ANALYSIS OF ACADEMIC LEARNING TIME IN PHYSICAL EDUCATION CLASSES OF PROSPECTIVE AND INSERVICE TEACHERS

A THESIS SUBMITTED TO
GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

AHMET YILDIRIM

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF SCIENCE

IN

THE DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS

DECEMBER 2003

Approval of Graduate School of Social Sciences

_____

Prof. Dr. Sencer AYATA

Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

_____

Prof. Dr. Feza KORKUSUZ

Head of Department

This is to certify that we had read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science in Physical Education and Sports.

_____	_____
Assist. Prof. Dr. Şeref ÇİÇEK	Assist. Prof. Dr. Sadettin KİRAZCI
Co-Supervisor	Supervisor

Examining Committee Members

Prof. Dr. Ömer GEBAN	_____
Assist. Prof. Dr. Ahmet OK	_____
Assist. Prof. Dr. Settar KOÇAK	_____
Assist. Prof. Dr. Sadettin KİRAZCI	_____
Assist. Prof. Dr. Şeref ÇİÇEK	_____

ABSTRACT

ANALYSIS OF ACADEMIC LEARNING TIME IN PHYSICAL EDUCATION CLASSES OF PROSPECTIVE AND INSERVICE TEACHERS

Yıldırım, Ahmet
M. S., Department of Physical Education and Sports
Supervisor: Assist. Prof. Dr. Sadettin Kirazcı
Co-Supervisor: Assist. Prof. Dr. Şeref Çiçek

December 2003, 69 pages

One of the important characteristics of effective teaching is to devote sufficient time to appropriate physical activity in physical education classes. The purpose of this study was to compare teaching effectiveness of prospective and in-service teachers in relation to student behaviors, course content activities and Academic Learning Time in Physical Education (ALT-PE) scores. Participants were 26 prospective and 28 in-service physical education teachers. Forty-minute regular lessons (n=54) of each teacher were video recorded in their natural settings and observed with the ALT-PE observational instrument. Learner involvement behaviors, context levels and ALT-PE scores were compared for two groups of teachers. MANOVA results have shown significant differences in student behaviors and course content activities between the groups. While prospective teachers spent significantly more time with management content, in-service teachers spent

significantly more time with warm-up activities. Students in the classes of prospective teachers spent significantly more time with off-task and interim behaviors, but students in the classes of in-service teachers spent significantly more time with on task behaviors. The results, however, indicated no significant differences between the groups in motor appropriate behaviors of students. ANOVA results indicated that students spent 17.9% (for prospective teachers), and 18.7% (for in-service teachers) of total class time with ALT-PE behaviors. It seems fair to suggest that prospective and in-service PE teachers should decrease the time on management, transition, waiting, and theoretical explanations, while allocating more time on physical activity.

Keywords: Academic Learning Time in Physical Education, Effective Teaching, Prospective Physical Education Teacher, In-service Physical Education Teacher

ÖZ

HİZMET-İÇİ VE HİZMET-ÖNCESİ BEDEN EĞİTİMİ ÖĞRETMENLERİNİN DERSLERİNDEKİ AKADEMİK ÖĞRENME SÜRELERİNİN ANALİZİ

Yıldırım, Ahmet
Yüksek Lisans, Beden Eğitimi ve Spor Bölümü
Tez Yöneticisi: Yrd. Doç. Dr. Sadettin Kirazcı
Ortak Tez-Yöneticisi: Yrd. Doç. Dr. Şeref Çiçek

Aralık 2003, 69 sayfa

Beden eğitimi derslerinde etkili öğretimin önemli özelliklerinden biri de fiziksel aktiviteye yeterli zamanın ayrılmasıdır. Bu çalışmanın amacı hizmet-içi ve hizmet-öncesi beden eğitimi öğretmenlerini, öğrenci davranışları, ders içerikleri ve ALT-PE (Beden Eğitiminde Akademik Öğrenme Süresi) puanları yönlerinden karşılaştırmaktır. Çalışmaya 26 hizmet-öncesi ve 28 hizmet-içi beden eğitimi öğretmeni katılmıştır. Her öğretmenin kırk dakikalık birer dersi videoya kayıt edilmiş, ve ALT-PE gözlem formu kullanılarak analiz edilmiştir. Çok yönlü varyans analizi sonuçlarına göre iki öğretmen grubu arasında öğrenci davranışları ve ders içeriği yönlerinden anlamlı farklılık bulunmuştur. Hizmet-öncesi beden eğitimi öğretmenleri sınıf yönetimine daha fazla zaman ayırırken, hizmet-içi beden eğitimi

öğretmenleri ısınma aktivitelerine daha fazla zaman ayırdıkları gözlenmiştir. Aynı zamanda, hizmet-içi beden eğitimi öğretmenlerinin derslerindeki öğrenciler daha fazla "konuyla ilgili" (on-task) davranış gösterirken, hizmet-öncesi beden eğitimi öğretmenlerinin derslerindeki öğrenciler daha fazla "konuyla ilgisiz" (off-task) davranış göstermişlerdir. Öğrencilerin uygun motor aktivitede bulundukları zaman karşılaştırldığında iki öğretmen grubu arasında anlamlı bir fark gözlenmemiştir (hizmet-öncesi öğretmenler için %17.9 ve hizmet-içi öğretmenler için % 18.7). Hizmet içi ve hizmet öncesi beden eğitimi öğretmenleri sınıf yönetimiyle, konu açıklamasıyla, geçişlerle ve sıra beklemelerle ilgili zaman dilimini düşürmeli ve fiziksel aktiviteye daha fazla zaman ayırmalıdırlar.

Anahtar Kelimeler: Beden Eğitiminde Akademik Öğrenme Süresi (ALT-PE), Etkili Öğretim, Hizmet-öncesi Beden Eğitimi Öğretmeni, Hizmet-içi Beden Eğitimi Öğretmeni

To my Dearest Family

ACKNOWLEDGEMENTS

I am grateful to those who have extended their help and contributed the completion of this work, particularly to my advisors, Assist. Prof. Dr. Sadettin KİRAZCI and Assist. Prof. Dr. Şeref ÇİÇEK, for their help, guidance, and support.

My appreciation is also extended to the members of thesis committee, Prof. Dr. Ömer GEBAN for his support during statistical analysis, Assist. Prof. Dr. Ahmet OK for his invaluable contributions and courage, and Assist. Prof. Dr. Settar KOÇAK for his close interest during the development of this work.

I am also thankful to Dr. M. Levent İNCE for his guidance and invaluable support during undergraduate and graduate years. I want to also thank for his precious support for video recording process. To A. Fethi İNAN, who helped me while putting the data in order and analyzing the data, I am grateful to him. I also thank to Bilal KIRKICI and Betül SEKENDİZ for their corrections in English.

I want to send a special thanks to Yaşar SALCI. I am deeply gratitude to him for his endless support and cheerful face all the time. He provided a computer for me during a writing process.

I want to send my gratitude to my family: my mother Yeter YILDIRIM, my father Mehmet YILDIRIM, my brothers A. Kadir YILDIRIM, İhsan YILDIRIM, Veli YILDIRIM and sister in law Gülay YILDIRIM. They have never hesitated to tolerate me during hard days and they provided happy and cozy family atmosphere through the thesis.

And finally I want to thank to my two princesses; Leyla SARAÇ and Irmak HÜRMERIÇ. They always gave great support to me whenever I need help. Words are not sufficient to express my gratitude to Irmak and Leyla. Actually, they were always shoulder-to-shoulder with me and they made me feel what friendship is. Beyond everything, I am indebted to them for being my friends.

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Date: Signature:

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

FIGURE PAGE

CHAPTER 1

INTRODUCTION

Every student from kindergarten through grade 11 should have opportunity to participate in physical activity, which has many beneficial effects on students' life. Studies related to benefits of physical activity on human body indicated that it helps the development of flexibility, cardiovascular endurance, muscular strength and muscular endurance (Heyward, 1991). Furthermore, regular physical activity can substantially reduce the risk of developing heart disease, diabetes, colon cancer, and high blood pressure (Centers for Disease Control and Prevention [CDC], 1997).

Students must be given opportunities to gain the knowledge and skills needed to adopt active lifestyles. USA National Association for Sport and Physical Education (NASPE) states that quality physical education (PE) helps students improve the knowledge, attitudes, skills, behaviors, and confidence needed to be physically active in daily life (NASPE, 1995). The crucial role of PE is to develop the skill learning, health related physical fitness, physical competence, and cognitive understanding about physical activity that makes students accept healthy and physically active life styles. To profit the benefits of physical activity, students should learn the physical skills and they should join the class activities joyfully

(Graham, 1987). PE teacher should give sufficient time to each student to learn and apply the physical activity.

Physical education teacher should manage the student well to decrease the non-instructional disruptions and assign longer time for learning. Class activities must be modified to match student abilities so that optimal amount of learning occurs. Effective teaching includes good management, good organization and sufficient time for explanation and demonstration period. In that way sufficient physical activity time can be allocated for reaching effective teaching.

Physically active involvement of student with the related subject is a major issue for PE teaching area. Schools are the institutions where physical activity promotion must be enhanced as they serve eleven years of required physical education. Also, PE programs for students should focus on promoting regular physical activity that would be a lifelong habit (Demirhan, 1997). Engaging students in physical activity and teaching them how to develop and maintain appropriate physical activity level could help the growing of healthier generations.

In PE lessons, selected practices, drills and other activities should be appropriate for ability and developmental level of an individual. Motor development includes the way in which individual acquires skill as a function of that age. So one of the physical educator's primary roles is to enhance the acquisition of motor skill by individuals in a developmentally appropriate manner (Siedentop, 1991). Physical education teacher should (a) recognize the motor development needs of all students, (b) select motor activities which meet their needs in an optimal level, and (c)

implement instruction in a way that enhances the possibility of those needs being met in a developmentally appropriate manner (Hawkins, Wiegand, & Behneman, 1983).

Understanding what happens during PE class is crucial for effective teaching. Metzler (1990) explained that children in PE classes spent about 20-25% of class time waiting for something to happen (waiting in line, waiting for equipment, waiting for a turn, waiting for organizational period etc.). They spent up almost 20-25% of their time for managerial tasks and 20-25% for receiving information from teacher. Only 25-40% of class time remains for physical activity. Even, some of that time they might be performing activities that are beyond their physical ability level, in which case they become either frustrated or bored. In PE classes when student appropriately perform the skill assigned, the teacher is credited with doing an effective job (Rate, 1980).

Beginning Teacher Evaluation Study (BTES) was conducted in mid-1970s to understand the student engagement time with the subject matter. In the BTES, three measures of instructional time were defined (see figure 1.1). *Allocated Time* is the whole time period a teacher allocates for instruction and practice in a particular subject area. *Engaged Time* is the portion of allocated time that a student is actually involved with the subject matter. *Academic Learning Time* (ALT) is that the amount of engaged time when the student is involved with materials that are appropriate to his or her ability, resulting in high success and low error rates (Parker, 1989). Academic Learning Time-Physical Education (ALT-PE) is an application of ALT in PE setting.

