your mat. Turn. Walk towards your mat, jump and land SOFTLY on your mat. Repeat.

4. Take 2 steps then jump and make a shape in the air. Land softly on your mat. Jump several times and make different shapes in the air.

5. On one spot jump with a twist in the air. Try to turn 1/4 way around, 1/2 way around. Land softly on both feet with control.

Skill development(2 stations)

Station 1 - Rotations (rolls)

Task 1: Travel from one end of the mat to the other making a stretched rolling shape (e.g. log roll)

Task 2: Travel from one end of the mat to the other making a curled rolling shape (e.g. forward roll, egg roll)

Task 3: Travel on the mat making a rolling shape but changing the positions of your legs (wide, narrow)

Task 4: Make different rolling shapes by starting from a standing position and ending in a sitting position, a standing position.

Task 5: Try to travel in a rolling shape down the mat while holding a bean bag between your knees, under your chin, under one arm.

Station 2 - Jumping and Landing (benches)

Task 1: Travel around and over the benches making different hopping shapes (hop like a frog, a kangaroo, a rabbit)

Task 2: Hop onto a bench, make a balance shape, then jump high off the bench. Land SOFTLY with both feet on the floor.

Task 3: From a bench jump and while in the air make a shape. Land SOFTLY with both feet on the floor.

Task 4: From a bench jump and make a 1/4, 1/2 turn in the air. Land SOFTLY with both feet on the floor.

Task 5: Make a bridge shape between a bench and the floor. Have a partner travel under your shape without touching you. Make a second bridge shape and let your partner travel under again. Change places.

Concluding activity (5 minutes)

1. "Bouncing Ball"

Standing with arms at sides. Take short jumps and after each jump gradually lower the body. Continue until the hands touch the floor. Reverse the action until the standing position is again reached. (repeat 3 times)

2. "Wring the Dish Rag" (with partner) (see lesson 1D) Repeat 10 times then change directions and repeat 10 times.

NOTE: This lesson should be repeated next day with the students performing at the remaining station. It may be appropriate to review jumping/landing and rolls during the Exploratory phase of next day's lesson.

Intermediate Gymnastics Unit (lesson 3)

Warm-up activity (5 minutes)

a) Perform 20 "straddle jumps". Rest. Repeat.

b) Perform 20 "stride jumps". Rest. Repeat.

c) Start with ear to one shoulder. Circle head forward and down to tuck chin to chest. Continue circling until other ear touches opposite shoulder. Repeat 4-5 times in each direction.

d) Perform curl ups for 30 seconds. Lie with the knees bent and feet flat on the floor. Curl up from the waist with arms straight at the sides and off the floor. Curl back down to the starting position. Rest and repeat.

Skill Practice (stations) (15 minutes)

Station 1 Supports/Balances

1. rear support to front support 2. V-sit with support from a partner 3. shoulder stand 4. bridge support

Mastery 1: Perform 3 of the above skills in a sequence
Mastery 2: Perform a sequence of 3 skills with a partner

Station 2 Rotations

1. forward roll to a straddle sit 2. forward roll to a squat stand 3. forward roll to a 1 leg stand 4. forward roll; cross legs; 1/2 turn on toes

Mastery 1: Perform 3 skills in a sequence

Station 3 Supports/Balance with Height

1. jumps 1/4, 1/2, 3/4, full turn (on floor) 2. 2 foot springs (floor) 3. from standing lie on front (prone), stand, turn, lie on lie on back (on bench) 4. perform 2 foot springs (one end of bench to other)

Mastery 1: Perform 3 of the above skills in a sequence

Station 4 Climbing Frame/Ropes/Ladder

1. climb rope to waist height, support with feet 2. hang by arms and hold tuck/straddle position (rope) 3. swing hand over hand; one end of the ladder to the other 4. balance with feet higher than head on climbing frame ** (at floor level) **

Mastery 1: Perform 3 of the above skills in a sequence

Concluding Activity (5 minutes)

1. "Wring the Dish Rag"

Partners face each other and join hands. Each partner raises one joined arm and turn back to back. Repeat with the other joined arms to face front to front again. Repeat 10 times both directions.

2. "Partner Pull-Up"

Sit on the floor facing your partner (feet flat on the floor, knees bent and toes touching your partner's). Grasp each other's hands and pull each other to a standing position and then lower yourselves gently to the floor. Repeat several times.

3. Individual 'line jumps' if time (as lesson 2)

Appendix C

SURVEY OF ATTITUDES TOWARDS GYMNASTICS INSTRUCTION (PRE-POST TEST)

---------- QUESTIONNAIRE ----------

A. Personal Attitude Regarding Gymnastics Instruction

FOR EACH OF THE FOLLOWING STATEMENTS RECORD ON THE ATTACHED ANSWER SHEET YOUR LEVEL OF AGREEMENT OR DISAGREEMENT. COMPLETELY FILL IN ONLY 1 CATEGORY PER QUESTION.

---

strongly agree agree unsure disagree strongly disagree

A B C D E

---

1. Our school is well equipped regarding gymnastics equipment.

2. I enjoy teaching physical education to my students.

3. My students enjoy participating in gymnastics activities whenever they are offered.

4. I would teach gymnastics more often if I had more knowledge in the area.

5. My gymnastics spotting techniques are adequate to ensure student safety.

6. I have no difficulty organizing students within a gymnastics lesson.

7. It is a school expectation that I offer gymnastics as part of my overall physical education program.

8. I tend to avoid using large gymnastics apparatus.

9. I consider physical education to be important to the physical development of the student.

10. My students are not very successful at performing gymnastics skills.

11. I have the competence to instruct my students in gymnastics.

12. Constant supervision is crucial in order to ensure safe conduct in gymnastics.

13. Students are more difficult for me to control in gymnastics.

14. My school provides a coordinated gymnastics program for all grade levels.

15. I have well developed routines for handling large gymnastics equipment.

16. My students look forward to their physical education lessons.

17. Daily physical education should be offered at the elementary level.

18. I do not consider personal skill level to be an essential requirement for gymnastics instruction.

19. I accept that there is an inherent safety risk in teaching any physical activity to students.

20. Discipline problems seem to increase during my gymnastics lessons.

21. There is someone on my staff capable of offering advice to others regarding gymnastics instruction.

22. I tend to avoid offering gymnastics to my students.

23. Gymnastics equipment is not readily accessible when required for a lesson.

24. I find it difficult to keep one step ahead of my students when instructing gymnastics.

25. The gymnastics activities I offer my students present no more of a safety risk than other physical education activities.

