THE RELATIONSHIP OF TEACHERS' EXPECTATIONS AND ACADEMIC LEARNING TIME IN GRADE SIX PHYSICAL EDUCATION CLASSES

by

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B.P.E., University of British Columbia, 1977

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Center for the Study of Curriculum and Instruction)

We accept this thesis as conforming

to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

August 1987

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Abstract

The purpose of this study was to investigate the relationship between teachers' expectations of performance, teacher training, and student gender, with student achieved Academic Learning Time (A.L.T.) of grade six students.

To examine the following relationships four main hypotheses were generated. It was hypothesized that:

1 There would be a positive relationship between A.L.T. and teachers' expectations of performance in Physical Education.

2 Teachers with Physical Education majors would have greater A.L.T. than those with Physical Education minors, or generalist classroom teachers.

3 There would be no difference in A.L.T. totals between student gender.

4 There would be less student off-task time in Physical Education majors classes, than in the Physical Education minors, and the generalist teachers'.

This study also examines the relationship between teachers' perception of student effort, student grades in physical education, and student achieved Academic Learning Time. Finally, it was possible to investigate how student expectations of performance are developed by teachers in Physical Education.

Six, grade six, classes taught by male teachers were selected for observation in the study. Two P.E. majors, two P.E. minors, and two generalist teachers' classes were observed. Each of these teachers conducted a rank-ordering of students in their class, based on their expectation of student performance. From this rank ordering, six students from each class were selected for observation during the study. Each class was observed three times, using the Academic Learning Time Version II instrument to collect data. At the conclusion of the study, teachers were also asked to submit student grades for the first and second term, rate student effort over the three observed lessons, and complete a teacher demographic information sheet.

Results indicated that a positive relationship existed between teachers' expectancy and A.L.T.. It was found that P.E. majors had higher A.L.T. than did P.E. minors, or generalist teachers. No significant difference was found between student gender groups. Differences in off-task time levels were not noted between teacher training groups. A significant relationship was found between student perceived effort and student A.L.T.. Finally, it was indicated that teachers primarily use student ability and skill level in determining students' expectancy level.

Recommendations for future research on this topic suggest that a larger sample size be used and that lesson

and activity structure be controlled in comparative A.L.T. studies. It appears that more research is needed to substantiate the relationship between A.L.T. and teacher training, and the relationship between student achievement and A.L.T..

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Acknowledgements

I wish to acknowledge Dr. Moira Luke, faculty advisor and chairperson of my committee, for her most valuable assistance and encouragement throughout my graduate program and, in particular, her help on this thesis. I would also like to acknowledge and thank Dr. Gary Sinclair, and Dr. Frank Echols for their support as committee members.

Thanks to Cyndi Cunneyworth, who served as my research assistant; and to Dr. Walter Boldt, who provided valuable assistance in the interpretation of statistical analyses used in this thesis.

I also would like to thank the Kamloops School District, senior administration officials, principals of schools participating in the study, and finally the participating teachers for their support and cooperation in this study.

Finally, special thanks are also expressed to two people without whom this study would have been extremely difficult to complete, Bev and Syd Roberts. Many, many thanks for all your inspiration, support, encouragement, and help.

Dedication

To my parents and brother, for their constant support and encouragement.

Chapter 1

Introduction

It has been well documented in the literature over the past few years that teachers' expectations of performance may create a "self fulfilling prophecy" effect in a classroom. Most notably, the work of Rosenthal and Jacobson (1968), demonstrated the possibility of such a prophecy existing. Although Rosenthal and Jacobson's research techniques and results were questioned initially, it appears that this prophecy exists in some classrooms (Brophy and Good, 1974). Much research in this area has been conducted in traditional classroom settings, but, few studies have been done in physical education. Some research has been done in this area by Thomas Martinek (1979-84). He has explored the possibility that a teacher in physical education may be influenced by the "self fulfilling prophecy", and his research findings indicate that this phenomena may exist.

Recently there has been evidence from studies in evaluation of instruction that suggest the most effective method of instruction may be "direct instruction" (Berliner, 1984). The research in "direct instruction" suggests a number of factors that influence learning in the

classroom. Perhaps the key finding from this research is that academic learning time seems to be the most important variable in determining actual student achievement. A model for determining academic learning time in the classroom was constructed by Fisher et al. (1978). This model was quickly adapted for use in physical education by Siedentop, Birdwell, and Metzler in 1979. Since then the concept has been modified to permit the measurement of management time, on task time, success rate, and motor engaged time, to name a few. However, there appears to be a scarcity of literature that relates the two factors of academic learning time and teacher expectations. Since it appears that expectation may contribute to student achievement, and also that academic learning time may contribute to student achievement, it would appear that these two variables may be related. If these two variables are related, it may be suggested that by creating an expectancy level, through student achieved academic learning time, the teacher could substantialy alter student achievement in class. Also, by altering academic learning time levels, a teacher may create false student expectations of performance.

Over the last decade, there has been an increased emphasis on quality physical education programs both in and out of school. At the elementary school level in British

Columbia, daily physical education has been implemented in several school districts. To ensure a quality physical education program, many schools have hired full time physical education specialists, or have appointed someone responsible for physical education in the school. These "physical education specialists" usually have formal training in physical education, and provide leadership for the entire physical education program at the school. Since there may be a link between student achievement and academic learning time, comparing physical education lessons taught by physical education majors, minors, and nonspecialists, using academic learning time, could provide useful information in the overall analysis of physical education instruction.

Another philosophical change in physical education instruction within British Columbia, has resulted in the creation of the co-educational class. Until the last decade boys and girls, in most cases, were segregated for physical education classes. However, in this decade most physical education classes in elementary schools have become co-educational. By using academic learning time as a measuring tool, inter-gender differences may be revealed. In a related study, (Silverman, et al., 1984) it was discovered that differences between sexes in amounts of academic learning time were not significant. However, in

this study, by using expectation and gender as variables, differences in academic learning time may be noted. If this is the case, it could suggest that teacher expectations may be different in physical education for males and females. Also, by controlling both grade and lesson variables, useful information may be gathered for analysis of the co-educational physical education class.

Statement of the Problem

The purpose of this study is to examine the relationship between teachers' expectations of performance in Physical Education and academic learning time in selected grade six physical education students.

Subproblems

To examine if there is a relationship between the training of elementary Physical Education teachers, and student achieved Academic Learning Time in selected grade six physical education students.

To determine if there is a relationship between student gender and Academic Learning Time in selected grade six physical education students.

Definitions

Teachers' expectations of performance in Physical Education: The preconceived ideas about a student's performance that a teacher may have formed, based on either previous information, experience, or bias, to perform activities in Physical Education.

Physical Education Major: A teacher who has obtained a recognized physical education degree at a university.

Physical Education Minor: A teacher who has taken advanced physical education courses at university, without having a declared physical education major.

Academic Learning Time in Physical Education: The portion of time in a physical education lesson that a student is engaged in a relevant activity at a high success rate. The relevant activity must be physical education subject content, must be a motor activity, and the activity must be of an appropriate level of difficulty. Success rate is determined by the novelty of the activity, the difficulty of the activity, and the students' success at the appropriate task.

Activity: The sport or general activity selected for use in the study. In this particular study, basketball is the selected sport of focus and is referred to as the activity.

Lesson Type: The specific lessons to be taught within each activity. In this particular study three specific lessons (basketball passing, dribbling, and shooting) were selected and taught during the observational period.

Cycle of Observation (cycle): The period of time taken to observe and record behaviors of the six selected students per class one time.

Off-Task Time: The portion of time that a student is not engaged in an appropriate activity, or engaged in a different activity than an appropriate one (Siedentop et al., 1983).

Hypotheses

1 *That there will be a significant positive relationship between Academic Learning Time and expectancy levels in grade 6 Physical Education classes.*

If a positive relationship is established between these two variables, it will indicate that, A.L.T. and expectation may be linked in the gymnasium. If this hypothesis is not supported, then it would indicate that A.L.T. and expectancy effects may not be linked.

2 *Physical Education classes taught by Physical Education majors will have greater mean Academic Learning Time than those taught by teachers with Physical Education minors, or by teachers with no specific training in Physical Education.*

If this hypothesis is supported, then it would indicate that teachers with Physical Education majors, in general, provide more A.L.T. in Physical Education, than do teachers with Physical Education minors, or teachers with no specific Physical Education training. If not supported, it would indicate that there is no significant difference in A.L.T. between Physical Education majors, Physical Education minors, and non-specialized Physical Education teachers.

3 *That there will not be a significant difference between student gender with respect to Academic Learning Time.*

If true, this hypothesis would support findings

(Silverman et al., 1984; Placek et al., 1982) in earlier studies, that gender does not directly affect achievement of A.L.T.. If the hypothesis is not supported, this would indicate that further research in this area may be needed, since gender may influence A.L.T..

4 *That classes taught by Physical Education majors will have less off-task time than classes taught by Physical Education minors, or by teachers with no specific training in Physical Education.*

If this hypothesis is supported, it would indicate that Physical Education majors may be better able to minimize the amount of off-task time than those of P.E. minors, or generalist classroom teachers. This may indicate that organizational patterns in the P.E. majors' classes may be different than those in the P.E. minor, or generalist classes.

Along with the preceding hypotheses, it will also be possible to examine the relationship of variables, such as student term grades and teacher perceived student effort, to Academic Learning Time. Although hypotheses on these factors will not be generated, each factor will be examined and implications discussed.

Variables in the Study

For this study, the independent variables are, 1 three expectation levels, high, middle, and low; 2 gender, male or female; and 3 physical education teacher, P.E. major, P.E. minor, and generalist.

The dependent variables for this study are academic learning time, and off-task time.

Other variables to be considered in this study are first and second term grades, perceived effort of student by teacher, and criteria for the selection of students' expectancy levels by the teacher.

Assumptions

This study assumes that:

The physical education teacher was able to rank-order students by level of performance in physical education within their class.

The observer was able to observe the classes involved with a reliability factor of over 80% (As tested by the scored interval difference method [Hawkins and Dotson, 1975]).

The teacher was able to rate from 1 (lowest) to 5 (highest) their perception of student effort over the

observed lessons.

The teacher was able to grade students in physical education.

The teacher was able to identify how expectations in physical education were developed.

That students attempted to do activities to the best of their ability.

Delimitations

This study is delimited by the following conditions:

That all students were grade six students in elementary school.

That the testing was done over as short a time period as feasible.

Limitations

The study is limited by:

The assignment of expectancy levels.

The use of the "Academic Learning Time - Physical Education 1982 Revision Coding Manual" (Siedentop et al., 1982).

The selection of students based on teacher's rank-ordering and selection by a third party.

The use of physical education classes only.

The use of physical education classes taught by non-itinerant male teachers.

The use of complete grade six classes.

The use of basketball as the sport of focus for lessons.

The observation of basketball passing, dribbling, and shooting lessons only.

The number of classes, teachers, and students observed in this study.

Significance of the Study

In education, expectations of student performance are always created. In fact, it is impossible for teachers not to have expectations of performance for students. Since expectations are always apparent in education, the creation of faulty expectations may directly affect student achievement. Therefore, it is important that models be established to allow teachers to be aware of and control these expectations.

At the same time, student time on task is being investigated extensively. In fact, it has been suggested by several researchers that a variation of time on task called Academic Learning Time may be a superior method to

evaluate student performance (Berliner, 1979).

This study will attempt to investigate the existence of a relationship between teachers' expectation of student performance and Academic Learning Time achieved in physical education. Should a relationship exist between teachers' expectations of performance and A.L.T., it will be argued that manipulation of student achievement may be possible by the establishment of such expectations. At the same time, relationships between teacher specialization, student gender, student effort in observed lessons, student outcome grades and A.L.T. will be examined and discussed in light of previous research.

In the next chapter, a review of previous research in teacher expectation and Academic Learning Time will be provided. Following this chapter, in Chapter 3, the methodological procedures employed in this study will be explained in detail. Chapter 4 presents the statistical interpretations of data collected in the study. Chapter 5 provides a discussion of the findings and attempts to relate these to past research findings. Finally, in Chapter 6, a summary of the study, together with recommendations for further research is presented.

Chapter 2

Review of Related Literature

Expectation Research in Education

Prior to 1968, many educational researchers suspected that there may be an "expectancy" phenomena within education. The whole area of expectancy research emerged with the publication of Rosenthal and Jacobsen's Pygmalion in the Classroom (1968). Rosenthal and Jacobson's research explored whether or not there was evidence to suggest that teachers' expectations create differences in performance and evaluation of pupils. The study was conducted in a public school setting, one that was located in a low socioeconomic neighbourhood. The children at the school were all given a test for intelligence, one that was purported to be able to predict intellectual "blooming", that is, whether a child was likely to have an academic spurt that year. In fact, the test did not test "blooming", but rather was an obscure general academic ability test. Using the results of this test, 20% of the children were selected at random and teachers were told that these children could be expected to "bloom" academically during the coming year. Later that year, the

same general academic ability test was administered, and the so-called "bloomer" group showed more gain than could normally be expected.

From this study, Rosenthal and Jacobsen suggested that a "self-fulfilling prophecy" had occurred, where students performed in accordance with the teachers' perceived expectation levels.

Based on this study, researchers began to investigate the teacher expectancy phenomenon. Initially, the premise was viewed with skepticism by some researchers, due in large part to questionable research techniques utilized by Rosenthal and Jacobsen. In particular, Thorndike (1971), stated that:

> ... the indications are that the basic data upon which this structure has been raised are so untrustworthy that any conclusions based upon them must be suspect. The conclusions may be correct, but if so it must be considered a fortunate coincidence. (p. 68)

In 1974, Brophy and Good analysed and conducted over 60 studies relating to this phenomena, and concluded that there appeared to be a link between performance and the "self-fulfilling prophecy". Support for the "self-fulfilling prophecy" is more widespread now, and has been accepted, in principle, by many researchers. However, the degree to which this "prophecy" affects learning is debated.

In 1974, Rosenthal suggested that there were four

levels which influenced development of expectation in the classroom. The four identified categories were, 1 Climate, 2 Input, 3 Feedback, and 4 Output. These terms were further defined by Hutslar in 1981. Climate refers to; "the emotional tone of the interaction between the teacher and student.". It is felt that teachers sometimes create a warmer atmosphere for high expectation students than for lows (Cooper & Good, 1977). Input refers to, "the amount and difficulty of new material presented to students.". It would seem that high expectation students receive more new or challenging material than those labelled as low (Rosenthal, 1974; Mendosa, Good, & Brophy, 1972). Feedback is referred to as; "teacher's use of praise and criticism.". Teachers have been found to praise high expectation students far more frequently than the lows (Brophy and Good, 1974). Also, it has been found that low expectation students are often praised inappropriately (Good, 1981). Output refers to "the length of time the teacher is willing to spend seeking a correct answer from a student.". High expectancy students often are given more clues and more time to answer a question, than lows (Rowe, 1969; Brophy and Good, 1974). These four factors have been well accepted by researchers and appear to provide the basis for models of expectancy development.

Within expectancy research, three models have been

developed to explain this phenomena. The classic model, the one upon which others have been developed, is Rosenthal's (1974) model (figure 1). In his model, Rosenthal indicated that the teacher expectation led to biased teacher behavior, which, in turn, led to biased student behavior (Self-fulfilling prophecy). This kind of model reflects unilateral causation, where teacher behavior dictates student behavior.

A second model, one that could be considered a refinement of the first, is Cooper's (1979) model (figure 2). This model, which also reflects unilateral causation, is based on Cooper's premise that effort perceptions can greatly influence student performance and evaluation.

The third model, developed by Martinek, Crowe and Rejeski (1982) represents reciprocal causation (see figure 3). In this model, both student and teacher interact in creation and development of expectancy effects. It would appear that this model has most merit in Physical Education, due to the fact that perceived student effort plays a large role in development of teacher's expectations and evaluation (Rejeski and Lowe, 1980; Martinek and Johnson, 1979; Martinek, 1983).

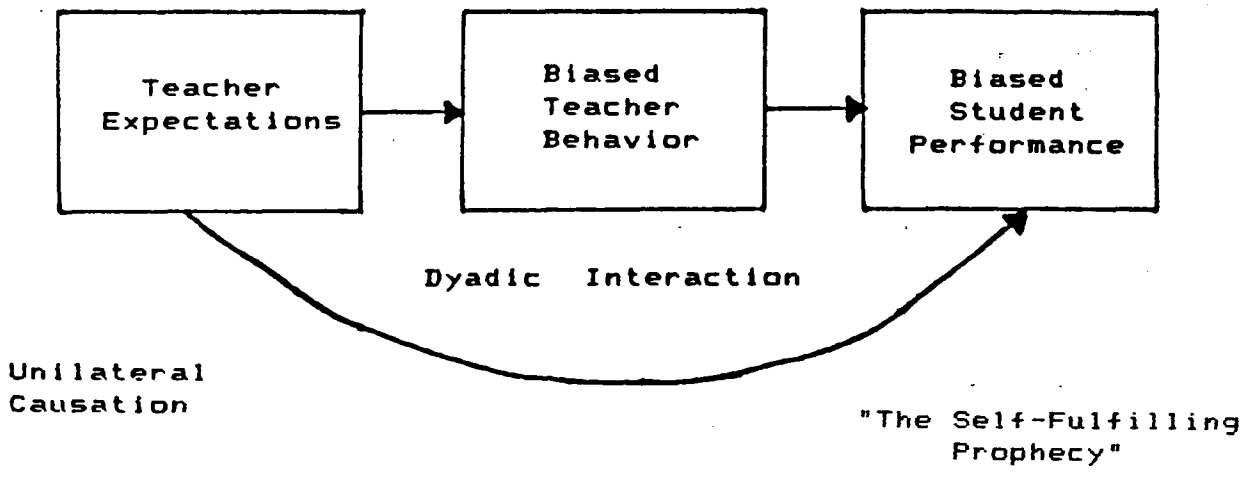

Figure 1. Rosenthal's (1974) model for development of teachers' expectations.

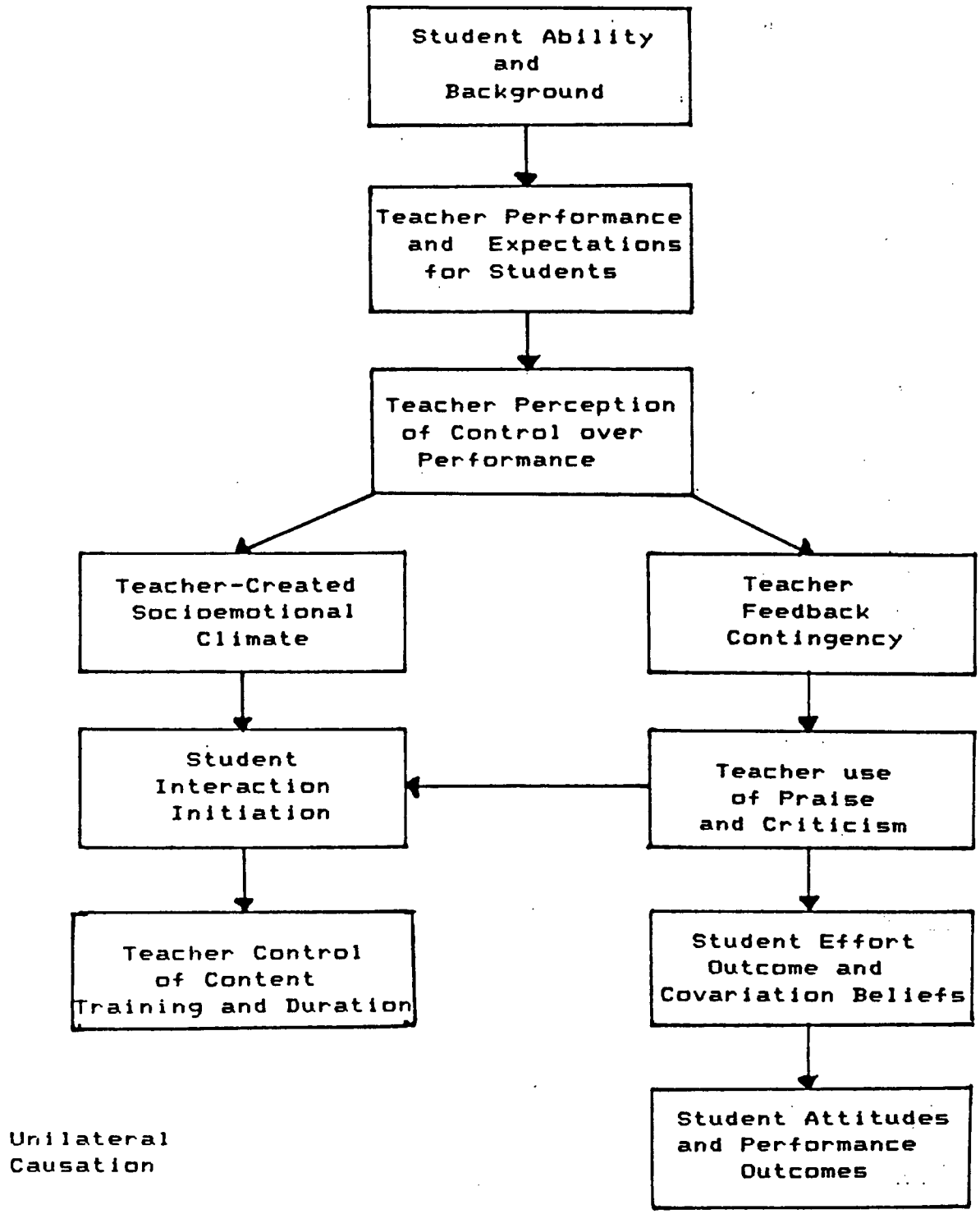

Figure 2. Cooper's (1979) model for development of teachers' expectations.

