THE INTERRELATIONSHIP OF TEACHER EXPERIENCE, STUDENT BEHAVIOUR, AND EFFECTIVE TEACHING IN SECONDARY SCHOOL PHYSICAL EDUCATION

by

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ABSTRACT

The purpose of this study was to analyze the relationships which occur between the following variables during the course of a physical education lesson: (1) physical education teaching experience and judged effectiveness; (2) physical education teaching experience and observed student behaviour; (3) judged teaching effectiveness and student behaviour; (4) the sex of the teacher and (a) judged teaching effectiveness and (b) student behaviour; (5) the grade level taught and (a) judged teaching effectiveness and (b) student behaviour.

Twenty-seven physical education lessons, taught by practicing physical educators, were videotaped in various secondary schools in southern British Columbia and on Vancouver Island. After matching for experience category, sex of the teacher, and grade level taught, 12 teachers were chosen for this study.

Twenty-five per cent of the students in each of the 12 classes were randomly selected for observation. The 57 students were individually observed and their behaviour coded for alternating 30-second periods for the duration of

the lesson. Laubach's (1980) BESTPED (*BE*haviour of *ST*udents in *P*hysical *ED*ucation) observation system was used to record the behavioural pattern of each student.

Three judges, experienced and knowledgeable in the field of secondary physical education, evaluated and scored the 12 teachers for effectiveness using an evaluation sheet designed for the study. Testing to determine the judges reliability produced an inter-judge agreement value of .60 and an intra-judge agreement value of .79.

Nonparametric statistical analyses produced no significant differences in judged effectiveness for teacher sex, grade level taught, teacher experience, or student behaviour. These results may be explained in part by the small sample size and the variety of activities observed. No significant differences were found in student behaviour for grade level taught or for the category of teaching experience with the exception of a significantly higher percentage of student talk for Category I teachers (0-3+ years of experience). The female teachers had a significantly greater amount of on-task movement than the males, and conversely, the males recorded a significantly larger amount of movement (off-task) than the female teachers.

This study supports the claim that effective teaching is a combination of skills which are situation specific or,

in other words, an "orchestration" of a variety of skills which change with the occasion and the circumstance (Locke, 1979; Brophy and Evertson, 1976; Goldberger, 1974).

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for

Mildred and Jack

CHAPTER I

THE PROBLEM

Throughout the years, researchers in the field of teaching effectiveness have attempted to define those teacher behaviours which are most consistent with student achievement gains. Rather consistently, they have failed to discover any concrete evidence of specific, identifiable methods, characteristics, or behaviours facilitating the teaching-learning process which would in turn, effectively increase student acquisition of skill or knowledge (Medley & Mitzel, 1959).

Flanders (1970:6) cites a conclusion from Horsh and Wilder's (1954) review of research on evaluating teaching performance during the period 1900 to 1952:

> No single, specific observable teacher act has yet been found whose frequency or percent of occurrence is invariably (and) significantly correlated with student achievement.

Similarly, current teaching effectiveness research has yet to find a consistent, positive relationship between teacher behaviour and student learning outcomes (Rosenshine & Furst, 1973; Dunkin & Biddle, 1974) but recent findings point optimistically to the possibility of concrete answers in the near future (Good, Biddle, & Brophy, 1975;

Rosenshine, 1976): "a pattern of effectiveness that has broad applicability within many contexts may be emerging" (Siedentop, Birdwell, & Metzler, 1979).

More specifically, research on teaching effectiveness in physical education suffers from the same lack of tenable results as general education. To date, a mere handful of scientific inquiries has been completed concerning the effective physical educator (Locke, 1979), and these few continue to echo the sentiments of past educational research:

1. There is no general consensus or conclusion as to those behaviours which may be labelled as "effective" or "ineffective" in any given teaching situation (Locke, 1977; Cheffers, 1977).

2. Past studies lack consistency in the use of their measuring instruments and the analysis of their data, thereby effectively negating any common base upon which empirical statements concerning teacher effectiveness in physical education may be made.

3. At present, research lacks a single superior method for determining just what effective teaching is in physical education.

In the hope of shedding some light on concrete answers, an inquiry was conducted into the interaction among three variables: physical education teaching experience, student behaviour, and teacher effectiveness. Locke (1979b:134) suggests two methods through which a definition of the effective physical educator may be discovered - personal observation and experience in the field. He supports

Zeichner's conviction that teachers learn how to teach primarily in the first few years of employment:

> It is there in the solitary process of personal trial and error, accompanied only by the ghosts of fondly remembered models, that the young physical education teacher constructs the behavioural patterns which will dominate a career. (p. 8)

This study was designed to observe, record and comment on the 'state of the art' in physical education as it exists in a sample of British Columbia schools today, and to provide relevant information on the relationship between years of experience in the gymnasium and effective teaching practices.

Statement of the Problem

The purpose of this investigation was to analyze the relationship among three categories of teacher experience, observed student behaviour, and judged effectiveness during the teaching of a physical education lesson at the secondary school level.

Sub-problems. During the course of this inquiry the following questions were investigated:

1. Are there any significant differences among teachers in three experience categories with respect to their judged effectiveness during the teaching of physical education lessons?

2. Are there any significant differences among teachers in three experience categories with respect to student behaviours during the teaching of physical education lessons?
3. Is there a significant relationship between the judged effectiveness of the teachers and student behaviours during the teaching of physical education lessons?
4. Are there any significant differences between teacher sex and judged effectivneess or student behaviours?
5. Are there any significant differences between grade level taught and judged effectiveness or student behaviours?

Delimitations

1. This study was restricted to a sample of teachers currently employed as physical educators in a junior or senior secondary school in British Columbia.
2. Each subject was required to teach one physical education lesson in a gymnasium setting.
3. The usable floor space within which the class could maneuver was restricted to the maximum viewing angle of the camera lens.
4. All student behaviours were not recorded for the entire lesson due to the random selection of students

for observation and the use of 30 second time intervals when recording the data.

Limitations

1. This study was limited by the ability of the observer to record, accurately and reliably, the student behaviour categories of Laubach's BESTPED observation system (Laubach, 1980) with additions (see Appendix A).
2. Due to the logistics involved in videotaping a lesson, naturalistic observation was hindered although interference by the researcher and the equipment was kept to a minimum.
3. This study was limited by the ability of the researcher to extrapolate the results to other populations and settings (see Chapters IV and V).

Definition of Terms

Judges. Three knowledgeable and qualified individuals in the field of secondary school physical education.

Score. A number ranging between 0 and 100 assigned to each tape by each judge as a measure of effectiveness as a physical education teacher.

Effectiveness. The judges' "holistic" view of the teacher's lesson accomplishments within the ten categories of the teacher evaluation form (Appendix E).

Junior Secondary Physical Education. Those physical education classes in British Columbia schools labelled grade eight, nine, and ten.

Senior Secondary Physical Education. Those physical education classes in British Columbia schools labelled grade 11.

Behaviour. A person's actions. Specific student behaviour categories of the BESTPED system in use during the study may be found in Appendix A.

Observer. The researcher who observed and subsequently analyzed the videotapes according to the BESTPED system.

Lesson Objective(s). The teacher's stated lesson goals for student development as defined by the B.C. Ministry of Education (1980:1):

> Cognitive Domain (mental-intellectual) - involves knowledge, perception, memory, imagination, creative ability, thinking and reasoning related to performing physical activities.
>
> Psychomotor Domain (physical) - refers to motor ability and physiological functioning in the performance of physical activities.
>
> Affective Domain (social-emotional) - involves adjusting to both oneself and others. It is concerned with developing an appreciation and enjoyment of an activity for its own sake and recognizing the individual self-worth of each participant.

Movement Task. Observed change in location or in space of oneself, body parts, or posture which promotes

the attainment of the stated lesson objective(s).

Non-Movement Task. The opposite of movement. Maintenance of a relatively stationary position with no observed or very minimum movement of the body or its parts which promotes the attainment of the stated lesson objective(s).

CHAPTER II

REVIEW OF RELATED LITERATURE

Research on Teacher Effectiveness (RTE) has flourished during the past ten years (Locke, 1979:137). A previously dismal picture of the quality of research on teaching has brightened into a spectrum of a seemingly endless number of studies in the area. Unfortunately, the quantity of data has not uncovered many startling truths. In fact, it serves effectively to emphasize the many divergent paths research has taken in the search of a definition of the effective teacher.

This chapter surveys the related literature in the field of effective teaching research during the past three decades with an emphasis on current research and opinions in the field of physical education.

The Use of Observation Systems in General Education

In the past, systematic, scientific analysis of the teaching process and its relationship to student achievement (process-product measures) has been ignored in favour of subjective evaluations of a teacher's "effectiveness" (Cheffers, 1977). This deficiency of scientific inquiry led researchers to develop reliable, objective observation

systems to gather data on the day-to-day activities and interactions in the classroom (Flanders, 1970; Bales, 1950; Withall, 1949).

Interaction process analysis systems evolved through the need for the development of tools to understand personalities and group dynamics in their natural setting, and in doing so, to lay the foundation for scientific analyses. Progress in discovering teaching behaviours which are significantly related to pupil gains is directly attributable to the development of interaction analysis procedures (Flanders, 1970). Such classroom observation systems have existed for a minimum of thirty years (Medley and Mitzel, 1963) and are currently the dominant method for data collection in teaching effectiveness research. Rosenshine and Furst (1973) have enumerated over 120 different classroom observational category systems; Cheffers (1977) estimates thousands. Each system identifies and attempts to measure the effect of different variables thought to be of consequence on effective teaching and/or student achievement. As a result, the variety of approaches to the study of teaching is overwhelming and there is no guarantee that what each purports to measure is indeed an element of teaching effectiveness.

Problems With Effective Teaching Research

According to Anderson (1971:2), the primary obstacles to success in discovering the characteristics of effective teaching are the inability to identify valid criteria of teaching success and the inability to measure such characteristics reliably. Basically, the problem is one of consistency in the definition of the term "effectiveness" and consistency in measurement techniques. Machlup (1979: 376) points out:

> The teachers performance that prompts witnesses to say he is a good teacher is not always equivalent to good teaching if good teaching is what produces good learning.

The belief that teaching effectiveness can be determined by definable characteristics has led researchers to many varying opinions and many areas of studies with no common results or consensus as to salient teaching behaviours. Should teaching effectiveness in the classroom be judged according to the degree to which the teacher has reached the lesson objective, or the best use of available time, or according to the use of contemporary methods and theories (Brophy & Evertson, 1976), or a combination of all the aforementioned, and other, criteria? Perhaps it is the changes in student behaviour (Bloom, 1976), or his personality (Barr, 1961), or learning outcomes of the students that researchers should be focused on (Cheffers,

Amidon, & Rodgers, 1974). Is not classroom climate an indicator of effectiveness (Whithall, 1949; Bookout, 1967)?

Anderson (1971:2) believes that an inordinate amount of time has been devoted to determining the parameters of effective teaching, when research should be concerning itself with understanding the process of teaching through the use of observation instruments.

Musella (1970:15) views the situation realistically:

> We can measure the learner, the teacher and the relationships and interaction between these two, *but* we cannot say which teaching behaviour causes which changes in student behaviour or what teaching leads to what learning.