Parker and O'Sullivan (1983) stated that Academic Learning Time in Physical Education (ALT-PE) studies have been done almost exclusively with experienced teachers as distinct from pre-service and prospective teachers. As physical education course is based on movement education, teacher educators should emphasize the importance of giving sufficient time for suitable physical activity. It is reasonable that teacher educators can hold their student teachers accountable for their performances during the apprenticeships or other field experiences (Siedentop, 1983).

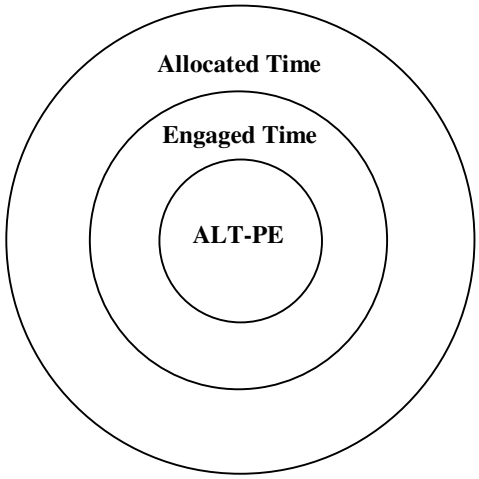

Figure 1.1. Allocated Time, Engaged Time, and ALT-PE (Adapted from Cruickshank, Jenkins, & Metcalf, 2003)

Academic Learning Time (ALT) provides meaningful information for assessing teacher effectiveness; that is the teacher who produces higher level of ALT-PE will be more effective teacher (Rink, 1996; Siedentop, 1983). In addition, ALT-PE is a powerful concept for effective teaching because it shows a teacher's ability to keep students in relevant and appropriate motor skill learning task, two necessary conditions for learning (Metzler, 1990).

ALT-PE has made useful improvements and provided valuable data for extending knowledge base about teaching, learning, and teacher education. It also offers many opportunities for teaching and learning in the unique environment of the gymnasium (Dodds & Rife, 1983). Moreover, it has made significant contributions to the quality of teaching and coaching through the data based literature (De Marco, Mancini, Wuest, & Schempp, 1996).

In addition to theoretical explanations, transitions, and management parts, PE class contains series of movements, sudden actions, temporary and no reproducible movements; each is unique (Anderson, 1983; Silverman, Dodds, Placek, Shute, & Rife, 1984). So assessing the student achievement in PE courses is really difficult as it has both theoretical and practical aspects of physical activity. ALT-PE is a competent instrument as it shows (a) what constitutes the class context, (b) what students are doing during the class period, and (c) what portion of the class time is allocated to appropriate physical activity.

There were two crucial considerations while selecting ALT-PE as a student criterion variable. First, student behavior category “motor appropriate” represented the time engaged in a motor task at a difficulty level, which would enhance skill development. Second, ALT-PE system generated data by observations of individual students. In addition, the system is relatively simple and observation skills are acquired rather easily. Moreover, it has other popular and comprehensive categories that generate data regarding what the students do when they are not in the motor appropriate category (Hawkins, Wiegand, & Behneman, 1983).

ALT-PE instrument is divided into two parts as context level and learner involvement level. Context level demonstrates how much class time passes with (a) general content (transition, management, warm-up, break), (b) subject matter knowledge content (technique, strategy, rules, social behavior, background information), and (c) subject matter motor content (skill practice, scrimmage/routine, game, fitness). Learner involvement level demonstrates whether (a) the student is motor engaged (motor appropriate, motor inappropriate, supporting) or (b) not motor engaged (off-task, on-task, waiting, interim, cognitive). It demonstrates how much time is allocated to a subject of the lesson and what the students tend to do in that particular time zone. It also shows what extend the student is active or inactive relevant to the subject taught in the PE classes.

Physical education is a unique course in which students are physically active during the class including warm-up, drills, games, competitions, and all other practices. One of the important aspects of effective teaching is to increase the appropriate physical activity time where students perform the appropriate task successfully (Griffey, 1983; Metzler, 1990; Siedentop, Mand, & Taggart, 1986). So difficulty level should not be over the ability level of students.

At the end of the study how much class time is spent to physical activity, theoretical explanations, and class organization can be determined to analyze teaching effectiveness. Furthermore, how much class time is spent with class management, warm-up activities, transitions between events, and breaks during the class period can be understood. Student behaviors were also analyzed in PE classes. This study was designed to determine how much academic learning time was experienced in classes of prospective and in-service PE teachers. Thus, ALT-PE

instrument provide whole picture of PE lesson and focused on motor appropriate behaviors on subject matter (e.g. overhead pass in handball or lay-up in basketball etc.)

1.1. Research Questions

1. How did the prospective and in-service PE teachers structure the class time?

2. What were the student behaviors in the classes of prospective and in-service PE teachers?

3. What percent of class time was spent with ALT-PE

1.2. Purpose of the Study

The aim of this study was to compare the content and student behaviors of prospective and in-service teachers in PE classes.

1.3. Hypotheses

1. There was no significant difference between prospective and in-service PE teachers in terms of lesson context as measured by ALT-PE.

2. There was no significant difference between prospective and in-service PE teachers in the learner involvement level of the students as measured by ALT-PE.

3. There was no significant difference in ALT-PE scores between the classes of prospective and in-service PE teachers.

1.4. Significance of the Study

Academic Learning Time in Physical Education research has proved to be one of the most usable forms of research relating to PE teacher effectiveness and time usage. It provides information about general content, subject matter motor content, subject matter knowledge content, and successful motor engagement time of students (Parker, 1989; Silverman, Devillier, & Ramirez, 1991; Randall, 1992).

PE specialists have been studying teaching effectiveness for a long time (Siedentop, Mand, & Taggart, 1986). ALT-PE, which shows the appropriate and relevant motor engagement time, has been used since 1980s (Parker, 1989; Siedentop, 1983). However it is newly used in Turkey and there have been very limited number of studies done wherein the behaviors of students were systematically observed. Furthermore, in the literature, researchers investigated ALT-PE for many aspects but there were few studies that compared the prospective and in-service PE teachers. Therefore, investigating ALT-PE scores of prospective and in-service PE teachers would give valuable information about the student behaviors, lesson contexts, and teaching effectiveness of these two groups of teachers and would help PE supervisors for better guidance to them.

1.5. Limitations of the Study

It was the intention of the study to acquire data in the natural setting of the observed classes. There was no control of the researcher over the teachers, students, or selected lesson contents. The subject pool was limited with 54 teachers (26 prospective and 28 in-service) and 162 students.

1.6. Definitions of Terms

Academic Learning Time: is the amount of time a given student spends actively engaged in academic tasks he/she is mostly successful at doing (Cruickshank, 2003).

Academic Learning Time-Physical Education: is an amount of time a student spends in motor skill tasks that are considered relevant and appropriate motor skill learning tasks (Metzler, 1983).

Prospective PE teacher: is student teacher who learns about teaching before preservice teaching stage through previous experience as students in school programs.

In-service PE teacher: A teacher who has already been teaching physical education courses in schools.

1.7. Assumption of the Study

It was assumed that inservice and prospective teachers gave PE courses in regular routines in every aspect during videotaping

CHAPTER 2

REVIEW OF LITERATURE

Literature related to quality physical education, effective instruction, and academic learning time in physical education studies will be presented in the following sections.

2.1. Quality Physical Education

Physical education is a process through which an individual obtains optimal physical, mental, and social skills and fitness through physical activity. Physical education programs should increase every individual's physical mental, and social benefits from physical activities and develop healthy life style skills and attitudes (Lumpkin, 1990). We can reach these goals through the quality PE programs. Quality PE is not a specific curriculum or program; it reflects an instructional philosophy that:

- Emphasizes knowledge and skills for a lifetime of physical activity.
- Meets needs of all students
- Keeps all students active for most of the class period.
- Builds students' confidence in their physical abilities.

- Influences moral development by providing students with opportunities to assume leadership, cooperate with others, and accept responsibility for their own behavior.
- Is an enjoyable experience for students. (NASPE-USA, 1995).

Having quality PE programs we can have physically educated person: who

1. has learned skills necessary to perform a variety of physical activities,
2. is physically fit,
3. participates regularly in physical activity,
4. knows the implications of and the benefits from involvement in physical activities,
5. values physical activity and its contribution to a healthful lifestyle (NASPE-USA, 1995)

It is also important that quality PE requires optimum facilities, equipments, and competent instructors. Çiçek, Kirazcı, and Koçak (1998) stated that it was difficult to reach PE course objectives in Turkey because of crowded classes, inadequate facilities and equipments in schools. Moreover, Çiçek and Bizati (2001) specified that 80% of schools did not have sports hall in Ankara. These are obstacles to reach quality PE and needed to be solved.

Ministry of National Education, professional associations, academic experts, and PE teachers across the country should focus on promoting and implementing quality PE programs that emphasize participation in life long physical activity among all

students. Providing intensive instruction in the motor and self-management skills needed to enjoy a wide variety of physical activity experiences, including competitive and noncompetitive activities.

There are many characteristics of quality physical education. One of these characteristics is related with motor skill learning. So if physical educators want to have quality physical education, he/she should give importance to the physical activity promotion and provide sufficient opportunity for students to learn new motor skills. It should not be forgotten that students learn more when they practice more, especially learning motor skills.

2.2. Effective Instruction in Physical Education

Siedentop (1983) defined effective teaching, as it was the instruction that results in intended learning. Physical education should be able to demonstrate clear outcomes and students should be able to show recognizable achievement gains while performing physical tasks. Students must be more skilled, more fit, more committed to an active, healthy, playful life style (Siedentop, Mand, & Taggart, 1986). They also gave important teaching tips which reflect the characteristics of effective instruction. These characteristics were (1) clear and appropriate instruction, (2) well-prepared, efficient, and informative demonstrations, (3) active supervision during practice, (4) meaningful feedback, and (5) proper accountability.

Tousignant, Brunelle, Pieron & Dhillon, (1983) investigated the links between the various dimensions of the teaching-learning process and to identify characteristics of more and less effective teachers. They realized that the best variable to predict teacher effectiveness was not the time students spent engaged with

a task. Teachers who provided their students with more "time to practice activities specifically related to learning objectives" were more effective. He also compared lessons taught by experienced teachers and student teachers. He found that experienced teachers obtained a higher student engagement during PE classes.

Siedentop (1991) specified the characteristics of effective physical education teacher who:

- Allocates as much time as possible to subject matter and provide sufficient opportunity to learn
- Communicates well and have realistic expectations for achievement
- Is good managers who prepare well-developed organizational structures to increase time for student engagement in academic activities
- Arranges meaningful activities related to academic objectives. Those activities are suited to the achievement levels of the class and are challenging, yet allow for high success rates.
- Creates and maintain soft transitions through the tasks
- Communicates with students directly during the physical activity
- Monitors the students and provide active supervision.
- Holds students accountable for completing task.

- Is clear in their presentations, and to be enthusiastic about the subject matter and their students, and maintain warm classroom climate in which student attitudes can be positive.