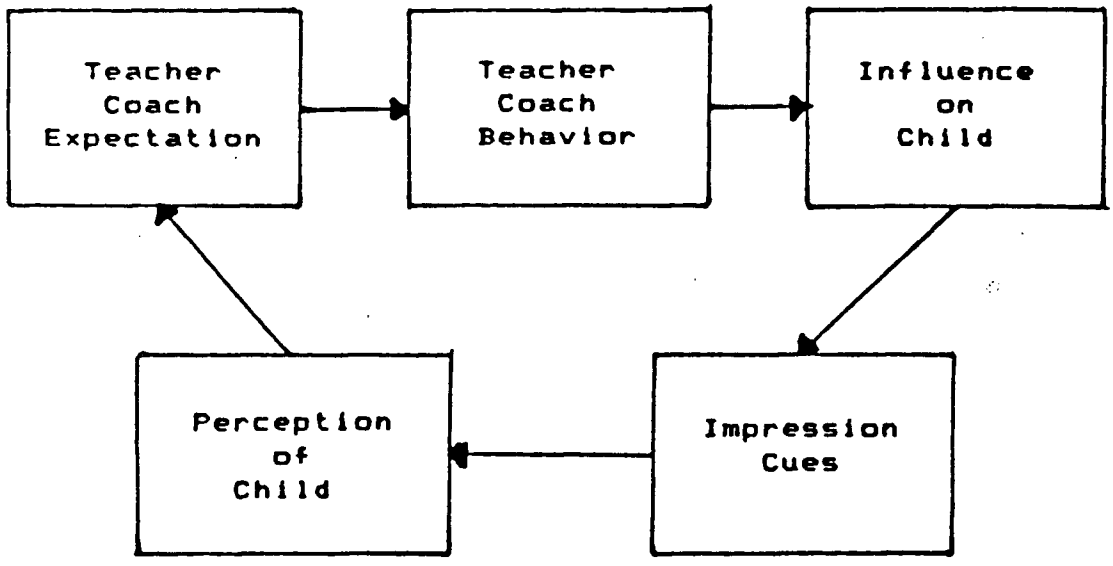

Figure 3. Martinek, Crowe, and Rejeski's (1982) model for development of teachers' expectations.

Expectancy Research in Physical Education

With these developments in the field of expectancy research in education, it was was only natural that some researchers would explore expectancy effects in Physical Education. Since evaluation in Physical Education is primarily subjective, some researchers felt that faulty expectations could affect both student and teacher performance.

In a 1979 study, Martinek and Johnson investigated the effects of teacher expectations on teacher-student behaviors occurring during physical education instruction. This descriptive study also considered the effects of expectation on student's self concept. Using five physical education classes, from different schools, 170 fourth and fifth grade students were observed. Expectation effects were determined by having the physical education specialist teachers rank, and later re-rank children in the class from 1 to 7 based on anticipated performance of physical skills. From this ranking, the top 10 students and the bottom 10 students were identified in each class as being high and low expectancy students. For this study, to ensure that both students and teachers were unaware of who was being observed, all students in the class wore numbered pinnies. A dyadic version of the Cheffers Adaptation of Flanders

Interaction Analysis System (CAFIAS) was used to identify teacher-student behaviors. For the analysis of data, the researchers used a 2x2x5 multi-analysis of variance (MANOVA). Martinek and Johnson suggested that teachers gave high achievers more opportunity to interact, than low achievers. It also appeared that teachers gave more praise and supportive encouragement to high expectancy students. Teachers also appeared to more readily accept actions and ideas given from high expectancy students. Martinek and Johnson conclude that:

> In summary, it is feasible to assume that within a physical education setting high achievers have all the advantages - more intellectual stimulation and better self-concept. It follows, then, that the physical education teacher should become sensitized to those behavioral mechanisms that mediate expectations which perpetuate success and failure in children. (p. 89)

In another related descriptive study, Martinek (1981) examined the effects of physical attractiveness on teachers' expectations and specific teacher-student interactions. To determine expectations for this study, teachers were asked to rate students from 1 to 7 on four variables, overall skill performance, social relations with peers, cooperative behavior, and ability to reason. Physical attractiveness scores were determined by student teacher's ranking black and white photographs of students. To identify specific interaction patterns, a dyadic

adaptation of Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS) was used. Data was analyzed through use of two 2x2x3 MANOVAs, using the four teacher expectancy variables, and behaviors measured by CAFIAS as dependent variables. Martinek concluded that physical attractiveness was "significantly associated" with teachers' expectations of performance, and also with expected social relations for peers. It was suggested that physical educators view physical performance and physical attractiveness as related variables. Another interesting suggestion from the results was that teachers' expectations, based on physical attractiveness may become prophetic.

In 1982, Martinek and Karper conducted a descriptive study to investigate the relationship between perceived expression of effort and motor ability, with teacher expectations and dyadic interaction patterns. To determine expectations, Martinek and Karper used the same method as described above in Martinek's 1981 study. By using canonical correlation, the researchers were able to determine the shared variance between selected variables and found that a student's age and expression of effort can influence the expectations that a teacher develops, particularly those linking with social prowess and reasoning ability. They also suggested that performance

expectation and actual motor ability may be related. Therefore, the students may be performing to, and reinforcing the teacher's expectations, thus creating a self-fulfilling prophecy. Martinek and Karper also indicated that teacher expectations could directly affect the quantity and quality of dyadic interactions, as has been indicated in previous studies (Rejeski, Darracott, and Hutslar, 1979; Martinek and Johnson, 1979). Martinek and Karper also surmised that high expectancy children receive more corrective feedback, because teachers anticipate that high expectancy students are capable of using more corrective feedback than those perceived as low. Therefore, the performance gap between the highs and lows could be expected to widen with time.

Martinek and Karper (1984) studied the multivariate relationships of specific impression cues with teacher expectations and dyadic interactions in elementary school children. As in their previous study, a descriptive format was employed with expectations for students determined by a 1-7 ranking on four variables, and physical attractiveness determined by graduate students' assessment of student photographs. For effort ratings, teachers were asked, during the 11th and 20th weeks of study to rank students on a 1-5 continuum. As in the previous study, Martinek and Karper used the revised CAFIAS observational tool to

identify specific interaction patterns. In analyzing data, the researchers used canonical correlation. Martinek and Karper found that as students became older, attractiveness and effort became more important factors in formation of expectations, which had also been indicated in their previous study (Martinek and Karper, 1983). It was also suggested that lower expectations for students may encourage them to misbehave during class. One other significant finding from this study was that students that are expected to be more socially adept working in groups receive more content-related feedback than students considered to be less socially adept.

In a related doctoral dissertation, Crowe, in 1977, examined teachers' expectancy effects and their mediating mechanisms on students in physical education. Crowe's study identified and differentiated teacher behaviors affecting student behavior based on Rosenthal's four factor theory (1974). In this descriptive study, teachers were requested to rank-order students in order of their performance in physical education. Four physical education classes were observed in this study. From the rank-ordering, students were placed into either high or low expectancy groups. A total of 48 high expectancy students and 48 low expectancy students were observed by three judges trained in the Brophy-Good Interaction Analysis

System. An analysis of variance was performed to assess the effects of teachers' expectations on Rosenthal's four factors, as well as on a fifth factor, touch. Crowe found that designated high achievers were asked more questions and given more opportunities to respond than lows. Teachers acted more "warmly" towards high achievers than lows. Like other later studies, it was found that high expectancy students received more corrective feedback than did low students. It was also found that high students received more attention, and were given more opportunities to respond, than those perceived to be low students. Crowe concluded that more evidence was needed to conclude that teachers communicate expectations to students by using different teaching behaviors.

Pieron (1982), in a descriptive study, examined behaviors of low and high achievers in physical education classes. In determining expectancy, Pieron asked teachers to indicate the three highest and lowest achieving students in terms of subject matter content. From the categories, two of three subjects were observed. Students were observed between the sixth and eleventh minutes of a lesson. A total of 224 students, from ages 15-18 were observed, participating in either a volleyball or gymnastics lesson. Pieron used a modified interval recording system to accumulate necessary data. To

determine interobserver reliability, the scored interval difference method was used (Hawkins & Dotson, 1975). Data analysis consisted of examining descriptive statistics, with t-tests being used to distinguish differences between high and low achievers. It was found that the success rate for activities differed considerably between volleyball and gymnastics. It was also found that high achievers found more opportunities to learn in class than did low achievers, and because of this, the gap between high and low should be expected to widen over time. Teachers in this study appeared to behave similarly with the high and low achievers, although teachers tended to react more often to low's unsuccessful trials. Pieron finally stated that the size of the difference in teacher interaction did not appear to be high enough to account for the differences between high and lows in terms of time-on-task or success rate.

In another expectancy related study, Hatfield and Landers (1978) explored observer expectancy effects upon appraisal of gross motor performance. In this study, Hatfield and Landers selected three groups of observers to watch children on a stabilometer. One of the groups was told that they were observing "superior" performers, while the second group of observers were told they were watching "inferior" performers. A third group was used as a control

and, therefore, were not given any expectancy information. In fact, all children observed were of equal ability. Each subject was also classified as either mesomorphic or endomorphic by percentage of body fat. Observers scored each individual on the stabilometer by time on balance, and by performance errors. Each subject performed six trials on the stabilometer. After the six trials, observers completed a questionnaire checking how their expectancies were developed, and their confidence in these estimates. For data analysis, three separate 3x2x6 ANOVA's were used. Hatfield and Landers concluded that positive expectancy performers were attributed with less error than negative expectancy performers. They went on to suggest that since these judges had to estimate both errors and time, the observers were so overloaded with information that errors were made in evaluation. Hatfield and Landers concluded that the above finding showed a need to examine athletic evaluation and judging.

In a 1980 study, Rejeski and Lowe examined the role of ability and effort in attributions for sport achievement. In this study, Rejeski and Lowe tested all subjects in quadraceps strength. After all subjects had been tested, the subjects were given bogus information about their performance, and according to this bogus information were grouped. Next, subjects then proceeded to take two bicycle

ergometer tests. At the end of each test, subjects were informed of the number of revolutions completed, and also of their heart rate. However, the heart rate reading was a bogus one, allowing researchers to manipulate the subjects' perceived effort for each activity. During the second ergometer test, subjects were given either a higher or lower work load, without being informed. At the end of the second ergometer test, subjects that increased their performance from test 1 were told that they had scored in the upper 90th percentile for the test. Likewise, subjects that experienced a decrement in performance were told that they had scored in the lower 10th percentile. Subjects then completed an expectancy, affect, and attributional scale. To analyze data, a 2x2x2 (Ability x Effort x Outcome) MANOVA was used on the four dependent variables of ability, effort, task difficulty, and luck. Rejeski and Lowe discovered that subjects attributed their success, or failure, in performance to ability, regardless of their prior ability level. Effort, or lack of effort, was not perceived to contribute to the success, or failure, at the task. Affect, or "feeling" for the activity was most positive when subjects received high effort and ability feedback. Affect was most negative when low ability and effort feedback was given. Expectancy for performance outcome largely contributed to subjects' analysis of task

difficulty.

Rejeski, Darracott, and Hutslar (1979) conducted a descriptive study examining whether the "pygmalion effect" occurred in youth sport programs. Coaches were observed in the field and their interactions with participants were analyzed. Observers recorded interactions by use of the Coaching Behavior Analysis System (CBAS). After the observational period, coaches were asked to rank-order their team members by perceived ability. In this manner the top and bottom three players were selected as high and low expectancy children. In the analysis of data, Hotelling's T, and a one-way Analysis of Co-Variance was used. The researchers found that high expectancy subjects received more specific reinforcement, and more specific technical instruction, than did low expectancy participants. The researchers go on to state that unless students feel that they can achieve a particular level of performance, their performance tends to taper, and the "self-fulfilling prophecy" can occur. Therefore, the key in instruction is to set realistic goals for each child.

Research on Academic Learning Time in Education

Most researchers in education seem to agree that there have been three cycles for examining the relationship between classroom instruction and gain in student achievement. First cycle research, characterized by the work of Barr was based on teacher personality and teacher characteristics that were displayed (Rosenshine, 1979). Second cycle research, beginning in the 1950's, characterized by Flanders, Medley, Mitzel, and others, focused on the systematic counting of specific teacher/student behaviors, and analyzing these characteristics with student achievement gain (Rosenshine, 1979). Third cycle research initiated in the early 1970's, characterized by Berliner, has focused on student attention, content that the student is covering and has mastered, and settings that promote engagement time of the student (Rosenshine, 1979). Rosenshine states that the two major variables under investigation in the third cycle are content covered, and academically engaged minutes. Rosenshine points out that in all studies reviewed, with one exception, a significant relationship was found to exist between content covered and gains in student achievement. Rosenshine goes on to make a key point; that

allocated instructional time is not as important as students' academically engaged minutes per day. In fact, Rosenshine states that:

> A teacher is not obligated to maintain high engagement of students at all times; what is more critical is the total number of academically engaged minutes and the amount covered. (p. 36)

Rosenshine clearly states that unless subject matter is taught in academic areas it is not learned. The key underlying theme is that "direct instruction"; activities that directly contribute to successful instruction in academic areas and to settings that promote successful instruction, are critically important in maximizing student learning and achievement.

An extensive study carried out in the early 1970's, the Beginning Teacher Evaluation Study (B.T.E.S.) (Fisher, et al., 1978), greatly affected research done on teaching and learning in elementary schools. In this study, three key variables were investigated; allocated time, "the time a teacher provides for instruction in a particular content area"; engaged time, "the time a student is attending to instruction in a particular content area"; and, academic learning time, "the time a student is engaged with instructional materials or activities that are at an easy level of difficulty for that student" (Berliner, 1979). The underlying premise of the study was that variability between allocated, engaged, and academic learning time may

be the best known predictor for learning; disregarding initial aptitude. For this study, the key variable used was Academic Learning Time (A.L.T). There was found to be a high correlation between math and reading outcome scores, and A.L.T..

In reviewing the findings of the B.T.E.S. study, Berliner (1979) explains that although A.L.T. does not likely have a direct linear relationship with achievement, it likely has a strong relationship. Berliner also states that the content area a student is working in must be clearly defined, that task engagement, and level of difficulty be judged, and that time be measured. One of the key points Berliner raises is that academic learning time can be measured at any time, not just at the end of an instructional process. This flexibility allows a researcher to study learning as it actually occurs. In fact, Berliner later suggests that academic learning time may be a better method of evaluating student performance than achievement scores, since A.L.T. is unaffected by entrance ability, which can largely influence student performance outcomes (Berliner, 1979).

Academic Learning Time Research in Physical Education

With the potential of the Academic Learning Time model in the Beginning Teacher Evaluation Study being exposed, other disciplines, besides reading and mathematics began to adapt the model. In Physical Education, Daryl Siedentop and his graduate students began to produce and use a variation of the original A.L.T. model. In 1979, such a model was conceived and tested.

In a 1980 doctoral dissertation, Metzler developed an instrument to measure Academic Learning Time in Physical Education (A.L.T. - P.E.). This instrument used an interval recording method, having four categories for behavioral coding. These four categories consisted of; setting, content, learner moves, and level of difficulty. Within each category, the researcher had a choice of descriptions that specifically describe student behavior. Each subject was observed for six seconds, and then the observer had six seconds to record what was seen. To use this instrument, each researcher had to undergo an extensive training period coding from video-tape initially and later prrogressing to live observation of students. To ensure that the data collected was reliable and valid, inter-observer reliability had to be determined. If observers were found to be over 75% agreement for all

coding cateagories, then they were considered to be ready for actual data collection. Within the descriptive study, 92 students were observed in 14 different physical education activities. For the analysis of data, descriptive statistics were used, with mean and percentage A.L.T. being considered. Metzler also examined A.L.T. - P.E.(M); the amount of time subjects were engaged in "motor appropriate" A.L.T. - P.E.. He found that there was a significant "funnelling effect" through the four coding categories, as the analysis of action proceeded from setting through to level of difficulty.

In a related doctoral dissertation, also at the Ohio State University, Birdwell (1980) examined the effects of modification of teacher behavior on the A.L.T. of physical education students. The A.L.T. - P.E. system devised by Siedentop et al. (1979) was used for the purposes of data collection in this study. Three teachers, one from elementary, junior high, and senior high school were selected as participants in the study. Each of these teachers were given instructions to reduce management time levels, negative feedback, and student non-engagement. As Metzler had done previously, Birdwell also examined A.L.T. - P.E.(M). Descriptive statistics were used for data analysis. Birdwell stated that there appeared to be an association between changes in teacher behavior and

increases in A.L.T.. It was concluded that with a decrease in management time, and an increase in corrective feedback, significant increases in both A.L.T. - P.E. and A.L.T. - P.E.(M) may occur.

In another descriptive study, Whaley (1980) used the A.L.T. - P.E. model to examine the effect of daily monitoring and feedback on students. In this study, three students in four classes were examined over seven weeks. His research design used a baseline study, an intervention (feedback for teachers on A.L.T. - P.E. catagories) and a final study. The data was analyzed by a multiple baseline across subjects. Results showed that graphic feedback had no effect on content time, engaged time, or A.L.T. - P.E. of students. It was, however, noted that changes of A.L.T. - P.E. occurred with changes in the class activities, rather than with interventions.

Rate (1981) examined A.L.T. - P.E. and coaching behaviors in interscholastic practices. Rate used the system devised by Siedentop et al. (1979) to record A.L.T. - P.E. in different interscholastic settings. Data was collected on 46 teams in five sports, those being basketball(32), wrestling(6), gymnastics(2), tennis(4), and baseball(2). Data analysis consisted of descriptive statistics, and a one-way ANOVA between the sports. Rate found that 75% of instruction was direct, and that the same

funnelling effect, reported by Metzler occurred. When looking at specific sports, Rate found that A.L.T. - P.E. and A.L.T. - P.E.(M) varied from sport to sport with statistically significant differences being recorded between wrestling - tennis, and wrestling - gymnastics. It was also found that A.L.T. - P.E. (M) made up approximately two thirds of the overall practice time.

In a 1983 monograph, Siedentop analysed the strengths and weaknesses of A.L.T. - P.E.. He states that the basic underlying concept of A.L.T. is that of an advanced method of recording time-on-task. In this article, Siedentop cites McLeish (1981) who states that:

> It is one of the major impressions received in the use of the ALT - PE system that this supplies the missing element, or indeed the major component, for evaluating effective teaching in physical education. Time-on-task, academic learning time, opportunities to learn -- call it what you will, and measure it if you can -- this is the vital component of effective teaching in general. (p. 31)

Siedentop goes on to suggest that the A.L.T. - P.E. instrument could be improved by developing content-specific categories for each P.E. activity, and that A.L.T. - P.E. should more carefully reflect the goals of the learning environment. He also states that another limiting factor of A.L.T. - P.E. research is that it uses an interval recording method, thus is subjected to problems that exist with any interval recording system. However, Siedentop

reiterates the need to quantify, and the use of time allows for such quantification. In turn, this quantification allows for standardization of data collection.

Godbout, Brunelle, and Tousignant (1983), conducted a descriptive study on A.L.T. - P.E. in elementary and secondary P.E. classes. Using the method developed by Siedentop et al. (1979) the researchers observed sixty-one classes (thirty elementary and thirty-one secondary) twice in a two month period, for A.L.T.- P.E.. The data analysis consisted largely of descriptive statistics, with t-tests used to compare elementary and secondary data. They found that the main difference between elementary and secondary classes in physical education tended to be in the amount of general content versus P.E. content activities. In the elementary school setting, more time was spent on waiting, management, and resting, than in the secondary school. In both cases, students were found to experience A.L.T. - P.E. about one third of the time. Finally, the researchers state that they suspect A.L.T. - P.E. data may be influenced by the nature of the activity taught.

Shute, Dodds, Placek, Rife, and Silverman (1982) examined academic learning time in movement education. In this descriptive-analytic study, the researchers examined differences between student gender, skill levels, special need and non-special need students, and overall A.L.T. -

P.E. scores for movement education with one physical education teacher. 147 observations of students were made, and a total of 20 classes observed. To distinguish between high, middle, and low skill groups, the teacher was requested to group the top and bottom 5 students, based on their perception of skill. The remaining, ungrouped students were considered to be middle students. The sample was determined by randomly selecting four students for observation in each class. At the conclusion of the study 46 high, 61 middle, and 40 low skill students were observed. Eleven special needs children were identified, and 15 observations were taken on these children. A.L.T. - P.E. Version I was used as the measurement device (Siedentop et al., 1979). The data analysis for the study consisted of descriptive statistics, with means and percentages used. Results of this study found that students were engaged in A.L.T. - P.E. about 22% of the time. Little difference was noted between gender and also in skill level in terms of overall A.L.T. - P.E. for the groups. The special needs students had less motor response easy time than the non special students.