Although research on teaching effectiveness by means of naturalistic observation is the first step in obtaining valid results (Locke, 1979), the systems for analysis of classroom teaching are as numerous as the criteria offered for investigation. There is too much variation in recording procedures to produce valid, consistent results (Rosenshine & Furst, 1973) from which generalizations concerning teaching effectiveness may be drawn. There is such an abundance of complex, and discordant, results in the field of teacher effectiveness research, that no one really knows just how the competent teacher behaves (Pedersen, 1975). The most specific truism educators may relate, which has some basis in scientific inquiry, is stated parsimon-

iously by Locke (1979:141);

> It is the right thing done at the right time for the right student, which constitutes effectiveness in the classroom or gymnasium.

Research has failed, with surprising consistency, to demonstrate that there is one best method for determining teaching effectiveness. The teaching-learning process is too complex to confine to one observational method and as with all instruments, there is a wide variation in recording procedures (Rosenshine & Furst, 1973) and a question of validity upon analysis.

What Variables Have Been Regarded as Indicators of Teaching Effectiveness

Again, research cannot agree uniformly on the superiority of any one variable which is indicative of effective teaching. Optimistically, there has been a movement away from teacher-centered behaviours to the investigation of student variables (Rosenshine & Berliner, 1978). Teacher behaviours which were thought to be critical to student achievement in the past: higher-order questions and teacher talk (Flanders, 1970; Wolfe, 1976), teacher indirectness and warmth (Soar, 1966; Wright & Nuthall, 1970; Flanders, 1970), have been superseded by student variables such as the evaluation of pupil learning (Bloom, 1963; Musella, 1970) and student opportunity to learn or content

covered (Carroll, 1963; Chang & Raths, 1971; Rosenshine & Berliner, 1978). Rosenshine and Furst (1973) hypothesized that an increase in student opportunity to learn results in a corresponding increase in student achievement, but caution is advised when viewing this statement as relatively few studies have been completed and some negate the positive findings (Dunkin & Biddle, 1974). More recently though, Rosenshine and Berliner (1978) reviewed the studies on student opportunity to learn and concluded that significant relationships were found between content covered and student achievement gain in all but one. They determined, as did Dunkin and Biddle (1974), that neither student talk nor higher-order questions are related to student progress. Included in these "time-on-learning-task" studies is the work of Armento (1977) and Rosenshine (1971) who coded the content of a short presentation which was relevant to exam questions. Barr (1974) counted the number of words the teacher attempted to teach. McDonald (1976) counted the amount of mathematics covered. Rosenshine (1976) coded the level of student workbooks completed prior to a post-test. All found significant relationships between content covered and student achievement gains.

Rosenshine and Berliner (1978) believe research should focus on academic engaged time of the student, then look at the teacher variables and see how well and to

what extent these variables promote the students' opportunity to learn. In support, Siedentop, Birdwell and Metzler (1979) also report a significant relationship between Academic Learning Time (ALT) and student achievement in the work of the Far West Laboratory for Educational Research and Development in the Beginning Teacher Evaluation Study (BTES) in California - the work of Berliner, Marliave, Cahen and Dishaw.

Other variables have been considered in the past and related to teaching effectiveness. Kouin (1970) and Borg (1975) found that discipline and successful classroom management denoted the effective teacher. Brophy and Evertson (1976) believe that effective teachers are "problem-preventers." Doyle (1977) confirms the importance of classroom management. These findings may be related to academic engaged time theory in that, more frequently, positive student gains are achieved when there are few classroom distractions and the students are thus "freed" to concentrate on the assigned task or lesson objective.

Effectiveness in teaching has also been measured in terms of quality and/or quantity of student learning (Musella, 1970; Lopez, 1979), the behaviour patterns or processes used by the teacher (Meux & Smith, 1964; Goldberger, 1974; Musella, 1970), the feedback given by the teacher (McKeachie & Lin, 1971; Darst, 1977), and the emotional

climate of the classroom (Withall, 1949; Medley & Mitzel, 1963; Bookhout, 1967).

Popham (1971) found no differences between experienced teachers and non-teachers with respect to their ability to accomplish instructional objectives. Is it reasonable, therefore, to judge effectiveness by this variable?

Flander's (1974) performance-based teaching utilizes particular patterns of teaching behaviour called teaching skills. Unfortunately, he points out, research has yet to identify those teaching skills which produce desirable learning outcomes. Flanders contends that the analysis of student-teacher interactions (interaction analysis system) holds the key to teaching effectiveness comprehension. Brophy and Evertson (1976) determined in the final report of the Texas Teacher Effectiveness Study that effective teaching is context specific, that is, effective methods differ in various stituations, which gives rise to their opinion that there is no one mode of teaching which is consistently more effective.

McLeish (1978:10) concludes that effective teaching cannot be defined as a single variable but as "a function of the discriminate use of a variety of operants." The ability to adapt teaching behaviours to fit student needs and the demands of the situation holds credence as a reliable measure of teacher competence (Goldberger, 1974).

Locke (1979) holds the conviction that a single "right" teaching method never existed. Barr (1961) determined also that there were many different approaches to the study of the teaching act and that no one style was uniformly more productive.

It may be deduced from the rife of results that, again, the teaching-learning process is very intricate and perplexing and that those qualities that define effective teaching have yet to be established in general education. Although recent studies indicate a strong positive relationship between student time on task and learning outcomes (Siedentop, Birdwell, & Metzler, 1979; Rosenshine, 1976; Rosenshine & Furst, 1973), there still remain many different approaches to the task of identifying the behaviours of the effective teacher and no one method of teaching seems particularly suited to consistent, positive student learning. Pedersen (1975) contends that research on teacher effectiveness, almost without exception, has produced negative results. In other words, although the question has been asked many times, the answer still remains elusive (Doyle, 1977).

Research on Teaching Effectiveness in Physical Education

What has been considered? The field of physical education suffers from the same, albeit larger, lack of scientific inquiry as does the area of general education. In that research in physical education has just recently burgeoned, there are many discordant opinions on just which path the study of teaching effectiveness in physical education should take.

Locke and Nixon (1973) felt the need for research to concentrate in the motivational and corrective influences of feedback as it affects student learning. Blank (1958) sought to identify and classify incidents characteristic of effective and ineffective teaching in secondary school physical education. The effective physical educator, he concluded, should provide capable instruction in activities and maintain good control of his pupils. Goldberg (1974) also held credence in the study of teacher behaviours.

Locke (1979:139) more recently, confirmed that a number of studies demonstrate a relationship between teacher behaviour that increase or decrease active learning time and student achievement gains. He applauded the use of observational instruments in the gymnasium as they go right to the heart of teaching - the recording and analysis of teacher-pupil behaviour (1977:8).

The Use of Observation Systems in Physical Education

Generally speaking, there is one common denominator in physical education teaching effectiveness research. It is the widely held belief in the significance of naturalistic observation methods to measure a pattern of teacher influence. As mentioned earlier, the recording of teacher-pupil interactions in their natural setting by use of descriptive-analytic systems has been widely used (Withall, 1949; Flanders, 1970; Bales, 1950) in the field of education. Dougherty (1971), Gasson (1976), Cheffers (1973) and Nygaard (1975) modified the influential Flanders Interaction Analysis System and applied their adaptions to the gymnasium. Anderson and Barrette (1978) cite others, such as Laubach (1975), Fishman (1974), Anderson (1975), and Morgenegg (1978) all from Teachers College, Columbia University Data Bank Project, who have developed their own systems, each measuring a different aspect of teacher and/or student behaviour. Siedentop and Hughley (1975) and Taylor (Locke, 1977:8) have also evolved their own physical education observation systems. Laubach (1980) was prompted to develop her BESTPED system (*BE*haviour of *ST*udents in *P*hysical *ED*ucation) in order to describe, objectively and sequentially, how individual students actually spend their time in class. One of the system's

operational objectives was to record the amount of time students spend performing tasks related directly to the accomplishment of physical education objectives. Costello (1977) first implemented the system with the description of the behaviours of 193 elementary students in 20 different physical education classes. His results profile the "state of the art" of physical education as it exists in the schools. The data showed that the students spent only one third (36.8%) of the time moving with 27.5 per cent of their total time on movement related to the accomplishment of physical education objectives.

These observation systems are all essentially descriptive and therefore attempt only to report what is happening in the gymnasium in an objective manner. They do not draw any conclusions or recommendations concerning effective teaching. Interaction analysis observation instruments may be used to describe classroom or gymnasium practice or to modify teaching behaviours or as a tool for the analysis of teaching (Cheffers and Mancini, 1978) but they have not, and cannot by themselves, identify those teaching behaviours which are characteristic of effective teaching. These methods deal with the process approach to systematic observation due to the fact that standardized tests in physical education, such as skills tests, are not valid, reliable or easy to administer (Siedentop, Birdwell & Metzler, 1979). Consequently,

there have been no product measures, no cause and effect conclusions to the problem of identifying the characteristics of the effective physical educator (Nygaard, 1975), although an increasing number hold the conviction that improvement in time on task is positively related to improved student achievement.

Time on Learning Task

Contrary to Lopez's (1979) belief that teaching effectiveness can be measured only in terms of learning outcomes, Locke (1979:144) states that "time spent on task is positively associated with both student learning and positive student attitudes." With specific reference to the teaching of physical education, he continues:

> In confirmation, a large number of RTE (Research on Teaching Effectiveness) studies do indicate that behaviours which increase or decrease active learning time (practicing the skill) are strongly associated with learning. (1979:139)

Locke cautions though that good or poor learning may not be directly associated with a specific teacher behaviour. Medley (1973:42) agrees with Locke's cautiousness as he is of the conviction that it has been verified that pupils learn just as much from teachers rated ineffective by experts as they do from teachers who were rated effective by the same experts.

Prompted by the concept of student engaged time begun in the BTES in California (noted above) and the finding of the Juniper Gardens Children's Project, University of Kansas, of the need for students to respond actively, Daryl Siedentop (Ohio State University) developed ALT-PE (academic learning time-physical education) as a process approach to measuring teaching effectiveness in physical education classes (Siedentop, Birdwell & Metzler, 1979). Siedentop cited studies which showed that physical educators spent a majority of their time on management and instruction and little on time on task (Stewart, 1977; Quarterman, 1977; Freedman, 1978). With this base, and in the absence of reliable and valid student performance data, Siedentop saw the need for an observation tool which would attempt to estimate teacher effectiveness by the time-on-learning-task criterion. At present, ALT-PE studies are underway at the University of Massachusetts and the University of Texas, three experimental studies based on ALT-PE are being attempted at Ohio State, and finally a symposium entitled "ALT-PE: One Year Later" was held at the 1980 Detroit AAHPERD meetings (Siedentop, 1980).

This is a positive step in research on teaching effectiveness in physical education. Locke and Nixon (1973) see the use of such systematic recording methods as a rational approach to understanding how to

assist pupil learning in physical education.

> Although it still matters whether a teacher is critical, or indirect, or enthusiastic, it is more relevant to the issue of student achievement to know how long the students have been on task and what kind of progress is being made into the mastery of skill. (Rosenshine & Berliner, 1978:3)

Effectiveness as a Function of Experience

Past studies indicate that teaching experience in any particular field lays the foundation for effective, or ineffective teaching practices. Lortie (1975:77), in a study designed to identify variables related to the acquisition of teaching roles, found over two-thirds of the teachers interviewed (n = 94) emphasized classroom experience as their major means of learning how to teach. With further breakdown, 44 per cent indicated their knowledge concerning teaching was gained only through employment as a teacher, and 23 per cent viewed practice teaching as the primary variable.

The "learning-while-doing" theory shapes, over the years, a formal pattern of teaching behaviour. Three stages of learning to teach have been categorized by Fuller and Brown (1975). Based on research by Fuller, Parsons, and Watkins (1973), Lortie (1973), and Katz (1972), the first stage is considered the survival stage which incorporates the first few teaching years.