Physical educator should take into consideration grouping students, arranging drills and use of practice area for effective instruction. These considerations are important aspects for increasing engagement time. Hould and Brunelle (1981) investigated the relative effectiveness of various types of group organization among young hockey players. They found that the most effective group formation in terms of engagement time was when the players were freely scattered. In free phase, they had three times more engagement time than squad phase. On the other hand, they realized that the highest rate of engagement was not always the most effective one. As a result, they concluded that while identifying the most appropriate group formation, one must take into account the characteristics of the skills being practiced, and the skill level of the participants, as well as the rate of engagement obtained with a particular group formation.

Effective instructions give importance to individual instruction, as each student is different. Aufderheide (1980) compared the amount of academic learning time between regular and handicapped students. She also examined the differences in the amount of ALT provided to students by users and non-users of individualized instruction. Seven teachers and their 60 students from each group were the subjects of the study. Results showed that the students within the classes of users of individualized instruction were engaged significantly greater amount of ALT than were the students within the classes of non-users of individualized instruction. There was no significant difference in the amount of ALT engaged in by mainstreamed

handicapped and regular students. So individual instruction can increase the engagement time whether the students are handicapped or regular.

One of the important characteristics of effective instruction is giving a brief explanation about the subject matter. It was emphasized that a certain amount of cognitive learning could enhance motor responding success but it was unlikely that most students learn best by listening only. They must make motor responses to acquire motor skills (Metzler, 1983). Then, teachers constantly monitor the relevance of learning tasks and their relationship to desired lesson goals. It would seem that in a handball class any activity relevant to handball could accrue ALT-PE. This is not true approach. If the immediate goal is learning overhead pass, any activity not directly related with learning that particular skill, must be considered not relevant. Because it makes no progress toward learning overhead pass (Metzler, 1983).

Birdwell (1980) investigated the effects of modification of teacher behavior on the ALT of selected students. For this purpose three in-service PE teachers, one of each at the elementary, junior high, and senior high school level, participated in instructions. The instructions targeted for change were management time, feedback, and student non-engagement time. Data was reported as a percentage of intervals (6 sec observe/6 sec record) for each of the three dependent variables: management time, feedback, and student non-engagement. ALT-PE data showed that there was an association between changes in teacher behaviors and increases in student ALT. Significant increases in student ALT-PE appeared to be associated with decreases in teacher's management time, increases in feedback to students and decreases in time spent not-engaged in PE content.

Teachers should try to maximize the student participation as much as possible. Rink (1996) stated, “Students who spend more time in good practice learn more”. Students learn more when they practice more should not surprise anyone, particularly when it comes to the learning motor skills. Similarly, if a physical educator wants students to learn a motor skill they have to be engaged with subject matter at an appropriate level of difficulty for a sufficient amount of time to produce learning (Rink, 1996; Silverman, Devillier, & Ramirez, 1991).

2.3. Academic Learning Time-Physical Education for Coaching

Metzler (1990) explained construct of ALT-PE so important for effective teaching/learning environment. He also mentioned about the usefulness of ALT-PE and its’ alternatives for supervision. ALT-PE Event Recording System (ALT-PEERS) and ALT-PE Placheck Recording System (ALT-PEP) were the devised models for using supervision (Metzler, 1990). These models were used to provide feedback about the effective usage of class time.

ALT-PE instrument is used for providing feedback both in the area of teaching and coaching. Rischard (1981, cited in Tousignant, Brunelle, Pieron & Dhillon, 1983) developed a series of sub-categories under the subject matter categories of ALT-PE. His aim was to describe the specificity of the content being presented during training sessions in soccer. As a result, he was able to provide the observed coach with specific feedback on the time devoted to the various elements of the program, and on the athletes’ behavior in relation to a particular subject matter. Data showed that athletes were using 50% ALT for practicing strategies, and 35% of

ALT practicing of motor skills. Thus these findings pointed out a doubt about the usefulness of those skill practices because of limited ALT.

In another study, McLean (1981, cited in Tousignant, Brunelle, Pieron & Dhillon, 1983) investigated the ALT scores to provide feedback on engagement and success rate of basketball players considering their position on the court. The data revealed that forwards and guards had an ALT of 62% while the centers had 66% during practice session. Actually it was expected that centers should have had more ALT than forwards and guards. Another study result used to provide feedback to the coach was the guards' rates of failures (8%) when compared to others (3% and 2%). This shows that basic skills of guards need to be developed as they play with the ball for a longer time.

ALT-PE was mainly used in teaching area but it was also used in coaching area (basketball, soccer, ice hockey, etc.) to see the appropriate activity time and to give the feedback to players about their performances. Dixon (1997) investigated the ALT-PE scores of basketball players from four different colleges. He stated that athletic settings tend to produce greater academic learning time than physical education settings. In his study, 43% of total training time spent with motor appropriate behaviors in a basketball unit.

2.4. Academic Learning Time in Physical Education

Many researchers have claimed that the major determining factors distinguishing PE course the best from the poor were higher rates of appropriate learning time and lower rates of non-instructional activities (Beauchamp, Darst, & Thompson, 1990; Metzler, 1990; Siedentop, 1991; Templin, 1983). After his reviews

on ALT-PE Mc Leish (1981 cited in Siedentop, 1983) reached the following conclusion:

> The theoretical basis of the ALT-PE system is what is now conventionally referred to as learning theory. By this we mean that we accept as established fact certain basic principles: (a) learning is maximized in direct proportion to the number and type of opportunities to learn; (b) we learn best by concentrating on practicing the motor, cognitive, or psychomotor skill by actually doing; or (c) by observing others performing the skill at a difficulty level which results in a level of failure rate greater than 10 percent. Effective teaching means structuring the lesson to maximize the amount of time in direct practice by each individual at a level, which at once ensures a continuing development of the skill compatible with the minimal number of mistakes. (Mc Leish, 1981, p.29)

There were different kinds of studies that analyze physical education lessons and tried to understand level of their effectiveness. Beauchamp, Darst, and Thompson (1990) observed 75 PE lessons in 15 different high schools. They observed that 65% of total class period was on subject matter motor content but ALT-PE value was only 38%. Actually, this value was quite high when we compare it with previous studies (Metzler & Young, 1984; Parker, 1989). In addition to that, out of 17 different lessons, fitness grouping classes had highest ALT-PE scores (50%) while the gymnastics classes showed the lowest ALT-PE scores (18%). Also it was noteworthy that 20 % of total class time was spending with waiting time which is an obstacle for higher ALT-PE.

ALT-PE has received substantial support from studies within PE. McLeish (1981 cited in Siedentop, 1983) administered a project involving one hundred videotaped PE lesson. After analyzing the videotapes, McLeish concluded the notion about ALT-PE:

> 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 PE. Time on-task, ALT, and 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).

LaMaster and Lacy (1993) examined teacher behaviors and student ALT and analyzed the relationship between teacher behaviors and student ALT in junior high school PE settings. Nine selected in-service teachers and their classes were videotaped four times. Data indicated that students spent 14.6% of their time engaged in ALT-PE. They emphasize that length of general content and subject matter knowledge content should be decreased and length of subject matter motor content should be increased. The low amount of ALT-PE may be attributed to the type of activities, size of class, class structure and organization.

Lacy, La Master, and Tommaney (1996) examined student behaviors, teacher behaviors, and their relationship with each other. The subjects in this study were seven experienced elementary PE teachers and their classes. Each of the seven teachers was videotaped four times. The mean size of the 28 classes was 39 students. Classes ranged in length from 16 to 39 minutes with average length being 24 minutes. There was variety of sports taught in the classes. Student behaviors were measured with ALT-PE scores and teacher behaviors was measured with Arizona State University Observation Instrument. The mean ALT-PE was 20.1%. They emphasized that management behaviors and lots of explanations had negative relationship with ALT-PE.

Silverman, Devillier, and Ramirez (1991) determined whether the ALT-PE system (version 2) was valid as a process approach to estimate student achievement. Sixty students from 10 PE classes (9 middle and 1 high school) participated the

study. Correlations were calculated between achievement scores of students. Skill practice was shown to correlate with achievement on the selected skill when the students were engaged at a motor appropriate level. It was found that skill practice-motor appropriate category was related to achievement for summed and percent of intervals. Summed motor appropriate intervals and related to achievement. The results showed a significant relationship between ALT-PE and teacher effectiveness.

Beckett (1989) tried to determine the relationship between ALT-PE and student achievement using an Experimental Teaching Units (ETU). Group A, group B, and Control group were pre-tested and post-tested at the conclusion of instruction. While group A received a lesson with a brief explanation/demonstration period, group B received a lesson with a lengthy explanation/demonstration period. Mean ALT-PE results were 53.5% for group A and 33.5% for group B. The result of this study has found a significant relationship between ALT-PE and student achievement.

In a similar study, Metzler and Young (1984) examined the student process behavior differences within Experimental Teaching Unit (ETU). Two different PE teachers designed their classes under the same facilities without observing each other. Mean ALT-PE for two groups were 23.6% and 9.9%. Reason for this big difference was divergent lesson planning which give importance to the student achievement behaviors enhance the ALT-PE percentages.

In their study, Griffey and Housner (1991) focused the differences between experienced (n=8) and inexperienced (n=8) PE teachers for many respects. They were analyzed PE classes according to categories (a) student on-task (what the teacher had specified in terms of a movement activity), (b) student off-task

(physically active but not doing what the teacher had specified), (c) student receiving information from teacher, (d) student waiting for a turn at a piece of equipment or activity, (e) student relocating the another station or activity, and (f) others. At the end they observed 30.3% and 29% on-task student engagement time for experienced and inexperienced PE teachers respectively. Major differences were found for receiving information percentages (48.1% for experienced and 30.8% for experienced teachers) and waiting percentages (11% for experienced and 23.9% for inexperienced PE teachers).

In an exemplary elementary PE program, Lacy, Willison, and Hicks (1998) observed first grade and their veteran instructor who has received several awards for his programs and teaching excellence. The instructor followed a curriculum that incorporated an introductory activity, fitness routine, lesson focus, and closing game in each lesson. Observed student behaviors were motor appropriate, receiving information, waiting, transition/management, and off-task behaviors. Results indicated that students spent great amount (49%) of class time in motor activity followed by receiving information (24%). Also they noted that transition/management time (8%) and waiting time (15%) were quite low.

Behets (1996) compared PE specialist teachers and classroom teachers. He found no significant difference between two groups concerning active learning time (engagement time). Engagement time for PE specialist teacher was 45.4% and 41.2% for others.

Metzler (1990) reviewed the research on time in PE classes and he found that teachers spent 25 to 50 percent of class time in non-instructional activities and he

emphasized that teachers ignore individual students and their maximum participation. He also noted that (1) students spent only 20 to 50 percent of their time in related activities; (2) students differ in the amount of time they spent on achievement-related learning; (3) student time varies with the activity in which students are engaged; and (4) ALT is low regardless of who the teacher is. Moreover he found that individual sports get more time on task than team sports but he realized that there was no difference on ALT percentages of boys and girls (Metzler, 1989 cited in Harrison and Blakemore, 1992).