26. My students would rather cooperate than compete with each other during a gymnastics lesson.

27. I have no difficulty keeping my students actively involved during a gymnastics lesson.

28. Physical education is considered to be an important subject area within my school.

29. There is adequate time in my physical education periods to offer gymnastics using all available equipment.

30. I have had more positive than negative experiences when teaching gymnastics.

31. My students would rather take part in other activities than gymnastics.

32. I often feel the need to seek advice regarding gymnastics instruction.

33. I am extremely concerned about aspects of safety and personal liability within a gymnastics setting.

34. Students seem to spend more time standing around and waiting in my gymnastics lessons.

35. The principal takes an interest in my physical education program.

---------- END PART 1 ----------

PART 2: PLEASE COMPLETE BY WRITING DIRECTLY ON THIS FORM

I would offer more instruction in gymnastics if the following conditions were met:

B. Professional Training and Teaching Experience

Please indicate sex: _____ M _____ F

1. Have you had any professional training in gymnastics?

_____ yes _____ no

If yes, for each course you have taken please indicate its length, what % of time the course dealt with gymnastics and what the course emphasis was (e.g. spotting techniques, peer teaching, artistic gymnastics, movement education.

course	length	% gymnastics	course emphasis

a. _____

b. _____

c. _____

2. How many years have you taught at the primary level; at the intermediate level; at your present grade level?

_____ primary _____ intermediate _____ present grade

3a. Are you a physical education specialist?

_____ yes _____ no

3b. Do you offer physical education instruction to more than one class in your school? _____ yes _____ no

3c. Do you offer physical education to your own class?

_____ yes _____ no

4. How many phyaicsl education lessons are students offered per week? How long are the periods?

_____ lessons per week _____ length in minutes

5. Approximately what portion of your total physical education content involves gymnastics instruction to your students?

_____ number of days/week _____ % of total p.e. time

6. Consider how you integrate gymnastics into your physical education program. In terms of the total amount of gymnastics instruction you offer to your students, gymnastics is emphasized in the following manner (should add up to 100%):

_____ taught within a discrete gymnastics lesson

_____ offered in conjunction with another skill (e.g. during a 'minor activities' lesson in a stations approach

_____ offered as a warm-up activity in an unrelated lesson

_____ other (please specify) _____

7a. Which is your preferred method of gymnastics instruction?

_____ whole class _____ stations

_____ other (specify) _____

7b. Please comment on your preferred teaching style in gymnastics (e.g. direct instruction using stations, whole class, movement education, artistic gymnastics, individualized learning, etc.)

_____

_____

8. Please identify the following equipment in terms of its use within your gymnastics lessons (e.g. used frequently (*), sometimes used (S), never used (N), not available in the school (N/A).

_____ climbing apparatus _____ benches

_____ rings _____ balance bean

_____ hoops _____ springboard

_____ vaulting box _____ horizontal bar

_____ individual mats _____ pommel horse

_____ crash mats _____ trampette

_____ trampoline _____ other (list below)

_____ _____

C. Gymnastics at the School Level

9. Is there an organized school wide gymnastics curriculum available to you within your school?

_____ yes _____ no

10. Is gymnastics timetabled into the school gym schedule (e.g. Monday = gymnastics day, a 6 week block of gymnastics, etc.?)

11. At which level in your school is more emphasis placed upon gymnastics?

_____ primary _____ intermediate

General Comments:

_____

_____

Pre and Post Study Questionnaire Factors By Question

Factor	Question Number
Equipment	1,8,15,23,29
Safety	5,12,19,25,33
Personal Skill	4,11,18,27,32
Administrative Support	7,14,21,28,35
Attitude Toward P.E.	2,9,17,22,30
Student Attitude Toward P.E. and Gymnastics	3,10,16,26,31
Management Ability	6,13,20,24,34

_____ END OF QUESTIONNAIRE - THANK YOU!! _____

Appendix D

SURVEY OF POST-STUDY ATTITUDES REGARDING THE INSERVICE PROCESS

SAANICHTON ELEMENTARY GYMNASTICS STUDY

YOU HAVE JUST COMPLETED AN EXPERIMENTAL PROCESS WHICH, FOR BETTER OR WORSE, HAS FORCED YOU TO EXAMINE YOUR PRACTICES AND BEHAVIOURS REGARDING THE TEACHING OF GYMNASTICS. YOUR HONEST AND THOUGHTFUL RESPONSE TO THE FOLLOWING QUESTIONS WILL BE MUCH APPRECIATED. PLEASE DON'T BE DIPLOMATIC, SIMPLY RESPOND IN A DIRECT AND OBJECTIVE MANNER.

PART A - TEACHING CONTENT AND PROCESS

1. How much opportunity did you have to provide input regarding:

a)	the overall curriculum content	A	B	C	D	E
b)	the fine tuning of lesson content	A	B	C	D	E
c)	altering your teaching behaviours	A	B	C	D	E
d)	specific management strategies	A	B	C	D	E

a great deal	some	unsure	minimal	none
A	B	C	D	E

2. Has your knowledge of gymnastics content (skills, activities, progressions, etc.) increased as a result of the study? Please explain.