It is there where, literally, the beginning teacher learns to "sink or swim." Assumption of full responsibility is abrupt:

> Because of his isolation the beginning teacher frequently works things out as best he can before asking for assistance . . . his learning is limited by his personal resources - the acuity of his observation and his capacity to take effective action. (Lortie, 1975:73)

The second stage has been tentatively identified as the mastery stage. During this stage income continues to rise, status in the community and school accelerates, youth, energy, and idealism still influence teaching behaviours. In short, it is a period "when teachers are trying to perform well" (Fuller and Brown, 1975:37). The final stage sees the teacher settling into stable routines and the "old master" becomes virtually resistant to change. Possibly, it is during this last phase enthusiasm, energy, and motivation deteriorates causing a parallel decrease in effectiveness as a teacher. Clark, Snow and Shavelson (1976) discovered a decrease in student learning with increased teacher experience. Rosenshine (1971), on the other hand, found experience to be a consistently positive but non-significant predictor of student achievement in nine studies (comprising seven independent samples).

> . . . the teacher of thirty years' experience occupies no higher status than the teacher of five years' experience, sometimes less.

> Each year the teacher stays he tends to remain longer. As he stays longer, given his lack of training and experience in other occupations, he finds it difficult to find a comparable position. (Bush, 1970:125)

Bush (1970), in reference to the previous statement, alludes to the possibility that the more aggressive and alert young teachers, seeing that their position will not improve a great deal with added experience, have left the teaching profession. In fact, the B.C. Physical Education Assessment Summary Report (1979:37) confirms that the majority (61%) of B.C. secondary teachers plan to leave the Physical Education field within five years.

Whether the aforementioned are actual stages or merely "clusters" of individuals, and whether teachers teach differently or more effectively at different stages, has yet to be proven through research (Lortie, 1975; Fuller & Brown, 1975). Grant (1979), in reference to physical education specifically, views the relationship between teacher experience and effective practices as an area which warrants further investigation.

Summary and Conclusions

After an extensive review of the related literature, it becomes apparent that most physical education studies in teaching effectiveness lack consistency in the use of their instruments and the analysis of their data, and at

present, lack a method for determining just what effective teaching practices are in physical education. As soon as conformity of instrumentation takes place and agreement occurs with respect to the important variables to be focused on when studying the effective teacher, concrete conclusions which will benefit all involved in the teaching-learning process will manifest themselves. This study attempts to uncover the complexities involved in the relationship between teacher experience and effectiveness in the gymnasium and, by doing so, aid others in future RTE studies.

CHAPTER III

RESEARCH METHODS

This chapter describes the subjects and variables under study, the data collection procedures, and the methods utilized for data analyses.

When employing naturalistic observation methods, "no effect" by the researcher and equipment on the subjects cannot be claimed although minimal interference and equal effect for each class was attempted.

Subjects

Six male and six female teachers were randomly selected from a sample of 27 practicing physical educators on Vancouver Island and in southern British Columbia. Prior to the random selection for the purposes of this study, all the teachers were videotaped while teaching a physical education lesson in a gymnasium setting. All 27 videotapes were collected by the researcher with assistance from a fellow graduate student. The majority of these teachers had been selected on the basis of their past working relationship with the researcher or their sponsorship of a fifth year University of Victoria physical education student during the student's spring

practicum April 8 to May 16, 1980.

Prior to videotaping, approval of the district superintendent, the school principal, and the subjects themselves was sought (Appendix B). The co-operation of any additional teachers on the physical education staff willing to be videotaped was requested.

The subjects were matched for sex, teaching grade level, and experience in teaching physical education. Experience was determined by information gathered from a questionnaire completed at the time of videotaping in the school (Appendix C).

Thus, the design was as follows:

Experience Categories

	I	II	III	
Total Experience	0-3+	4-8+	9+	
Male	2 (1 Jr, 1 Sr)	2 (1 Jr, 1 Sr)	2 (1 Jr, 1 Sr)	
Female	2 (1 Jr, 1 Sr)	2 (1 Jr, 1 Sr)	2 (1 Jr, 1 Sr)	
	4	4	4	n = 12

+ includes experience up to the next full year.

Although 27 tapes were collected, some categories were represented by single tapes necessitating the relatively small numbers in the design. When categories held more than one tape, random selection was employed.

Dependent Variables

1. *Effectiveness as a physical education teacher.* Three judges viewed the 12 tapes and independently scored each lesson on teacher effectiveness utilizing the teacher evaluation form (Appendix E). The three judges scores were pooled and averaged, the mean value representing the effectiveness level of the teacher.
2. *Student behaviours.* The three student behaviour dimensions and the single time dimension of Laubach's BESTPED (*BE*haviour of *ST*udents in *P*hysical *ED*ucation) - Form 1 with additions was used. A detailed description of the system may be found in Appendix A. The following categories of behaviour were observed and recorded:
   (a) Function Dimension: describes what the student is doing (13 categories).
   (b) Mode Dimension: describes the student in terms of movement or non-movement, on task movement, or on task non-movement (4 categories).

(c) Content Dimension: identifies the activity the subject is performing (14 categories).

(d) Time Dimension: records the duration of each function behaviour in seconds.

Independent Variables

1. *Teaching experience in physical education.*
2. *The sex of the teacher.*
3. *The level i.e. junior or senior, of physical education taught.*

Collection of Data

The lesson. Each subject was requested to teach one 30 minute physical education lesson in a gymnasium setting to a regularly assigned class. The lesson had three major parameters:

(a) although teachers were initially requested to restrict the length of their lesson (30 minutes), the lessons varied in length from 20 to 37 minutes. Due to the researcher's desire to obtain as complete a picture as possible of the entire lesson, regardless of length, the following parameter was employed: after the teacher's designated start of the lesson, videotaping terminated at the conclusion of

the lesson or at the end of the tape reel (maximum recorded time: 37:00 minutes).

(b) in order to record lessons as they occur normally in a gymnasium, constraints were kept to a minimum. There were no restrictions on:

(i) the teaching methodology. The subjects were free to use any style or method they wished;

(ii) the type or quantity of equipment;

(iii) the content of the lesson. The subjects were requested to maintain their regular indoor lesson or unit scheduling. Model or "ideal" lessons were neither required nor desired.

(c) the teacher was requested to state clearly the lesson objective(s) prior to videotaping. The objectives were stated in terms of the cognitive, psychomotor, and affective domains.

Videotaping procedures. In order that all appropriate behaviours occurring during a lesson were accurately recorded, the lessons were videotaped for later analysis. All 27 tapes form a permanent journal of the status of physical education teaching in a sample of B.C. secondary schools today and have, therefore, been deposited with the University of Victoria for possible use in teacher

education programmes.

The camera was stationed in an appropriate place in the gymnasium as to allow maximum viewing of the gymnasium area and minimum distraction for the class and the teacher. The usable floor space was restricted by the maximum viewing angle of the camera lens and marked by cones (see Figure 1). The students wore numbered pinnies for later identification during lesson analysis. In order to obtain a clear reproduction of the teacher's voice, the subject was required to wear a small cordless microphone. Neither of the aforementioned items appeared to restrict or interfere with the on-going activities of the lesson.

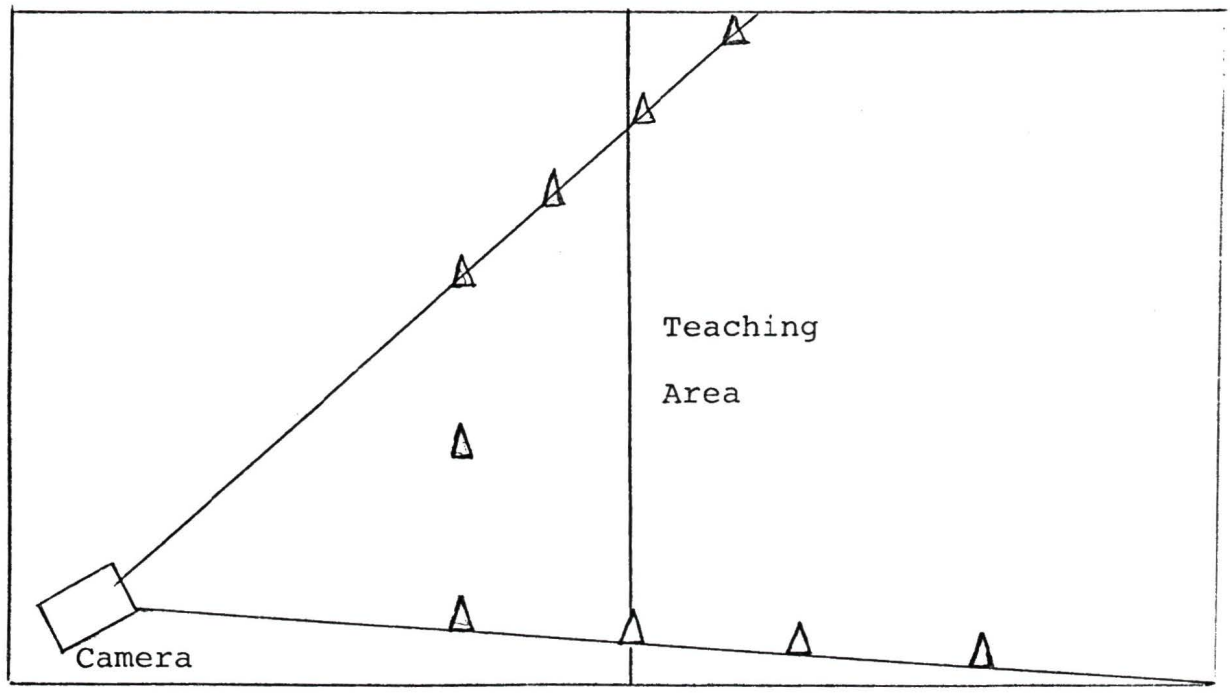
All videotaping equipment was obtained from Media and Technical Services and the Faculty of Education, University of Victoria. The equipment included:

1. Half-inch, reel-to-reel Sony videotape recorder;
2. Portable Sony videotape camera;
3. Portable videotape monitor;
4. Extension cord;
5. Cordless microphone, transmitter, and receiver;
6. 27 half-inch videotapes (30-60 minutes, black and white).

Evaluation for teaching effectiveness. Three judges chosen on the basis of their knowledge and expertise in the area of secondary physical education viewed and evaluated

Figure 1

Usable Floor Space



the lessons for teaching effectiveness.

In order to assist the judges in their arduous task and to aid reliability in their evaluations, a practice tape was thoroughly scrutinized by the judges as a group, prior to viewing the 12 tapes employed in the study. Comments, criticisms, effective and ineffective teaching behaviours, and a score out of 100 (utilizing the teacher evaluation form, Appendix E) were recorded by the individual judges. The teacher evaluation sheet was designed to incorporate teaching behaviours thought to be of significance in recent teacher effectiveness research (see Chapter II), and teacher qualities listed on the University of Victoria-Faculty of Education Summary Analysis of *Secondary* Student Teaching form. After discussing questions concerning the evaluation sheet and its interpretation, the judges then proceeded to assess, one by one, the 12 tapes selected for the study.

Prior to viewing any particular tape, the judges copied onto the evaluation sheet the individual teacher's stated lesson objective(s). During the observation of the lessons, the judges noted effective and ineffective teaching behaviours of the individual subjects and thereby, independently assigned a score out of 100 at the conclusion of the tape. This score represents the judge's informed opinion of the subject's effectiveness level with

respect to the ten categories of the teacher evaluation sheet. As each judge's opinion is respected and valued on its own merits, no attempt was made to have the judges reach a common consensus as to a single score for each subject. Instead, each judge's score was weighted equally, the mean value of the three scores denoting the effectiveness level of the teacher.