Many researchers have confirmed that decreasing management time and increasing engagement time for individual student have positive relation with ALT-PE. Furthermore, Landin, Hawkins, and Wiegand (Cited in Harrison and Blakemore, 1992) suggest that using additional equipment and facilities decrease waiting time and increase activity time.

Metzler, (1983) listed some points to increase the ALT-PE:

Do I plan ahead for reduced management time?

Is my first activity posted to reduce pre-class waiting time?

Do I assign learning tasks based on observed individual student skill levels?

Are learning tasks sequenced with stated criteria for proficiency?

Do I base individual learning progressions on observed student skill proficiency?

Do I design feedback mechanisms into learning tasks for students?

Do I provide high rates of specific feedback until student progress is noted?

Do I plan for “active” lecture/demonstrations?

Do I “hustle” students between drills and class activities to reduce transition?

Do I modify games to allow for more direct student participation and skill practice?

Do I plan learning tasks for those students not playing in a game (substitutes)?

Do I have enough equipment for maximum student participation in drills?

Do I use available equipment and facilities to their maximum potential?

Do I plan relevant activities for students who must wait for equipment/facilities?

Is my student-to-equipment ratio low? (Do I have enough equipment?)

Is my class size manageable?

Is the observed range of student skill level narrow?

Do I constantly monitor student time-on-task?

Do I try new instructional patterns to improve time-on-task?

Martinek and Karper (1983) have added different perspective to Metzler’s list for increasing ALT-PE. They believed that explaining the benefits of physical activity increase the expectancy level of students from physical education lessons. For this aim they observed the low expectancy students (n=2) and high expectancy students (n=2) and measured the ALT-PE levels of those students over a 6-week period. As a result high expectancy student showed much higher amounts of ALT-PE (76%) than the other (23%). This big difference showed the importance of increasing ALT of low expectancy students in physical education courses. It can be said that

after organizing the class, physical education teacher should maintain and develop the expectancy level of students for better participation.

Godbout, Brunelle, and Tousignant (1983) studied on how much ALT is experienced by elementary and secondary school students during regular PE classes and investigated three major ALT variables, that is, time devoted to specific content areas, learner engaged time with subject matter, and student's success rate. The mean ALT-PE results were 31.3% and 36.5% respectively for the elementary and secondary school level. Furthermore, from one-fifth to one-third of class period was spent in other than PE content activities (transition, management, breaks etc.)

Skill practice, scrimmage, and game context are the subparts of the subject matter motor content. Among these three parts, Hastie (1998) stated that students showed the high level of ALT-PE in game context and they showed the higher level of off-task behavior during skill practice period.

Silverman, Dodds, Placek, Shute, and Rife (1984) compared the combined data from two previously reported studies, which focused on ALT-PE variables. Results showed that 33.6% of total class time was spent engaged with the subject matter, 17.1% in motor activity, and 11.5 in a motor activity at an easy difficulty level.

Hastie (1994) compared the three PE teachers according to their ALT-PE results. Two of them who spent significantly more time with waiting for turns, being interim activity and off-task had a significantly lesser percentage of student engagement in motor appropriate activity than the other teacher. He concluded that higher levels of ALT-PE, lower levels of off-task and non-participatory behavior,

together with more class time devoted to setting performance standards were all indicators of effective teachers. So one of teachers was classified as a more effective teacher, and other two teachers were classified as less effective teachers. Percentages of more effective teacher and less effective teachers were 42.9% versus 23.3% and 27.7% for ALT-PE, 8.2% versus 15.1 and 17.3% for interim, 18% versus 26.5 and 30.4% for waiting time, 3.3% versus 5.9% and 11.6% for off-task behaviors respectively.

Byra and Coulon (1994) compared the instructional behaviors of a group of pre-service teachers across planned and unplanned teaching conditions. They found that learner spent more time with general content (or non-physical education content) in unplanned lessons (31.7%) than planned lessons (24.7%). Although there was no significant differences for motor appropriate category between planned (18.9%) and unplanned (18.2%) lessons, results suggested that learners spent less time in non-instructional aspects of activity, less time waiting for turn, and less time being off-task during activity time in planned lessons.

Van der Mars, Vogler, Darst, and Cusimano (1994) studied the effects of teacher location, teacher's rate of movement, and feedback on student ALT-PE. At the end, teacher movement correlated significantly with student's ALT-PE while the feedback and location did not. Results were 57.8% for on-task behavior, 8.24% for off-task behavior, 39.2% for total motor engagement and 31.9% for motor appropriate engagement.

Johns, Ha, and Macfarlane (2001) studied the effects of increased fitness and decreased skill practice and game activity time on ALT-PE percentage. While both

groups of teachers focused on knowledge as subject matter and motor activities. Experimental group focused more fitness but less skill practice and game activity than the control group. Students from the control group had more off-task time (73.6%) than students from experimental group (65.3%). Moreover, motor appropriate time for students from experimental group was 31.9% but this value was 22.7% for control group.

In their study, Ward, Barrett, Evans, Doutis, Nguyen, and Johnson (1999) examined the student participation between two schools with the same subject matter. They found that organization of the classes was so important that drills, practices, and games should include as many students as at the same time. Not motor engaged times were 72% and 61% for these two schools. Main reason for this difference was more waiting time in PE classes. Motor appropriate time was quite high (42%) in a PE class that had short period of waiting time. Other two teachers had mid-high scores of motor appropriate time (27% and 32%).

An effective teacher manages students well to decrease non-instructional disruptions and increase time for learning. After that he/she organizes that learning time with activities matched the student capacities so that an optimal amount of learning occurs (Siedentop, 1991). Then effective teaching should be evaluated primarily by observations of student work involvement and student outcomes.

Physical education authorities have been studying on reaching effective physical education course for many years. It was mainly emphasized that students must be engaged in physical activity for most of the class time. When related literature reviewed, researchers who were interested in ALT-PE found that students

spent very limited time with an appropriate physical activity related with subject matter in PE classes. They emphasized that non-instructional time such as, management, transition, too much theoretical knowledge, organization of equipment and drills should be decreased in PE classes.

In review, an observational system exists which is capable of producing valid and reliable measures of ALT in a physical education setting. ALT-PE system is interval and categorical in nature and has been used to identify student involvement in a physical education setting. It has been proven to be positively correlated with teaching effectiveness and quality physical education.

CHAPTER 3

METHOD

Overall design of the study and information about the participants, data collection instrument, data collection procedure, and data analysis procedure were presented in the following sections.

3.1. Overall Design

Prospective and in-service physical education teachers were participants of the study. As direct (live) observation could be less objective and less reliable, videotape recorder was used in the study. Videotape recorder provides a permanent account of the observation for future examination (Turner & Meyer, 2000). This record could be reviewed over and over again, which was an important feature in case there were some uncertainties about how a behavior should be coded. Because the interval recording system was used in the study, direct (live) observation was very risky in case of missed intervals. Furthermore, videotape recorder was also essential for intra-observer reliability. So all teachers were videotaped during their one 40-minute-lesson (N=54).

Pilot study was conducted as training session. It was questioned whether observers made same judgment for same behavior during pilot study. As reliability

was prerequisite for collecting accurate data, inter-observer and intra-observer agreements were conducted with 10% of total lessons (n=5). After reaching acceptable reliability, main data collection was conducted.

3.2. Participants

Participants of this study were 28 in-service teachers (15 female, 13 male) and 26 prospective teachers (2 female, 24 male). Prospective and in-service teachers were selected to understand the differences in; (1) how they constructed the lesson, and (2) how their student spent the class time. For this reason three students from each class of prospective and in-service PE teachers were observed

In-service teachers were from the 17 different schools (13 public, 4 private) in Ankara. Seventeen in-service PE teachers were teaching at elementary level (6-7-8) and 11 of them were teaching at secondary level (9-10-11). Schools were selected according to their availability and teachers were selected with their willingness. Official permission for each school was taken from Turkish Ministry of National Education. School principals agreed the videotaping of the PE class in schools.

Prospective teachers were from physical education teacher education program. They were 4th year students of Middle East Technical University who were taking the "Field Practice" course during the spring semester of 2000 -2001 academic year. Elementary and secondary level students of prospective and in-service teacher from different public and private schools took part in the study. Demographic information about the participants was given in Table 3.2.1.

Table 3.2.1. Information about Grade Level and School Type of Prospective and In-service Teachers.

	Prospective PE Teachers (n)	In-service PE Teachers (n)	Total (n)
Teaching Level			
Elementary level (6-7-8)	21	17	38
Secondary level (9-10-11)	5	11	16
School Type			
Public	-	13	13
Private	4	4	8

3.3. Data Collection Procedure

Before videotaping in-service teachers' PE classes, proper authorization were obtained from Ministry of National Education and school principals. Prospective teachers were videotaped during their field experiences and in-service teachers were videotaped in their schools. Prospective and in-service teachers were videotaped during a regular 40-minute class period in their natural setting. The video camera was placed so that all students and the instructor were included in recordings. Cordless microphone was also used to record verbal behaviors of teachers.

Mean class size were 25 (for prospective teachers) and 24 students (for in-service teachers). There were variety of subjects taught in the classes during data collection. Frequencies of subjects taught in PE classes were given in Table 3.3.1.

Table 3.3.1. Frequencies of Subjects Taught in PE Classes

Subjects Taught	Prospective Teachers' PE Classes	In-service Teachers' PE Classes	Total
Handball	3	3	6
Basketball	2	9	11
Volleyball	1	7	8
Gymnastics	5	3	8
Track and Field	9	5	14
Soccer	-	1	1
Step	2	-	2
Tennis	2	-	2
Educational Games	2	-	2
Total	26	28	54

The observation format for ALT-PE was an interval recording system in which the first 6 seconds of the interval was used to observe and second 6 seconds to record the observation on the coding sheet. One regular class of each teacher was observed (n=54). Three target students from each class were randomly selected and observed in sequence for an entire class period. So there were 78 observed students from the classes of prospective teachers and 84 observed students from the classes of in-service teachers.

A pre-programmed audiotape was used to provide observe/record signals to keep the observations in the proper order and time (e.g. 0 sec: observe ……. 6thsecond: code1 …… 12th second: observe……18th sec: code2 ……etc.).

3.4. Data Collection Instrument

The Academic Learning Time-Physical Education (1982 Revision) instrument was used to record the student behaviors and lesson context (Parker, 1989). The ALT-PE instrument focuses on student behavior in relation to class content. The ALT-PE instrument separates behaviors into two levels of decision making: context level, which is concerned with the behavior of the entire class, and learner involvement level, which is concerned with individual student behavior.

The context level describes the focus of the class content. The behaviors recorded describe the amount of time the class is engaged in specific behavior related to the assigned activity. The context level is divided into three subparts, each containing several behavioral categories: general content, subject matter knowledge content, and subject matter motor content. The context level categories were summarized in Figure 3.4.1.

The learner involvement level describes the amount of time a selected student is involved. In this category the individual will be either motor skilled engaged or not motor skill engaged. The ALT-PE categories for the learner involvement were summarized in Figure 3.4.1.

Definitions of both the context level and learner involvement level categories are given in Appendix A.