In a similar study done by Placek, Silverman, Shute, Dodds, and Rife (1982) a descriptive analysis of academic learning time in a traditional elementary physical education setting was conducted. In this study, one male

physical educator was observed teaching a grade one, a grade three, and a grade six physical education class. Skill levels were determined by the same procedures as in their previous study. To determine skill level, the teacher was asked in the first week to indicate the five highest and lowest skilled in each class. During the data collection, children were randomly observed, with 21 observations of highly skilled, 78 of middle skilled, and 24 of low skilled students taken. To distinguish between the instructional units, three categories were assigned; (1) manipulative skills, where students worked with objects in skill practice rather than in game situation; (2) team sports, group games with differentiated player roles; and, (3) movement experiences, where problem solving situations, based on Laban's movement analysis factors were followed. In this study, differences between A.L.T.- P.E. for girls and boys was examined, as was A.L.T. - P.E. for all students. Observers were trained as outlined by the Version I A.L.T. - P.E. manual (Siedentop et al., 1979). Interobserver reliability checks were conducted throughout the study to ensure observer stability. Data analysis was done by use of descriptive statistics with A.L.T. mean scores being converted to percentage figures. The researchers found that students were engaged in A.L.T. - P.E. about 20% of the time. It was noted that the

"funnelling effect" reported by Metzler (1980) occurred in two areas. The researchers found that as time was classified, from allocated time, down to Motor Response Easy time there was a drastic funnelling effect. It was also discovered that a funnelling effect was apparent in the different skill levels of students. High skilled students recorded more A.L.T. - P.E. than did middle skilled. In turn, these middle skilled students recorded more A.L.T. - P.E. than low skilled students. These figures would seem to support Pieron's (1982) assertion that the performance gap between high and low skilled students may widen due to high skilled students higher A.L.T. - P.E. time. It must also be noted that, in this study, inferential statistics were not used, so it is not possible to tell if the differences between high, middle, and low groups were significant. The researchers reported that there was little difference between boys and girls in total A.L.T. - P.E. time, with boys recording only slightly higher A.L.T.. It was found that movement experiences provided far more A.L.T. (41%), than did manipulative skills (22%), or team games (5%). The researchers suggest that game and scrimmage situations seemed to limit practice time, thus limiting A.L.T. - P.E..

Another similar descriptive-analytic study conducted by the same authors examined academic learning time for

student subgroups and instructional activity units in elementary schools (Silverman et al., 1984). In this study two teaching styles were examined, with one teacher using a movement education approach, while the second used a games and sports approach. The subgroups for activities were; manipulative skills, movement skills; and team sports. The subgroup selection procedure for high, middle, and low groups was the same as in previous studies, as was the procedure for selection of special needs students. As in previous studies, observers were trained to observe and record using the A.L.T. instrument (Siedentop et al., 1979). The data analysis used for this study consisted of a 2x2 (situation x sex) MANOVA, and a second 2x3 (situation x skill level) MANOVA, with the dependent variables being the three categories of the A.L.T.-P.E. (Version 1) system (Learner Moves-Engaged, Motor Response, and Motor Response Easy). For the data analysis between special need and non-special need students descriptive statistics were used. It was found that neither student gender, nor skill level accounted for statistically significant differences. Students recorded higher mean A.L.T. - P.E. time in the movement education classes and manipulative skills classes than did students involved in team sports classes. As was reported in the other study, students in the special needs category accumulated much less motor-response easy time

than did non special needs students.

Martinek and Karper, in a 1983 descriptive study, examined the influence of teacher expectations on A.L.T. in an elementary physical education class. In this study, Martinek and Karper had a teacher select a high and low expectancy student, based on the their perception of performance. These two students were observed by researchers over a six week period, using the A.L.T. interval recording instrument. Descriptive statistics were used for the data analysis. The researchers found that the high expectancy student had much higher A.L.T. then the low expectancy student. It was also found that the low expectancy child showed far more motor inappropriate responses than the high expectancy student. The teacher provided far more technical instruction to the high expectancy student than the low expectancy student. Finally, the researchers found that the high expectancy student was found to be engaged in more non-motor activities (technical instruction, routines, etc.) than the low expectancy student. Thus, Martinek and Karper surmised that expectancy effects may be related to the differences in A.L.T. found.

An example of A.L.T. - P.E. research moving out of the formal teaching setting was Wuest, Mancini, van der Mars, and Terrillion's (1984) study examining the A.L.T. - P.E.

of high, average, and low skilled female intercollegiate volleyball players. In this descriptive-analytic study, 18 volleyball practice sessions were video-taped throughout a season of play. At the end of the season, the coach of this team rated players on a continuum from high to low ability. From this continuum, the researchers selected one high, middle, and low ability student. The videotapes were then coded by observers using the A.L.T. - P.E. Version II instrument. Descriptive statistics were used to analyze the data collected. It was found that low and average skilled players had fewer opportunities to participate than did highly skilled players. However, differences, with respect to non-motor activities were minimal.

In a major revision of the A.L.T. - P.E. instrument, Siedentop, Tousignant, and Parker (1982) developed a streamlined version of the original instrument. Instead of having four coding categories, Version II used only two coding categories, the Context Level, and Learner Involvement Level. Within the context category, the researcher has to decide whether the individual is in either the General Content, Subject Matter Knowledge, or Subject Matter Motor subcategory. Once this has been determined on the coding sheet, the researcher has to analyze whether the subject is in either the Not Motor Engaged, or Motor Engaged categories of learner

involvement. It has been felt by researchers that Version II is more sensitive to student behaviors than Version I, and is easier to use (Rife, Shute, and Dodds, 1985). The training procedures and inter-observer reliability procedures remain the same as in Version I.

Rife, Shute, and Dodds (1985) contrasted A.L.T. Versions I and II. In this descriptive study, two university classes, in volleyball and badminton, were videotaped, over a three week period. The videotapes began when the class was called to order and ended when the students were dismissed. The videotapes were then coded by observers trained in both A.L.T. version I and II. For both versions, the same students were observed on videotape to control for differences by individuals. The data analysis for the study consisted of percentages calculated from mean A.L.T. scores. The researchers found that the two versions of A.L.T. yielded, essentially, similar results. Version I allowed the researcher to gather some additional information about the teachers' instructional moves, while version II's combining of learner moves and difficulty, through the motor appropriate category, streamlined data collection. The researchers concluded that both instruments yielded essentially the same kind of information. Since both instruments yielded similar data, it was possible to compare research done on A.L.T. by

version I and II.

In a 1986 descriptive-analytic study, Placek and Randall compared A.L.T. - P.E. in specialist and nonspecialist classes. 20 teachers' (7 specialists and 13 nonspecialists) classes were examined. For this study, a specialist was classified as having at least a bachelor's degree in physical education. Teachers were told not to deviate from their normal instructional practices within the period. Each of the teachers were observed either two or three times. Students were selected for observation by random selection, and observed 10 consecutive times (2 minutes). No attempt was made to control grade level, and classes were observed from kindergarten to grade 6. As in other studies, observers were initially trained for use of the A.L.T. recording instrument, and reliability checks conducted throughout the study. The data analysis consisted of descriptive statistics to contrast categories within the specialist and nonspecialist classes. A t-test was used to contrast mean academic learning time between specialist and nonspecialist classes. It was found that nonspecialist classes recorded higher A.L.T. than the specialist classes. However, when the subject matter motor categories were examined, it was found that students in specialists' classes spent more time in skill practice than in nonspecialists'. The researchers noted that students

usually receive far more feedback in skill practice than in the game setting. In fact, when skill practice and scrimmage time was combined, it was found that specialist teachers' classes had a far greater amount of time devoted to these type of tasks, as opposed to students in nonspecialist teachers' classes. When the specialist and nonspecialist teachers' mean A.L.T. was compared, no significant difference was found. Placek and Randall concluded that there was no difference in academic learning time between classes taught by specialist physical education teachers, and those taught by nonspecialists.

In examining the literature in both teacher expectations and academic learning time in physical education, there appears to be significant questions to be explored. The expectancy literature supports the premise that a "self-fulfilling prophecy" is in existence in some physical education classes, yet the impact of such a prophecy is still debated. At the same time, the Academic Learning Time instrument appears to be a valid way to record student behavior in a quantitative fashion. This instrument is a valuable addition to research in physical education because it provides some measurable data on both students and teachers.

By using the A.L.T. instrument, it is possible to

examine if there are differences in A.L.T. between high, middle, and low expectancy students in physical education. Although a previous study has been conducted in this area by Martinek and Karper (1983), further research is definitely needed to substantiate or refute previous findings. In Martinek and Karper's study two students (a low and high expectancy student) were observed over a six week period in physical education. Since only two students were observed, a potential weakness existed in Martinek and Karper's study. In my study, 36 students, in six different schools will be observed for A.L.T. - P.E. It will also be possible to place controls on teacher gender (male), grade (six), activity (basketball), and lesson structure. In previous A.L.T. - P.E. studies, these controls have not been used. By using such controls, differences not found in previous research, in both teacher expectations, and in Academic Learning Time in Physical Education may be revealed. It will also be possible to examine the relationships of teacher training and student gender to Academic Learning Time in Physical Education in this study.

Chapter 3

Methodology

In the initial part of this chapter, the population and sample are defined, with sampling procedures outlined. Next, procedures for gaining access to the district, and selection of subjects for observation are presented. The instruments used in this study are then explained in detail. Finally, the sources and quality of measurement are identified in readiness for data analysis.

Population to Which Conclusions Will Be Generalized

The population to which conclusions will be inferred are grade six students taking Physical Education in British Columbia elementary schools. In this study, all students were instructed by male teachers in the regular elementary school program, and in a whole grade class. The students' ages ranged from 11 to 13 years.

Sampling Techniques

The sample was determined by selecting six schools from a British Columbia School District. The schools selected had to have one whole grade six class for measurement, and have co-educational physical education classes. To select teachers and classes for observation in the study, a list of all male grade six teachers in the School District was compiled. All teachers instructing split-classes were eliminated for consideration in the study. Furthermore, the teachers had to be the predominant instructor of the class. The final subgrouping consisted of listing teachers, according to training in physical education. From the list submitted, only two teachers qualified as being physical education majors, and their classes were selected for observation. Two other teachers had taken advanced methodology courses in physical education, and were considered to have obtained a minor in physical education at university. These two teachers' classes were also selected for observation. Finally, two classes, taught by teachers who had no specific training in physical education were selected for participation in the study. Five teachers and classes were found suitable for this category. From this group of five, two teachers' classes were selected at random, for observation. These

two teachers were considered to be "generalist" physical education instructors.

Procedures

Gaining Permission to Perform Study

Due to the researcher's affiliation with a school district , it was decided that all testing would be done there. By selecting one school district for observation, bias, due to differences in curriculum emphasis, was minimized.

To gain permission in using district schools, the Assistant Superintendent was approached, and informed fully about the aims and procedures of the study. Permission was granted for the researcher to contact individual schools. At the same time, the University of British Columbia Ethics Committee gave consent for the research to be conducted. Before contacting each teacher about participation in the study, principals of the schools involved were contacted and permission granted to use the school, students, and teacher in the study. In November 1986, each teacher was contacted, in person, and asked for their cooperation and participation in the study. At this point, each teacher was asked to sign a letter of informed consent (Appendix 1). An explanatory letter was given to each teacher,

outlining the requirements of the study, without directly informing them about the purpose of the study (Appendix 2). In this letter, teachers were requested to teach three specific lessons on basketball, each to be observed by the researcher. Basketball was selected as the activity to be observed because, traditionally, in this School District's elementary schools, it is taught to intermediate children in physical education at this particular time of year. Therefore, it was felt observing basketball lessons would create the least amount of disruption to the classes.

Procedures

Selection of Subjects for Observation

After completing the letter of informed consent, teachers were asked to rank-order students in their class, based on their perception of expected level of performance (expectancy) in physical education (Crowe, 1977). The researcher collected these lists and, in turn, passed them over to a neutral third party, who then selected six students for observation in each class. This third person grouped the three highest boys, and from this group selected one subject, at random, to be observed, with another selected as an alternate in case of absence. The following procedure was also used to select a high

expectancy girl, a low expectancy boy, and a low expectancy girl, in each class. For the middle expectancy subjects, the exact median boy and girl, according to the rank-order sheet, was selected for observation, and an alternate also selected. These selections were recorded by the third party, and then placed alphabetically by class on a list, disguising the expectancy ratings. Along with each selection, the alternate subject was indicated. These new lists, plus a blank class list were then given to the researcher and the original rank-order sheets stored until the conclusion of the testing period. This procedure was repeated for all six classes observed, producing a grand total of 36 students to be observed, 6 in each class. Similar grouping procedures have been used previously by Shute, et al. (1982), Placek et al. (1982), Silverman et al. (1984), and Wuest et al. (1984). The rationale for having an independent third party group students was to minimize observer bias, eliminating the possibility that the observer would know teacher expectancy ratings and be influenced by these. If a subject was absent from the study for either the second, third, or both days, then a replacement subject was substituted. This subject had to be of the same gender as the original subject. In the case of a high expectancy child being absent, the child immediately after the selected child, according to the

rank-order sheet, was observed for A.L.T.. In the case of a low expectancy child being absent, the next highest child, according to the rank-order sheet, was observed. In the case of a middle expectancy child being absent, the third party selected either the child immediately above, or below, the selected child, according to the rank-order measurement as a replacement.

Instruments

The Academic Learning Time - Version II Instrument

The measuring instrument to be used for collection of data was the Academic Learning Time - Version II model, developed by Siedentop, Tousignant, and Parker (1982). This measuring tool was a revision of the initial Academic Learning Time instrument, developed and piloted by Metzler (1980). The initial measuring instrument required four coding decisions to be made in six seconds, whereas in Version II, only two coding decisions were made as various categories were combined to simplify the data collection process. In a study of both Version I and II instruments, Rife, Shute, and Dodds (1985) found that both instruments yielded essentially the same kind of information and, therefore, either could be used. Furthermore, they suggested that information using either instrument could be

compared to the other, in terms of Academic Learning Time assessments.

The researcher, bearing this study in mind, decided to use Version II, largely because of the simplicity and ease of using the instrument.

To use this instrument, the researcher and assistant needed to have a audio-tape recorder and a special tape with six-second tones on the tape. This tape recording would indicate the length of each observation period, and the total recording period. In previous studies, six seconds was found to be an appropriate length to observe a subject and record data (Siedentop et al., 1982). The researcher listened to the tape recorder through head-phones. At first, using standard head-phones, it was extremely difficult to hear the teacher talking, and since one of the coding categories relied on deciding the lesson context level, modifications had to be made. It was found that standard "walkman" type headphones, that allowed the researcher to hear the lesson, and also the tone were satisfactory for use. The tape, with six second periods, and cueing for each period was prepared in the U.B.C. Education Media Laboratory. On this tape, a tone would initiate observation, followed by an audio "observe one", for six seconds. Another tone would follow, with the audio command, "record one". The following pattern was repeated

for subjects two through six (As described in sampling procedures, the six students were observed in alphabetical order with the researcher not knowing the expectancy level for each student). This "cycle" was repeated on the ape six times. After the sixth cycle (six observations and recordings of each subject - 7 minutes and 12 seconds duration), the researcher was given a 72 second rest break. The observation pattern was again repeated for six cycles, followed by another 72 second break, followed by a final six cycle observation period. This provided 18 observational periods for each subject, and the entire observational sequence required 24 minutes. The 72 second break allowed the researcher to refocus, and provide an opportunity to rest after intense concentration for 7 minutes and 12 seconds. The period of 24 minutes total observation was determined by the researcher. In the observed classes, 5 of 6 had 30 minute Physical Education classes. Since a small amount of time had to be allocated to initial routines (i.e., changing) that the teacher had little control over in terms of the lesson, it was felt that the observations would begin when the teacher clearly initiated the lesson. In the lessons observed, the teacher always gave children a cue to begin the lessons. Since some time had to be allocated for start-up routines, it was felt by the researcher that 24 minutes was the maximum

possible observation time. This proved to be a very wise decision, since it was found that in the 30 minute lessons, about 25-26 minutes were spent with the actual lessons.

The actual Version II measuring instrument consisted of six double-boxed rows (Figure 4). The top box indicated the Lesson Context Level("C") and the lower indicated the Learner Involvement Level ("LI"). In each 12 second period, the researcher had to observe the student for six seconds, and then record the specific Lesson Context Level, and Learner Involvement Level for the student during this period.

The Lesson Context Level refers to the class as a whole, and describes the context in which student behavior is occurring (Siedentop et al., 1982). Within Learner Context Level there are three subcategories, General Content, which refers to time spent where students are not directly engaged in physical education content; Subject Matter Knowledge, which refers to time spent on delivery of knowledge relating to physical education; and Subject Matter Motor, which refers to time spent where students have the opportunity to become motor engaged.

In the General Content area, there are four major subdivisions, those being Transition ("T"), Management ("M"), Break ("B"), and Warm-up ("WU"). Transition refers to time spent to organizational activities pertaining to

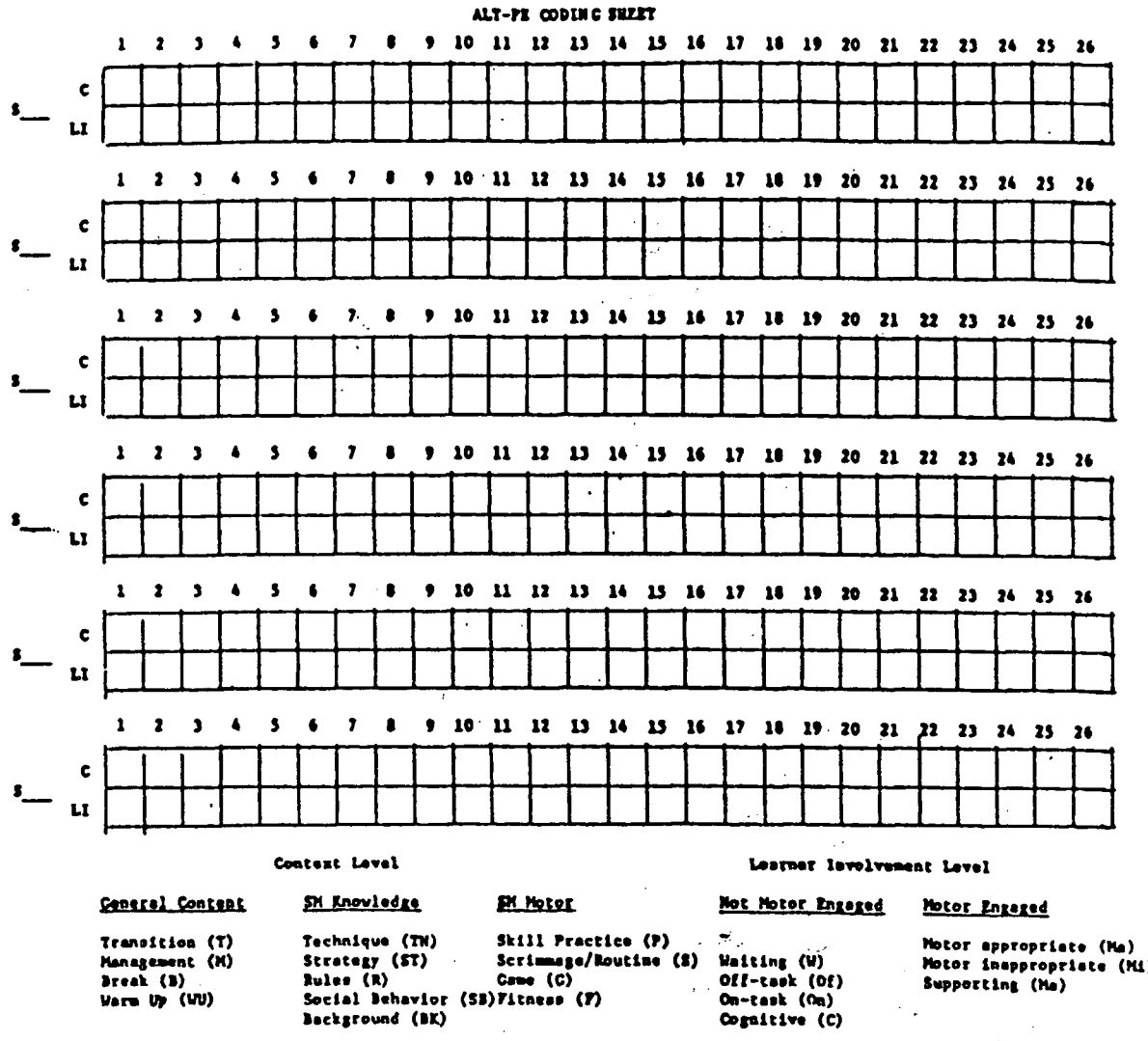

Figure 4. Academic Learning Time Version II Measuring Instrument.

the lesson. Management refers to time spent on activities that are totally unrelated to physical education activity. The key difference between these two subdivisions is that management only refers to time spent unrelated to physical education tasks. Break refers to time spent on rest or refreshment. Warm-up refers to time spent on activity designed to prepare the student for later activity, but not to alter the long-term state of the individual (This was a category that was eliminated when researcher established coding conventions).