In order to collect data for later computation of intra-judge consistency, a measure of the judges' reliability, the judges reviewed five days later a random selection of one-quarter of the tapes. The method and procedures employed during this review were identical to those applied to the main body of tapes.

Observer reliability. Prior to the analysis of the 12 lessons, observer reliability in recording student behaviours according to Laubach's BESTPED observation system was established. Two practice tapes, consisting of a total of 1,860 recorded seconds, were observed repeatedly until the coder developed, and was able to maintain, a high degree of agreement between different viewings of the same tape in each of the three dimensions.

Laubach (1978:59-60) describes the BESTPED system for determining intra-judge agreement as an index of consistency - the extent to which the coder agrees with his own codings made on a previous occasion.

A Per Cent of Agreement method was used to analyze coder reliability in this, and Laubach's, study. The unit of comparison for all Dimensions was each second. A second by second measure of agreement was chosen because, in Laubach's view, it represents the most stringent test available.

Coder reliability for the subscripts was determined using a by-instance tally due to the fact that the duration of subscripts is not accounted for in the system. For a more detailed account of the computation of Intra-Judge Agreement (Coder Reliability), see Appendix F.

Table 1 summarizes the data. The percentage of agreement for each dimension was high, and in each case was above the 80 per cent level of acceptance (Laubach, 1980:68). The intra-judge agreement for the subscripts was lower than the acceptable level by 32.4 per cent; a similar low subscript agreement was found by Laubach (1980). Nevertheless, subscripts were still used in the study, acting as approximate time-reference points during the lessons.

Lesson analysis. For each of the 12 lessons, a random selection of 25 per cent of the students in the class was chosen for behaviour analysis utilizing the BESTPED system. A total of 57 students were observed. Coding commenced after the first 30 seconds of the lesson. An alternating

TABLE 1: INTRA-JUDGE AGREEMENT

DIMENSION	MNS	NA	ND	PER CENT A
Function	1860	1501	359	80.7
Mode	1860	1496	364	80.4
Content	1860	1548	312	83.2
Mean Agreement - All Dimensions				81.4
By-Instance Tally-Subscripts		50	55	47.6

Key MNS = Maximum Number of Seconds

NA = Number of Seconds of Agreement

ND = Number of Seconds of Disagreement

Per Cent A = Per Cent of Agreement

pattern of "30-second wait - 30-second record" was employed for the duration of the tape. For every second a student was under examination, the observer recorded the appropriate category from each of the three BESTPED dimensions: (i) Function; (ii) Mode; (iii) Content; and the duration of each function behaviour in seconds.

After recording the data in the above manner, the researcher was able to determine the duration of occurrence for each of the 31 behavioural categories. In order to standardize the information, the duration of occurrence was converted to percentage of on-camera time. The following formula was employed:

$$\frac{RBS}{OT-OM} \times 100 = \text{Per Cent of on-camera time.}$$

RBS = Recorded behaviour in seconds

OT = Total observation time for student

OM = Total number of seconds off monitor for student

Data analysis. Nonparametric statistics were employed to determine the significance of the data in this study. Inter-judge agreement, a measure of the consistency among the judges' effectiveness scores for the 12 teachers, was analyzed using the Kendall coefficient of concordance (Siegel, 1956:229). Intra-judge agreement, a measure of the judges' reliability in scoring for effectiveness, was determined by the Spearman rank correlation coefficient

(Siegel, 1956:202). For sub-problems one and two, a Kruskal-Wallis one-way analysis of variance (Siegel, 1956:184) was applied in order to establish whether a significant difference existed between any two variables. If a significant difference was found, a Mann-Whitney U test (Siegel, 1956:116) was employed to determine precisely where the difference lay. If there were only two variables under study (questions three, four, and five), Mann-Whitney U tests were employed. The level of significance, accepted for this study, was set at the .05 level ($p \leq .05$).

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The purpose of this investigation was to determine the interrelationship among years of teaching experience, student behaviour, and effective teaching in physical education. Specifically, five sub-problems were investigated (*supra*, pp. 3-4). In this chapter, the data are presented and the analyses and results for each specific problem are summarized and discussed. The analyses for the judges' reliability are also outlined and the findings described.

The 12 lessons, randomly selected for this study, varied in length from 20 to 37 minutes producing a total of 50,611 seconds of analyzed student behaviours. A total of 57 students (20 males and 37 females) were observed and their behaviour coded using the BESTPED observation system (Appendix A). In order to achieve a common data baseline for statistical analysis, the raw data (Appendix G)were converted to a percentage of on-camera time. The Percentage of On-Camera Time, Function and Mode dimensions, may be read on Table 2. Due to the variety

TABLE 2: STUDENT PERCENTAGE OF ON-CAMERA TIME DEVOTED TO EACH CATEGORY IN THE FUNCTION AND MODE DIMENSIONS

Teacher: Tape Number	+STUDENT BEHAVIOUR															
	FUNCTION											MODE				
	P	E	G	Q	F	A	O	I	T	D	Total	M	MT	N	NT	Total
1	8.4	11.0	*	.3	5.2	6.5	*	.4	66.9	1.3	100.0	88.1	11.5	.3	*	99.9
2	20.8	*	*	23.9	2.9	13.9	.6	21.1	16.3	.4	99.9	70.7	20.9	3.4	5.1	100.1
3	11.3	2.6	28.7	2.1	7.3	4.5	14.0	14.9	13.8	1.0	100.2	30.8	25.6	33.9	9.7	100.0
4	29.1	14.9	28.9	*	2.5	*	1.2	10.5	13.0	*	100.1	36.1	30.7	1.6	31.6	100.0
5	3.1	9.9	*	*	7.0	.3	.2	46.0	33.2	.2	99.9	59.8	3.0	6.6	30.6	100.0
6	27.0	16.7	*	3.3	5.4	4.9	.2	28.1	14.4	.1	100.1	56.0	30.1	10.2	3.7	100.0
7	71.0	*	*	*	4.3	*	.3	12.0	12.4	.2	100.2	19.2	71.9	5.4	3.5	100.0
8	64.6	.7	*	*	*	*	.2	14.2	20.3	*	100.0	13.6	62.2	15.9	8.6	100.3
9	6.9	5.4	*	.4	5.4	3.5	.3	38.3	38.9	.9	100.0	74.1	6.0	17.1	2.8	100.0
10	9.1	13.5	*	4.8	6.1	2.1	.3	33.3	30.8	*	100.0	63.3	13.0	9.5	14.3	100.1
11	64.3	*	*	*	4.9	*	.3	12.4	18.0	.2	100.1	15.2	66.1	14.1	4.7	100.1
12	4.1	8.2	.4	2.3	5.7	4.5	*	23.3	50.6	1.0	100.1	77.1	4.1	9.8	9.1	100.1
Percentage Grand Total	26.6	6.9	4.8	3.1	4.7	3.4	1.5	21.2	27.4	.4	100.0	50.3	28.8	10.7	10.3	100.1

* No occurrence of this behaviour was recorded at any time during the course of the lesson.

+ A complete description of all categories of student behaviour may be found in Appendix A.

of activities in the sample, the Content dimension of the BESTPED system was not statistically analyzed. No data were recorded in two of the Function Dimension categories (Explore and Communicate) for any of the 57 students. For this reason both classifications were removed from the study before statistical analysis took place.

Judges' Reliability

The effectiveness scores assigned by each judge for the 12 individual teachers are presented in Table 3. The ranking was determined by the mean value of the judges' total score. The scores allotted to each of the three randomly selected review tapes are also listed.

Inter-judge agreement. With a correction for ties incorporated, the Kendall coefficient of concordance (W) produced a value of .60. In order to test the significance of this observed value of W, a chi-square test was employed (Siegel, 1956:236). The .60 value of W was found to be significant at the .05 level. This significant value of W may be interpreted as meaning that the judges were applying essentially the same standards in scoring the teachers for effectiveness. In other words, the inter-judge agreement, which is a measure of the judges' testing consistency, was statistically significant.

TABLE 3: JUDGES' SCORES FOR TEACHER EFFECTIVENESS

Teacher Tape Number	Judge Number 1	2	3	Total Score	Mean Value	Rank
6	100	92	80	272	90.7	1
3	84	88	82	254	84.7	2
7	80	86	85	251	83.7	3
5	95	64	78	237	79.0	4
11	82	68	78	228	76.0	5
12	86	86	52	224	74.7	6
2	94	52	66	212	70.7	7
1	78	50	76	204	68.0	8
8	64	72	66	202	67.4	9
10	82	54	64	200	66.7	10
4	70	54	58	182	60.7	11
9	40	32	66	138	46.0	12
Reviewed Tapes						
10	78	48	62	188	62.7	-
3	88	84	82	254	84.7	-
2	72	60	70	200	67.3	-

Intra-judge agreement. Intra-judge agreement, the ability of the judges to be consistent in their evaluations over time, was determined by matching each judge's effectiveness scores from a second viewing of three randomly selected tapes with the original effectiveness scores of those same tapes. A Spearman rank correlation produced a significant value of .79 ($p = .005$). It may be stated with a reasonable degree of certainty, therefore, that the judges were reliable as a group in their scoring of the teachers for effectiveness.

Experience and Effectiveness

The first sub-problem investigated in this study was stated as follows: Are there any significant differences among teachers in three experience categories with respect to their judged effectiveness during the teaching of a physical education lesson?

A summary of the data is presented in Table 4. A non-significant value of 2.29 ($p = .32$) was obtained by means of the Kruskal-Wallis one-way analysis of variance (Siegel, 1956:184-193). It may be stated, therefore, there was no statistical difference among the three experience categories with respect to their judged effectiveness as physical educators.

TABLE 4: JUDGES' SCORE FOR TEACHER EFFECTIVENESS CATEGORIZED BY TEACHER EXPERIENCE

Category	Teacher: Tape Number	Judges' Total Score	Mean Value	Rank
I	1	204	68.0	8
0-3 + Years	2	212	70.7	7
Experience	3	254	84.7	2
	4	182	60.7	11
Grand Mean			71.0	
II	5	237	79.0	4
4-8 + Years	6	272	90.7	1
Experience	7	251	83.7	3
	8	202	67.3	9
Grand Mean			80.2	
III	9	138	46.0	12
9 + Years	10	200	66.7	10
Experience	11	228	76.0	5
	12	224	74.7	6
Grand Mean			65.9	

Kruskal-Wallis one-way analysis of variance value for teachers in the three experience categories was 2.29 ($p = .32$).

It is worth noting, however, that the grand mean measures the most experienced teachers as the least effective group of the three experience categories. The lack of statistical proof to support the previous statement may warrant further investigation.

Limitations of the teacher evaluation form may have hindered the judges in their assessment of teacher effectiveness. Although the teacher behaviour variables listed on the form are supported by the results of recent research on teacher behaviour and student achievement gains (Rosenshine and Berliner, 1978; Dunkin and Biddle, 1974), no measure of extraneous variables, which could influence the judges' evaluation of a teacher's effectiveness, could be incorporated into the evaluation form. No measure of reactive effects (factors related to the teacher's awareness of being the subject of the study which would, in turn, affect the way he or she responds during the lesson) or experimenter effects (certain characteristics of the researcher or the equipment which would unintentionally influence the teacher's and/or student's behaviour) was made. Although these effects were consistent for each lesson, the ability of the teachers and students to cope with the experimental nature of the study may have influenced their behaviour to varying degrees. The skill level and personality of the individual students in a class may also

dictate the success of a lesson and thereby, bias a judge's perception of the effectiveness of the teacher. None of the above variables were, nor could they be, controlled or accounted for accurately in the teacher evaluation form.