3. Comment on the appropriateness of lesson content in the unit ("just right, too difficult, too basic", etc.) relative to:

a) The ability of your students -

b) Your personal level of gymnastics teaching expertise -

c) Its simplicity and ease of application -

4. Please comment on elements encountered during this study which might facilitate or discourage regular classroom teachers in successfully implementing this gymnastics unit "as is".

5. Has your knowledge and/or practice of management and instructional strategies (organization, movement, supervision, motivation, etc. of children) increased as a result of this study? Please explain.

6. Which did you consider more critical in successfully teaching this gymnastics unit: Please explain.

(a) the ability to organize, manage and control the movement and behaviour of children, or

(b) personal knowledge and expertise in gymnastics

7. With regard to the process of behavioural change, were expectations placed upon you realistic? unrealistic? too high? reasonable?

8. State which skills you possessed previous to the study that aided in your overall teaching of gymnastics.

9. Are you a better gymnastics teacher as a result of the study? Please elaborate.

PART B - INSERVICE CONTENT AND PROCESS

The process of inservice included initial workshops, 2 intervention sessions and conferencing before and/or after lessons.

1. Was the time devoted to this inservice process reasonable? too great? insufficient?

2. Considering that some information had to be temporarily withheld (specific nature of the intervention variables) were the strategies and information provided during this process: (please comment)

a) clearly communicated? (goals, expectations, strategies)

b) realistic? easy to apply?

3. Did you feel like a passive recipient or was there an opportunity to exchange ideas?

4. To what extent did you share and receive thoughts and ideas with others involved in the study?

1. Please circle to indicate the commitment you feel you made to the study:

very strong strong moderate mild minimal

2. Comment on factors which may have interfered or enhanced your commitment to the study.

3. Do you feel that the commitment you made influenced your teaching behaviour? In what way?

4. Please circle the amount of time spent preparing for the instruction of each lesson (average)

0-15 min. 15-30 min. 30-45 min. 45+ min.

5. How might the issue of 'equipment' be addressed in a future unit?

6. Did the use of models enhance or diminish the instructional process? Is this an essential feature when using the stations approach? Is it worth the cost in time to train models? How might this be achieved? (answer only if applicable)

7. Please comment regarding the attitude of your students relative to their interest, commitment and performance during the study.

Appendix E

TREATMENT PACKAGE FOR SUBJECTS

First Intervention - Teachers and Variables

Instruction: teachers A, B, D; Transition: teacher D; Corrective Feedback: teachers A, B; Accountability: teacher C; Wait: teacher A; Off-task: teachers C, D.

Second Intervention - Teachers and Variables

Instruction: teachers A, C; Corrective Feedback: teacher D; Accountability: teacher A; Wait: teachers B, C; Off-task: teacher D; Equipment Management: teachers B, C.

Teacher A. First Intervention

Goal One

Reduce class instruction time by choosing expert models and providing them with skill practice sheets (pictures of skills covered in each lesson were reproduced from the Premier's Sports Award Program booklet). As well, encourage the models to become better prepared by practicing the skills on their own. Models will be prompted during training sessions to provide more concise instruction. On the climbing frame, for example, models can demonstrate part of travelling skill and then explain the rest of the activity.

Goal Two

Increase the amount of corrective feedback by using the 'coaching points' sheets to assist in identifying key performance points.

Sample Skill Coaching Points

o Bridge

"Sit on floor with knees up and hands on shoulders; lay back with fingers pointing to toes; push up with stomach and arms"

o Backward Roll

"Begin in a squat position; make sure hands are on shoulders with fingers pointing in the direction of the roll; tuck head (hold a bean bag under chin; when hands touch the mat throw knees over the head and push with the hands"

o Rope Climb

"Stand with rope forward between the legs; reach high with both hands to hold the rope; wrap right leg counterclockwise around rope so rope sits on right foot; pull up with hands; step on the rope and right foot with the left foot"

o Two Foot Spring and Land

"Step near the end of springboard (2 foot takeoff); keep upper body straight with head up; arms swing forward and up at takeoff; jump up not out; land in control with a 2 foot plant"

Goal Three

Introduce a third set of mats to the roll station to minimize lineups. Prompt students not to stand in lines but to choose another 'vacant' skill activity.

Teacher A. Second Intervention

Goal One

Initiate an accountability system by circulating and randomly asking students to demonstrate a skill during practice time. This strategy is designed to reduce student off-task behaviour when left to practice on their own. Evaluate student skill performance and record on a check list. Tell the students that a mark will be given for skill performance as well as active participation. Also tell the students that they will put on a gymnastics demonstration for the school at the end of the unit.

Goal Two

Limit the models' demonstration time by prompting them to provide clear but fast paced instruction. Reinforce that they practice the skills on their own with the aid of the skill practice sheets.

Teacher B. First Intervention

Goal One

Reduce the frequency of short instructional episodes and lengthen the practice intervals following instruction, during whole group instruction.

Goal Two

Maintain the skill practice level while adding a third activity station. Provide more skill instruction at one station while monitoring the student progress at the remaining stations. Teacher B was already providing a high level of feedback and it was deemed unnecessary to provide skill coaching points.

Teacher B. Second Intervention

Goal One

Attempt to develop an efficient routine for setting up the equipment required for each lesson. A floor plan was provided which indicated where the equipment for each lesson was to be placed. The climbing frame was set up by the researcher and the remaining equipment for each lesson was taken from storage and placed at the side of the gym.

Goal Two

Reduce wait time during practice by monitoring lineups and encouraging students to move to 'free equipment' rather than waiting in lines. Teacher B was also encouraged to react to students waiting in lines and to think of strategies which might minimize lineups, such as adding an extra mat to an activity.

Teacher C. First Intervention

Goal One

Initiate an accountability system as a strategy to reduce the off-task behaviour of students left to practice independently. Circulate and randomly ask students to demonstrate a skill during practice time. Evaluate student skill performance and record on a check list.