In the Subject Matter Knowledge area, there are five subdivisions; Technique ("T"), Strategy ("ST"), Rules ("R"), Social Behavior ("SB"), and Background ("BK"). Technique refers to the teacher giving information concerning the physical form of the specific activity. Strategy refers to the teacher giving information on concepts performed in physical activity. Rules refers to time spent discussing the regulations of the activity/sport. Social Behavior refers to time spent discussing appropriate behavior in context with the activity. The last subdivision, Background, refers to giving information about the derivation, or history of the activity.

For the Subject Matter Motor area, four subdivisions were used; Skill Practice ("P"), Scrimmage/Routine ("S"),

Game ("G"), and Fitness ("F"). Skill Practice refers to practicing skills appropriate to the lesson. Scrimmage/Routine refers to refinement of skills in a controlled setting. Game refers to the participation in an activity in a competitive setting, without intervention by the teacher. Fitness refers to activities done specifically to improve the physical well being of an individual.

After the researcher has coded the Context Level of the lesson, the Learner Involvement Level has to be coded. If the Context Level selected was either General Content, or Subject Matter Knowledge, then the researcher may only select from the Not Motor Engaged subcategory. If the Context Level selected was from Subject Matter Motor, then selections for the Learner Involvement Level may be from either the Not Motor Engaged, or Motor Engaged subcategories.

In the Not Motor Engaged subcategory, the subdivisions include Interim ("I"), Waiting ("W"), Off-task ("OF"), and On-task ("ON"). Interim refers to being involved in a non-instructional task (i.e., retrieving balls). In the coding conventions established for this study, interim was eliminated, and scored as on-task. Waiting refers to awaiting a chance to perform the determined task. On-task refers to students that are appropriately engaged in a non

subject matter task. It was found that on-task and waiting could be scored at similar times, and it was decided, through the coding conventions established, that waiting only occurred when the student was physically waiting to participate (i.e., in line). Off-task refers to a student not engaged in an appropriate activity, or engaged in a different activity than an appropriate one.

For the Motor Engaged category three subdivisions were used; Motor Appropriate ("MA"), Motor Inappropriate ("MI"), and Motor Supporting ("MS"). Motor Appropriate was scored when the student was engaged at an appropriate activity, with high success (approximately 80%). When students were scored as "MA", then, and only then, would the student be considered to be engaged in Academic Learning Time. Motor Inappropriate was scored when students were engaged in activity, yet the activity was too difficult, or too easy for the individual. Finally, when scored as Motor Supporting, the student was engaged in activities which directly assisted others in participation in activity. (For more detailed information on all coding categories see Siedentop et al., 1982. Academic Learning Time - Physical Education 1982 Revision, Coding Manual)

Before using the Version II instrument, it was found that specific coding rules (coding conventions) needed to be established by the researcher to further tighten

definitions as well as to assist in the training of a second reliability observer. Ten such rules were established:

1 When the researcher was in doubt between Waiting and On-Task the researcher was to score On-Task.

2 When the subject is standing in a line, seated, or clearly watching and waiting for someone, the researcher was to score Waiting.

3 When the researcher was in doubt between Motor Appropriate and Motor Inappropriate, the researcher should score as Motor Appropriate (Siedentop et al., 1982).

4 Management only occurs when the subject is talking about a non-instructional item.

5 Motor Supporting only occurs when the subject is directly aiding in the instructional practice.

6 Motor Inappropriate only occurs when the subject is doing the correct motor response - but the motor response is of a poor quality. If any other response is given - score Off-task.

7 (a) If the teacher is talking about technique score as Technique.

(b) If the teacher is talking about the strategies of the game/skill score as Strategy.

(c) If the teacher is talking about rules score

as Rules.

8 Warm-up will be excluded, since virtually all warm-up activities can be scored as Fitness activities.

9 When the researcher is in doubt, scoring between the subcategories of General Content and Subject Matter Knowledge, score as in the appropriate subdivision of Subject Matter Knowledge.

10 The Interim category is eliminated and all episodes in this category are scored as On-Task.

To minimize subject bias, all students wore laminated number cards on their front and back. Each card was a six by eight inch white rectangle. Within each white rectangle one inch diameter numbers were mounted, and then laminated. Safety pins were purchased and used to fasten the numbers in place. Teachers handed out and collected the numbers for the duration of the study. Students were asked if they found the numbers uncomfortable and indicated they were not. The numbers were assigned by alphabetical order in the class. Without these numbers, it would have been extremely difficult to observe students accurately. As mentioned in the sampling techniques, six students were selected for observation, based on expectancy ratings. A third party determined the students to be observed, and gave the name and number of the students to be observed to

the researcher (along with alternates for each). The researcher observed the six students systematically, from lowest number to highest number (One cycle). This cycle was repeated 18 times in a 24 minute period, thus providing the necessary data for the observational period. Each class was observed three separate times, and the data was totalled from these observations. The researcher attempted to watch three concurrent physical education lessons, although in some cases this was not possible. In total, 18 lessons were observed, three each in six different classes.

Instruments

Training and Reliability of Observers

Initial training for the researcher consisted of reading and completing several written training documents provided with the Ohio State A.L.T. - P.E. Version II training manual (Siedentop et al., 1982). After completing this process, the researcher observed physical education lessons to become familiar with the instrument. This procedure was accomplished by observing lessons in the cooperating School District's elementary schools. The schools used for training and video-taping purposes were not schools in the in the actual study sample. Following this, five physical education lessons were video-taped,

keying on specific students in the class. To allow for easy identification on video-tape, students to be observed wore pinnies with numbers. Although this may have altered actions of the students, it was felt that biased behavior on tape was not a concern, since the researcher and fellow observers would use these tapes for training purposes only. Three of the video-tapes examined four students in a cyclical fashion, as would be repeated in the actual data collection. The two other video-tapes examined six students in cyclical fashion, replicating the intended observational pattern and procedure. Each student was observed for a six second interval, and six seconds were allowed for recording.

Video-tapes were then coded, using the Academic Learning Time - Physical Education Version II instrument (Siedentop et al., 1982). In the initial phase of researcher training, only the video-tapes with four students were used. By using video-tapes with only four subjects, identification of subjects on a repeated basis was easier. After coding these video-tapes, the researcher recoded the identical tapes three days later. Reliability of codings was determined by using the scored interval difference method (Hawkins and Dotson, 1975).

$$\frac{\text{Agreements}}{\text{Agreements and Disagreements}} \times 100\% = \text{Percentage Agreement}$$

Reliability scores for the initial period ranged from 65-81%. This procedure was continued until the researcher scored over 90% with all video-tapes. After 90% reliability had been accomplished, one video-tape with six subjects was observed and recorded. As had been done previously, this tape was recoded three days later and reliability was found to be 94%. At this point, the researcher made a list of specific coding rules to be followed (see Data Collection Procedures) in order to aid with reliability training of a second observer.

At this point a second observer was recruited as a research assistant to provide a control for variability of the initial observer. The assistant was given written copies of training documents to read and complete, in order to provide familiarization with the instrument. Initially, the assistant and the researcher observed, discussed, and coded the tapes focusing on four subjects. At this point, coding rules were reviewed to provide consistency in the recording of data. These three tapes were then recorded without discussion, and reliability scores ranged from 74-85%. In previous studies, acceptible reliability coefficients were determined to be between 75-80% (Siedentop et al., 1982; Godbout et al., 1983; Silverman et

al., 1984). The researcher and assistant continued to record the three tapes until over 90% agreement had been reached. Next, a video-tape with six subjects was introduced, and coded, with 88% reliability. Finally, the last video-tape (six subjects) was recorded, and reliability determined at 94%.

At this point, the researcher and assistant observed and coded two classes in a local school. In this class, all students wore laminated numbers pinned to their front and back. These numbers were assigned in random order to students. The researcher and assistant then randomly selected and observed six students, exactly replicating conditions to be followed in the actual study. At the conclusion of the lessons, reliability coefficients were determined. Percentage agreements for the two lessons were found to be 83 and 87%. It was felt that sufficient reliability had been reached to initiate the study.

To assure reliability of observation throughout the study, the assistant was flown up to the research site to code the 14th observed lesson of the actual study with the researcher. The percentage agreement for this lesson was 92%. This check provided assurances that the data collection was reliable.

Instruments

With the Academic Learning Time instrument providing information to support or refute the main hypotheses of the study, it was then possible to explore several other questions in this study. It was possible to examine the relationship of student achieved term grades, and teachers' perceptions of student effort, with Academic Learning Time. It was also possible to examine how teachers develop expectations for students in physical education. Finally, a journal was kept to record information that may not have been reflected specifically by other instruments.

Instruments

Student Achieved Grades in Physical Education

A third instrument was the collection of first and second term grades in Physical Education for all students. It was realized that these grades would reflect achievement over an entire term of work, and not of the specific lessons observed by the researcher. None the less, it was felt that there may be a relationship between A.L.T. and grades.

Instruments

Effort Rating Instrument

To determine teachers' perceptions of effort, the researcher requested that teachers, at the completion of the study, rate each student in the class, based on the their perception of student effort. This rating was based solely on perceived effort over the three basketball lessons observed. The rank ordering was on a 1 (lowest) to 5 (highest) scale (Martinek and Karper, 1983; Martinek, 1984). Although teachers' scale values would vary from class to class, it was still felt that important new information may be indicated about the relationship between A.L.T. and teachers' perceptions of student effort.

Instruments

Demographic Information Instrument

To gain some background information on the teachers involved in the study, a demographic information instrument was constructed (Appendix 5). On this instrument, information regarding the age of the instructor, years teaching, years teaching at elementary school, years teaching Physical Education, years at present school, years

at present grade level, and number of students in classes observed was collected.

Instruments

Journal

To ensure that the researcher recorded incidents that were not been reflected by the Academic Learning Time instrument, a journal of the training and observational period was kept. In this journal, the researcher recorded all information that was felt to be pertinent to the study. In the data analysis section, the observations from this journal are presented.

Type and Quality of Measurement

The data accumulated through the Academic Learning Time - Physical Education instrument was a ratio scale. Academic learning time can be expressed as a fraction, percent, or a whole number. Each student was be observed 18 times in a 24 minute period. With six students observed per class, observations per class totalled 108.

For the determination of expectancy rankings, the teacher was asked to rank-order students, providing ordinal data.

For the outcome scores, grades on students were submitted. Grades are a form of ordinal data.

To determine effort in lessons observed the teacher was asked to rank-order students from 1-5, with 1 being lowest and 5 being highest. Again this information provided ordinal data.

To determine how teachers formed their expectations for this study, teachers were asked to state, and rank, reasons for the development of expectation. This information provided nominal data.

To determine training and background for teachers in the study, teachers were requested to complete a demographic form (Appendix E).

A final source of information was a journal kept by the researcher over the instrument training and data analysis period. This data was based on observations by the researcher.

Data Analysis

In this study, several different data analyses were used. Descriptive statistics formed the initial base for analysis. Means and percentages for each category, sub-category, and sub-division on the A.L.T. - P.E. instrument were analysed. A complete raw data listing for information gathered through the A.L.T. - P.E. instrument can be found in Appendix 6.

Following descriptive analysis of data gathered by the Academic Learning Time instrument, inferential statistics were used to test hypotheses generated initially in the study. To examine measured Academic Learning Time, and it's relationship to gender, expectation, and specialty, three 2 by 3 factorial design Analyses of Variance (ANOVA) were used. At the same time, three more 2 by 3 ANOVA's, using motor engaged time as the dependent variable, were performed on expectancy, specialty, and gender. To examine off-task time, two one-way Analyses of Variance were computed, with one using expectancy as the independent variable, while teacher specialty was used as the independent variable in the other.

A third analysis used in the study was that of regression. Although regression is normally used with interval or ratio data, it was found to be appropriate for

this study. It is possible to use ordinal data with regression, as long as the dependent variable is either interval or ratio in nature (Pedhazur, 1982; Marascuilo & Levin, 1983). In this case, Academic Learning Time, which provides ratio data, was chosen as the dependent variable, to which other variables would be regressed. Another key consideration was the number of categories used with each ordinal item. Since a 1 to 5 category scale was the largest scale used, a near normal distribution occurred with the ordinal data. Student expectancy levels, 1st term grades, 2nd term grades, and effort over the observed lessons, (all ordinal data), were individually regressed with Academic Learning Time.

A fourth method of data analysis, examined the basis for development of expectancy ratings by teachers. Teachers were asked for criteria on which they developed expectations of performance in class. This nominal data was identified and classified by content analysis. By using content analysis, data was analyzed by the specific wording of the teachers' response. From these responses six basic categories emerged from the specific wording. The categories were, <u>ability</u>, defined by teachers as the overall athletic ability of the individual; <u>team sports</u>, defined as students' ability in peforming traditional team sports such as basketball or volleyball; <u>fitness</u>, defined

as the perceived or measured fitness level of the child; effort, defined as the perceived effort that a teacher felt that a student exhibited in physical education; maturity, defined as a student's ability to work independently; and finally, skill level, defined as the ability of the student to perform specific sport related skills. By using modes, it was possible to determine factors that affected the development of expectation.

A fifth form of data analysis was done by examining the demographic information sheets that were completed by all teachers at the conclusion of the study. Teachers were asked to contribute information about their teaching experience, age, and number of student in their present class. It was hoped that this information would be of aid to understanding relationships explored in the study.

A sixth, and final form of data collection, was in the form of a journal. In this journal, the researcher recorded experiences about training procedures, and of the actual data collection period. It was intended that this journal would serve to record any event that may not have been reflected by the other instruments but would be of value in the study. An analysis of recollections from this journal will be presented.

Chapter 4

Findings

In this chapter, the statistical analysis of data will be presented, and briefly discussed. A more detailed discussion of the findings will be conducted in Chapter 5, where results from this study will be compared to previous research.

This chapter begins with the presentation of information from the A.L.T. - P.E. instrument. Four tables are displayed indicating totals and percentages for each category, subcategory, and subdivision. A fifth table displays means, deviation scores, and standard deviations for all subcategories, based on the three teacher training categories. Tables 1 and 2 give a general summary of information gathered from the A.L.T. - P.E. instrument. Tables 3 and 4 summarize A.L.T. - P.E. information according to professional training. In tables 1 and 2, percentage figures are generated by dividing the total for the subdivision into the total number of observations in each category (1944). In tables 2 and 3, summary and percentages are exactly the same as in tables 1 and 2. However, the percentages for the specialty levels are calculated by summing the 2 teachers scores for each

subdivision, and dividing this sum by the total number of observations taken on the two teachers in each category (648). In table 5, means were computed by adding all teachers raw scores for each subcategory, and dividing by three. To compute deviation, the two teachers' scores for each training area were added together, and finally subtracted from the mean, giving the deviation. Using the deviation score, the variance and standard deviation for each subcategory were computed.

Table 1

Academic Learning Time - Physical Education: General Summary Table

	Context Level							
	Majors		Minors		General			
	1	2	3	4	5	6	Total	%
General Content								
Transition	70	77	73	73	56	73	422	(21.7)
Management	0	0	0	5	1	1	7	(0.3)
Break	0	0	0	2	0	2	4	(0.2)
Subtotal: General Content							433	(22.2)
Subject Matter Knowledge								
Technique	62	59	85	145	116	36	503	(25.9)
Strategy	-	-	-	-	-	-	-	-
Rules	-	-	-	-	-	-	-	-
S. Behavior	-	-	-	-	-	-	-	-
Background	-	-	-	-	-	-	-	-
Subtotal: Subject Matter Knowledge							503	(25.9)
Subject Matter Motor								
Practice	184	121	149	86	121	197	858	(44.9)
Scrimmage	-	-	-	-	22	-	22	(1.1)
Game	6	34	-	-	-	-	40	(2.1)
Fitness	2	33	17	13	8	15	88	(4.5)
Subtotal: Subject Matter Motor							1008	(51.9)
Overall Total							1944	

Table 2

Academic Learning Time - Physical Education: General

Summary Table

	Learner Involvement Level							
	Majors		Minors		General			
	1	2	3	4	5	6	Total	%
Not Motor Engaged Time								
Waiting	34	30	37	17	40	35	193	(9.9)
Off Task	15	15	19	22	12	30	113	(5.8)
On Task	87	81	77	73	75	105	498	(25.6)
Cognitive	56	56	70	129	99	31	441	(22.7)
Subtotal: Not Motor Engaged Time							1245	(64.0)
Motor Engaged								
Inappro.	4	9	8	1	4	4	30	(1.5)
Supporting	9	-	-	1	-	-	10	(0.5)
Appropriate	119	133	113	81	94	119	659	(33.9)
Subtotal: Motor Engaged Time							699	(36.0)
Overall Total							1944	

Table 3

Academic Learning Time - Physical Education: Summary by Specialty Table

	Context Level							
	Majors		Minors		General			
	Ttl	%	Ttl	%	Ttl	%	Sum	%
General Content								
Transition	147	(22.7)	146	(22.5)	129	(19.9)	422	(21.7)
Management	0	0	5	(0.8)	2	(0.3)	7	(0.3)
Break	0	0	2	(0.3)	2	(0.3)	4	(0.2)
Subtotal: General Content							433	(22.2)
Subject Matter Knowledge								
Technique	121	(18.7)	230	(35.5)	152	(23.5)	503	(25.9)
Strategy	-	-	-	-	-	-	-	-
Rules	-	-	-	-	-	-	-	-
S. Behavior	-	-	-	-	-	-	-	-
Background	-	-	-	-	-	-	-	-
Subtotal: Subject Matter Knowledge							503	(25.9)
Subject Matter Motor								
Practice	305	(47.1)	235	(36.3)	318	(49.1)	858	(44.9)
Scrimmage	-	-	-	-	22	(3.4)	22	(1.1)
Game	40	(6.2)	-	-	-	-	40	(2.1)
Fitness	35	(5.4)	30	(4.6)	23	(3.5)	88	(4.5)
Subtotal: Subject Matter Motor							1008	(51.9)
Overall Total							1944	

Table 4

Academic Learning Time - Physical Education: Summary by Specialty Table

	Learner Involvement Level							
	Majors		Minors		General			
	Ttl	%	Ttl	%	Ttl	%	Sum	%
Not Motor Engaged Time								
Waiting	64	(9.9)	54	(8.3)	75	(11.6)	193	(9.9)
Off Task	30	(4.6)	41	(6.3)	42	(6.5)	113	(5.8)
On Task	168	(25.9)	150	(23.1)	180	(27.8)	498	(25.6)
Cognitive	112	(17.3)	199	(30.7)	130	(20.0)	441	(22.7)
Subtotal: Not Motor Engaged Time							1245	(64.0)
Motor Engaged								
Inappro.	13	(2.0)	9	(1.4)	8	(1.2)	30	(1.5)
Supporting	9	(1.4)	1	(0.2)	-	-	10	(0.5)
Appropriate	252	(38.8)	194	(30.0)	213	(32.9)	659	(33.9)
Subtotal: Motor Engaged Time							699	(36.0)
Overall Total							1499	

Table 5

Academic Learning Time - Physical Education: Summary of Raw Scores (R), Means (X), Deviations (D), and Standard Deviations (s) for Subcategory and Teacher Specialty

	Majors		Minors		General			
	R	D	R	D	R	D	X	s
Context Level								
General Content	147	6.34	153	12.34	133	7.66	140.66	9.15
Subject Matter Knowledge	121	46.67	230	62.33	152	15.67	167.67	45.85
Subject Matter Motor	380	44.00	265	71.00	363	27.00	336.00	50.68
Learner Involvement Level								
Not Motor Engaged	374	41.00	444	29.00	427	12.00	415.00	29.81
Motor Engaged	274	41.00	444	29.00	427	12.00	415.00	29.81

Descriptive Analysis of Data from the Academic Learning Time Instrument

In this section, descriptive information gathered through the A.L.T. - P.E. instrument will be analyzed. Total time periods (Total) and percentages (%) of time each teacher spent in the subcategory (i.e., % in GC), and the mean percentage of time spent in the individual category by all teachers (i.e., %-CL) are displayed with all tables. A further listing of raw data can be found in Appendix F.

Table 6

Context Level (CL) of Lessons Observed - General Content Time (GC)

	Majors		Minors		Generalists			
Teacher	1	2	3	4	5	6	Total	%-CL
Transition	70	77	73	73	56	73	422	(21.7)
Management	0	0	0	5	1	1	7	(0.3)
Break	0	0	0	2	0	2	4	(0.2)
Total	70	77	73	80	57	76	433	
% in GC	21.6	23.8	22.5	24.7	17.6	23.5		(22.2)

There was little difference between teachers with

regard to general content time. This is reflected by the narrow range of percentages in general content time (17.6% - 24.7%). The vast majority of episodes recorded in this category reflect transition. About 97.4% of the total time recorded in this subcategory was spent in Transition. Only 0.3% of the overall Context Level time was coded as Managerial time, according to the Version II definition.