Teacher Experience and Student Behaviour

Sub-problem two was concerned with uncovering significant differences among teachers in the three experience categories with respect to student behaviours. The Kruskal-Wallis one-way analysis of variance results are listed in Table 5.

The student function dimension "0" (Output) displayed a significance level (.01) of consequence, indicating a relationship somewhere among the three experience categories. A Mann-Whitney U test was then employed for this student behaviour in each experience category. The results are summarized in Table 6.

Category I, 0-3+ years of teaching experience, contained a significantly larger percentage of student time in "output" behaviour than either of the other two experience categories. Although the probability of a significant difference occurring by chance is high when analyzing ten behaviour categories, this difference may also be accounted for in part, by the type of teaching methodology utilized in one lesson and the lack of management skills of the individual

TABLE 5: ANOVA RESULTS FOR THE INTERACTION BETWEEN TEACHER EXPERIENCE AND STUDENT BEHAVIOUR*

	+ STUDENT BEHAVIOUR													
	FUNCTION										MODE			
	P	E	G	Q	F	A	O	I	T	D	M	MT	N	NT
Teacher Experience	1.38	.75	2.0	1.31	1.02	2.83	8.75	1.61	2.38	3.11	2.35	.96	2.33	1.28
Significance Level	.50	.69	.16	.52	.60	.24	.01	.45	.30	.21	.31	.62	.31	.53

+ A complete description of all categories of student behaviour may be found in Appendix A.

*The Kruskal Wallace one-way analysis of variance is expressed in H values.

TABLE 6: TEST RESULT FOR THE INTERACTION BETWEEN CATEGORIES OF TEACHER EXPERIENCE AND STUDENT BEHAVIOUR CATEOGRY "O"*

	Student-Behaviour
Experience Category	O
I vs II	2.37
Significance Level	.02
I vs III	2.12
Significance Level	.03
II vs III	0
Significance Level	1.0

*Results of the Mann-Whitney U test are expressed in negative z scores.

teachers in this category of experience. In tape number three, the teacher employed student task cards whereby the students openly criticized and evaluated fellow students on volleyball skills. This methodology resulted in the highest percentage of student "Output" behaviour (14.01%) of all 12 teachers. Although the exact content of the students' verbal responses are not recorded, it is fair to assume, upon study of the raw data (Table 16), that the quantity of student talk in this lesson may be attributed to the teaching methodology employed.

The organizational and management skills of the teachers in Category I may also have contributed to the significantly higher percentage of time students spent talking or discussing. Borg (1975:320) states that a number of surveys have indicated that beginning teachers generally believe that control of their students is their most serious problem. This lack of control, which may stem in part from a deficiency in lesson organization and/or class and equipment management skills, provides greater opportunity for the students to engage in dialogue with the teacher and other students.

No other significant differences were found among the three experience categories with respect to student behaviour. It is appropriate here, to discuss the data measurement and analyses. Transferring the data

to a common percentage baseline necessitated the use of ranks during analyses. Both the Kruskal-Wallis one-way ANOVA and the Mann-Whitney U test employ ranking in computation. Ranking is a relatively unrefined, yet valid, statistical method. Ranking does not account for the magnitude of a difference between any two scores. Although the three categories of teachers had a wide variation in the percentage of time devoted to each function (Table 7), the analysis of the data failed to find any significant differences other than in the function category "O" mentioned previously.

Judged Effectiveness and Student Behaviour

The teachers ranked one, two, three, and four on the basis of the judges' total score for effectiveness, were compared with the teachers ranked the least effective, that is, teachers ranked nine, ten, 11 and 12. A Mann-Whitney U test was calculated between the percentage scores of the most effective and least effective teachers for each student behaviour category containing complete data. Categories P, O, I and T account for over 75 per cent of all student behaviours coded. This comparison was made in order to answer the question posed in sub-problem three; Is there a significant relationship between teachers' judged effectiveness and student behaviours?

TABLE 7: PER CENT DURATION OF STUDENT BEHAVIOUR FOR THE THREE TEACHER EXPERIENCE CATEGORIES

Category of Teacher Experience	+ STUDENT BEHAVIOUR													
	FUNCTION										MODE			
	P	E	G	Q	F	A	O	I	T	D	M	MT	N	NT
I	17.4	7.1	14.4	6.6	4.5	6.2	4.0	11.7	27.5	.7 (100.1)	56.4	22.2	9.8	11.6 (100)
II	41.5	6.8	*	.8	4.2	1.3	.2	25.1	20.1	.1 (100.1)	37.2	41.8	9.5	11.6 (100)
III	21.2	6.8	.1	1.9	5.5	2.5	.2	26.8	34.6	.5 (100)	57.4	22.3	12.3	7.7 (99.7)

* No data recorded.

\+ A complete description of all categories of students behaviour may be found in Appendix A.

The results are summarized in Table 8.

TABLE 8: TEST RESULTS COMPARING MOST EFFECTIVE AND LEAST EFFECTIVE TEACHERS IN TERMS OF STUDENT BEHAVIOUR*

	+ STUDENT BEHAVIOUR							
	FUNCTION				MODE			
	P	O	I	T	M	MT	N	NT
Most Effective vs Least Effective Teachers	0	.19	.27	.88	.58	0	0	.27
Significance Level	1.0	.85	.77	.38	.56	1.0	1.0	.77

*Results of the Mann-Whitney U test are expressed in negative z scores.

+ A complete description of student behaviour categories may be found in Appendix A.

No significant differences in student behaviour were found to exist between the four teachers rated the highest for teaching effectiveness by the judges, and the four teachers rated the lowest by the same judges. This lack of empirical evidence to support the judges' evaluations may be attributed, in part, to the observation instrument. The limitations of this system are best described by Costello and Laubach (1978; 14-15);

> The portion of reality described by the BESTPED System is limited as is the case for all systems. For instance, at a given time its use is limited to observing just one student unless several coders are observing several students. Only those behaviours defined by the categories are recorded. Interaction is not accounted for, nor are each person's verbal responses recorded. What the teacher does is not directly or completely accounted for.

While the quantity of student practice or on-task movement is believed to be a primary indicator of the effective teacher (Rosenshine and Berliner, 1978; Dunkin and Biddle, 1974), no significant relationship exists between teacher effectiveness and student behaviour in this study. Of the eight teachers under study, three had a higher percentage of student practice *and* on-task behaviours in their classes than the teacher rated the most effective by the judges (see Table 9). The small sample size, the variety of activities observed, and the diversity in the teachers' written lesson objectives (which dictate whether a certain behaviour is on- or off-task), could also account, in part, for the unexpected results.

For a summary of the data, see Table 9.

Teacher Sex, Judged Effectiveness, and Student Behaviour

Question four dealt with the differences in student behaviour which could be attributed to the sex of the

TABLE 9: PER CENT DURATION OF STUDENT BEHAVIOUR
MOST EFFECTIVE AND LEAST EFFECTIVE TEACHERS

Rank	Teacher: Tape Number	Activity	+ STUDENT BEHAVIOUR							
			Function				Mode			
			P	O	I	T	M	MT	N	NT
1	6	Volleyball	27.0	.2	28.1	14.4	56.0	30.1	10.2	3.7
2	3	Volleyball	11.3	14.0	14.9	13.8	30.8	25.6	33.9	9.7
3	7	Dance	71.1	.3	12.0	12.4	19.2	71.9	5.4	3.5
4	5	Track and Field	3.1	.2	46.0	33.2	59.8	3.0	6.6	30.6
Mean Percentage - Most Effective			28.1	3.7	25.3	18.5	41.5	32.7	14.0	11.9
					75.6					100.1
9	8	Dance	64.6	.2	14.2	20.3	13.6	62.1	15.9	8.6
10	10	Gymnastics	9.1	.3	33.3	30.8	63.3	13.0	9.5	14.3
11	4	Volleyball	29.1	1.2	10.5	13	36.1	30.7	1.6	31.6
12	9	Softball	6.9	.3	38.3	38.9	74.1	6.0	17.1	2.8
Mean Percentage - Least Effective			27.4	.5	24.1	25.8	46.8	28.0	11.0	14.3
					77.8					100.1

+ A complete description of student behaviour categories may be found in Appendix A.

teacher, and the difference between the sexes with respect to judged effectiveness levels. As only two variables were involved (male, female), Mann-Whitney U tests were employed. Only those student behaviour categories displaying complete data were analyzed. Categories P (Practice), I (Receive Information), and T (Await) comprise 75.4 per cent of all coded student behaviours. The results of the data analyses are summarized in Table 10.

TABLE 10: TEST RESULTS COMPARING MALE AND FEMALE TEACHERS IN TERMS OF EFFECTIVENESS SCORES AND STUDENT BEHAVIOUR*

	EFFECTIVENESS SCORES	+ S T U D E N T B E H A V I O U R					
		FUNCTION			MODE		
		P	I	T	M	MT	N
Male vs Female Teachers	.48	1.76	1.76	1.36	2.08	1.92	.88
Significance Level	.63	.08	.08	.17	.04	.05	.38

*Results of the Mann-Whitney U test are expressed in negative z scores.

+ A complete description of student behaviour categories may be found in Appendix A.

Again, the results obtained from the observation system seem to contradict the judges' evaluations for effectiveness. No significant difference was found between the male and female teachers with respect to effectiveness as physical education teachers. However, the students in the classes taught by the six males demonstrated a significantly higher ($p = .04$) percentage of time in the movement (off-task) category of the mode dimension. Conversely, the students in the classes taught by the six female teachers demonstrated a significantly higher ($p = .05$) percentage of time in the movement-task category. A summary of the data may be found in Table 11.

The significantly higher percentage of student time devoted to the movement category for the male teachers (68.7%) may indicate a variation in management skills and/or in writing lesson objectives between the two sexes. The activities taught dictated, to a certain degree, the amount of on-task movement observed in the classes. For example, in the tennis class a large amount of off-task movement (23.9%) was coded for students while they collected equipment and retrieved balls; in the track and field and gymnastics lessons students devoted an average of 43.6 per cent of their time waiting to use equipment.

The percentage scores for student on-task movement (43.4%) was significantly higher for the female teachers

TABLE 11: PER CENT DURATION OF STUDENT BEHAVIOUR AND EFFECTIVENESS SCORES MALE VS FEMALE TEACHERS

	Teacher Tape Number	Activity	Mean Effectiveness Score	Rank	+STUDENT BEHAVIOUR					
					Function			Mode		
					P	I	T	M	MT	N
Males	1	Gymnastics	68.0	8	8.4	.4	66.9	88.1	11.5	.3
	2	Tennis	70.7	7	20.8	21.1	16.3	70.1	20.9	3.4
	5	Track and Field	79.0	4	3.1	46.0	33.2	59.8	3.0	6.6
	6	Volleyball	90.7	1	27.0	28.1	14.4	56.0	30.1	10.2
	9	Softball	46.0	12	6.9	38.3	38.9	74.1	6.0	17.1
	10	Gymnastics	66.7	10	9.1	33.3	30.8	63.3	13.0	9.5
Mean Percentage - Males			70.2		12.6	27.9	33.4	68.7	14.1	7.9
Females	3	Volleyball	84.7	2	11.3	14.9	13.8	30.8	25.6	33.9
	4	Volleyball	60.7	11	29.1	10.5	13.0	36.1	30.7	1.6
	7	Dance	83.7	3	71.1	12.0	12.4	19.2	71.9	5.4
	8	Dance	67.3	9	64.6	14.2	20.3	13.6	62.2	15.9
	11	Dance	76.0	5	64.3	12.4	18.0	15.2	66.1	14.1
	12	Field Hockey	74.7	6	4.1	23.3	50.6	77.1	4.1	9.8
Mean Percentage - Females			74.5		40.8	14.6	21.4	32.0	43.4	13.5

+ A complete description of student behaviour categories may be found in Appendix A.

when compared to student on-task movement of the male teachers (14.1%). The high percentage scores for practice and on-task movement occurring in the classes of the female teachers may be accounted for by the type of activity selected. Three of the six females taught dance/fitness to music lessons. Although the amount of class participation and involvement was extremely high, the judges scored these three lessons low on variability and on teacher achievement-oriented behaviour. Generally the judges viewed the classes as "non-lessons" in terms of the amount of actual teaching which transpired.