Goal Two

Reduce wait time by prompting students not to stand around and wait in lineups, but to choose a skill activity which is not presently occupied.

Teacher C. Second Intervention

Goal One

To reduce instruction time by providing models with skill practice sheets and encouraging them to prepare for lessons by practicing on their own. Teacher presence at the models' training sessions was suggested.

Goal Two

Attempt to develop an efficient routine for setting up the equipment required for each lesson. A floor plan was provided which indicated where the equipment for each lesson was to be placed. The climbing frame was set up by the researcher and the remaining equipment for each lesson was taken from storage and placed at the side of the gym.

Goal Three

Reduce wait time by by making 'active participation' a component of accountability. Students were to be prompted to avoid lineups and to choose alternate activities to those which were crowded.

Teacher D. First Intervention

Goal One

Reduce transition time by introducing a signal ("5..4..3..2..1") to motivate students to attend more quickly.

Goal Two

Decrease the length of instruction intervals through better pacing of instructional episodes. Become familiar with the lesson material and minimize lengthy task descriptions during which students remain inactive. Maintain practice momentum by considering how to organize the next activity while students are still involved in the present task.

Goal Three

Reduce off-task behaviour by implementing a two minute 'time out' for inappropriate behaviour such as running and fooling around.

Teacher D. Second Intervention

Goal One

Reduce off-task behaviour by continuing with the 'time out' system and introducing a merit system to reinforce proper conduct. The merit system was initially developed for the classroom but was extended to the gymnastics setting. The class was divided into two groups ("Super Spiders", "Fighting Flies") who were collectively awarded points for being on-task at the time of random teacher checks. Points earned in the gymnasium accumulated with classroom points for a weekly period, at which time a winning group was chosen. That group had first choice of two prizes which were divided between the two groups.

Teach the proper progressions regarding the following skills: a) jumping and landing: head up, upper body straight, bend knees on landing, land softly; b) rolls: begin from a squat position, tuck head by placing a bean bag under chin, lead with hands, take weight gently on shoulder and rounded back, freeze ending position for the count of three. Emphasize control at all times so that if a stop signal is heard a student could stop any movement without falling over.

Appendix F

DECISION LOG FOR CODING

Decision Log for Class Context Variables

All class context and learner involvement variables were coded using a modified ALT-PE interval recording system (Siedentop, 1982). An interval was credited with the variable which was observed for 50% or more of the six second, observe interval. If two class context variables were each observed for three seconds in an interval, the variable was assigned to that interval according to the following ranked order: practice, instruction, transition, management.

Practice Time. The portion of total lesson time in which 50% or more students are physically engaged in skill practice relating to lesson content. In classes with four activity stations, practice time was designated as the time when two of the four stations began practice.

Instruction Time. The portion of total lesson time in which 50% or more students in a class are attending to instructions, demonstrations or directions relating to lesson activities. In classes with four activity stations, instruction time was designated as the time when two of the four models began to demonstrate or explain a station activity.

Transition Time. The portion of total lesson time in which 50% or more students in a class are engaged in activities such as setting up equipment, changing stations, selecting groups or teams or waiting for a new activity to begin. The class was considered in transition if inactive while a student was being desisted or during a pause or silence lasting four seconds or longer.

Management Time. The portion of total lesson time in which 50% or more students are being spoken to regarding inappropriate behaviour or conduct.

Decision Log for Learner Involvement Variables

If two learner involvement variables were each observed for three seconds in an interval, the variable was assigned to that interval according to the following ranked order: motor appropriate, motor-inappropriate, cognitive, on-task, interim, wait, off-task.

Motor appropriate. a) a skill performed at an 80% rate of success or at a control level (two tries look alike), b) a successful skill attempt which lasted less than 50% (3 seconds) of an interval, c) a skill attempt initiated but not completed within the six second 'observe' interval.

Motor inappropriate. A skill performed below an 80% rate of success or at a pre-control level (no two tries look alike, erratic).

Cognitive. Attending to skill instruction (verbal or a demonstration), or studying a station skill chart.

On-task. Preparing to execute a skill (moving to a squat position for a forward roll, preparing the rope for climbing), travelling to a new activity area during a class transition, or purposefully engaged in a non-skill activity such as tying a shoe lace or straightening a mat.