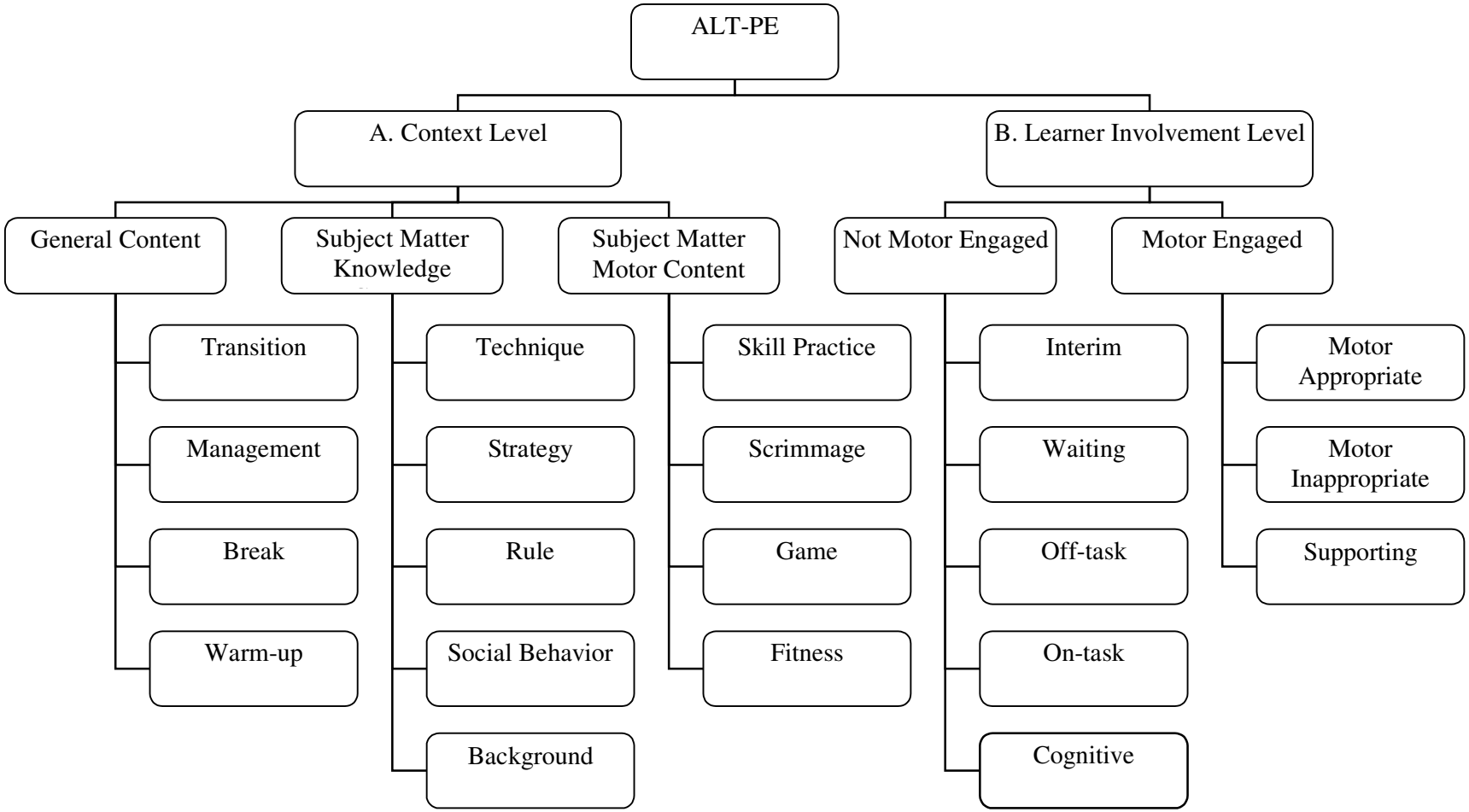

Figure 3.4.1. Graphical Presentation of ALT-PE and its Sub Levels

3.5. Reliability of ALT-PE

Inter observer agreement (for 5 classes) was made with two observer. Intra observer agreement (for 5 classes) was made in different days to ensure the accuracy of the data collection. Scored-Interval (S-I) method was used to see observer reliability scores. As van der Mars (1989) stated, S-I method was considered the most rigorous method of estimating observer agreement for interval data. The formula for the S-I method is:

Agreements/(Agreements + Disagreements) x 100 = % of Agreement

Agreements: The number of agreements of observers on the same lesson or the number of agreements of the same observer on his/her observations at two different times.

Disagreements: The number of disagreements of observers on the same lesson or the number of disagreements of the same observer on his/her observations at two different times.

Results of observer agreements for context level and learner involvement level were given in Table 3.4.1.

Table 3.5.1. Observer Agreements for Context Level and Learner Involvement level

	Inter observer agreement	Intra observer agreement
Context Level	97% (93% – 100%)	97% (96% – 99%)
Learner Involvement Level	95% (89% – 100%)	98% (95% – 100%)

3.6. Data Analysis Procedure

Mean percentages of Context Level and Learner Involvement Level were reported for both prospective and in-service teachers as descriptive statistics. Multivariate Analysis of Variances was performed to determine differences between prospective and in-service teachers in terms of lesson context and learner involvement as dependent variables. Univariate Analysis of Variances was performed to determine differences between prospective and in-service teachers in terms of ALT-PE scores as dependent variables. The confidence level for interpretation purposes of all statistical tests was set at .05.

CHAPTER 4

RESULTS

The purpose of this study was to investigate differences in context level, learner involvement level, and ALT-PE scores of prospective and in-service teachers. To examine the differences descriptive statistics, multivariate analysis of variances, and one-way analysis of variances were conducted. Results of these parts were presented in the following sections.

4.1. Results of Lesson Context Categories of ALT-PE for Prospective and In-service Teachers

Lesson Context categories divided into three groups. These are (a) general content, (b) subject matter knowledge content, and (c) subject matter motor content. While prospective PE teachers spent 33.7% of class time with general content, in-service PE teachers spent 39.3% of class time with general content. They had similar amount of subject matter knowledge content. In-service PE teachers spent 37.3% and prospective PE teachers spent 45.1% of class time with subject matter motor content. Figure 4.1.1 indicated the graphical representation of the lesson context percentages of prospective and in-service PE teachers.

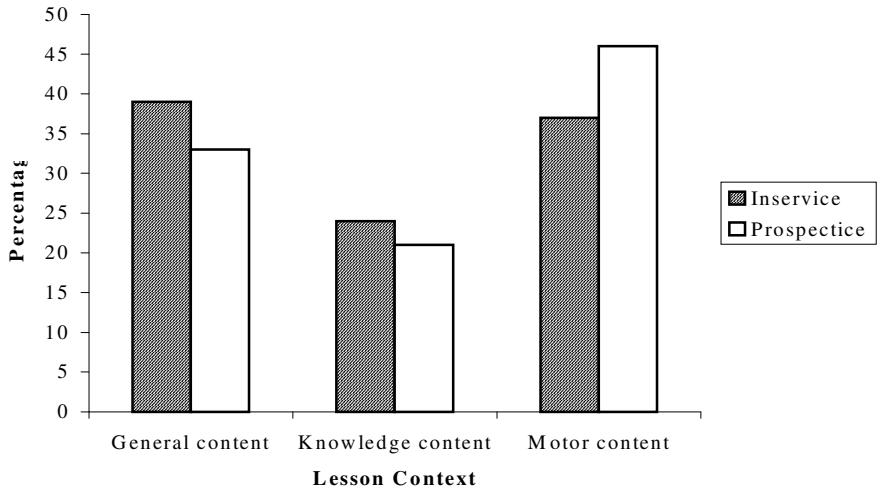

Figure 4.1.1. Graphical Representation of Lesson Context Level for Prospective and In-service PE Teachers

4.1.1. General Content Category of Lesson Context

In-service teachers spent more time with general content (39.3%) than prospective teachers (33.7%). In-service and prospective PE teachers assign 20.2% and 12.5% of class time to warm-up, and 5.9% and 9.9% of class time to management skills respectively. Percentages and standard deviations of general content category were given in Table 4.1.1.1

Table 4.1.1.1. Percentages and Standard Deviations of General Content Category

General Content	Prospective PE teachers		In-service PE teachers	
	Mean (%)	SD	Mean (%)	SD
Transition	10.3	5.0	12.9	5.7
Management	9.9	6.1	5.9	2.7
Break	1.0	1.8	0.3	0.5
Warm-up	12.5	7.8	20.2	7.7
Total	33.7		39.3	

4.1.2. Subject Matter Knowledge Content Category of Lesson Context

In-service and prospective PE teachers spent similar amount of time for subject matter knowledge content (23.4% and 21.4% respectively). Both prospective and in-service PE teachers spent major percent of Subject Matter Knowledge Content for technique and strategy categories. Percentages and standard deviations of subject matter knowledge content category were given in Table 4.1.2.1

Table 4.1.2.1. Mean Percentages and Standard Deviations of Subject Matter Knowledge Content Category

Subject Matter Knowledge Content	Prospective teachers		In-service teachers	
	Mean (%)	SD	Mean (%)	SD
Technique	11.4	6.3	13.3	6.5
Strategy	8.7	9.0	6.5	3.3
Rules	0.1	0.5	0.4	1.1
Social Behavior	0.1	0.3	0.3	0.6
Background	0.8	2.1	2.9	3.9
Total	21.1		23.4	

4.1.3. Subject Matter Motor Content Category of Lesson Context

Prospective and in-service PE teachers spent 45.1% and 37.3% of class time with subject matter motor content respectively. Skill practice was mostly emphasized part of subject matter motor content category by both prospective and in-service PE teachers. Percentages and standard deviations of subject matter motor content category were given in Table 4.1.3.1

Table 4.1.3.1. Mean Percentages and Standard Deviations of Subject Matter Motor Content

Subject Matter Motor Content	Prospective teachers		In-service teachers	
	Mean (%)	SD	Mean (%)	SD
Skill Practice	31.9	16.4	25.6	14.2
Scrimmage	5.7	9.4	5.6	7.9
Game	6.7	15.8	4.5	8.6
Fitness	0.8	1.8	1.6	3.1
Total	45.1		37.3	

4.2. Results of Learner Involvement Categories of ALT-PE for Prospective and In-service Teachers

The learner involvement categories involved observations made in conjuction with content areas. Learner involvement category included two parts; Motor engaged and not motor engaged. Learner involvement observations were made on three randomly chosen students during the class period. Individual student participated in motor activity for one fifth of total class time.