Table 7

Context Level (CL) of Lessons - Subject Matter Knowledge Time (SMK)

	Majors		Minors		Generalists			
Teacher	1	2	3	4	5	6	Total	%-CL
Technique	62	59	85	145	116	36	503	(25.9)
% in SMK	19.1	18.2	26.3	44.7	35.8	11.1		(25.9)

This table indicates a wide range (11.1% - 44.7%) in the amount of time spent in instruction. Interestingly, no time was recorded in the other four Subject Matter Knowledge subdivisions (Strategy, Rules, Social Behavior, and Background). It should be noted that the two P.E. majors' classes scores were very similar (59 - 62), and

that great fluctuations occurred with both the P.E. minors' (85 - 145), and the generalists' classes (36 - 116). Non-major teachers, in three of the four classes observed, spent more time in instruction than did P.E. majors'.

Table 8

Context Level (CL) of Lessons - Subject Matter Motor Time (SMM)

	Majors		Minors		Generalists			
Teacher	1	2	3	4	5	6	Total	%-CL
Practice	184	121	149	86	121	197	858	(44.9)
Scrimmage	0	0	0	0	22	0	22	(1.1)
Game	6	34	0	0	0	0	40	(2.1)
Fitness	2	33	17	13	8	15	88	(4.5)
Total	192	188	166	99	151	212	1008	
% in SMM	59.3	58.0	51.2	30.6	46.6	65.4		(51.9)

In examining the percentages for Subject Matter Motor time, it can be seen that there was large variability in scores. However, with closer examination, it can be noticed that five of six scores are within 20% of each other (65.4% - 46.6%). The sixth score is a further 16%

lower (30.6%). It may be suggested that, in view of the other five scores, the sixth score is unusually low, and pulled the mean percentage down. It would certainly appear that this group of educators put a premium on motor-skill participation, with 51.9% mean percentage time being spent in such activities. It is also noteworthy that the majority of Subject Matter Motor time was spent in skill practice. 85.1% of all Subject Matter Motor time was devoted to skill practice. It is also indeed surprising to see the low scores for scrimmage, fitness, and in particular the game subdivision. It would appear that these teachers did not want to use the game situation for instruction, which may be contrary to traditional instructional practices at elementary schools. Another interesting observation at this level was the similarity of scores between the two specialist P.E. teachers' students in overall Subject Matter Motor time (58.0% - 59.3%). As was the case in the Subject Matter Knowledge category (Table 5), the P.E. minors and generalist teachers' classes have far greater variability in their overall Subject Matter Motor time. One final observation about this data is the lack of fitness time observed in these lessons, although a case could be made that if the student is motor engaged, then some fitness benefits accrue.

Table 9

Learner Involvement Level (LI) of Lessons - Not Motor Engaged Time (NMT)

	Majors		Minors		Generalists			
Teacher	1	2	3	4	5	6	Total	%-LI
Waiting	34	30	37	17	40	35	193	(9.9)
Off-Task	15	15	19	22	12	30	113	(5.8)
On-Task	87	81	77	73	75	105	498	(25.6)
Cognitive	56	56	70	129	99	31	441	(22.7)
Total	192	182	203	241	226	201	1245	
% in NMT	59.3	56.2	62.7	74.4	69.8	62.0		(64.0)

In five of the six classes observed, little variation in Waiting time was noted (30 - 40). Only class four showed a substantial variance from the other classes (17). This may be attributed to the class having lower Subject Matter Motor time than the other classes. In this class, students were motor engaged less often than in the other five classes, and because they had less opportunity to practice, there would likely be less associated Waiting time. There was less Off-Task time in the two specialists' classes than in the other classes. Again, it is

interesting to note the similarity of Off-Task time in both specialists' classes (15 episodes). With On-Task time there appears some variation between classes (73 - 105), and it appears that a substantial amount of Learner Involvement time is spent in this area (25.6%). Finally, Cognitive time data showed a substantial amount of variance (31 - 129). It would appear that Subject Matter Knowledge time (Table 7) and Cognitive time are closely related. This would help explain for the high total of Cognitive time recorded in teacher 4's class. Again, the specialist teachers' showed similarity in scores (182 -192). Examining the accumulated means and percentages, it appears that the P.E. majors' had less Not-Motor Engaged time than the P.E. minors', or generalists' teachers classes.

Table 10

Learner Involvement Level (LI) of Lessons - Motor Engaged Time (ME)

	Majors		Minors		Generalists			
Teacher	1	2	3	4	5	6	Total	%-LI
Motor Inapp.	4	9	8	1	4	4	30	(1.5)
Motor Supp.	9	0	0	1	0	0	10	(0.5)
Motor Appro.	119	133	113	81	94	119	659	(33.9)
Total	132	142	121	83	98	123	699	
% in ME	40.7	43.8	37.3	25.6	30.2	38.0		(36.0)

When examining both the Motor Inappropriate and Motor Supporting categories, very few episodes were recorded, and there appears to be little difference between the classes. When the two categories are combined, it appears that the specialist classes had more time in these categories than other classes, but differences were slight. However, in the Motor Appropriate category, there appears to be substantial differences. It is important to note that the Motor Appropriate category represents Academic Learning Time achieved. It can be seen that both specialist classes recorded high Motor Appropriate scores (119 - 133) when compared to the other four scores. For the P.E. minors'

(81 - 113), and generalists' classes (94 - 119), there was substantial variability with A.L.T. achieved. In the entire Motor Engaged category, totals and percentages showed that the two P.E. majors' classes had higher time in this category than the P.E. minors', or generalists' classes. There appeared to be a large percentage difference between the lowest and highest class with regard to motor engaged time (25.6% - 43.8%). A gap this large could have an important impact on achievement in Physical Education.

Inferential Analysis of Data from the Academic Learning Time Instrument

In the following tables, results from the analysis of variance statistical tests are presented. In each table, cell scores are displayed, along with average means for the variables of lesson (L), expectancy (EX), teacher training (T), and gender (G). At the bottom of each table, effects of the variables, and associated probability levels are displayed.

Table 11

Two-Way Analysis of Variance - Mean Academic Learning Time by Expectancy Rating and Lessons

Lessons	Expectancy Rating			
	High	Middle	Low	Average-L
Passing	6.75	6.25	5.17	6.06
Dribbling	8.25	8.00	5.92	7.39
Shooting	5.75	5.00	3.75	4.83
Average EX	6.92	6.42	4.94	6.09

Main effect expectancy	$F(2,33) = 6.62$, $p < .003$	
Main effect lessons	$F(2,33) = 10.99$, $p < .001$	
Interaction effects	$F(4,66) = 0.18$, $p < .946$	(Figure 5)

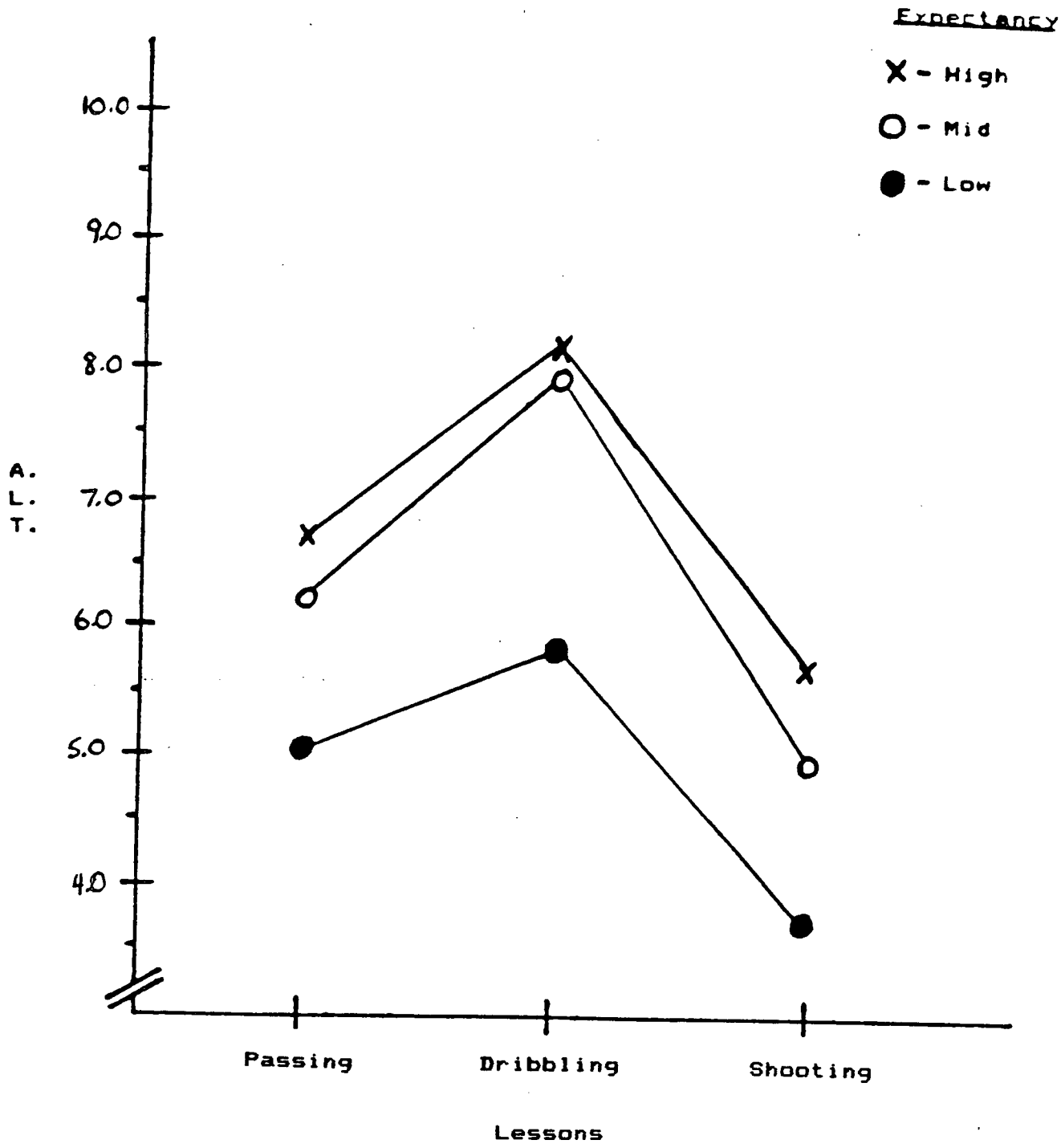

Figure 5. Academic Learning Time contrasted with Expectancy Rating and Lessons.

There is a highly significant F score found between the three mean scores in expectation. As hypothesized, the high expectancy students scored greater A.L.T. than did the middle expectancy students, who, in turn, scored greater A.L.T. than the low students, averaged over the three lessons. There is also a highly significant F score recorded for the lessons factor. The dribbling lesson recorded the greatest amount of A.L.T., followed by the passing lesson, and finally by shooting lesson, averaged over the three expectancy conditions. No significant difference was recorded in the interaction effects for the two independent variables of expectancy and lessons.

Table 12

Two-Way Analysis of Variance - Mean Academic Learning Time by Teacher Training and Lessons

Lessons	Teacher Training			
	Major	Minor	General	Average-L
Passing	6.25	5.33	6.58	6.06
Dribbling	9.41	5.83	6.92	7.38
Shooting	5.25	5.00	4.25	4.83
Average T	6.97	5.39	5.92	6.09

Main effect training $F(2,33) = 3.55$ $p < .040$

Main effect lessons $F(2,33) = 12.68$ $p < .001$

Interaction effects $F(4,66) = 2.74$ $p < .036$

(Figure 6)

A significant F score was found for the main effect of teacher training. There is a significant difference between P.E. majors, P.E. minors, and generalist teachers' A.L.T. means. As hypothesized, the P.E. majors' classes scored greater A.L.T. than the P.E. minors' or generalists' classes. However, it is interesting to note that the generalist P.E. teachers' classes scored greater A.L.T. than P.E. minors' classes. It appears that the generalists

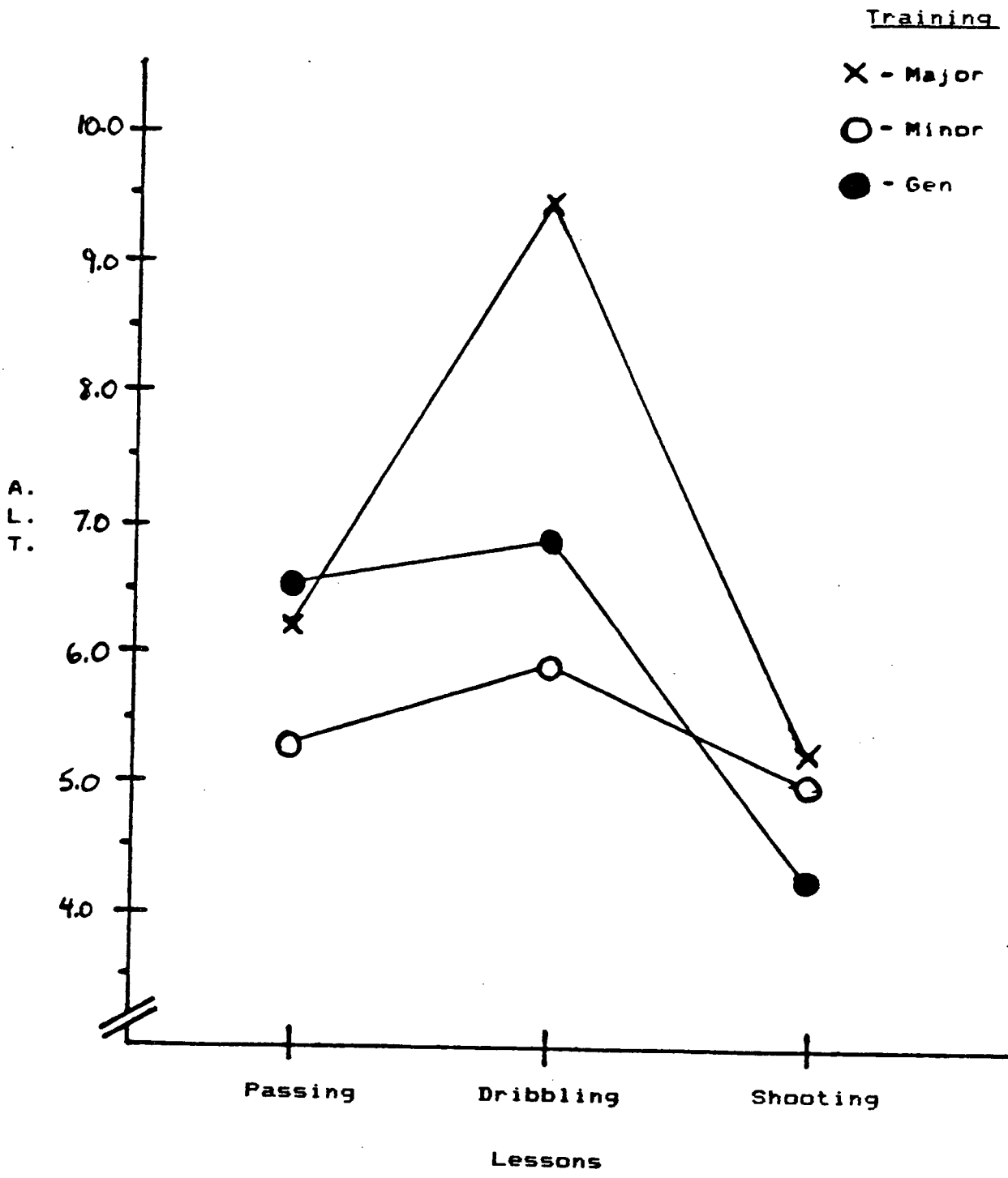

Figure 6. Academic Learning Time contrasted with Teacher Training and Lessons.

spent less time in Subject Matter Knowledge, and Cognitive areas then did the P.E. minors. This, in turn, led to more Subject Matter Motor and Motor Engaged time in the generalist classes, than in the P.E. minors' classes. The lesson effect was very similar to those reported with the teacher expectancy data. Significant interaction effects were also recorded between training and lessons. The nature of change over the three lessons in teacher training categories is significantly different.

Table 13

Two-Way Analysis of Variance - Mean Academic Learning Time by Student Gender and Lessons

Lessons	Gender		
	Male	Female	Average-L
Passing	5.94	6.17	6.06
Dribbling	7.44	7.33	7.39
Shooting	5.00	4.67	4.83
Average G	6.13	6.05	6.09

Main effect gender $F(2,33) = 0.02$, $p < .891$

Main effect lessons $F(2,33) = 11.25$, $p < .001$

Interaction effects $F(4,66) = 0.13$, $p < .874$

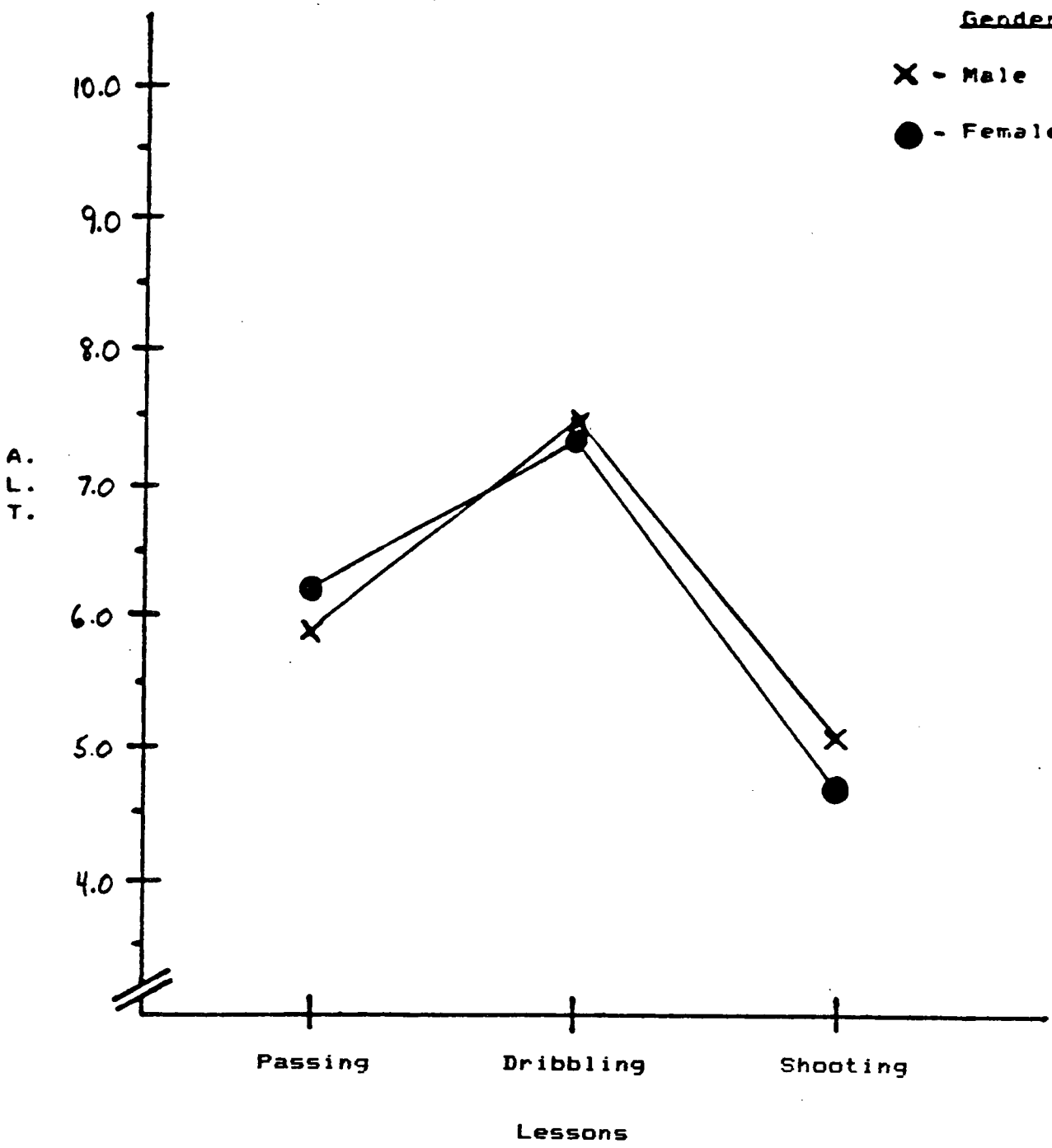

Figure 7. Academic Learning Time contrasted with Gender and Lessons..

(Figure 7)

A significant difference was not found between the mean scores for the two gender categories. A significant lesson effect was noted, and was very similar to those reported earlier. A significant interaction effect was not noted.

To further substantiate findings on the motor engagement of students, three identical analysis of variance tests were done, using Motor Engaged time, rather than A.L.T. as the dependent variable. The four independent variables, gender, expectancy, training, and lesson, were the same as in the A.L.T. ANOVA's.