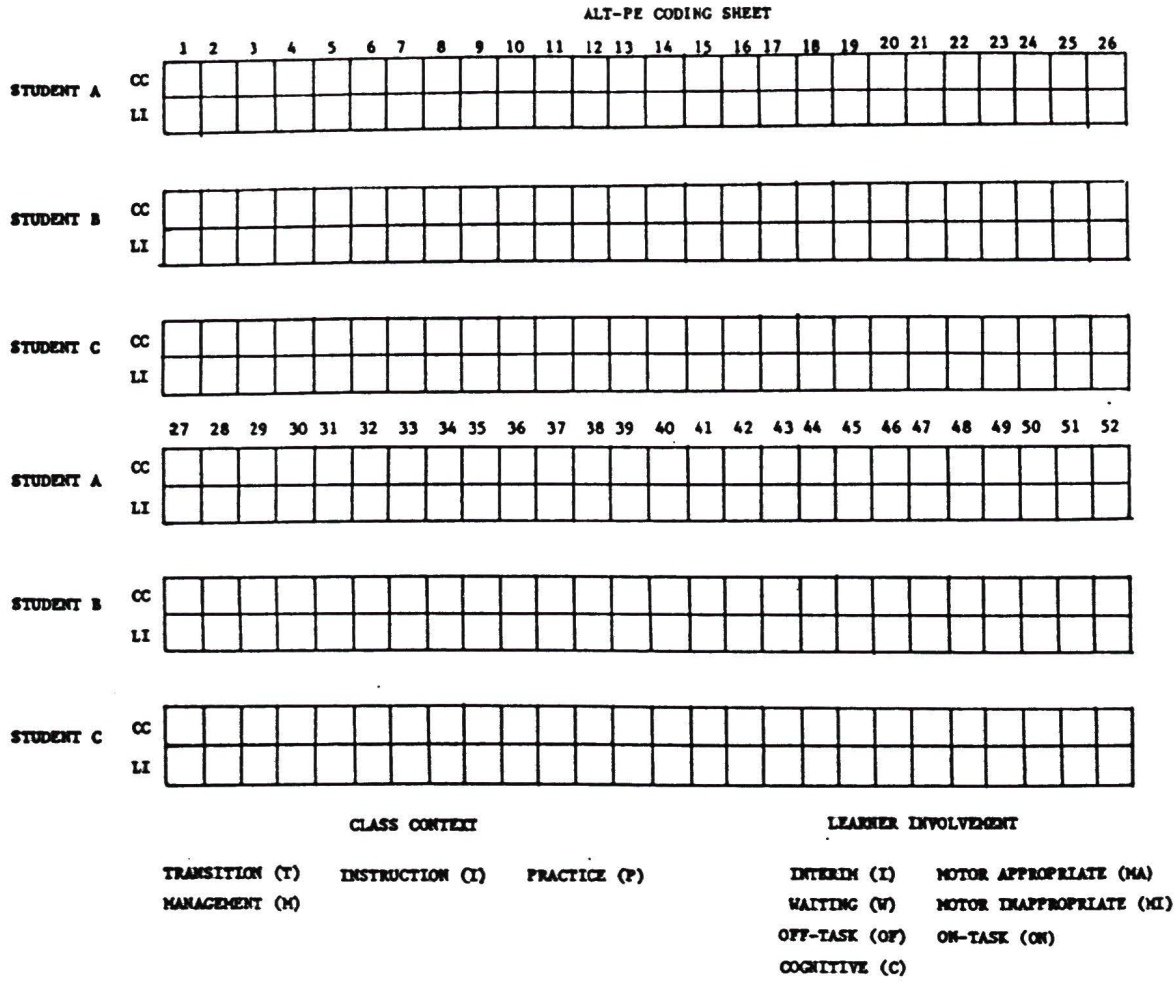
Interim. Travelling purposefully from one activity area to another or pausing for less than six seconds between a sequence of skill activities.

Wait. In position and ready to begin a skill but waiting because the activity area was occupied by another performer.

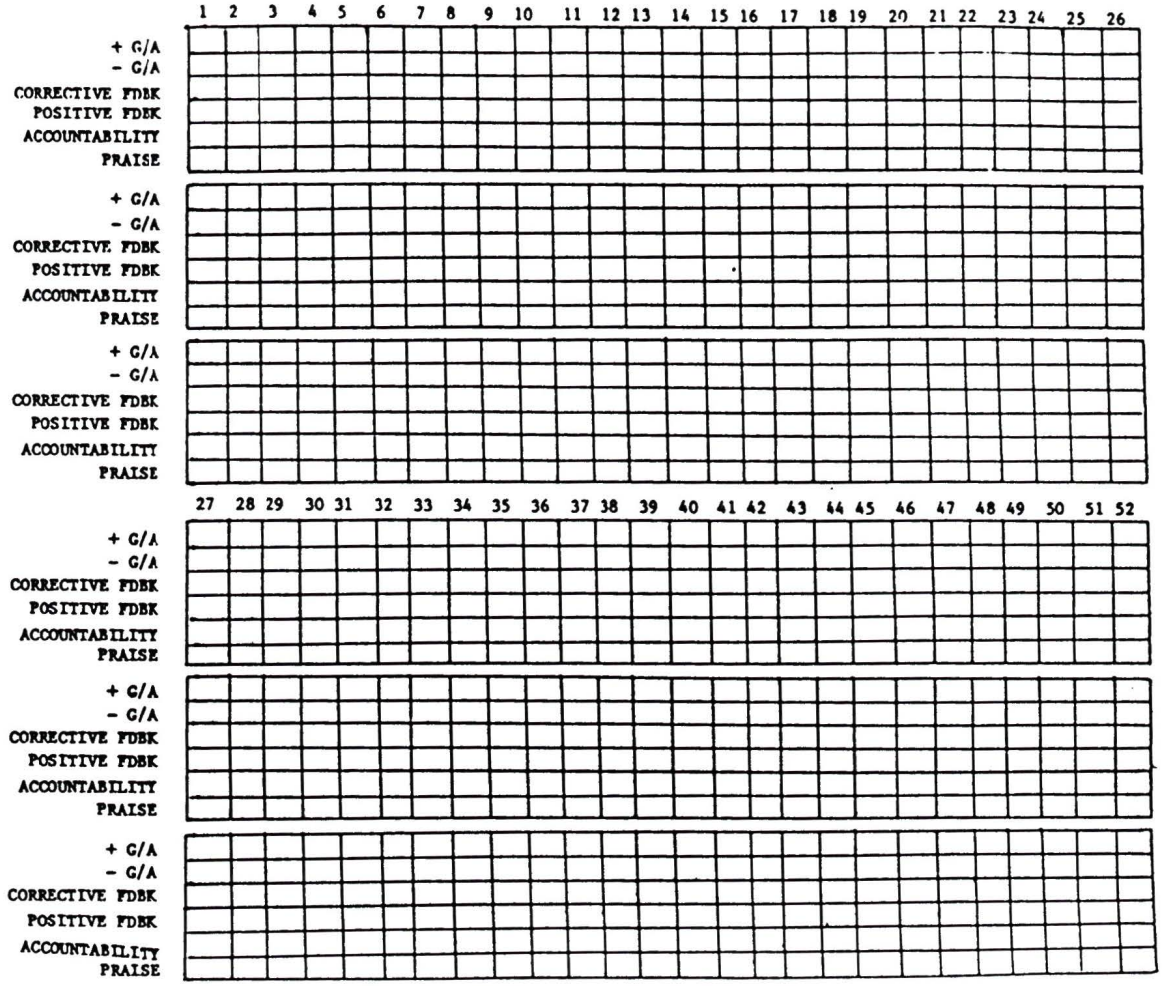
Off-task. Not involved in a purposeful or task-related activity, interfering with the activity of another student, or remaining inactive (pausing) for an entire interval.