4.2.1. Not Motor Engaged Category of Learner Involvement Level

Results indicated that students in Prospective and In-service PE teachers' PE classes spent similar amount of time for not motor engaged activities (Table 4.2.1.1.). Students spent 61% of total time with on-task behavior in the classes of in-service PE teachers, this rate decreases to 45% in the classes of prospective PE teachers. Off-task behavior and waiting time of students were found higher in PE classes of prospective teachers. Percentages and standard deviations of not motor engaged category were given in Table 4.2.1.1

Table 4.2.1.1. Mean Percentages and Standard Deviations of Not Motor Engaged Category of Learner Involvement Level

Not Motor Engaged	Prospective teachers		In-service teachers	
	Mean (%)	SD	Mean (%)	SD
Interim	1.6	2.7	0.4	0.9
Waiting	20.7	14.0	15.5	9.2
Off-task	12.3	7.5	1.7	1.9
On-task	45.4	9.8	61.0	11.7
Cognitive	0.1	0.2	0.1	0.2
Total	80.1		78.7	

4.2.2. Motor Engaged Category of Learner Involvement Level

Results showed that in both prospective and in-service PE teachers' classes, students were provided almost all percent of motor engaged activity at an appropriate level. Percentages and standard deviations of motor engaged category were given in Table 4.2.2.1

Table 4.2.2.1. Mean Percentages and Standard Deviations of Motor Engaged Category of Learner Involvement Level

Motor Engaged	Prospective teachers		In-service teachers	
	Mean (%)	SD	Mean (%)	SD
M. Appropriate	18.4	10.2	20.2	10.1
M. Inappropriate	1.3	2.0	0.4	1.0
M. Supporting	0.3	0.8	0.6	1.8
Total	20.0		21.2	

4.3. Multivariate Analysis of Variance (MANOVA) for Context Level

Multivariate Analysis of Variance was conducted to determine the effect of the two groups (prospective and in-service teachers) on the context level (transition,

management, break, warm-up, technique, strategy, background, rule, social behavior, practice, scrimmage, game, fitness). MANOVA results showed overall significant differences between the groups.(Hotelings T^2 = 2.22 $F_{(12,41)}$ = 7.59 p<.001) as indicated in Table 4.3.1.

Table 4.3.1. MANOVA results for context level

Effect		F	Hypothesis df	Error df	Sig.
Teacher	Hotelings T^2	7.586	12	41	.001

Follow up univariate analysis of variances demonstrated significant differences in context level between prospective and in-service teachers. Prospective PE teachers spent significantly more time with management (9.9%) than in-service PE teachers (5.9%).

Results also indicated that in-service PE teachers spent significantly more time with warm-up activities (20.2%) than prospective PE teachers (12.5%). And in-service PE teachers also gave more background knowledge (2.9%) than prospective PE teachers (0.8%). Subsequent ANOVA results of context level for prospective and in-service teachers were given in Table 4.3.2.

Table 4.3.2. ANOVA Results of Context Level for Prospective and In-service PE Teachers

	df	F	p
General Content			
Transition	1	3.173	n.s
Management	1	10.073	<.05*
Break	1	3.868	n.s
Warm-up	1	13.097	<.05*
Subject Matter Knowledge Content			
Technique	1	1.175	n.s
Strategy	1	1.388	n.s
Rules	1	1.887	n.s
Social Behavior	1	3.097	n.s
Background	1	5.993	<.05*
Subject Matter Motor Content			
Skill Practice	1	2.275	n.s
Scrimmage	1	.000	n.s
Game	1	.525	n.s
Fitness	1	1.437	n.s

4.4. Multivariate Analysis of Variance (MANOVA) for Learner Involvement Level

Multivariate Analysis of Variance was conducted to determine the effect of the two groups (prospective and in-service teachers) on the learner involvement level (waiting, off-task, on-task, interim, cognitive, motor appropriate, motor inappropriate, motor supporting). Significant differences were found between the

prospective and in-service PE teachers (Hotelings $T^2 = 2.52$ $F_{(7,46)} = 16.56$ $p<.001$) as indicated in Table 4.4.1.

Table 4.4.1. MANOVA Results for Learner Involvement Level

Effect		F	Hypothesis df	Error df	Sig.
Teacher	Hotelings T^2	16.559	7	46	.001

Univariate analysis of variances on each dependent variable was conducted as follow-up tests to the MANOVA. There was a significant difference for on-task and off-task behavior of students in classes of prospective and in-service teachers. In the classes of prospective PE teachers, students spent significantly more time with off-task behavior (12.3%) and less time with on-task behavior (45.4%) than students who were from the classes of in-service PE teachers (1.7% for off-task and 61% for on-task). Students spent significantly more time in the classes of prospective teachers with interim behavior (1.6%) than students in the classes of in-service teachers (0.4). Actually students in the classes of both groups spent almost entire class time with four behaviors: on-task, off-task, waiting, and motor appropriate. Graphical presentation of these mostly used behaviors was given in Figure 4.4.1.

While the students of prospective teachers spent significantly more time with off-task and interim behaviors, the students of in-service teachers spent significantly more time with on-task behaviors. However, there was no significant difference in motor appropriate time of students. Subsequent ANOVA results of learner involvement level for prospective and in-service teachers were given in Table 4.4.2.

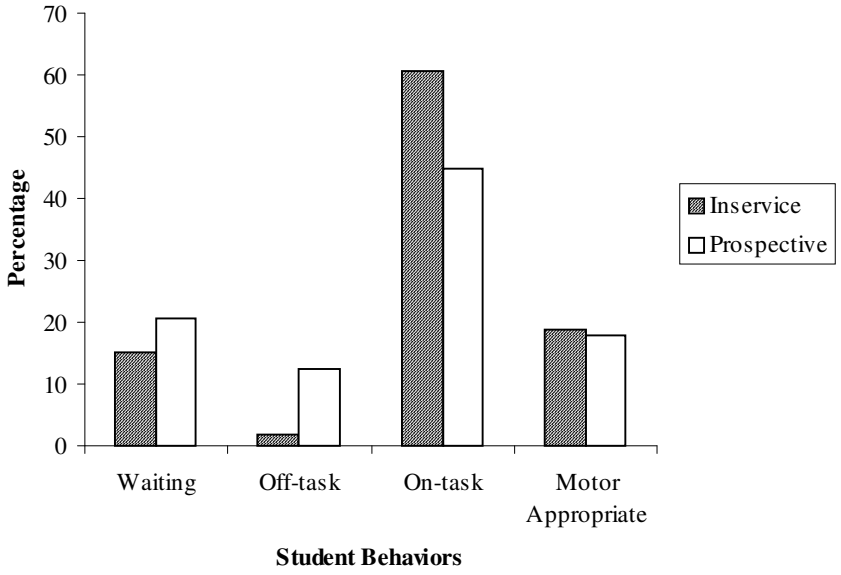

Figure 4.4.1. Graphical Representation of Mostly Used Behaviors in the Classes of Prospective and In-service PE Teachers

Table 4.4.2. ANOVA Results of Learner Involvement Level for Prospective and In-service Teachers

	df	F	p
Not Motor Engaged			
Interim	1	4.644	<.05*
Waiting	1	2.678	n.s
Off-task	1	53.186	<.001*
On-task	1	28.104	<.001*
Cognitive	1	2.450	n.s
Motor Engaged			
M. Appropriate	1	.401	n.s
M. Inappropriate	1	3.721	n.s
M. Supporting	1	.499	n.s

4.5. Analysis of Variances (ANOVA) for ALT-PE

Analysis of variance test was conducted to assess whether means on ALT-PE were significantly different between groups. The independent variable was group (prospective and in-service teachers) and dependent variable was the mean ALT-PE scores. The ANOVA result was not significant, $F(1,52) = .073$, $p = .788$ (Table 4.5.1.).

Table 4.5.1. ALT-PE Results for Prospective and In-service PE Teachers' Classes

	Prospective	In-service	F (1,52)	P
Mean ALT-PE (%)	17.9	18.7	.073	.788

The results of ANOVA supported that students in the classes of prospective and in-service PE teachers had similar scores on ALT-PE (17.9% for students in prospective PE teachers' classes and 18.7% for students in in-service PE teachers' classes).

CHAPTER 5

DISCUSSION

The aim of this study was to compare the lesson context, learner involvement behaviors and ALT-PE scores of students in prospective and in-service PE teacher's classes by using ALT-PE observational instrument. The results of the study were discussed in the framework that included the differences in general content, subject matter motor content, and subject matter knowledge content at context level and motor engaged and not motor engaged behaviors at learner involvement level. As high-level motor appropriate behaviors and low-level of non-instructional behaviors (off-task, waiting, interim) were directly related with teaching effectiveness, these findings will contribute to understand (1) how the teacher constructed the class time (2) what the student behavior was and (3) what percentages of class time spent with motor appropriate activities.

5.1. Evaluation of Lesson Context for Prospective and In-service Teachers

Findings demonstrated that in-service and prospective teachers spent 39% and 34% of class time with general content (transition, management, warm-up, and break) respectively. They had similar time for subject matter knowledge content (technique, strategy, rules, social behavior, and background information). While

prospective PE teachers separated 45.1% of total class time to motor content, in-service teachers separated 37.3% of total class time to motor content.

In hypothesis one, it was stated that there was no significant difference between prospective and in-service teachers in terms of lesson context in PE classes. MANOVA results of the study indicated that there was a significant difference between prospective and in-service teachers in terms of lesson context. This finding failed to support the hypothesis one.

Length of management time, warm-up time, and background information time were significantly different for prospective and in-service PE teachers. According to the univariate ANOVA results, significant difference was found in management time between prospective (9.9%), and in-service (5.9%) teachers. This finding was consistent with the literature that prospective teachers spent more time on managerial activities. Griffey and Housner (1991) suggested that inexperienced teachers tend to have students more under control than did their experienced counterparts and spent more time for managerial skills.

Another univariate ANOVA result showed that in-service teachers spent significantly more time for warm-up activities than did prospective teachers. Sufficient warm-up activities prepare the muscles for later practices and prevent injuries (Heyward, 1991). So every teacher should adjust adequate time to warm-up activities. Çiçek (1998) stated that warm-up activities should take ten to fifteen minutes generally and should be appropriate to lesson objectives. This duration equals to 25%to 35% of total class time. But this study reveals that prospective

teachers spent 12.5%, and in-service teachers spent 20% of total class time with warm-up activities.

Total percentage of class time spent for knowledge content (technique, strategy, rules, social behavior, and background) was not significantly different between prospective (21.1%) and in-service teachers (23.5%). But there was a significant difference between in-service and prospective PE teachers on providing more background information than prospective teachers in PE classes (0.8% and 2.9% respectively). This result was also parallel to previous findings that background information such as, history, records, and heroes of subject matter or its' importance in later life, had no or very little period of the class time (Evans, 1999; Ward et al, 1999). But this kind of information should take optimal time because they can get care of students and can increase the level of their interest to subject matter. As stated in several literature teachers spent between 10% and 26% of class time with knowledge content (Byra & Coulon, 1994; Godbout et al, 1983; Metzler, & Young, 1984; Evans et al, 1999; Ward et al, 1999). Knowledge content gives theoretical explanations about technique of skill before practicing. Physical educator should decrease the explanation period by giving short, clear, and understandable information. Beckett (1989) stated that brief explanation and demonstration period increase student achievement because of longer time for practice.