Table 14

Two-Way Analysis of Variance - Mean Motor Engaged Time by Expectancy and Lessons

Lessons	Expectancy Rating			
	High	Middle	Low	Average-L
Passing	6.83	6.50	5.58	6.30
Dribbling	8.33	8.25	6.83	7.80
Shooting	6.00	5.41	4.50	5.30
Average EX	7.05	6.72	5.64	6.47

Main effect expectancy $F(2,33) = 2.98$, $p < .065$

Main effect lessons $F(2,33) = 9.81$, $p < .001$

Interaction effects $F(4,66) = 0.06$, $p < .994$

(Figure 8)

In examining the main effect of expectancy, no significant F was recorded. This would appear to be contradictory with earlier findings on the relationship between teacher expectancy and A.L.T. (Table 11). However, in more closely examining the data, it can be seen that the expectancy effects F is still high, despite not being statistically significant. Also, in examining the graphs between teacher expectancy and A.L.T. (Figure 5), and

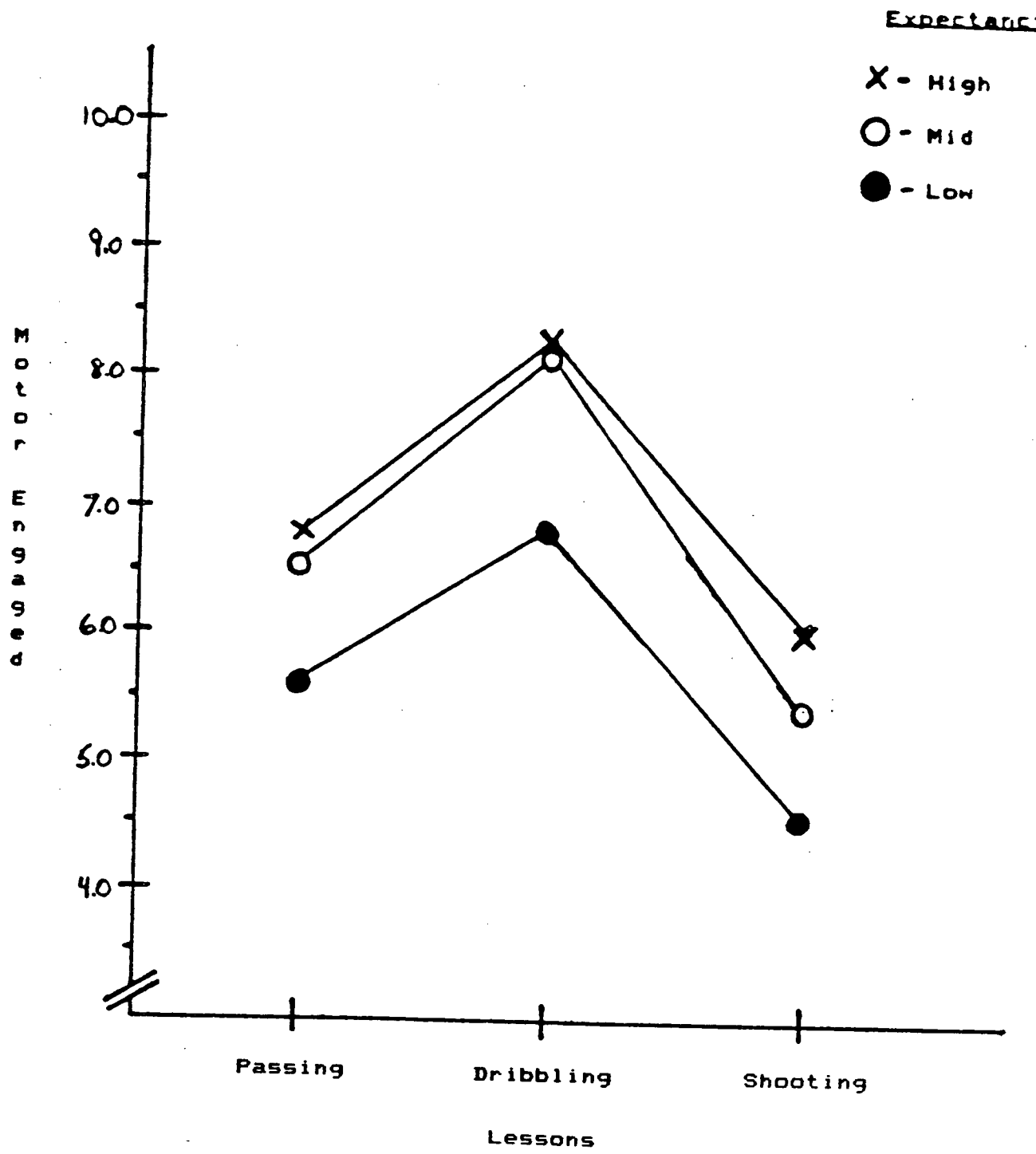

Figure 8. Motor Engaged Time contrasted with Expectancy Rating and Lessons.

teacher expectancy with Motor Engaged time, it can be seen that general trends remained the same. In both cases the high expectancy students outperformed the midddle expectancy students, who in turn, outperformed the low expectancy students. The explanation for the difference between the two results is that the low expectancy students scored more Motor Inappropriate time than did middle and high expectancy students. As a result, the low expectancy students' mean score in Motor Engaged time was considerably higher than the A.L.T. mean score (5.64 M.E. - 4.94 A.L.T.). For comparison, it can be seen that the middle expectancy students' score did not change as substantially (6.72 M.E. - 6.42 A.L.T.), as the lows'. High expectancy students' scores changed even less (7.05 M.E. - 6.92 A.L.T.), than the low or middle expectancy students. Therefore, the three expectancy scores were closer together, and this led to the nonsignificant F. There was a significant difference between the lessons with the dribbling lesson mean being higher than the passing lesson mean, which in turn, was higher than the shooting lesson mean averaged over the three conditions. No significant interaction effects were recorded.

Table 15

Two-Way Analysis of Variance - Mean Motor Engaged Time by Teacher Training and Lessons

Lessons	Teacher Training			
	Major	Minor	General	Average-L
Passing	6.50	5.50	6.91	6.31
Dribbling	10.17	6.25	7.00	7.81
Shooting	6.08	5.25	4.58	5.31
Average T	7.58	5.66	6.16	6.47

Main effects training $F(2,33) = 6.28$, $p < .005$

Main effects lessons $F(2,33) = 11.55$, $p < .001$

Interaction effects $F(4,66) = 2.98$, $p < .025$

(Figure 9)

A significant difference was found in the teacher training main effect. The P.E. majors' classes mean was higher than the generalists' mean, which, in turn, was higher than the P.E. minors' mean, averaged over the three lessons. It can be seen that these results closely parallel those found between teacher training and A.L.T. (Table 12). A significant lesson effect was noted, and was very similar to those reported earlier with the teacher

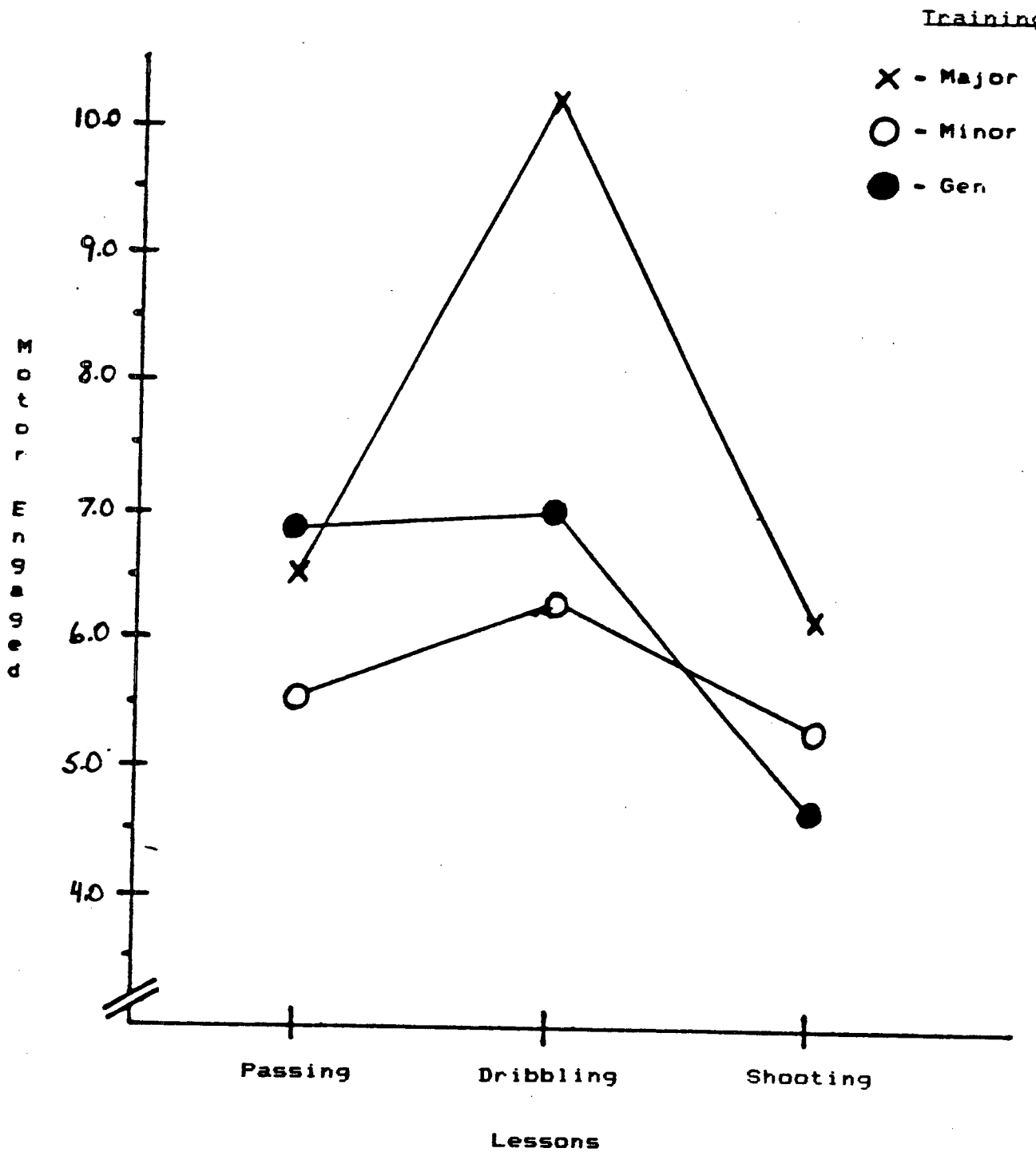

Figure 9. Motor Engaged Time contrasted with Teacher Training and Lessons.

expectancy data. Significant interaction effects were also noted between training and lessons. The nature of change over the 3 lessons for P.E. major, P.E. minor, and generalist teachers' classes is significantly different.

Table 16

Two-Way Analysis of Variance - Mean Motor Engaged Time by Student Gender and Lessons

Lessons	Gender		
	Male	Female	Average-L
Passing	6.00	6.61	6.31
Dribbling	7.67	7.81	7.80
Shooting	5.27	5.33	5.30
Average G	6.31	6.63	6.47

Main effect gender $F(2,33) = 0.36$, $p < .555$

Main effect lessons $F(2,33) = 10.11$, $p < .001$

Interaction effects $F(4,66) = 0.12$, $p < .883$

(Figure 10)

No significant gender effect was recorded. These results closely parallel those found between student gender and A.L.T. (Table 13). A signifigant lesson effect was

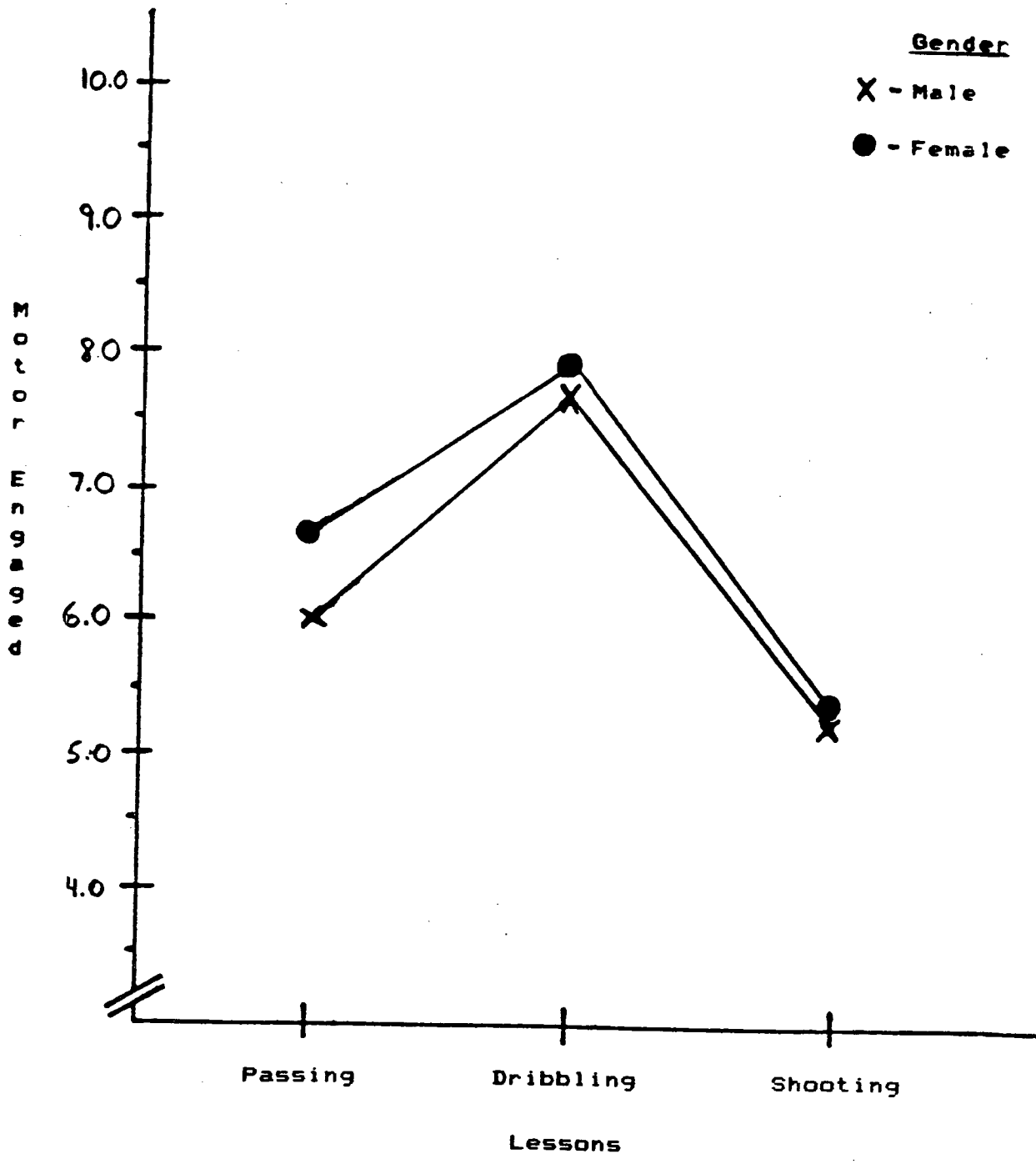

Figure 10. Motor Engaged Time contrasted with Gender and Lessons.

noted. No significant interaction effects were recorded.

Table 17

One-Way Analysis of Variance - Mean Off-Task Time by Expectancy Rating

	Expectancy Rating			
	High	Middle	Low	Average-L
Off-task time	2.75	2.83	4.08	3.22

Main effect expectancy $F(2,33) = 0.96$, $p < .391$

No significant expectancy effect was found for off-task time. None the less, it is interesting to examine the cell means. The high students appeared to have less off-task time than did the middle expectancy students, who, in turn, appeared to have less off-task time than the low expectancy group. It was decided to examine the linear tendency of these means, due to the apparent increase in off-task time over the three groups.

Table 18

Analysis of Trend Effects for Off-Task Time by Expectancy Rating

Linear term	$F(1,33) = 1.53$, $p < .224$
Quadratic term	$F(1,33) = 0.39$, $p < .535$

No significant trend effects were found for the three cell means. Therefore, it can be assumed that these means are very similar, and the increase in off-task time over groups may be due to chance.

Table 19

One-Way Analysis of Variance - Off-Task Time by Teacher Specialty

	Teacher Specialty			
	Major	Minor	General	Average-L
Off-task time	2.58	3.41	3.66	3.22

Main effect specialty $F(2,33) = 0.96$, $p < .391$

As was found with expectancy, no significant difference was found between off-task time and teacher

specialty. Again, the means increased over the three conditions of specialty, so a trend analysis was done to examine the tendencies of the three cell means.

Table 20

Analysis of Trend Effects for Off-Task Time by Teacher Specialty

Linear term	: $F(1,33) = 1.58$, $p < .217$
Quadratic term	: $F(1,33) = 0.20$, $p < .653$

No significant trend effects were found for the three cell means. Therefore, it can be assumed that these means are similar, and any difference reported may be due to chance.

Inferential Analysis of Data from Other Instruments by Regression

The findings presented in this next section do not directly pertain to the hypotheses under examination in this study. During the course of this study, it was possible to collect data on student physical education grades in first and second term. It was also possible to obtain a subjective rating of the teachers' perceptions on student effort over the three observed physical education lessons. This data was then contrasted with the Academic Learning Time data collected, through the use of regression. Although the instrumentation used in collection of this data was crude, none the less, it is felt that these findings explore new areas of potential investigation, and provide preliminary data in a contrast with Academic Learning Time. Regression equations and graphs are provided with all variables that showed a significant relationship.

Table 21

Regression - Students' First Term Physical Education Grade contrasted with Student Total Academic Learning Time.

Regression equation : A.L.T. = 9.86 + (1.65) (Grade 1)

$t(35) = 2.75$, $p<.01$ $F(1,34) = 7.53$, $p<.01$

$r = .42$ $r^2 = 18.1\%$

(Plot see Figure 11)

Highly significant t and F values were found for the correlation between first term student grade and A.L.T.. This indicates that the correlation achieved is significantly different from 0. It would appear that first term grade is a good predictor of A.L.T. in this study. It can be noted on the plot of these two variables that, in general, the lower the grade achieved, the lower the A.L.T. recorded. In fact, there is a difference of 6.6 A.L.T. periods between the average C- student (14.8) observed, and the average A student (21.4) observed. In this study there is a significant positive relationship between students' first term grades and A.L.T. achieved.

It is also interesting to note that student achieved second term grades were found not to be significantly related to Academic Learning Time achieved, and therefore

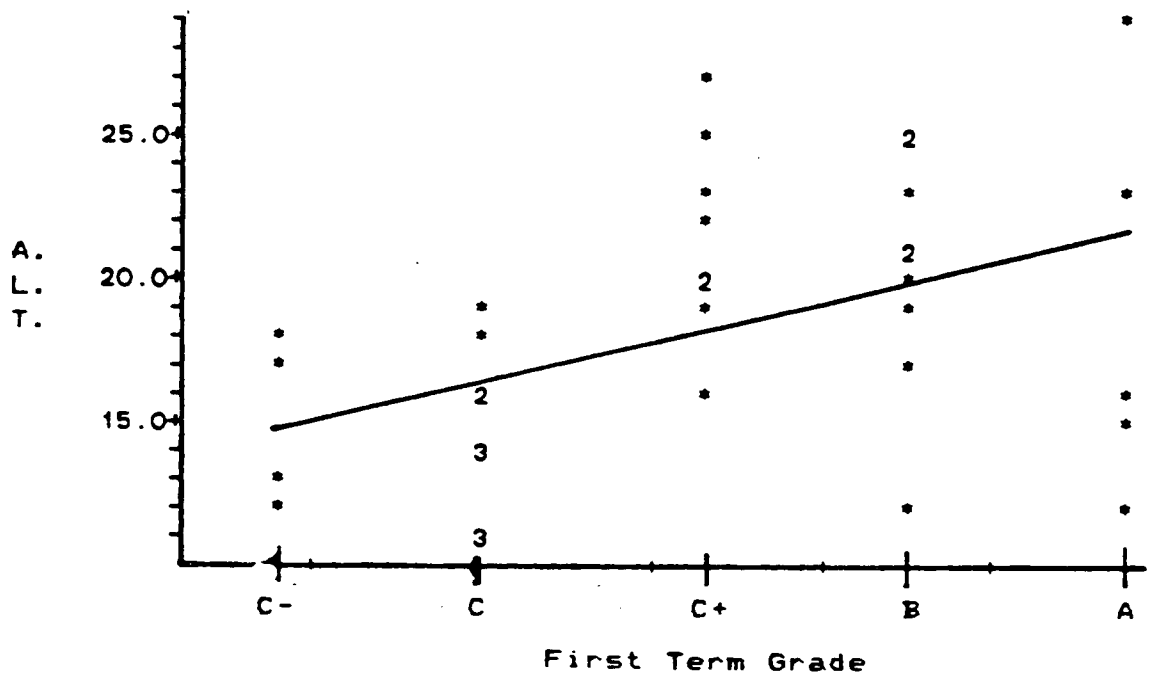

Figure 11. Academic Learning Time regressed with First Term Grade.

this information is not presented.