Decision Log for Teacher Verbal Behaviour Variables

Definitions of teacher verbal behaviour variables and discussion relating to the coding procedure appear in the research methodology section. Single, discrete verbal statements were classified according to the definitions previously outlined. Statements were coded in the 12 second interval in which they originated. A cluster of two or more statements directed at the same student were coded as one occurrance ("Good, that's great, way to go John").

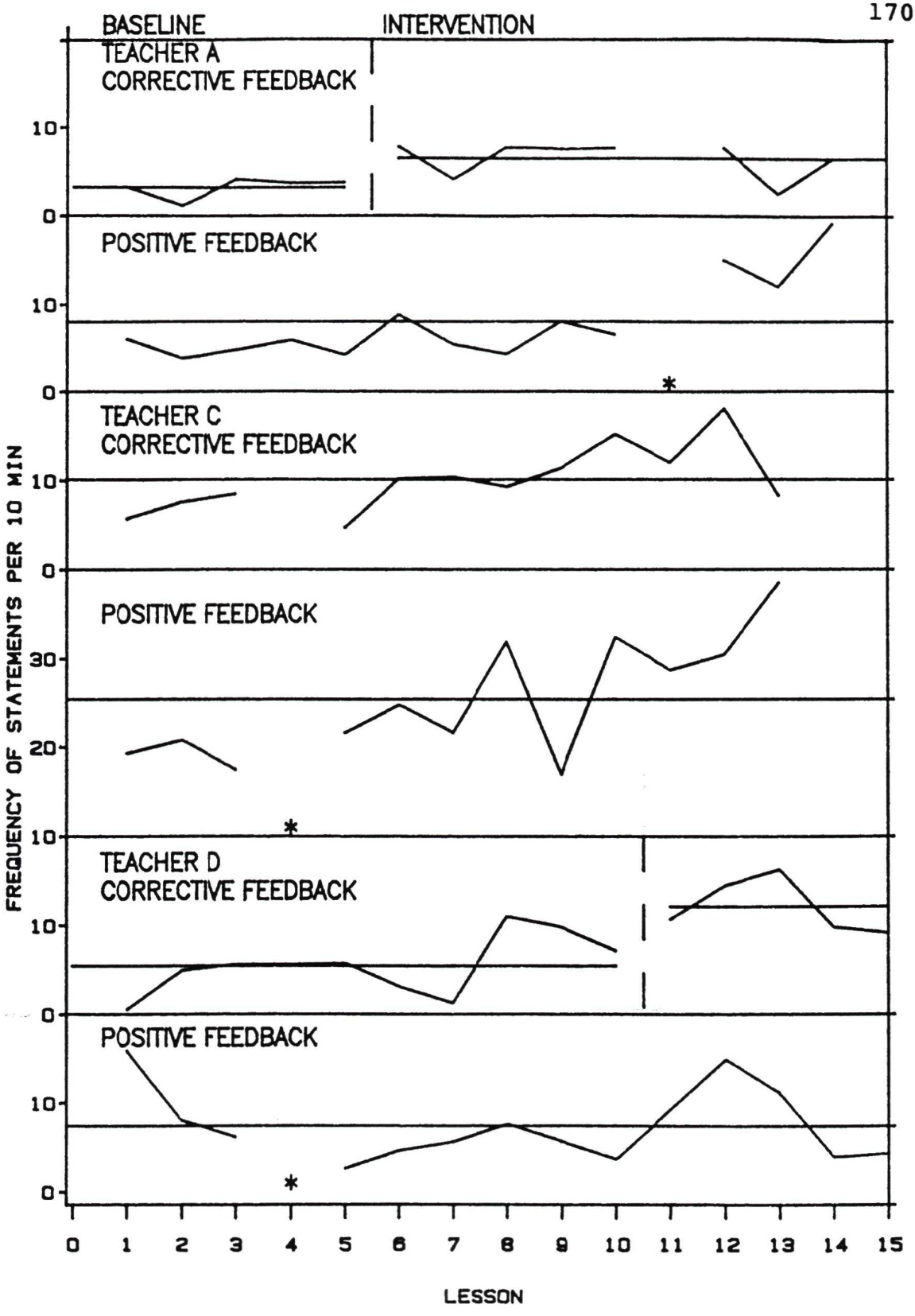

ALT-PE CODING SHEET
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
STUDENT A
CC
LI
STUDENT B
CC
LI
STUDENT C
CC
LI
27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
STUDENT A
CC
LI
STUDENT B
CC
LI
STUDENT C
CC
LI
CLASS CONTEXT
TRANSITION (T)
MANAGEMENT (M)
INSTRUCTION (I)
PRACTICE (P)
LEARNER INVOLVEMENT
INTERIM (I)
WAITING (W)
OFF-TASK (OF)
COGNITIVE (C)
MOTOR APPROPRIATE (MA)
MOTOR INAPPROPRIATE (MI)
ON-TASK (ON)

CODING SHEET FOR TEACHER VERBAL BEHAVIOURS



Appendix G

TEACHER CORRECTIVE AND POSITIVE FEEDBACK



* NO DATA

APPENDIX G. TEACHER CORRECTIVE AND POSITIVE FEEDBACK

Appendix H

CLASS CONTEXT VARIABLES

Practice Time as a Percentage of Total Class Time By Lesson (All Teachers)