Grade Level Taught, Judged Effectiveness, and Student Behaviour

The final problem of this study was to discover any significant relationships between the junior and senior grade level teachers with respect to student behaviour and judged effectiveness. As, again, only two variables were involved (junior grade level teachers, senior grade level teachers), a Mann-Whitney U test was applied to the total score for effectiveness and to the student behaviour categories containing complete data. Categories P, I, and T comprise 75.4 per cent of all student behaviours observed. The test results are summarized in Table 12.

TABLE 12: TEST RESULTS COMPARING JUNIOR AND SENIOR GRADE LEVEL TEACHERS IN TERMS OF EFFECTIVENESS SCORES AND STUDENT BEHAVIOUR*

	EFFECTIVENESS SCORES	+ STUDENT BEHAVIOUR					
		FUNCTION			MODE		
		P	I	T	M	MT	N
Junior vs Senior Grade Level Teachers	.78	.48	.38	.43	.13	.13	.48
Significance Level	.42	.63	.74	.69	.87	.87	.63

*Results of the Mann-Whitney U test are expressed in negative z scores.

+ A complete description of student behaviour categories may be found in Appendix A.

The grade level taught by the subjects bears no significant relationship to either student behaviour during the class, or the effectiveness level of the teachers as a group. This finding is of interest to the researcher as it was generally accepted among the researcher's colleagues in the Senior Secondary schools that junior school students were considerably more active and more difficult to manage than students in Senior Secondary schools. Although the results do not support this belief, caution is advised as there was no control over the activity chosen or the grade level taught at any particular school (e.g. not all the

junior level classes were taught in Junior Secondary schools).

A summary of the data is presented in Table 13.

TABLE 13: PER CENT DURATION OF STUDENT BEHAVIOUR AND EFFECTIVENESS SCORES
JUNIOR VS SENIOR GRADE LEVEL TEACHERS

	Teacher: Tape Number	Activity	Mean Effectiveness Score	Rank	+ STUDENT BEHAVIOUR					
					Function			Mode		
					P	I	T	M	MT	N
Junior Grade Level	1	Gymnastics	68.0	8	8.4	.4	66.9	88.1	11.5	.3
	5	Track and Field	79.0	4	3.1	46.0	33.2	59.8	3.0	6.6
	9	Softball	46.0	12	6.9	38.3	38.9	74.1	6.0	17.1
	3	Volleyball	84.7	2	11.3	14.9	13.8	30.8	25.6	33.9
	7	Dance	83.7	3	71.1	12.0	12.4	19.2	71.9	5.4
	11	Dance	76.0	5	64.3	12.4	18.0	15.2	66.1	14.1
Mean Percentages - Junior			72.9		27.5	20.7	30.5	47.9	30.7	12.9
Senior Grade Level	2	Tennis	70.7	7	20.8	21.1	16.3	70.9	20.9	3.4
	6	Volleyball	90.7	1	27.0	28.1	14.4	56.0	30.1	10.2
	10	Gymnastics	66.7	10	9.1	33.3	30.8	63.3	13.0	9.5
	4	Volleyball	60.7	11	29.1	10.5	13.0	36.1	30.7	1.6
	8	Dance	67.3	9	64.6	14.2	20.3	13.6	62.2	15.9
	12	Field Hockey	74.7	6	4.1	23.3	50.6	77.1	4.1	9.8
Mean Percentages - Senior			71.8		25.8	21.8	24.2	52.8	26.8	8.4

+ A complete description of student behaviour categories may be found in Appendix A.

CHAPTER V

SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

A summary of the study is presented in this chapter together with conclusions derived from the major findings. Implications for physical education teachers are discussed with suggestions for future research.

Summary

The purpose of this study was to analyze the relationships which occur between the following variables during the course of a physical education lesson: (1) physical education teaching experience and judged effectiveness; (2) physical education teaching experience and observed student behaviour; (3) judged teaching effectiveness and student behaviour; (4) the sex of the teacher and (a) judged teaching effectiveness and (b) student behaviour; (5) the grade level taught and (a) judged teaching effectiveness and (b) student behaviour.

Twelve physical education lessons, taught by practicing physical educators, were videotaped in various secondary schools in southern British Columbia and on Vancouver Island. The teachers were matched for teaching

experience, sex, and grade level taught. Twenty-five per cent of the students in each class were randomly selected for observation. Each student was individually observed and his/her behaviour coded for alternating 30-second periods for the duration of the lesson utilizing Laubach's (1980) BESTPED observation system. The resultant data were converted to percentage scores and statistically analyzed.

As the BESTPED system is purely a descriptive report on the behaviour of students during a physical education lesson, it cannot by itself identify teaching behaviours which are characteristic of effective teaching. Therefore, external evaluators were employed. Three judges, experienced and knowledgeable in the field of secondary physical education, evaluated and scored all 12 teachers for effectiveness.

A Kruskal-Wallis one-way analysis of variance and Mann-Whitney U tests were applied to determine significant relationships, if any, between the variables under study.

Statistical analyses produced no significant differences in effectiveness for teacher sex, grade level taught, teacher experience, or student behaviour. These results may be explained in part by the small sample size and the variety of activities observed. No significant differences were found in student behaviour for grade level taught

or for the category of teaching experience with the exception of a significantly higher percentage of student talk for Category I teachers (0-3+ years of experience). This finding may indicate a difference in lesson organization and classroom management techniques on the part of these relatively inexperienced teachers.

The female teachers had a significantly higher percentage of time devoted to student on-task movement than the male teachers. Consequently, the students observed in the male teachers' classes spent a significantly higher percentage of time in off-task movement than students observed in the classes taught by the female teachers. These significant differences between the sexes in respect to student behaviour may be attributed in part to the high percentage of practice and on-task movement coded in the three dance/fitness-to-music lessons taught by the females.

Conclusions and Implications

Naturalistic observation techniques have been claimed by many as the only suitable method of obtaining systematic and objective data concerning the reality of teaching (Locke, 1979; Bales, 1970; Rosenshine, 1970). Unfortunately, in order to obtain this "real life" picture, some experimental control must be sacrificed. The variety of activities taught and methodologies employed, the variations in lesson length

and the lack of randomization of classes to be videotaped all may have contributed in some measure to this study's findings. After pondering the effects of uncontrolled variables and coupling them with the data produced by the limited focus of one observation system, it is not difficult to understand the absence of statistically significant results. Nevertheless, many important conclusions may be drawn from the data. In the following pages each of the five sub-problems are presented individually with conclusions derived from the findings and with specific implications for physical education teachers.

1. Problem. Are there any significant differences among teachers in three experience categories with respect to their judged effectiveness during the teaching of physical education lessons?

Conclusions.(1)Judges, who are experienced and knowledgeable in the field of physical education, can produce reliable evaluations of teacher effectiveness. (2) According to the results of the statistical analysis on the data in this study, the amount of physical education teaching experience bears no relationship to effectiveness as a physical educator. Beginning teachers (0-3+ years) are just as effective in their lessons as teachers on the latter end of the experience scale (9+ years).

Implications. Teachers must continually re-evaluate their capabilities as educators. There does not seem to be a parallel increase in teaching effectiveness with an increase in length of experience. Perhaps this situation arises due to a combination of teacher "burn-out" in later years and the possibility that the more aggressive and alert young teachers, seeing that their position will not improve with added experience, have left the teaching profession (Bush, 1970). Regardless of the reason for these results, practicing physical educators could employ readily available tools, such as videotapes and observation systems, to analyze, assess, and modify their teaching behaviour.

This study establishes the reliability of knowledgeable and experienced physical educators to produce an evaluation of a teacher's effectiveness in the gymnasium. The utilization of descriptive analytical techniques and the acceptance of the advice of others are probably positive actions for understanding, and improving, teaching ability.

2. *Problem.* Are there any significant differences among teachers in three experience categories with respect to student behaviours during the teaching of physical education lessons?

Conclusions.(1)It appears that the BESTPED observation system is capable of accurately describing student behaviour in a variety of settings and activities.(2)Students exhibited similar types and quantities of behaviour characteristics regardless of the experience of the teacher. Students in all 12 classes spent from 39 to 61 per cent of their time waiting to perform or receiving information from the teacher. No one teacher experience category was significantly superior in student on-task movement. It is possible that the beginning teachers in this study did not possess highly developed skills in classroom management and/or lesson organization as suggested by the significantly greater amount of student talk coded in their lessons.

Implications. The results of this aspect of the study imply an error in the commonly accepted belief that an increase in teaching experience indicates an increased positive effect on the students instructed. It makes no difference to the behaviour of the students whether the class is taught by an experienced master or an inexperienced novice. Whether this is, in fact, the truth or it was the inability of the analysis system to detect a difference, it was not possible to determine. Nevertheless, this study supports the opinion of Siedentop, Birdwell and Metzler (1979) that physical educators spend

a majority of their time on management and instruction and little on time on task.

3. Problem. Is there a significant relationship between judged effectiveness of the teacher and student behaviours during the teaching of physical education lessons?

Conclusions. According to this study, students display similar behaviours during class regardless of the viewed effectiveness level of the teachers.

Implications. This finding is contrary to the currently popular view that the effective teacher maintains a high level of student on-task behaviour during classes (Rosenshine and Berliner, 1978; Siedentop, Birdwell and Metzler, 1979). The three dance/fitness to music lessons, which displayed a substantially higher percentage of student practice and on-task movement than any of the other classes in the sample, were ranked three, five, and nine on teacher effectiveness. The primary task for the students in these dance classes was to imitate the actions of the teacher. The students' ability to mimick the teachers' movements did not indicate to the judges that learning, or teaching, was taking place. The judges' evaluations are supported by the opinion of Brophy and Evertson (1976) that effective teachers take personal responsibility for the production of learning during their lessons. It seems

reasonable to assume, therefore, that with these findings the effective teacher should not be measured solely on the basis of the amount of student practice and/or on-task movement. The results of this aspect of the study support the belief that teaching is a combination of skills which are situation-specific or, in other words, an "orchestration" of a variety of skills at different times under varying circumstances (Locke, 1979; McLeish, 1978; Brophy and Evertson, 1976; Goldberger, 1974).

It would seem also that certain activities (e.g. dance/fitness-to-music lessons) are better suited to increased student participation and on-task movement in a confined indoor environment. However, the amount of on-task student behaviour is not, by itself, the sole parameter of teaching effectiveness.

4. *Problem.* Are there any significant differences between teacher sex and judged effectiveness or student behaviours?