Another important section of PE class was providing subject matter motor content for effective PE teaching. In this study, it was found that prospective and in-service teachers spent 45.1% and 37.3% of class time with subject matter motor content (practice, scrimmage, game, or fitness) respectively. There was no significant difference between the groups but prospective teachers spent slightly more time with

motor activity than did prospective teachers. Graham (1993) stated that experienced teachers tend to meet the knowledge-based demands of the students. Technical explanations and demonstrations of the subject matter took shorter time for prospective teachers (11.4%) than in-service teachers (13.3%). Moreover, in-service teachers spent more time with warm-up activities and it could be the reason for shorter time of motor engaged time.

The percentage of total time devoted to subject matter (motor and knowledge) content was 66% for prospective teachers and 62% for in-service teachers that fall below the range of findings reported in other ALT-PE studies (Evans et al, 1999; Ward et al, 1999). Literature ranged subject matter percentage as high as 82% (Silverman et al, 1984) and as low as 66% (Godbout et al, 1983). Findings showed that both prospective and in-service teachers should decrease the time for general content activities and they should assign this time for providing motor activities to their students.

5.2. Evaluation of Learner Involvement for Prospective and In-service Teachers

Comparisons of how class time was spent by the learners at the learner involvement level revealed differences within the subcategory "not motor engaged" and similarities within the subcategory "motor engaged".

Findings indicated that in-service and prospective teachers' PE classes students spent 78.8% and 80% of class time with "not motor engaged" activities respectively. And remaining one fifth of total class time was assigned with "motor engaged" content for prospective and in-service PE teachers.

Hypothesis two stated that there was no significant difference between the learner involvement level of the students of prospective and in-service PE teachers. Results of the study indicated that there was a significant difference between prospective and in-service teachers in terms of learner involvement. This finding failed to support the hypothesis two. ANOVA results demonstrated that off-task, on-task, and interim behaviors of students were significantly different in prospective and in-service PE teachers' classes.

Percentages of class time spent for on-task behavior of students was significantly different between the groups (45.5% for prospective and 61% for in-service PE teachers). On-task behavior showed that students were appropriately engaged in carrying out an assigned non-subject matter task (e.g., management task, transition task, warm-up task). Siedentop (1991) compared the experienced and new PE teacher teaching behaviors and stated that new teacher as "new adult", in the sense that he/she was entering a teaching environment without sufficient experiences. So it was normal that new teacher found teaching complex and he/she had difficulty in controlling the class.

In addition, students were spending their 12.5% of class time with off-task behaviors in the classes of prospective teachers but this rate was two percent over than in the classes of in-service teachers. Actually, off-task was related with on-task behavior as one increases, the other decreases and vice versa. Prospective teachers were found more excited than in-service teachers during the lesson (Metzler, 1990; Siedentop, 1991).

Previous studies have indicated that the more opportunities students have active participation at an appropriate level, the more likely learning is to occur (Rink, 1996; Parker, 1989). Subsequently, researchers used ALT-PE as an indicator of the amount of time students were spending actively engaged in an appropriate activity at a level conducive to maximum learning. Unfortunately, students were spending anywhere from 15% to 20.5% of their class time waiting. The main reason for waiting time might be organizing practices with inadequate equipment. For example, in handball lesson, two students had one ball to use but in high jump lesson students had one high jump mat to use. So every student had to wait until the other student complete to drill. Other reason could be the grouping students in one queue during activities. Physical education teacher must consider on variety group organization in a few groups and settings. Teacher should decrease the waiting time for students during exercise. Hould and Brunelle (1981) suggested that grouping students and using of practice area could decrease the waiting time. Templin (1983) suggested that more than half of the class time passes with waiting. PE teacher should modify practices and games to allow more direct student participation.

Although there was a significant difference in interim behavior between groups, it was found very small percentages just like cognitive behavior of students. Because of the great amount of time the students were spent waiting and off-task behavior, the amount of time they had to participate was limited (Evans et al, 1999; Ward et al, 1999).

The amount of time devoted to learner motor engaged behavior was approximately the same across conditions. Within all three subcategories (motor

appropriate, motor inappropriate, motor supporting) the results were quite similar and there was no significant difference between two groups.

5.3. Evaluation of Total ALT-PE for Prospective and In-service Teachers

As stated in many literatures about teacher effectiveness, effective instruction, and quality physical education programs were all related with the percentage of academic learning time (ALT) which is an amount of time a students spends in motor skill tasks that are considered relevant and appropriate with the assigned activity.

Hypothesis three stated that there was no significant difference in ALT-PE scores between the classes of prospective and in-service teachers. Results of the study indicated that there was no significant difference between prospective and in-service teachers in terms of total ALT-PE scores. This finding about the hypothesis three was accepted.

The results of the present study showed that ALT-PE percentages were 17.9% and 18.7% for prospective and in-service teachers' classes respectively. So there was no significant difference between prospective and in-service teachers' classes by considering the total ALT-PE results.

At the end of his review, Metzler (1989) reached the conclusion that ALT is low regardless of who the teacher is. Graham, Hopple, Manros, and Sitzman (1993) stated that experienced teachers tend to meet the demands of the students. These results were medium according to the reviews of Parker (1989) for two groups. Parker (1989) found the ALT-PE percentages between 14% and 22% and another study Silverman et al (1984) found similar ALT-PE results between 15% and 25% of total class time. However, Hastie (1994) found three different ALT-PE percentages

among three physical educators. He concluded that teacher A engaged their students 42.9% of class time with ALT-PE and he has classified as effective teacher. This teacher made short explanation, and he also did not increase the management time. And two other teachers classified as less effective teachers because of low ALT-PE percentages (23.3% and 27.7%). In a similar study, Ward et al (1999) found the percentages of ALT-PE as 27%, 32%, and 42% for three different teachers. Moreover, Evans et al (1999) found the ALT-PE percentages from 45% to 66%, which were almost three times greater than previous results.

It is not expected from students that they must participate in motor activity during the whole PE class period. But teacher should organize the 45-50% of class time for appropriate motor activity for each individual student. In this study, 17.9% and 18.7% of Total ALT-PE scores were found. These findings were close to lower limits in the literature. So both groups of PE teachers were ineffective teachers because of the findings.

5.4. Conclusion and Recommendations

The ultimate goal of PE class is to allow all children to participate and enjoy the benefits of sports for a lifetime. Building quality physical education programs for the purpose of developing physical skills, allow students to participate comfortably in sport activities. It is then expected that students would join physical activities through much of their later life. But this study showed that prospective and in-service teachers have not given sufficient time for skill learning.

Low ALT-PE percentages may be attributed to class size, type of activity and amount of equipment, teacher behavior, class structure and organization. From

present study it seems that teacher should try to decrease management, waiting, and transition percentages and organize lessons with the primary goal of improving successful engagement time of students. This statement was supported by the results from this study as well as previous studies (Byra, & Coulon, 1994; Lacy et al, 1993; Lacy et al, 1998).

The results of this study can only be generalized to the 26 prospective and 28 in-service teachers and their 162 students from 54 observed classes. Future studies should be completed on the appropriate motor engagement percentages of students to see the effectiveness of variety PE classes.

Additional studies in other settings would be helpful to expand the database in this area. Future studies focusing on the effects of such things as different teachers, class size, class structure, type of activity on student ALT could also aid teachers and researchers to better understand what constitutes an effective teaching-learning environment in PE classes.

Physical education teacher educators should use findings of this study to evaluate their programs. Especially, findings may provide valuable data for field practice studies of prospective PE teachers.

REFERENCES

Anderson, W. (1983). Observations from outside the system. *Journal of Teaching in Physical Education,* Monograph, Dodds & Rife (eds.), 53-59.

Aufderheide, S. K. M. (1980). Individualized teaching strategies in mainstreamed physical education classes and their relationship to academic learning time. *Dissertation Abstracts International,* 41(4), 1472A.

Beauchamp, L., Darst, P., & Thompson, L. P. (1990). Academic learning time as an indication of quality high school physical education. *Journal of Physical Education, Recreation and Dance,* 61(1), 92-95.

Beckett, K. D. (1989). The effects of motor appropriate engagement ALT-PE(M) on achievement in a badminton skill during an experimental teaching unit.*The Physical Educator,* 46(1), 36-40.

Behets, D. (1996). Comparing teacher behavior during active learning time among physical education specialist and non-specialist teachers. *Journal of Classroom Interaction,* 31(2), 23-29.

Birdwell, D. M. (1980). The effects of modification of teacher behavior on the academic earning time of selected students in physical education. Dissertation Abstracts International, 41(4), 1472A.

Byra, M., & Coulon, S. C. (1994). The effect of planning on the instructional behaviors of preservice teachers. *Journal of Teaching in Physical Education*, 3, 123-139.

Centers for Disease Control and Prevention. Guidelines for school and community programs to promote lifelong physical activity among young people, (1997) http://www.cdc.gov

Cruickshank, D. R., Jenkins, D. B., & Metcalf, K. K (2003). *The Act of Teaching* (3rd ed). NY: McGraw-Hill Pub.

Çiçek, S. (1998). *Evaluation of Physical education teacher education program at Middle East Technical University*. Unpublished Doctoral Dissertation, Middle East Technical University, 1998.

Çiçek, Ş. & Bizati, Ö. (2001). Stajyer beden eğitimi öğretmenleri ve karşılaştıkları problemlere ilişkin bir çalışma. *Spor Bilimleri Dergisi,* 12(4), 3-17.

Çiçek, S., Kirazcı, S., & Koçak, S. (1998). Physical education teacher profile in Turkey: demographic characteristics, habits, working atmosphere. *Spor Bilimleri Dergisi,* 9, 32-42.

De Marco, G. M., Mancini, V. H., Wuest, D. A., & Schempp, P. G. (1996). Becoming reacquainted with once familiar and stil valuable tool: Systematic observation methodology revisited. *International Journal of Physical Education*, 32(1), 17-26.

Demirhan, G. (1997). Beden eğitimi ve sporda öğretme-öğrenme ekinlikleri ve felsefe. *Spor Bilimleri Dergisi*, 8(1), 4-16.

Dixon, S. L. (1997). *A study of ALT-PE and opportunity to respond to determine teaching effectiveness of college basketball coaches.* (Doctoral dissertation, University Microfilms No: 9727479)

Dodds, P., & Rife, F. (1983). Time to learn in physical education: History, completed research, and potential future for academic learning time in physical education. *Journal of Teaching in Physical Education*, Monograph 1.

Evans, S. A., Nguyen, P. T., Barrett, T. M., Johnson, M. K., Doutis, P., Brobst, B., & Shinoda, Y. (1999). Curriculum effects in seventh-grade pickleball. *Journal of Teaching in Physical Education,* 18, 444-454.

Godbout, P., Brunelle, J., & Tousignant, M. (1983). Academic learning time in elementary and secondary physical education classes. *Research Quarterly for Exercise and Sport*, 54(1), 11-19.

Graham, G. (1987). Motor skill acquisition – An essential goal of physical education programs. *Journal of Physical Education, Recreation and Dance,(58),* 44-48.

Graham, G., Hopple, C., Manros, M., & Sitzman, T. (1993). Novice and experienced children's physical education teachers: Insights into their situational decision making. *Journal of Teaching in Physical Education,*12, 197-214.

Griffey, D. (1983). Academic learning time in context: On the nonlinear and interactional characteristics of engaged time. *Journal of Teaching in Physical Education,* Monograph, Dodds & Rife (eds.), 34-37.