		Phase		
		1	2	3
Teacher A		62.4	58.1	65.9
		48.2	58.3	72.6
		55.2	60.0	66.4
		54.0	57.8	69.2
		53.8	56.6	
	Mean	54.7	58.2	68.5
Teacher B		59.9	68.5	63.3
		57.5	63.9	66.2
		67.4	71.2	51.8
		49.6	62.1	60.7
		46.9	83.2	
	Mean	56.3	69.8	60.5
Teacher C		59.3	44.0	60.0
		73.5	61.6	52.8
		52.3	57.3	52.9
		*	65.1	50.9
			52.1	
	Mean	61.7	55.8	54.2
Teacher D		47.0	69.3	69.2
		44.0	42.6	67.8
		74.4	69.2	64.5
		45.2	69.1	72.3
		62.0	58.2	71.3
	Mean	54.5	61.7	69.0

* data lost

Instruction Time as a Percentage of Total Class Time By Lesson (All Teachers)

		Phase		
		1	2	3
Teacher A		28.4	25.7	23.8
		28.9	29.2	17.1
		37.5	29.3	23.0
		30.7	31.1	22.3
		28.6	30.3	
	Mean	30.8	29.1	21.6
Teacher B		25.6	17.6	7.9
		28.3	17.7	7.7
		20.3	11.5	21.7
		30.1	25.0	13.3
		26.2	6.4	
	Mean	26.1	15.6	12.7
Teacher C		27.7	41.1	
		12.1	23.2	20.8
		25.2	26.4	20.2
		*	22.0	23.1
			26.0	
	Mean	21.7	28.2	21.4
Teacher D		32.5	11.9	15.4
		37.1	30.2	19.0
		13.3	14.4	18.3
		38.7	10.9	15.8
		15.0	18.2	11.5
	Mean	28.5	17.1	16.0

* data lost

Transition Time as a Percentage of Total Class Time By Lesson (All Teachers)

		Phase		
		1	2	3
Teacher A		9.2	14.2	10.3
		23.0	12.5	10.3
		7.4	10.7	10.7
		15.3	11.1	8.5
		17.7	12.3	
	Mean	14.5	12.2	10.0
Teacher B		14.6	13.9	28.8
		14.2	18.5	26.2
		12.3	15.4	27.0
		19.5	12.9	25.4
		26.9	10.4	
	Mean	17.5	14.2	26.9
Teacher C		13.0	14.9	25.6
		14.4	15.2	26.9
		22.5	15.5	25.9
		*	12.8	
			18.4	
			14.0	
	Mean	16.6	15.1	26.1
Teacher D		20.5	18.8	14.4
		19.0	19.4	13.2
		12.2	16.3	16.1
		16.1	18.2	11.9
		23.0	18.2	16.1
	Mean	18.2	18.2	16.1

* data lost

Appendix I

ALT-PE BY TEACHER

Mean ALT-PE as a Percentage of Total Class Time By Lesson (All Teachers)

		Phase		
		1	2	3
Teacher A		44.0	29.1	31.7
		34.1	28.5	46.2
		36.5	30.0	28.7
		28.5	27.4	33.1
		21.0	28.1	
	Mean	32.8	28.6	34.9
Teacher B		51.8	44.4	31.7
		46.9	51.7	43.1
		52.9	51.0	37.2
		37.4	46.6	49.2
		39.2	48.0	
	Mean	45.6	48.3	40.3
Teacher C		41.5	27.7	33.0
		49.2	36.9	30.4
		27.0	30.0	30.8
		*	35.2	30.8
			28.7	
	Mean	39.2	31.7	31.3
Teacher D		37.6	38.6	46.5
		38.8	29.5	32.7
		40.0	38.5	40.9
		29.8	48.2	44.6
		37.0	35.5	48.3
	Mean	36.6	38.1	42.6

* data lost

Appendix J

TEACHER VERBAL BEHAVIOURS

Frequency of Verbal Behavior Per Ten Minutes By Lesson : Teacher A

Lesson	Corr. Fdbk.	Pos. Fdbk.	Acc't	+G.A.	-G.A.	Praise
1	3.2	6.0	3.2	12.0	3.2	0.5
2	1.1	3.8	3.1	10.0	1.5	0.4
3	4.1	4.8	0.7	11.9	2.6	0.0
4	3.7	5.9	2.2	8.1	1.5	0.0
5	3.8	4.2	0.8	12.9	1.3	0.0
6	7.8	8.8	4.4	12.4	4.8	0.0
7	4.1	5.4	4.4	9.7	3.4	0.0
8	7.8	4.3	2.5	16.1	0.7	0.0
9	7.6	8.0	3.2	10.4	2.4	0.0
10	7.7	6.5	3.6	13.2	2.8	0.4
11	*					
12	7.7	15.0	13.7	13.0	1.3	0.0
13	2.5	12.0	13.6	10.8	0.8	0.0
14	6.9	19.2	13.8	12.7	1.2	0.0

* data lost

Frequency of Verbal Behavior Per Ten Minutes By Lesson : Teacher B

Lesson	Corr. Fdbk.	Pos. Fdbk.	Acc't	+G.A.	-G.A.	Praise
1	8.1	16.5	1.5	9.9	5.9	1.1
2	8.8	20.4	2.7	6.6	1.8	0.4
3	6.9	19.3	1.8	6.6	5.5	0.7
4	10.2	26.0	2.4	4.5	4.1	0.0
5	12.7	24.4	1.9	10.0	3.8	1.2
6	16.5	23.6	9.0	5.2	5.7	0.5
7	8.9	11.0	0.4	4.7	1.3	0.0
8	18.4	22.6	4.7	10.8	3.8	0.5
9	13.6	16.5	4.7	6.8	2.5	0.0
10	25.0	21.8	0.8	8.7	2.0	0.8
11	18.1	24.8	1.1	8.5	5.0	1.1
12	21.8	23.7	3.8	15.4	3.8	0.4
13	14.3	23.6	2.5	6.4	4.3	0.0
14	16.8	24.0	1.2	7.6	4.4	0.0