Conclusions.(1)Male and female teachers are not significantly different in their ability to teach effectively.(2) The choice of activity and a teacher's ability to formulate comprehensive lesson objectives dictate, to a large degree, the percentage of time a student is coded as practicing or on-task.

Implications. If there truly is no difference between the sexes in their ability to teach effectively, then perhaps administrators could attempt to capitalize on the utilization of school physical education personnel, male or female, to their best advantage. Often, the practice of scheduling Physical Education near the last on a student's timetable negates the possibility of drawing on the specialist areas of an individual teacher and necessitates a unit blocking schedule for the student. Providing for maximum employment of the talents and interests of individual instructors, regardless of teacher sex or class composition, still remains a relatively uncommon occurrence.

5. *Problem.* Are there any significant differences between grade level taught and judged effectiveness or student behaviours?

Conclusions.(1)Teachers, in this sample, are equally effective in their ability to instruct a junior or a senior grade level class. (2) In this study, students in junior and senior grade level physical education classes behave similarly.

Implications. Although caution should be used when viewing the above statements (limitations of the observation system and other restrictions on the study must be noted), implications of the conclusions can be suggested.

If junior and senior grade level teachers are truly similar in their ability to teach, then all teachers can move freely from level to level without disruption. Teaching techniques at both levels could be the same. There would be, in fact, no need to require progressive grade level courses if all students from grade eight to 11 demonstrated the same behaviours in class. Students would be free to select the activity and the skill level of a variety of required and optional courses to fulfil graduation requirements.

Recommendations for Further Research

The purpose of this study was to answer five specific questions and, in doing so, has also revealed the many difficulties inherent in RTE (Research on Teacher Effectiveness) studies. Several issues which require further research can be suggested. Replication of this study utilizing a larger number of subjects and stricter controls on the number of activities is needed in order to support, or refute, the results obtained. The subject of teacher experience and its relationship to effectiveness remains an interesting, and relatively untouched, area of study. Future studies should also consider a longitudinal analysis of one teacher instructing more than one lesson and/or more than one class in order to obtain a clearer

picture of the numerous skills possessed by the effective teacher.

Although videotaped lessons can be a useful tool for teacher behaviour modification and for teacher education programmes, a much more accurate and comprehensive picture of student-teacher behaviour might be obtained through a live coding situation. In addition, the logistics involved in videotaping a lesson for future use and the effect the equipment may have on the teachers as well as the students, are both important considerations when attempting a similar investigation.

Future physical education researchers in the field of effective teaching practices are wise to consider the deluge of observation instruments available and consciously attempt to focus their efforts on providing a common data base for extended use.

> We must not make the mistake of proliferating instruments endlessly as has been the case in classroom research. If an extant instrument will work for a given purpose it should be used . . . (Locke, 1977, p. 12)

As soon as conformity of instrumentation takes place, the analyses of a vast quantity of data may produce concrete evidence of the existence of certain, discernable behaviours characteristic of the effective teacher in physical education.

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APPENDIX A

The BESTPED System

Figure 2

BESTPED Coding Sheet

STUDENT OBSERVED: CODER'S NAME:

CLASS: DATE:

T	F	S	M	C	T	F	S	M	C
01					31				
02					32				
03					33				
04					34				
05					35				
06					36				
07					37				
08					38				
09					39				
10					40				
11					41				
12					42				
13					43				
14					44				
15					45				
16					46				
17					47				
18					48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				
30					60				

OVERVIEW OF THE BESTPED SYSTEM

Dimensions	*Categories*	*Code*
I. Function	Practice	P
	Game Playing	G
	Exercise	E
	Explore	L
	Communicate	C
	Position	F
	Equip	Q
	Assist	A
	Diverge	D
	Receives Input	I
	Gives Output	O
	Awaits	T
	Off Monitor	+
II. Mode	Movement	M
	*Movement Task	MT
	Non-Movement	N
	*Non-Movement Task	NT
	*Additions	
III. Content	Non-substantive	0
	Aquatics	1
	Exercises calisthenics	2
	Movement Education activities	3
	Rhythms, Dance	4
	Stunts, Tumbling, Apparatus	5
	Games and Sports	6
	a. low organization games, relays	i. track and field
		j. baseball
	b. recreational games	k. basketball
	c. archery	l. field hockey
	d. badminton	m. lacrosse
	e. bowling	n. soccer/speedball
	f. fencing	o. softball
	g. golf	p. volleyball
	h. tennis	q. other sports
	Fundamental motor act	.1
	Substantive positioning	.2
	Rules, Terminology	.3
	Strategy	.4
	Other related concepts	.5
	Measurement, evaluation	.6
	Managerial task	.7
IV. Time	Duration of each function behaviour in seconds.	

BEHAVIOURAL CATEGORIES

The thirty-one behavioural categories of the observation system are classified under the following three dimensions.

I FUNCTION

1.	*Practice*	To practice is to perform, often repeatedly, for the purpose of learning or effecting a change in behaviour; and for improving performance or proficiency in executing a task or motor act.
2.	*Game Playing*	To play a game is to participate in any explicitly stated modified, lead-up or official game such as basketball, dodgeball, or kick ball. The game has a definite beginning and end, rules, competition between two or more, activity towards the achievement of some goal, and usually some type of scoring.
3.	*Exercise*	To exercise is to perform, the same movements, usually repeatedly, and consecutively, to a count or within a time limit. The purpose(s) of exercise or calisthenics may be to warm-up, condition, increase or maintain fitness and/or prepare for subsequent motor activity.
4.	*Explore*	To explore is to investigate the environment and/or the constructs of movement, concepts and emotions. It is trying to or planning to move in different ways, to discover or select alternatives, and to find as many ways as possible to move. The process by which the goal is achieved is the student's decision.
5.	*Express/ Communicate*	To communicate is to express through movement one's ideas, opinions, concepts or emotions about some object, idea, concept or emotion.
6.	*Position*	To position is to locate or re-locate oneself, or body part, and to change posture.

I FUNCTION (Continued)

7.	*Equip*	To equip is to obtain, retrieve, distribute, set up, maintain, dismantle, return materials and/or equipment, and to be provided with equipment normally used in an educational setting.
8.	*Assist*	To assist is to help another or others learn, perform or execute some task.
9.	*Diverge*	To diverge is to perform any miscellaneous personal motion or task, or to exhibit any behaviour not classifed in another category.
10.	*Receive Information*	To receive information is to be available for, or directing one's attention for, stimulation or input, such as listening, observing, reading and using audio-visual aids. Included is mental practice, which is apparent attending to cognitively, or thinking about, the up-coming movement behaviour.
11.	*Give Information*	To give information is to talk, discuss, write or draw. Any similar behaviour whose purpose is to issue knowledge is coded as 0 for output.
12.	*Await*	To await is to engage in a "holding" behaviour until engaging in a new or different behaviour.
13.	*Off Monitor*	A large plus signifies that the student is not in sight and that the coder cannot, with a high degree of certainty, code his behaviour.

II MODE

1.	*Movement*	Movement behaviour is an observed change in location or in space of oneself, body parts or posture. It is motion of the body as a whole or of its parts.
**2.*	*Movement Task*	Movement task is any movement behaviour (defined above) which promotes the attainment of the stated lesson objective(s).
3.	*Non-Movement*	Non-movement behaviour is the opposite of movement. It is maintaining the same relative, stationary position with no observed (or very minimum) motion of the body parts or transport of oneself to another location.
**4.*	*Non-Movement Task*	Non-movement task is any non-movement behaviour (defined above) which promotes the attainment of the stated lesson objective(s).

* Task categories are additions for this study only.

III CONTENT

SUBSTANCE AREA

1. *Non-Substantive Content*

Non-substantive content is any subject matter, (or refers to the essence of behaviour), which is not directly related to physical education activities, movement or purposes; i.e.; attendance-taking, moving to formation and talking to or about a boyfriend.

2. *Aquatics*
3. *Experiences, Calisthenics*
4. *Movement Education Activities*
5. *Rhythms and Dance*
6. *Stunts, Tumbling, Gymnastics Developmental Moves*
7. *Sports and Games*

SPECIFIC CONTENT AREA

8. *Fundamental, Motor Skill Exercise*
9. *Substantive Positioning - Related to Game and/or Substantive Content*
10. *Strategy - Ways of and Plans for Winning*
11. *Rules and Terminology About the Sport and Activity*
12. *Other Concepts Related to Substantive Content - Such as Psychological, Physiological*
13. *Measurements (tests) and/or Evaluation*
14. *Managerial Task; (Announcements, Organization, etc.)*

APPENDIX B

Letters Requesting Permission To Videotape

UNIVERSITY OF VICTORIA
P.O. BOX 1700, VICTORIA, BRITISH COLUMBIA, CANADA V8W 2Y2
TELEPHONE (604) 477-6911, TELEX 049-7222

Faculty of Education

March 10, 1980

Dear

In partial fulfillment of our requirements for the Master of Arts degree at the University of Victoria, we are conducting a study on "Teaching Effectiveness in Secondary School Physical Education". This project involves videotaping fifty Physical Education classes throughout the province of British Columbia. The lessons will be analyzed at a later date to determine how pupil behaviours in the gymnasium situation correlate with teacher effectiveness.

We hope to have as our subjects the fifth year U-Vic student teachers who will be on practicum at your school April 8-May 16 inclusive, and their sponsor teachers.

As we have previously contacted your district superintendent for his approval, we would greatly appreciate your permission to approach the student and sponsor teacher(s) to ask for their cooperation. We do not foresee any class or schedule disruption.

We are well aware of your busy schedule and therefore ask that at your earliest convenience, you complete the enclosed form and return it to us in the envelope. We will inform you shortly of the

.../2

exact date of filming at your school. Thank-you.

Yours truly,

[redacted]

Mary O'Sullivan, M.A. Student

[redacted]

Dr. J.J. Jackson,
Thesis Committee Chairman

[redacted]

Jaye Hickey, M.A. Student

[redacted]

Dr. F.L. Martens, Thesis Committee Chairman

TEACHER EFFECTIVENESS IN PHYSICAL EDUCATION

I, as principal (approve/disapprove) _____ of the filming of student teachers and teachers on my Physical Education staff for the aformentioned study.

_____ _____

(signature) (School)

UNIVERSITY OF VICTORIA
P.O. BOX 1700, VICTORIA, BRITISH COLUMBIA, CANADA V8W 2Y2
TELEPHONE (604) 477-6911, TELEX 049-7222

Faculty of Education

March 10, 1980

Dear

In partial fulfillment of my requirements for Master of Arts degree at the University of Victoria, I am conducting a study on "Teaching Effectiveness in Physical Education." This project involves videotaping fifty secondary level Physical Education classes throughout the province. The lessons will be analyzed at a later date to discover how pupil behaviour in the gymnasium situation correlates with teacher effectiveness.

I hope to have as subjects the fifth year U-Vic student teachers who will be on practicum at your school April 8-May 16 inclusive, and you, their sponsor teacher.

Rest assured, I wish only to record the day-to-day Physical Education activities as they occur naturally in the gym--a specially prepared model lesson is neither required nor desired. I will make every effort to keep the effect of my presence to a minimum. Please see the enclosed explanation for the details on the videotaping procedures.

As we have previously contacted your district superintendent and principal for their approval, I would greatly appreciate your cooperation. As I will be at your school for an entire day, any other classes occurring during that time could be taped, with the teacher's permission.

.../2

I am well aware of your busy schedule and therefore ask that at your earliest convenience, you complete and return the form below in the enclosed envelope. I will inform you shortly of the exact date of filming at your school. Thank-you.