Griffey, D. C. & Housner, L. D. (1991). Differences between experienced and inexperienced teachers' planning decisions, interactions, student engagement, and instructional climate. *Research Quarterly for Exercise and Sport*, 62(2), 196-204.

Harrison, J. M., & Blakemore, C. L. (1992). *Instructional Strategies for Secondary School Physical Education* (3rd Ed.). Dubuque: Wm. C. Brown Pub.

Hastie, P. A. (1998). Effect of instructional context on teacher and student behaviors in physical education. *Journal of Classroom Interaction,* 33(2), 24-31.

Hastie, P. A. (1994). Selected teacher behaviors and student ALT-PE in secondary school physical education. *Journal of Teaching in Physical Education* 13(3), 242-259.

Hawkins, A., Wiegand, R., & Behneman, C. (1983). The conceptual nature of ALT-PE and its use in an undergraduate teacher preparation program. *Journal of Teaching in Physical Education,* Monograph, Dodds & Rife (eds.), 11-16.

Heyward, V. H. (1991). *Advanced Fitness Assessment and Exercise Prescription* (2nd Ed). Champaign, IL: Human Kinetics

Johns, D. P., Ha, A. S. C., & Macfarlane, D. J. (2001). Raising activity levels: A multi dimensional analysis of curriculum change. *Sport, Education, and Society* 6(2), 199-210

LaMaster, K. J., & Lacy, A. C. (1993). Relationship of teacher behaviors to ALT PE in junior high school physical education. *Journal of Classroom Interaction,* 28(1), 21-25.

Lacy, A., LaMaster, K., & Tommaney, W. (1996). Teacher behaviors and student ALT in elementary physical education. *The Physical Educator,* 53(1), 44-50.

Lacy, A., Willison, C., & Hicks, D. (1998). Student and teacher behaviors in an exemplary elementary physical education setting. *Journal of Classroom Interaction,* 33(2), 1-5.

Lumpkin, A. (1990). Physical Education and Sport: A contemporary introduction (2nd Ed) Times Mirror/Mosby College Publishing.

Martinek, T., & Karper, W. (1983). The influence of teacher expectations on ALT in physical education instruction. *Journal of Teaching in Physical Education,* Monograph, Dodds & Rife (eds.), 48-52.

Metzler, M. (1990). *Instructional Supervision for Physical Education*. Champaign, IL: Human Kinetics.

Metzler, M. (1983b). Academic learning time-physical education for in-service teachers: Questions and insights. *Journal of Teaching in Physical Education,* Monograph, Dodds & Rife (eds.), 17-21

Metzler, M. W., & Young, J. C. (1984). The relationship between teachers' preactive planning and student process measures. *Research Quarterly for Exercise and Sport,* 55(4), 356-364.

National Association for Sport and Physical Education. Moving into the future: National standards for physical education. NASPE, (1995).

Parker, M. (1989). Academic Learning Time in Physical Education (ALT-PE), 1982 Revision. In P. W. Darst, D. B. Zakrajsek, & V. H. Mancini (Eds). *Analyzing Physical Education and Sport Instruction* (2nd Ed.) pp. (195-206). Champaign, IL: Human Kinetics.

Parker, M. & O' Sullivan, M. (1983). Modifying academic learning time-physical education for game play contexts and other reflections. *Journal of Teaching in Physical Education,* Monograph, Dodds & Rife (eds.), 8-10.

Randall, L. E. (1992). *Systematic Supervision For Physical Education*. Champaign, Illinois. Human Kinetics Publishers.

Rate, R. W. (1980). A descriptive analysis of academic learning time and coaching behaviors in interscholastic athletic practices. *Dissertation Abstracts International,* 41(7), 2998A.

Rink, J. E. (1996). Effective Instruction in physical education. (In Silverman, & Ennis. 1996*). Student Learning in Physical Education: Applying research to enhance instruction*. Champaign, IL: Human Kinetics, pp. 171-198.

Siedentop, D. (1991). *Developing Teaching Skills in Physical Education* (3rd ed). Mayfield Publishing Company, CA 94041.

Siedentop, D. (1983). Academic Learning Time: Reflections and prospects. *Journal of Teaching in Physical Education,* Dodds & Rife (eds.), Monograph, 3-7.

Siedentop, D., Mand, C., & Taggart, A. (1986). *Physical education: Teaching and curriculum strategies for grades 5-12*. Mayfield Publishing Company.

Silverman, S., Devillier, R., & Ramirez, T. (1991). The validity of academic learning time-physical education (ALT-PE) as a process measure of achievement. *Research Quarterly for Exercise and Sport,* 62(3), 319-325.

Silverman, S., Dodds, P., Placek, J., Shute, S. & Rife, F. (1984). Academic learning time in elementary school physical education (ALT-PE) for student subgroups and instructional activity units. *Research Quarterly for Exercise and Sport,* 55(4), 365-370.

Templin, T. (1983). Triangulating ALT-PE: A research consideration. *Journal of Teaching in Physical Education*, Monograph, Dodds & Rife (eds.), 38-41.

Tousignant, M., Brunelle, J., Pieron, M., & Dhillon, G. (1983). What's happening to the ALT-PE research outside the USA? *Journal of Teaching in Physical Education*, Monograph, Dodds & Rife (eds.), 27-33.

Turner, J. C., & Meyer, D. K. (2000). Studying and understanding the instructional contexts of classrooms: Using our past to forge our future. *Educational Psychologist*, 35(2), 69-85.

Van Der Mars, H. (1989). *Observer reliability: Issues and procedures*. In P. W. Darst, D. B. Zakrajsek, & V. H. Mancini (Eds). Analyzing Physical Education and Sport Instruction (2nd Ed.) pp (53-80). Champaign, IL: Human Kinetics.

Van Der Mars, H., Vogler, B., Darst, P., & Cusimano, B. (1994). Active supervision patterns of physical education teachers and their relationship with student behaviors. *Journal of Teaching in Physical Education,* 14, 99-112.

Ward, P., Barrett, T. M., Evans, S. A., Doutis, P., Nguyen, P. T., & Johnson, M. K. (1999). Curriculum effects in eighth-grade lacrosse. *Journal of Teaching in Physical Education,* 18, 428-443.

APPENDICES

APPENDIX A

ACADEMIC LEARNING TIME - PHYSICAL EDUCATION (ALT-PE)

Purpose: to measure the portion of time in a physical education (PE) lesson that a student is involved in motor activity at an appropriate success rate. The total instrument is capable of describing not only the type of motor activity in which selected students are involved, but also the context in which the total class is involved. The information on motor activity provides the most useful data physical education.

CATEGORY DESCRIPTIONS

A. CONTEXT LEVEL

The context level describes the context of the setting within which specific individual student behavior is occurring. This level is comprised of two major facets: general content and subject matter content.

1. General Content

Class time during which students are not intended to be involved in physical education activities.

a. Transition (T): Time devoted to managerial and organizational activities related to instruction

b. Management (M): Time devoted to class business that is unrelated to instructional activity

c. Break (B): Time devoted to rest and/or discussion of issues unrelated to subject matter.

d. Warm-up (WU): Time devoted to routine execution of physical activities whose purpose is to prepare the individual for engaging in further activity, but not designed to alter the state of the individual on a long term basis.

2. Subject Matter Knowledge Content

Class time when the primary focus is intended to be on knowledge related to PE content.

a. Technique (TN): Time devoted to transmitting information concerning the physical form (topography) of a motor skill.

b. Strategy (ST): Time devoted to transmitting information concerning plans of action for performing either individually or as a group.

c. Rules (R): Time devoted to transmitting information about regulations that govern activity related to the subject matter.

d. Social Behavior (SB): Time devoted to transmitting information about appropriate and inappropriate ways of behaving within the context of the activity.

e. Background (BK): Time devoted to transmitting information about a subject matter activity such as its history, traditions, rituals, heroes, heroines, records, importance in later life, or relationship to fitness.

3. Subject Matter Motor Content

Class time when the primary focus is intended to be on motor involvement in PE activities.

a. Skill Practice (P): Time devoted to practice of skills or chains of skills outside the applied context with primary goal of skill development.

b. Scrimmage/Routine (S): Time devoted to refinement and extension of skills in an applied setting (i.e., in a setting that is like or stimulates the setting in which the skill is actually used) and during which there is frequent instruction and feedback for the participants.

c. Game (G): Time devoted to application of skills in a game or competitive setting when the participants perform without intervention from the instructor/coach.

d. Fitness (F): Time devoted to activities whose purpose is to alter the physical state of the individual in terms of strength, cardiovascular endurance, or flexibility.

B. LEARNER INVOLVEMENT LEVEL

The learner involvement level describes how individual learners are involved in the PE setting described in the context level. The learner involvement level has two facets: not motor engaged and motor engaged.

1. Not Motor Engaged

Any student involvement other than motor involvement with subject matter-oriented motor activities.

a. Interim (I): The student is engaged in non-instructional aspect of an ongoing activity.

b. Waiting (W): The student has completed a task and is waiting for the next instructions or opportunity to respond.

c. Off-Task (OF): The student is either not engaged in an activity he or she should be engaged in or is engaged in an activity other than the one he or she should be engaged in.

d. On-Task (ON): The student is appropriately engaged in carrying out an assigned non-subject matter task (e.g., management task, transition task, warm-up task).

e. Cognitive (C): The student is appropriately involved in a cognitive task.

2. Motor Engaged

Motor involvement with subject matter-oriented motor activities related to the goals of the setting. Thus the categories under the heading not motor engaged might include motor activity, but not subject matter-oriented motor activity.

a. Motor Appropriate (MA): The student is engaged in a subject matter motor activity in such a way as to produce a high degree of success.

b. Motor Inappropriate (MI): The student is engaged in a subject matter-oriented activity, but the activity-task is either too difficult for the individual's capabilities or so easy that practicing it could not contribute to lesson goals.

c. Supporting (S): The student is engaged in subject matter motor activity whose purpose is to assist others in learning or performing the activity.

APPENDIX B

ALT-PE RECORD SHEET

ALT-PE RECORD SHEET

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
S___	C																										
	LI																										

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
S___	C																										
	LI																										

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
S___	C																										
	LI																										

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
S___	C																										
	LI																										

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
S___	C																										
	LI																										

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
S___	C																										
	LI																										

CONTEXT LEVEL (C)			LEARNER INVOLVEMENT LEVEL (LI)	
General Content	Subject Matter Knowledge Content	Subject Matter Motor Content	Not Motor Engaged	Motor Engaged
-Transition (T)	-Technique (TN)	-Skill practice (P)	-Interim (I)	-Motor Appropriate (MA)
-Management (M)	-Strategy (ST)	-Scrimmage/Routine (S)	-Waiting (W)	-Motor Inappropriate (MI)
-Break (B)	-Rule (R)	-Game (G)	-Off-task (OF)	-Supporting (MS)
-Warm-up (WU)	-Social Behavior (SB)	-Fitness (F)	-On-task (ON)	
	-Background (BK)		-Cognitive (C)	