Frequency of Verbal Behavior Per Ten Minutes By Lesson : Teacher C

Lesson	Corr. Fdbk.	Pos. Fdbk.	Acc't	+G.A.	-G.A.	Praise
1	5.7	19.3	6.1	17.6	1.6	1.6
2	7.6	20.8	1.5	18.6	3.8	0.0
3	8.5	17.4	2.7	14.3	2.7	1.3
4	*					
5	4.7	21.6	14.0	21.2	1.8	0.4
6	10.2	24.8	21.2	15.5	2.2	0.0
7	10.4	21.6	18.5	14.4	1.8	0.0
8	9.3	31.9	22.5	17.6	1.1	0.0
9	11.4	16.9	11.9	10.6	2.5	0.0
10	15.2	32.4	17.2	9.3	2.5	0.0
11	12.0	28.7	9.7	10.1	2.3	0.0
12	18.1	30.5	21.4	12.4	3.8	0.5
13	8.3	38.5	19.3	9.4	3.1	0.0

* data lost

Frequency of Verbal Behavior Per Ten Minutes By Lesson : Teacher D

Lesson	Corr. Fdbk.	Pos. Fdbk.	Acc't	+G.A.	-G.A.	Praise
1	0.5	15.9	0.0	7.2	1.4	1.0
2	4.9	8.0	1.3	8.0	5.3	0.0
3	5.6	6.1	0.0	7.2	5.0	0.0
4	*					
5	5.7	2.6	0.5	8.8	4.6	1.5
6	3.1	4.6	0.5	12.2	4.6	0.0
7	1.2	5.6	0.4	9.9	4.4	0.0
8	11.0	7.6	1.4	16.2	5.2	0.0
9	9.6	5.6	2.3	13.1	8.9	0.0
10	7.1	3.6	1.8	12.9	4.9	0.0
11	10.7	9.3	1.4	14.0	2.8	0.5
12	14.5	14.9	2.4	12.9	1.6	0.0
13	16.3	11.1	0.5	12.6	2.6	0.0
14	9.8	3.9	2.5	6.4	4.9	0.5
15	9.1	4.3	0.6	13.4	4.3	0.0

* data lost

Appendix K

PRE AND POST STUDY QUESTIONNAIRE SCORES BY FACTOR

Pre and Post Study Questionnaire Scores By Factor : All Teachers

Factor	Q No.	*	A Pre	A Post	B Pre	B Post	C Pre	C Post	D Pre	D Post
	1	A	B	B	B	B	C	C	B	B
	8	E	E	E	C	E	D	D	C	B
Equipment	15	A	B	A	B	B	D	A	D	C
	23	E	B	D	B	A	D	D	B	B
	29	A	D	E	B	B	C	B	D	D
	5	A	B	B	B	A	C	C	C	B
	12	A	B	A	B	A	A	B	B	B
Safety	19	A	B	B	A	A	A	A	A	C
	25	A	D	B	B	A	D	C	A	B
	33	E	D	D	D	D	A	A	D	D
	4	E	B	D	B	E	A	A	B	A
Personal	11	A	A	A	B	A	D	C	C	C
	18	A	B	A	A	A	E	A	D	B
Skill	27	A	A	A	A	B	B	A	C	D
	32	E	D	E	C	D	A	B	B	B
	7	A	D	D	B	C	B	D	B	B
External	14	A	E	D	E	E	E	E	D	D
	21	A	B	D	B	A	B	B	C	B
Support	28	A	B	B	B	B	B	C	B	B
	35	A	B	B	B	B	B	B	B	B
	2	A	A	B	A	A	A	B	A	B
Personal	9	A	A	A	A	A	A	A	A	A
Attitude	17	A	B	A	A	A	A	A	A	A
Regarding	22	E	E	E	E	E	D	B	D	D
Gymnastics	30	A	A	A	A	A	B	B	A	B
	3	A	A	A	A	B	A	B	B	B
Student	10	E	E	E	D	E	D	D	D	C
Attitude	16	A	A	A	A	A	A	A	A	B
Regarding	26	A	C	B	A	A	B	D	C	C
Gymnastics	31	E	D	D	E	C	C	B	C	C

Factor	Q No.	*	A Pre	A Post	B Pre	B Post	C Pre	C Post	D Pre	D Post
	6	A	B	B	A	A	B	A	C	B
Management	13	E	D	D	E	E	D	E	B	A
	20	E	E	E	A	E	D	B	D	C
Ability	24	E	E	E	E	E	D	E	D	D
	34	E	E	E	D	D	D	B	B	D

* Maximum Positive Score

VITA

Surname: BURROUGHS Given Names: LARRY BRUCE

Place of Birth: NEW WESTMINSTER Date of Birth: 23rd JANUARY, 1949
BRITISH COLUMBIA, CANADA

Educational Institutions Attended, with Dates of Entering and Leaving:

UNIVERSITY OF BRITISH COLUMBIA	1967	to	1972
		to	
		to	
		to	

Degrees Awarded, with Dates and Names of Institutions:

BACHELOR OR EDUCATION	1972	UNIVERSITY OF B.C.

Awards:

PARTIAL COPYRIGHT LICENSE

I hereby grant the right to lend my thesis (the title of which is shown below) to users of the University of Victoria Library, and to make single copies only for such users or in response to a request from the Library of any other university, of similar institution, on its behalf or for one of its users. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by me or a member of the University designated by me. It is understood that copying or publication of this thesis for financial gain shall not be allowed without written permission.

Title of Thesis:

EFFECTS OF INTERVENTION ON TEACHER AND STUDENT BEHAVIOUR IN ELEMENTARY GYMNASTICS LESSONS

Author [redacted]

LARRY BRUCE BURROUGHS

July 2, 1986

July 2, 1986