Yours truly,

[redacted]

Jaye Hickey, M.A. Student

[redacted]

Dr. F.L. Martens,
Thesis Committee Chairman

TEACHING EFFECTIVENESS IN PHYSICAL EDUCATION

I, as teacher, (will/will not) _____ agree to the filming of one of my Physical Education classes for the aforementioned study.

_____

(Signature)

_____

(School)

APPENDIX C

Teacher Questionnaire

UNIVERSITY OF VICTORIA

SCHOOL OF PHYSICAL EDUCATION

INFORMATION SHEET (Researcher)

Researher _____	Tape Number
Date _____	
Time duration of the lesson: Minutes _____ seconds _____	

(1) Sex of teacher

- ◯ Female
- ◯ Male

(2) Grade level of Physical Education class

- ◯ 8
- ◯ 9
- ◯ 10
- ◯ 11

(3) Number of students in Physical Education class

- ◯ 15 - 22
- ◯ 23 - 30

(4) Sex of students in Physical Education class

- ◯ Female
- ◯ Male
- ◯ Co-Educational

(5) Type of Physical Education activity taught _____

UNIVERSITY OF VICTORIA

SCHOOL OF PHYSICAL EDUCATION

INFORMATION SHEET (Teacher)

This section is to be completed by the teacher before the lesson. Mark a check in the circle which corresponds to the answer of your choice.

(1) Age of teacher in years

- ○ 20 - 26
- ○ 27 - 32
- ○ 33 plus

(2) Specify your major area of teacher training at University

_____

(3) List degree(s) held _____

(4) State the number of years of teacher experience

- ○ Student teacher
- ○ Less than 6 years
- ○ 6 years or more

(5) State the number of years of teaching experience in Physical Education Student teacher or

Years _____ Months _____.

(6) Briefly state the psychomotor objective of this lesson

_____

_____

(7) Briefly state the cognitive objective of this lesson

_____

_____

(8) Briefly state the affective objectives of the lesson

_____

_____

APPENDIX D

Guidelines Regarding the Lesson to be Videotaped

Guidelines for Physical Education Lesson to be Videotaped

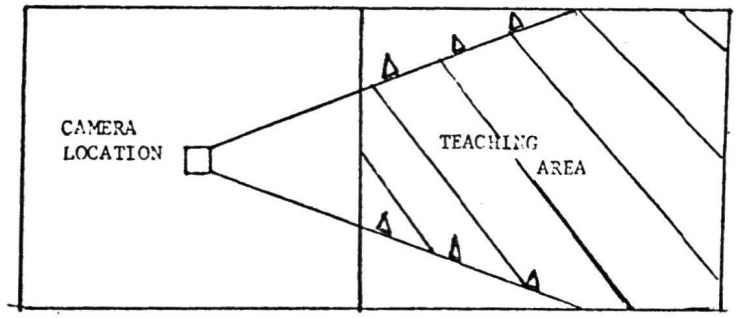
for

In order to record lessons as they occur normally in a gymnasium setting, constraints will be kept to a minimum. There will be no restrictions on:

1) the teaching methodology. You are free to use any style or method you wish.
2) the type or quantity of equipment
3) the content of the lesson. Please maintain your regular indoor lesson or unit scheduling. Model or "ideal" lessons are neither required nor desired.

RECORDING PROCEDURES

Due to the videotaping procedures, the lesson length must be limited to a 25 - 30 minute time period. The class will be restricted by cones to slightly less than one half of the gym space (see diagram). It is very important that we have in view all of the students for the entire lesson. Please consider this when planning. The students will be wearing numbered pinnies and you will be asked to wear a very small cordless microphone -- neither should interfere with the on-going activities of the lesson.



LESSON OBJECTIVES

Prior to videotaping, you will be asked to state your lesson objective(s). Please plan lessons which are appropriate to the students' stage of physical and skill development.

VIDEOTAPING DATE

Taping will occur between April 8 and May 16, 1980 inclusive. As soon as I receive your principal's permission, you will be informed through him, of a mutually convenient date. I trust that you will not be inconvenienced in allowing student teacher _____ to instruct an indoor lesson, even though this may not be part of his/her teaching assignment.

A sincere "thank-you" for your assistance.

APPENDIX E

Teacher Evaluation Form

Judge: _____

Tape #: _____ Grade Level: _____

Lesson Objectives:

Psychomotor: _____

Cognitive: _____

Affective: _____

	EXCEL.	GOOD	SATIS.	WEAK	UNSAT.	N/A
Management Skills: Getting and holding attention; Withitness (knowing what is going on at all times) Overlappingness (the ability to attend to two issues simultaneously)						
Clarity: of lesson presentation; i.e. Of speech, voice, instructions. Were questions suitable and clear? Did the teacher check for understanding?						
Lesson Preparation: To what extent did the teacher demonstrate subject knowledge and lesson planning? Were the learning activities planned to provide variety and challenge for the students?						
Enthusiasm: The teacher's total involvement and dynamic manner during the course of the lesson. Presented by means of vocal inflection, gesturing, eye contact, animation etc.						
Student Opportunity to Learn: Opportunity given by the teacher to allow students to learn what is desired of them during the course of the lesson. Participation and involement in physical or cognitive activity if specified as an objective of the lesson. Is time allocation sufficient?						
Achievement/Task-oriented, Business-like Behaviour: To what extent does the teacher take responsibility for student learning outcomes i.e. How determined does the teacher seem to be that the students learn?						
Development and Pace of the Lesson: The appropriate division and order of the lesson segments i.e. beginning, middle, end. Transition smoothness: teacher's ability to move students from one phase of the lesson to the next without breaking the rhythm or momentum of the lesson.						
Appropriateness: The extent to which the lesson content and delivery were appropriate to the grade level, sex, ability and interests of the students involved, i.e. are there better ways to accomplish the same objectives?						
Variability: Variety in teaching materials and/or tasks to maintain and stimulate interest in the lesson. Flexibility in procedures and adaptability to the unexpected.						
Overall Impression of the Lesson: Mindful of the clarity and accomplishment of objectives, and taking into consideration all the circumstances involved, how effective was the teacher during this lesson?						

APPENDIX F

Computation of Intra-Judge Agreement (Coder Reliability)

INTRA-JUDGE AGREEMENT

Function, Mode, Content, Dimensions. To determine agreement between codings, one set of codings was placed directly adjacent to the other set. The formula employed was:

$$\frac{NA_1}{MNS} = \text{Per Cent A}$$

Key: NA_1 = Number of Seconds of Agreement between first and second sets of recording

MNS = Maximum Number of Seconds on the Tape

Per Cent A = Per Cent Agreement

Subscripts. An instance of agreement occurred when the two sets of codings showed the same code at the same second or within two seconds of each other. An instance of disagreement occurred when the two sets of codings recorded different codes within this band of tolerance or when the code was recorded only on one set of codings. To determine intra-judge agreement for the coder, the following formula was used:

$$\frac{NA_1}{NA_1 + D_1} = \text{Per Cent A}$$

Key: NA_1 = Number of agreements between the coder's two sets of codings

D_1 = Number of disagreements between the coder's two sets of codings.

APPENDIX G

Summary of Raw Data

TABLE 14: DURATION OF BEHAVIOURS FOR THE FUNCTION DIMENSION

Tape Number	Number of Students Observed	CODE P	E	G	Q	F	A	O	I	T	D	+	Total Seconds Observed
1	2	126	165	-	5	78	97	-	6	1004	19	-	1500
2	4	733	-	-	843	103	490	22	741	574	5	79	3600
3	5	593	135	1511	108	382	236	737	785	723	50	290	5550
4	4	740	378	735	-	64	-	30	267	331	-	95	2640
Totals for Category I	15	2192	678	2,246	956	627	823	789	1799	2632	84	464	13290
5	6	155	490	-	-	346	15	12	2276	1640	10	40	4984
6	7	1865	1155	-	229	376	337	15	1945	993	5	10	6930
7	5	3832	-	-	-	230	-	15	645	668	-	10	5400
8	4	1451	15	-	-	-	-	5	319	455	-	155	2400
Totals for Category II	22	7303	1660	-	229	952	352	47	5185	3756	15	215	19714
9	5	304	240	-	17	238	156	15	1691	1719	40	230	4650
10	4	288	430	-	154	195	66	10	1058	981	-	100	3282
11	8	4488	-	-	-	340	-	21	862	1253	15	33	7012
12	3	106	212	9	59	148	117	-	608	1314	25	65	2663
Totals for Category III	20	5186	882	9	230	921	339	46	4219	5267	80	428	17607
GRAND TOTALS	57	14,681	3,220	3,220	1,415	2500	1514	882	1197	11655	185	1107	50611

TABLE 15: DURATION OF BEHAVIOURS FOR THE MODE DIMENSION

Tape Number	Number of Students Observed	CODE M	MT	N	NT	+	Total Seconds Observed
1	2	1322	173	5	-	-	1500
2	4	2488	735	119	179	79	3600
3	5	1621	1348	1782	509	290	5550
4	4	918	781	41	805	95	2640
Totals for Category I	15	6349	3037	1947	1493	464	13290
5	6	2958	149	324	1513	40	4984
6	7	3877	2081	705	257	10	6930
7	5	1034	3876	290	190	10	5400
8	4	300	1396	356	193	155	2400
Totals for Category II	22	8169	7502	1675	2153	215	19714
9	5	3276	267	754	123	230	4650
10	4	2014	412	301	455	100	3282
11	8	1061	4615	978	325	33	7012
12	3	2002	106	254	236	65	2663
Totals for Category III	20	8353	5400	2287	1139	428	17607
GRAND TOTALS	57	22871	15939	5909	4785	1107	50611

TABLE 16: SUMMARY OF BEHAVIOURS OF THE CONTENT DIMENSION

Content	TAPE NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
Non-substantive	1110	1679	840	603	2206	2232	1107	635	2703	1137	2102	1658
Exercises, Calisthenics	165		110	357	175	982		15	127	420		192
Rhythms, Dance							4283	1595			4877	
Stunts, Tumbling, Apparatus	225									1625		
Games and Sports												
Track and Field					2563							
Volleyball			4310	1585		3706						
Softball									1590			
Tennis		1842										
Field Hockey												748
Off Camera	-	79	290	95	40	10	10	155	230	100	33	65
TOTALS	1500	3600	5550	2640	4984	6930	5400	2400	4650	3282	7012	2663
Measurement, Evaluation			648	30								
Managerial Task	64	1027	243	206	247	704	187	19	1118	350	756	260

VITA

Surname: HICKEY Given Names: BRENDA JAYNE

Place of Birth: HAMILTON, ONT. Date of Birth: July 16, 1949

Educational Institutions Attended, with Dates of Entering and Leaving:

UNIVERSITY OF WESTERN ONTARIO, LONDON	1968 to 1971
ALTHOUSE COLLEGE, U.W.O, LONDON	1971 to 1972
UNIVERSITY OF VICTORIA, B.C.	1979 to 1980

Degrees, Diplomas, Etc., Awarded, with Dates and Names of Institutions:

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DIP. ED.	1972	ALTHOUSE COLLEGE, U.W.O., LONDON

Honors and Awards:

Publications:

Hickey, J. "Safety in the Riding Program." *Canadian Camping*, 22:9-11, March, 1970.

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Title of Thesis

THE INTERRELATIONSHIP OF TEACHER EXPERIENCE, STUDENT BEHAVIOUR, AND EFFECTIVE TEACHING IN SECONDARY SCHOOL PHYSICAL EDUCATION

Author

BRENDA JAYNE HICKEY

SEPTEMBER 15, 1980