Table 22

Regression - Teachers' Perception of Student Effort in the Three Observed Lessons contrasted with Student Total Academic Learning Time.

Regression equation : A.L.T. = 11.1 + (2.31) (Effort)

$t(35) = 3.54$, $p<.01$ $F(1,34) = 12.56$, $p<.01$

$r= .52$ $r^2 = 27.0\%$

(Plot see Figure 12)

Highly significant t and F values were recorded for the correlation between teachers' perception of effort in the three observed lessons, and A.L.T.. The resulting correlation is significantly different from 0. It would appear, in this study, that perceived effort is a good predictor of A.L.T. with a shared variance of 27.0%. It can be noted on the plot of these two variables that, in general, as the teachers' perception of student effort increases, so does A.L.T.. Over the five effort rating points, there is a difference of 9.2 A.L.T. periods between an effort rating of 1 (13.4) and an effort rating of 5 (22.6). In this study, there is a significant relationship

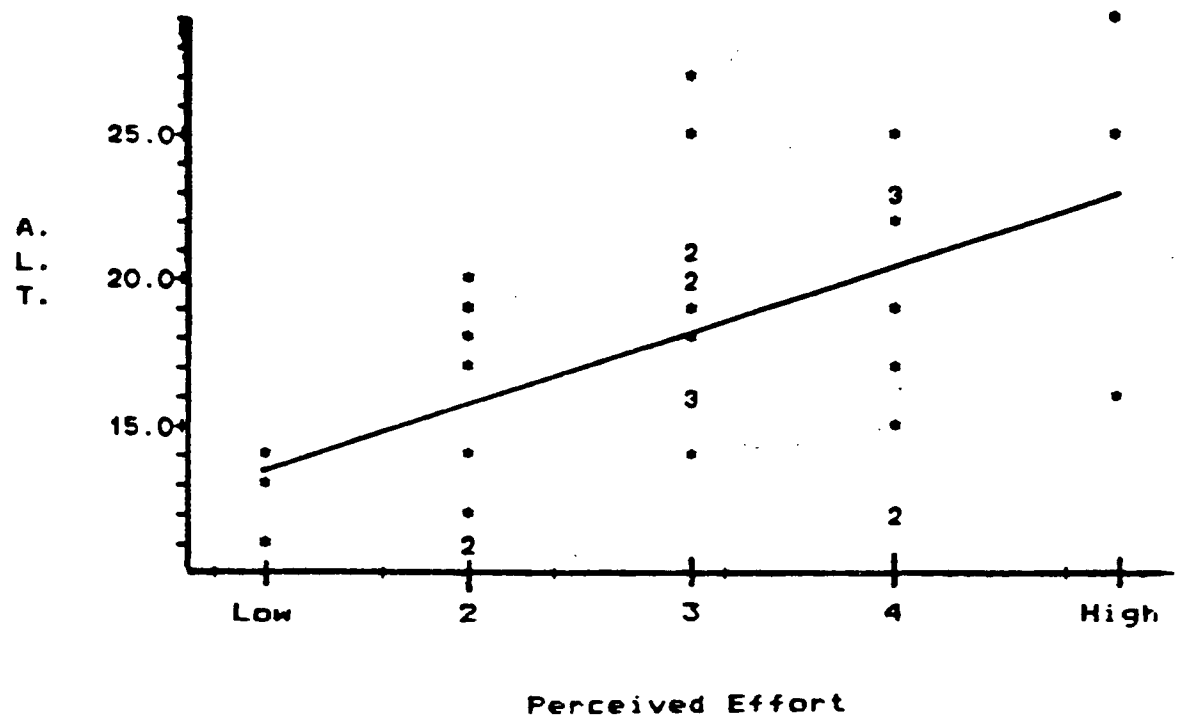

Figure 12. Academic Learning Time regressed with Students' Perceived Effort.

between teachers' perception of student effort and A.L.T. achieved.

Analysis of Criteria used by Teachers for Rank-Ordering Students based on Expected Level of Performance in Physical Education

Data for this analysis was collected by the researcher, through interviews with participating teachers at the completion of the study. Each teacher was asked to indicate, in descending order, the criteria they used in developing expectations for their students. In reclassifying the responses, by content analysis (Borg & Gall, 1979), it was possible to indicate, through mode scores, areas which these teachers felt contributed to their development of expectations for student performance in physical education. In this table, a teachers' first choice is denoted with a 1, his second choice with a 2, his third choice with a 3, and if a fourth choice was indicated, with a 4. At the bottom of the table a mode score total is displayed.

Table 23

Nominal Ranking of Criteria Used for Rank-Ordering of Teacher's Expected Level of Performance in Physical Education

Teacher	Ability	Team Sports	Fitness	Effort	Maturity	Skill Level
1	1	-	4	3	-	2
2	1	-	-	4	2	3
3	2	1	-	-	-	3
4	1	-	-	3	2	-
5	1	-	2	-	-	3
6	1	3	-	4	-	2
Total Selected	6	2	2	4	2	5

In examining this data, it can be seen that the highest mode score occurred in the ability category, with all six teachers selecting this as a component. It is also interesting to note that five of six teachers indicated that overall ability was their first component in the rank-ordering of their students. It appears that, overall, this group of teachers indicated perceived ability as the most important criteria for rank-ordering. The second highest mode score occurred in the perceived skill level category, with five teachers selecting this component. Two

of the teachers rated skill level as the second component considered in developing their expectations for students. The other three teachers indicated this as their third component for selection. Interestingly, this component was never ranked ahead of ability by any of the six teachers. The third highest mode score was in effort and attitude, selected by four of the instructors. Two of the instructors rated this component as their third rating criteria, while two others indicated it as their fourth criteria. Team sports was selected by two teachers as a criteria for categorization, and one of the teachers rated it as his most important rating category, while the other teacher felt it was his third criteria. Maturity was selected by two teachers, with both of them indicating that it was their second rating component. Interestingly, only two teachers rated fitness important to their selection of level of performance in Physical Education.

Analysis of Teachers' Demographic Information Sheets

In this study, a demographic information sheet was completed by teachers involved. This data table displays means and range scores for each item on the information sheet.

Table 24

Means and Sample Range from Teachers' Demographic Information Sheets

	Mean	Range
Age of Teachers	36.5	31-40
Years Teaching	12.0	8-17
Years Teaching at Elem. School	9.3	2-17
Years Teaching P.E. at Elem. School	9.0	2-17
Years at Present School	3.8	1-7
Years at Grade Level	3.6	1-7
Number of Students in Class	32.0	27-36

The average age of teachers in this sample is substantially lower than that of the estimated mean age of teachers in the school district ($\bar{X}$=45). All teachers in this study had at least eight years of classroom experience. There was a substantial range in both years teaching at elementary school, and years teaching Physical Education at elementary school. The small range and mean for years at present school suggests that these teachers, as a group, have changed schools recently within the school district. The mean and range for years at grade level are also fairly low, which indicates that these teachers have accepted different grade assignments over their years

teaching. Finally, numbers in class reflect the current provincial trend of larger class sizes, with a narrow (27-36) range and a mean of 32 students per class.

Analysis of Information Obtained in the Researcher's Journal

As a final source of information, the researcher kept a journal, based on personal observations. Specifically, the researcher attempted to record any event that may not have been reflected by the other instruments used in the study. Observations from the journal are listed below.

One aspect that impressed the researcher was the skill level of the students in general. In his opinion, it was felt that the students in this particular study had very advanced motor skills.

It was noted that the two specialist teachers used both command and practice teaching strategies (Mosston, 1981). As defined by Mosston, the command style of teaching occurs when the teacher controls all decisions made during a lesson. The practice style refers to allowing students to produce movement tasks on their own, within parameters set by the teacher (Mosston, 1981; Rink 1985). The specialists used a command style to give cognitive instruction, yet to practice skills, both used

stations (practice style) on occasion to maximize participation. The other four teachers used a command style of instruction exclusively for their lessons.

The researcher felt that there may be a weakness with the A.L.T. recording instrument with regard to cognitive engagement time. High A.L.T. was recorded in one of the generalist classes, yet the general level of skill within the class appeared to be far lower than the other five classes. It was also noted that this teacher had far less cognitive engaged time than that of the other teachers. It was felt that, because of a lack of technical instruction, the students skill level was not as high as in the other classes, yet this was not reflected in the A.L.T. scores.

Another observation noted in the journal was that specialists' classes appeared to be task oriented. Students were aware of the aims and intents of each lesson, whereas this was not always apparent in the four other teachers' classes. In the specialists' classes, students had routines which aided in the organization of the classes. In several of the other teachers' classes, this organization was not present, and this appeared to detract from the objectivity and smoothness of the lessons.

A final observation noted in the journal was the importance of Academic Learning Time in classes. It was very obvious in the classes observed that maximizing the

successful engagement of children is critical for effective instruction to occur in Physical Education.

Chapter 5

Discussion of the Findings

In this chapter, findings from the study are discussed and compared with previous related literature. Along with these comparisons, possible explanations for the results will be included. In the initial part of this chapter, findings related to the four stated hypotheses will be discussed. Next, any important findings not directly tied in to the research hypotheses will be discussed. Finally, descriptive information from the Academic Learning Time instrument will be discussed in light of other research.

Teachers' Expectation of Performance in Physical Education

In this study, a highly significant positive relationship ($p<.003$) was found between Academic Learning Time and teachers' expectations of performance. Therefore, it would appear that the initial hypothesis, which stated that there is a positive relationship between A.L.T. and teachers' expectations of performance, may be accepted.

In the literature, previous research has been found which both supports and contradicts findings from this study. Placek et al. (1982) stated that differences were

observed in A.L.T. between high, middle, and low students. However, research done by Shute et al. (1982) and Silverman et al. (1984) directly contradict this finding. In all three previous studies, grade level was not controlled. This factor could be important since a study done by Brophy (1983) suggested that lower grade teachers tend to have more direct interactions with students than at the upper intermediate or secondary levels. Consequently, at the upper intermediate and secondary grade level, high achievers tend to dominate whole class interactions. This concept is also supported by Pieron (1982) who suggested that the gap between high achievers and low achievers tends to widen as students progress from lower to higher grades in school. Therefore teachers in higher grade levels may find it considerably easier to accurately classify students by expectation. It would appear that in lower elementary grades that the reverse would occur. By not separating grade levels, it would appear that an important variable was not considered in previous studies, one that could potentially affect the relationship between expectancy and A.L.T..

Another important point raised by Pieron (1982) is that high expectancy students find more opportunities to be engaged in activity than low expectancy students. In this study, significant differences were not found between Motor

Engaged time and expectancy levels, however, the data, on closer analysis reveals the same general patterns as did expectancy and A.L.T. data. The Motor Engaged data revealed that high expectancy students had more Motor Engaged time than did middle or low students in this study, yet chance differences in this category could not be ruled out. It was also seen that low expectancy students had more Motor Inappropriate time than did middle or high students. When the Motor Inappropriate scores were included, as they were, with the Motor Engaged time score, it was seen that the gap between the high, middle, and low expectancy groupings was smaller than it had been for the A.L.T. scores exclusively. It would, indeed, appear that high expectancy students find more opportunities to be successfully engaged in class than do middle or low expectancy students. Since these high expectancy students have greater successfully engaged time than middle or low expectancy students, they have more opportunity to develop skills. It is only logical that achievement will substantially differ between groups, and as suggested by Pieron, the gap between expectancy levels will widen as students progress through the school system.

Another possible factor affecting A.L.T. and teachers' expectancy is the activity selected. Many previous studies (Birdwell, 1980; Rate, 1981; Godbout et al., 1983; Placek

et al, 1982; Silverman et al., 1984) suggest that the type of activity observed greatly alters the amount of A.L.T.. By using basketball as the specific sport of focus for this study, the type of activity was controlled. In this study, teachers were not aware that basketball would be the sport of focus when indicating their expectations of student performance. However, at the conclusion of the study, teachers indicated that ability was the most commonly used factor in developing expectations of student performance. Since basketball is usually a major component of the physical education curriculum taught in British Columbia, perceived ability in this activity may influence teachers' expectations of performance for their students. Shute et al. (1982) also controlled the activity (movement education) and indicated that little difference was noted between expectancy groups. However, it is likely that teachers may classify ability according to performance in games and team sports as opposed to movement education. It must also be recalled that Shute et al. (1982) did not control grade level in their study. It would appear that selection of activity can affect the expectations that a teacher develops for a student.

It was found in this study that overall ability and skill level were indicated by teachers as the most important contributing variables in expectancy formation.

This is consistent with Martinek and Karper (1982) who also indicated that skill level was an important factor in development of teacher expectations. Surprisingly, fitness did not play a large role in development of expectations, even though the categories of ability and fitness may be closely related. It was also interesting to note that teachers in this study did not feel effort was particularly important in developing expectations of performance. Martinek and Karper (1984) found that high expectancy students were perceived by teachers as showing greater effort than low achieving students. This hypothesis was not directly tested in this study. However, if one accepts Berliner's (1979) premise that there is a clear link between A.L.T. and achievement, then results from this study showing a significant positive relationship between A.L.T. and effort would also tend to confirm Martinek and Karper's findings.

Effect of Teacher Training on Academic Learning Time of Students in Physical Education

In this study, significant differences ($p<.040$) were found between the three levels of teacher training for Academic Learning Time in Physical Education. Therefore, the data supports hypothesis 2, and this hypothesis may be

accepted.

The results from this study directly contradict previous research. Placek and Randall (1986) conducted a study looking at the effects of teacher specialization, and found that there appeared to be little difference between teachers with specialized training and those without. In fact, it was found that specialists had less recorded Academic Learning Time in class, than did generalist teachers. However, in Placek and Randall's study, grade level, and subject content were not controlled. They did, however, note that when scrimmage and skill practice time were examined, it appeared that the specialist teachers spent more time in these aspects than did generalists. Since one may assume that students usually receive more corrective feedback in skill practice and scrimmage situations, it may be argued that this time is more valuable in the learning environment than is actual game playing time. In this study, results with skill practice time were very similar to those found in Placek and Randall's study. In fact, both P. E. majors showed a remarkable similarity with skill practice time in this study. The P. E. minors and generalist teachers showed a wide disparity in these aspects. In fact, it is worth noting that, in this study, the P.E. minors' classes had less practice time and A.L.T. than did generalists'. The

explanation for this may be in the fact that the P.E. minors' classes had far more Subject Matter Knowledge and Cognitive time associated with their classes than did the generalists'. It would appear that the generalist teachers were more interested in keeping students active, whereas P.E. minors were more concerned with actually teaching subject content. It appears that the P.E. majors may have a balance between instruction and activity.

In this study, by controlling subject content, the same type of activity was being taught in all six teachers' lessons. This ensured that differences in A.L.T. due to activity were minimized, which was not done in Placek and Randall's study. Many researchers (Birdwell, 1980; Rate, 1981; Godbout et al., 1983; Placek et al, 1982; Silverman et al., 1984) suggest that the type of activity observed greatly alters the amount of A.L.T.. Since it appears that generalist teachers may spend more time in game-type activities, and less in skill-development or practice, it is not surprising that generalist teachers had similar amounts of A.L.T. to specialists. By controlling activity, this study demonstrated that P.E. majors' students may indeed have greater A.L.T. than generalists' in specific activities. It may appear that one of the Academic Learning Time - Physical Education's greatest limitations is that it is difficult to distinguish between new,

challenging, substantive learning, and that of repetitive learning, in which students can score high A.L.T. yet not be challenged sufficiently for substantial learning to occur.

Another important control added in this study was that of grade. In Placek and Randall's (1986) study, grade was not controlled. In selecting an upper elementary grade for this study, it was felt that teachers in these grades work on more specific skills than in early elementary years, where more fundamental skills are emphasized. Since a P.E. major should have a superior background in the instruction of physical education skills, it would appear that this ability may be highlighted to a greater degree in upper elementary classes. This factor could help explain differences found between the two studies.

One final observation made during the research period was that of lesson objectivity. In the researchers journal, it was noted that, in general, P.E. majors' classes appeared to be more objective than those classes taught by P.E. minors or generalist teachers. Although there is no specific evidence to back up this statement, it would appear that this aspect may have also contributed to greater Academic Learning Time levels in P.E. majors' classes.

Student Gender and Academic Learning Time

In this study, no statistically significant relationship was found between Academic Learning Time and student gender. Therefore, the data supports hypothesis 3 and may be accepted.

As was found in several other previous studies (Shute et al., 1982; Placek et al., 1982; Silverman et al., 1984) gender was not found to contribute to significant differences in the amount of Academic Learning Time achieved. One important difference between this, and previous studies, was controlling the type of activity. In using basketball, it was felt that gender differences may appear due to a traditional male orientation in this sport. However, this was found not to be true. Another important difference between this and previous studies, was controlling grade level. It was felt that gender differences may be noted, if only upper intermediate students were used, as opposed to elementary students in general. Again, this assumption also appears to be false. It would appear that, in elementary school classes, there are little differences between boys and girls in the amount of Academic Learning Time achieved in physical education classes.

Teacher Training and Student Off-Task Time in Physical Education Classes

In this study, no statistically significant relationship was found between teacher training and student off-task time. Therefore the data refutes hypothesis 4, and this hypothesis may be rejected.

It is interesting to consider that results from this study strongly parallel those found by Pieron (1982). Pieron stated that there appeared to be differences between high and low students with regard to time-on-task and success rate; however, the size of the difference in teacher interaction did not appear to be high enough to account for differences between the two groups achievement. In this study, it was discovered that there were differences in the raw total amount of off-task time for the three teacher training groups, yet these differences were not considered to be statistically significant. A test of linearity also confirmed that no signifigant linear trend was apparent between means. In this study, it must be concluded that there is no difference in student off-task time between the three teacher training groups. However, due to tendencies found in this study and Pieron's, it may be considered worthwhile to reexamine the relationship of student off-task time in future research.

In future studies, by increasing the number of students observed, differences may be found, that were not discovered in this study, due to a small sample size.

Effects of Different Lessons on Achieved Academic Learning Time

The effect of different lessons on Academic Learning Time was not stated as a specific hypothesis for investigation in this study. During statistical analysis for this study, it was possible to investigate the relationship between different types of basketball lessons and A.L.T..

As previously stated, there is a substantial body of literature that suggests that the type of activity can greatly alter the amount of A.L.T. achieved (Birdwell, 1980; Rate, 1981; Godbout et al., 1983; Placek et al, 1982; Silverman et al., 1984). In this study, it was felt by controlling the activity, (basketball), A.L.T. differences, due to differing activities would be lessened. To further control activity, all teachers in this study taught a lesson on basketball passing first; followed by a lesson on dribbing; and finally a lesson on shooting. Within each lesson topic, teachers were allowed to devise their own lesson plan, allowing for individual preferences. It was

also felt that by allowing teachers to plan separate lessons for the same topic, A.L.T. differences between teacher training groups may be found. As was stated earlier, a significant specialist effect was noted.

A highly significant lesson effect was noted with the three variables of expectancy, gender, and specialty. In this particular study, it was found that dribbling lessons had the highest levels of A.L.T., followed by passing, and finally by shooting lessons. This would clearly suggest that not only does the type of activity alter A.L.T., but the type of lesson within the activity can greatly alter achieved A.L.T.. This substantiates the need to control lesson type in future studies, where A.L.T. is used for comparative purposes. If the researcher does not control this variable, wide discrepancies in A.L.T. may be noted from lesson to lesson, biasing results.

Another interesting observation was noted regarding lesson style. It was seen that the two P.E. major teachers used a variety of styles for instruction, including both command and practice styles (Mosston, 1981). The P.E. majors used a command style to give cognitive instruction, yet to practice skills, both used stations on occasion to maximize participation. The four other teachers used a command style of instruction exclusively. By using a station approach, it would appear that the P.E. majors were

more able to maximize practice time, yet at the same time ensure that substantive learning occurred. With the inherent difficulties involved in managing children in the gym or playground, it would appear that teachers without specific training may resort to command styles of instruction in physical education. It may also be possible that P.E. specialists are more willing to modify the style of instruction to meet students needs. This is a potential question to be explored in future research.

Teachers' Perception of Effort and Academic Learning Time

A significant relationship ($p<.01$) was discovered between teachers' perception of effort in the three basketball lessons and A.L.T. It must be remembered that a Likert scale was used to gather effort scores, and this instrument allowed for teachers to make interpretations on the scoring of effort. None the less, it is interesting to consider these results. It would seem that, although four teachers indicated that effort was a factor in their development of expectation, it was not rated as the most important criteria by any. This finding would suggest that teachers' establishment of effort is based on time on task. Since A.L.T. is in large part based on time on task, it would seem that teachers may be, in effect, using a form of

A.L.T. to establish effort ratings in class. It has also been established in previous research that there may be a link between student performance and the effort a teacher perceives students to be expending (Meyer, 1982; Weiner & Kukla, 1970; Martinek & Karper, 1984). If A.L.T. is substituted for, or is analogous to, student performance, as suggested by Berliner (1979), this phenomena would provide a possible explanation for the significant relationship of A.L.T. and perceived effort. This finding may also support the theory that A.L.T. and achievement are related.

Another point to consider in light of these findings, is the relationship between effort and achievement in physical education. Traditionally in British Columbia, educators have included a separate effort and achievement grade when reporting student progress in physical education. If one accepts the premise that A.L.T. and achievement are related, and a significant relationship is found to exist between A.L.T. and effort, it could be argued, in British Columbia elementary physical education evaluation, effort and achievement essentially evaluate the same aspect of performance. If effort and achievement are closely related, it may also be argued that there is no need to evaluate these aspects separately. Results from this study suggest that A.L.T. and effort may be related.

It would appear that future research is needed to clarify the relationship between effort and achievement.

Student Grades and Academic Learning Time in Physical Education

A significant relationship ($p<.01$) was found between first term grades and A.L.T.. At the same time, no significant relationship was found between second term grades and A.L.T.. In light of earlier findings, it is very interesting to consider these results. Berliner (1979) suggested that it is likely that a strong relationship may exist between A.L.T. and achievement. Since basketball only makes up a portion of the curriculum covered in a term, it is very likely that other subject curricula had an influence on the overall establishment of a grade in physical education. This would account for fluctuations between A.L.T. achieved in the basketball lessons, and grades achieved. It would appear that this study does not definitively support or reject Berliner's hypothesis. Instead, it is suggested that further research be done in this area. This future research should examine A.L.T. over an entire grading period in classes, eliminating the possibility of different activities contributing varying amounts of A.L.T.. This would also

control for changes in student effort that may occur when different physical education activities are taught during the term.

Discussion of Descriptive Information Gathered through the Academic Learning Time - Physical Education Instrument

In several other Academic Learning Time - Physical Education studies (Metzler, 1979; Rate, 1981; Godbout et al., 1982; Placek et al., 1982) a prominent "funnelling effect" occurred in the data collection process, as data was analyzed from content area to motor response. In this study, the "funnelling effect" was not as visible as in previous studies, due to the fact that the Version II instrument was used. The Version II instrument has only two levels for coding as opposed to Version I, which has 4 coding levels. However, a "funnelling" of percentages from the subject matter motor catagory to the motor engaged catagory was in evidence in this study, and would definitely support findings from other studies. This "funnelling effect" appears to show that A.L.T. is only a portion of the actual instructional time in a physical education lesson.

In terms of overall A.L.T. totals, it would appear that percentages found in this study are somewhat higher,

but similar to other A.L.T. studies conducted in elementary schools (Placek et al, 1982; Shute et al, 1982; Silverman et al., 1984). It is possible that controls on activity and lesson could have produced higher A.L.T. scores than usual.

It would also appear that there is a relationship between Subject Matter Knowledge time and Cognitive engaged time. During this study, in general, as Subject Matter Knowledge and Cognitive engaged time increased, A.L.T. decreased. However, it is obviously necessary to give students instruction to enhance performance. When new material is presented in physical education, a greater amount of Subject Matter Knowledge and Cognitive time is needed to provide students with the proper knowledge with which to acquire the skill. There would clearly appear to be an optimum balance between instruction and engagement in physical education. This finding directly reiterates McLeish's (1981) statement that student engaged time is the key component in effective physical education instruction. If one accepts the link between A.L.T. and achievement, it would appear that teachers should attempt to maximize student engaged time, and try to keep non-engaged instruction as succinct as possible, to increase performance and achievement in physical education.

Chapter 6

Summary, Conclusions, and Recommendations

Summary

The primary purposes of this study were:

1 To investigate the potential relationship between teachers' expectations of performance in physical education and student achieved Academic Learning Time.

2 To investigate the potential relationship between teacher training in physical education and student achieved Academic Learning Time.

3 To investigate the potential relationship between student gender and Academic Learning Time.

4 To investigate the potential relationship of student off-task time and teacher training.

Four hypotheses were presented initially:

1 That there is a significant positive relationship between A.L.T. and expectancy levels in grade 6 physical education classes.

2 Physical education classes taught by teachers with a Physical Education majors will have greater Academic Learning Time than those taught by teachers without a physical education major.

3 That there will be no difference between gender with respect to Academic Learning Time.

4 That Physical Education majors' classes will have less off-task time than classes taught by teachers with Physical Education minors, or generalists.

Six grade six classes from a British Columbia School District were selected for participation in the study. Two of the classes were taught by teachers with Physical Education majors, two were taught by teachers with Physical Education minors, and two taught by generalist teachers. Teachers in every class were asked to rank-order their students, according to their perception of student performance in physical education. From this rank-ordering, six students (three boys and three girls) in each class were selected for observation, representing

high, middle and low expectancy groups. Each class was observed three times, and the six selected students were observed, using the Academic Learning Time - Physical Education Version II instrument (Siedentop et al., 1982). At the conclusion of the study, teachers were asked to submit information about student grades, and perceived student effort in the study. Teachers were also asked to complete a demographic information sheet at this time.

To investigate hypotheses under consideration, the following statistical tests were performed:

1 An Analysis of Variance were performed to investigate the relationship of Academic Learning Time and teachers' expectation of performance in physical education.

2 An Analysis of Variance was performed to investigate the relationship of teacher training and Academic Learning Time.

3 An Analysis of Variance was performed to investigate the relationship of gender and Academic Learning Time.

4 An Analysis of Variance was performed to investigate the relationship of off-task time and teacher specialty.

The results of the analyses revealed that:

1 A significant positive relationship ($p<.003$) was noted between teachers' expectation of performance and Academic Learning Time

2 A significant difference ($p<.040$) was noted between teacher training groups and Academic Learning Time.

3 No statistically significant differences were noted with regard to gender differences.

4 No statistically significant differences were noted between teacher training groups and off-task time.

It was also possible to examine:

1 The relationship of Motor Engaged time and teachers' expectation of performance, training of teacher, and student gender.

2 The relationship of teachers' perception of effort and Academic Learning Time.

3 The relationship of student outcome grades in first and second term, and Academic Learning Time.

4 The criteria used by teachers to establish student expectancy in physical education.

The results from these questions indicated that:

1 No statistically significant relationship existed between teachers' expectation of performance and Motor Engaged time.

2 A statistically significant ($p<.005$) relationship existed between teacher training and Motor Engaged time.

3 No statistically significant difference existed between gender and motor engaged time.

4 A statistically significant ($p<.010$) relationship existed between student effort and Academic Learning Time.

5 A statistically significant ($p<.010$) relationship existed between first term student grade and Academic Learning Time.

6 No statistically significant relationship existed between second term student grade and Academic Learning Time.

7 Perceived student ability and skill level were the most commonly used factors in determining student expectancy.

Conclusions

1 That there was a positive relationship between teachers' expectation levels and A.L.T. achieved by students.

1.1 That high expectancy students recorded greater A.L.T. than did middle expectancy students who, in turn, had greater A.L.T. than low expectancy students.

2 That Physical Education majors' classes recorded greater A.L.T. than did physical education minors or generalist teachers' classes.

3 That no difference was noted between boys and girls with respect to A.L.T. achieved.

4 That differences did exist in off-task time for students in Physical Education major, minor, and generalist teachers' classes, but these differences were not statistically significant.

5 That there was a positive relationship between teachers' perceptions of effort and A.L.T. achieved by students.

6 That the specific type of lesson (passing, dribbling, and shooting) directly contribute to the amount of A.L.T. achieved in class.

7 That, in general, P.E. specialists had more motor engaged time for students than did non-specialists.

8 That teachers appear to use ability and skill level in developing expectations for students.

Recommendations

In future research, it is recommended that a larger sample size be used to further substantiate, or refute findings from this study. It would appear that by adding controls on teacher gender, grade, and activity, differences were noted that were not apparent in other studies. However, with the small sample size of this study, generalizations are difficult to make. Further research should also be done in other activity areas and grade levels to confirm or reject the importance of such controls.

It would also appear that further research is needed to be conducted on the relationship between teacher training and off-task time. In this study, no significant difference was found between teacher training and off-task time, yet differences between the mean totals of off-task time for the three teacher training groups were evident. It seems possible that with a longitudinal study such differences may be magnified. It may also be possible that the A.L.T. instrument was not sensitive enough to examine the entire aspect of off-task time in physical education.

Certainly, this area appears to be one where more research needs to be done.

It would appear that not only activity structure but lesson structure be controlled in comparative Academic Learning Time - Physical Education studies. Several recent A.L.T. studies identified that A.L.T. totals may be linked to activity. In this study, the link between activity and A.L.T. was not directly tested, but within the activity, specific lessons were investigated for differences in A.L.T.. It appeared that not only activity, but the lessons within the specific activity can contribute to varied totals of A.L.T.. It would, therefore, appear necessary in future A.L.T. studies to control both the activity and lesson type in order to generalize results from class to class.

Another related question that needs to be examined is that of lesson style. It was observed in this study that the P.E. majors appeared to be more willing to use differing styles of instruction that those teachers with less specific training in P.E.. It may well be possible that teachers without specific training in P.E. are less willing to vary instructional styles due to the managerial difficulties involved with physical education instruction. More research in this area would appear to be necessary.

Finally, it would appear that further research is

needed to determine the extent of the relationship between student achieved grades and Academic Learning Time in Physical Education. This research should be conducted over an entire school term, to eliminate the possibility of different activities contributing varying amounts of A.L.T.. As mentioned earlier, a longitudinal study may be an excellent way to examine the relationship between A.L.T. and student grades, since student A.L.T. is likely to fluctuate due to activity, lesson, and student interest in the activity. By examining students over a longer period of time it may be possible to control these kinds of variables. Certainly, the relationship of achievement to A.L.T. in physical education is an area where further research is badly needed. It would appear vital that a link be established between achievement and A.L.T. to substantiate the value of observing and measuring such a variable.

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Appendix A

Teachers' Letter of Informed Consent

THE UNIVERSITY OF BRITISH COLUMBIA
2125 MAIN MALL
VANCOUVER, B.C., CANADA
V6T 1Z5

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL STUDIES

- Business Education
- Centre for the Study of Curriculum & Instruction
- Child Study Centre
- Communications, Media, and Technology
- Early Childhood Education
- Home Economics
- Industrial Education
- School Librarianship

Letter of Informed Consent

I, _____ hereby give consent for B. Cousineau and co-investigators to collect data in my classroom, starting January 1987. I realize that, due to the nature of the study, I will not be informed of pupils being observed, nor the exact focus of study. At the conclusion of the study I will be fully informed, by the researcher, of the pupils observed, and of purposes and procedures carried out. Confidentiality of data will be maintained throughout the study.

_____

Appendix B

Explanatory Letter Given to Teachers Preceding Study

THE UNIVERSITY OF BRITISH COLUMBIA
2125 MAIN MALL
VANCOUVER, B.C., CANADA
V6T 1Z5

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL STUDIES

- Business Education
- Centre for the Study of Curriculum & Instruction
- Child Study Centre
- Communications, Media, and Technology
- Early Childhood Education
- Home Economics
- Industrial Education
- School Librarianship

Dear _____.

Thank you very much for allowing access to your classroom for my study.

By now, you have rank-ordered children in your class, according to your expected level of performance in physical education, and have given me a schedule of your physical education periods in the month of January. After examining all six participating teachers physical education periods, I will attempt, tentatively, to set up an observation schedule. Within this schedule, I will attempt to observe 3 physical education periods that are as close as possible (consecutively is preferable). In the first observation, the lesson focus will be on basketball passing. In the second, the lesson focus will be on basketball dribbling, and finally, a lesson with a focus on basketball shooting will be observed. Your lessons may take any format desired, as long as the focus of instruction remains on the given task. During these observation periods, all pupils will be required to wear numbers, to aid researchers with observations. It would be greatly appreciated if you could handle administrative

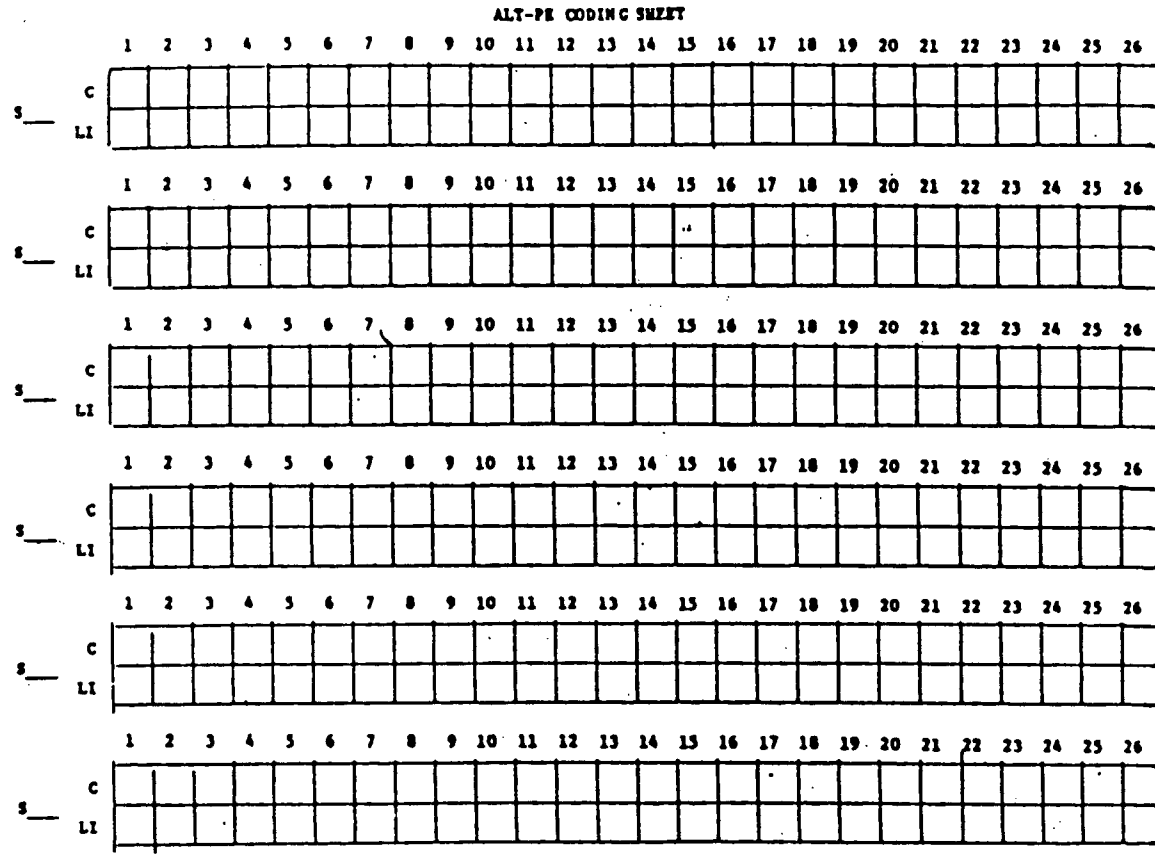
procedures concerning the distribution and collection of numbers. In the first week of January, you will be informed of the tentative lessons to be observed, and any changes to the schedule will be done at that time. Again, thanks for your cooperation with this project, and I trust that this study will not prove to be a inconvieniece for you, or your class.

Yours sincerely,

Bill.

Appendix C

Academic Learning Time Version II Measuring Instrument



Context Level

General Content	SM Knowledge	SM Motor
Transition (T)	Technique (TN)	Skill Practice (P)
Management (M)	Strategy (ST)	Scrimmage/Routine (S)
Break (B)	Rules (R)	Game (G)
Warm Up (WU)	Social Behavior (SB)	Fitness (F)
	Background (BK)	

Learner Involvement Level

Not Motor Engaged	Motor Engaged
Waiting (W)	Motor appropriate (Ma)
Off-task (Of)	Motor inappropriate (Mi)
On-task (On)	Supporting (Ms)
Cognitive (C)	

Appendix D

Academic Learning Time - Physical Education Demographic Information Sheet

ALT-PE CODING SHEET
DEMOGRAPHIC INFORMATION

Date: _____ Teacher : _____ School : _____

Class/Activity : _____ Observer : _____

Start time: _____ Stop time : _____ Duration : _____ Page _____ of _____

This observation is day _____ of _____ days in this unit.

The teacher allocated _____ minutes of activity time for this lesson.

The source of this allocation information was (asked teacher, saw lesson plan).

Observer comments on this class.

Data Summary

Total time _____ Allocated practice time _____ ALT-PE _____

Context level data: General content _____ SM Knowledge _____ SM Motor _____

Learner involvement data: Not motor engaged _____ motor engaged _____

Appendix E

Teacher Demographic Information Sheet

THE UNIVERSITY OF BRITISH COLUMBIA
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FACULTY OF EDUCATION

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- Centre for the Study of Curriculum & Instruction
- Child Study Centre
- Communications, Media, and Technology
- Early Childhood Education
- Home Economics
- Industrial Education
- School Librarianship

Demographic Information

Name: _____.

Age: ____.

Number of years teaching: ____.

Number of years teaching in elementary school: ____.

Number of years teaching P.E. in elementary school: ____

Number of years teaching at present school: ____.

Number of years at present grade level: ____.

Degrees/concentration areas applicable to teaching:

_____.

Number of students in your present class: _____.

Appendix F

Raw Data from the Academic Learning Time - Physical Education Version II Instrument

Context Level		1				2				3				4				5				6				Total
		Trial 1	2	3	T	1	2	3	T	1	2	3	T	1	2	3	T	1	2	3	T	1	2	3	T	
T		39	8	23	70	19	36	22	77	19	32	22	73	26	17	30	73	22	22	12	56	24	23	26	73	422
M		-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	5	-	-	1	1	-	1	-	1	7
B		-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2	-	-	-	-	1	-	1	2	4
General Context					70				77				73				80				57				76	433
TN		17	19	26	62	34	10	15	59	34	32	19	85	57	46	42	145	44	26	46	116	10	9	17	36	503
ST		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.M. Knowledge					62				59				85				145				116				36	503
P		52	81	51	184	30	54	37	121	38	44	67	149	16	37	33	86	36	38	47	121	58	75	64	197	858
S		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	-	22	-	-	-	-	22
G		-	-	6	6	-	-	34	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40
F		-	-	2	2	25	8	-	33	17	-	-	17	8	5	-	13	6	-	2	8	15	-	-	15	88
S.M. Motor					192				188				166				99				151				212	1008
Learner Involvement																										1944
W		17	6	11	34	3	6	21	30	4	20	13	37	1	5	11	17	-	28	12	40	3	23	9	35	193
OF		6	5	4	15	-	10	5	15	9	3	7	19	7	6	9	22	1	5	6	12	11	6	13	30	113
ON		45	11	31	87	19	23	39	81	22	27	28	77	26	14	33	73	30	24	21	75	43	17	45	105	498
C		13	21	22	56	34	12	10	56	27	25	18	70	54	41	34	129	40	20	39	99	6	9	16	31	441
Not Motor Eng.					192				182				203				241				206				201	1245
MI		-	4	-	4	3	5	1	9	2	4	2	8	-	1	-	1	-	-	4	4	3	1	-	4	30
MS		-	-	9	9	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	10
MA		27	61	31	119	49	52	32	133	44	29	40	113	20	41	20	81	37	31	26	94	42	29	40	119	659
Motor Engaged					132				142				121				83				78				121	699
																										1944

Academic Learning Time - Raw Data Over All Three Lessons.

	1	2	3	4	5	6	Total
HB	17	29	25	12	20	21	124
HG	25	23	23	15	16	23	125
Highs	42	52	48	27	36	44	249
MB	22	21	19	16	14	16	108
MG	25	27	16	16	19	20	123
Middle	47	48	35	32	33	36	231
LB	18	19	17	11	14	20	99
LG	14	14	13	11	11	18	81
Low	32	33	30	22	25	38	180
Total	119	133	113	81	94	119	659

33.9%

Off-Task Time - Raw Data Over All Three Lessons.

	1	2	3	4	5	6	Total
HB	0	0	2	4	2	11	19
HG	0	1	1	7	0	4	13
High	0	1	3	11	2	15	32
MB	5	7	3	1	3	2	21
MG	1	2	2	0	2	0	7
Middle	6	9	5	1	5	2	28
LB	4	3	6	5	3	4	25
LG	5	2	5	5	2	9	28
Low	9	5	11	10	5	13	53
Total	15	15	19	22	12	30	113

5.8%

Appendix G

Directions Given to Teachers for Completion of Data Collection

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- School Librarianship

Dear _____.

Thank you very much for allowing me access to your classroom during the past few weeks. I certainly hope that the study did not prove to be too much of an inconvience to you, or your students.

In conclusion to this study, I would like you to take another class list, and on this list, indicate your perceived level of achievement for each student in the class over the past three lessons. This perceived level of achievement should be rated from 1 (lowest) to 5 (highest). Finally, I would apprreciate it if you would forward, on the same class list, students grades in physical education for the 1st and 2nd term, as well as the demographic information sheet, and post this back to me in the return envelope before the end of February.

Again, thanks for your interest and participation in the study. I hope that any questions you may have about the study have been answered. If not, please feel free to contact me at the university, and I would be pleased to clarify any questions. I am anticipating completion of this study in April, and hopefully will be able to communicate findings from the study to you, at this time. Take care, and all the best for the rest of the year.

Yours sincerely,

Bill.