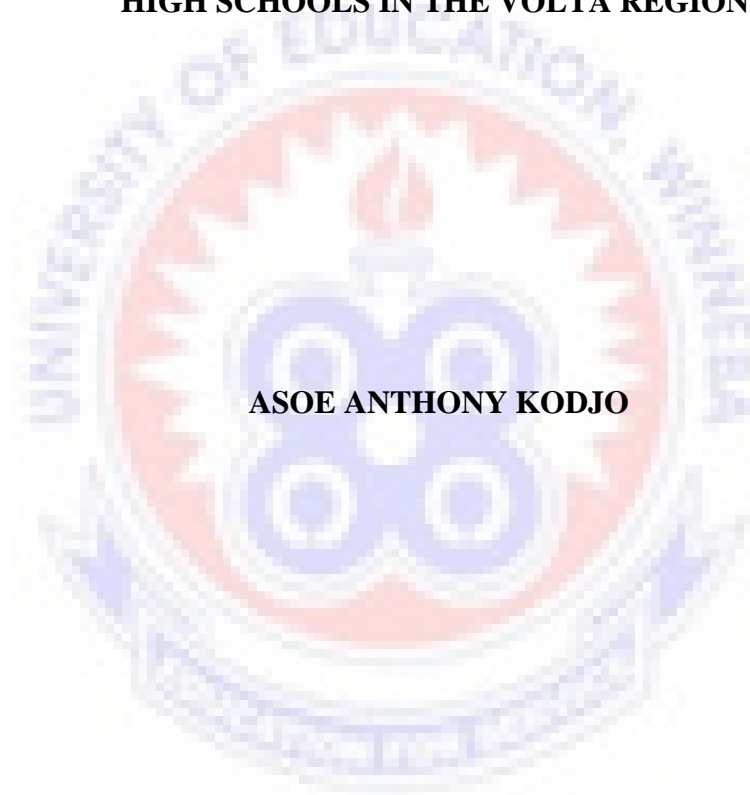


UNIVERSITY OF EDUCATION, WINNEBA

**A COMPARATIVE STUDY OF ACADEMIC LEARNING TIME OF PHYSICAL
EDUCATION (EXPERIENCED AND BEGINNER TEACHERS) IN SENIOR
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ASOE ANTHONY KODJO

7130090008

**A DISSERTATION IN THE DEPARTMENT OF HEALTH, PHYSICAL
EDUCATION, RECREATION AND SPORTS, FACULTY OF SCIENCE,
SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES, UNIVERSITY OF
EDUCATION, WINNEBA IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTERS OF EDUCATION
DEGREE IN PHYSICAL EDUCATION.**

DECEMBER, 2015

DECLARATION

STUDENT'S DECLARATION

I, ASOE ANTHONY KODJO declare that this Thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work and it has not been submitted, either in whole or in part for another degree elsewhere.

Signature of Student:

Date:

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines in supervision of thesis laid down by the University of Education, Winneba.

NAME OF SUPERVISOR:

SIGNATURE:

DATE:

ACKNOWLEDGMENTS

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DEDICATION

I wish to dedicate this work to my beloved son Asoe Samuel and my wonderful daughter Asoe Rose Yawa and of course my dedicated wife Madam EmmanuellaKpoh.



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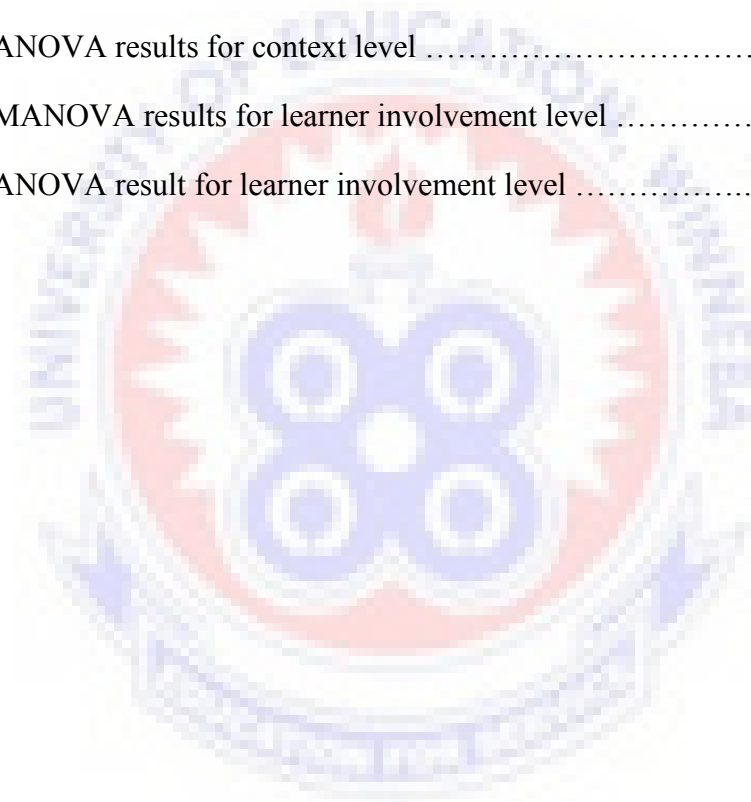
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ABSTRACT

The purpose of the study was to compare teaching effectiveness of beginner and experienced Physical Education teachers in the Volta Region of Ghana. It specifically examined how the class time is managed using Academic Learning Time- Physical Education as a tool. The population for the study was made up of Physical Education teachers and Senior High School students in selected districts and municipalities of the Volta Region. Participants were seven (7) experienced and seven (7) beginner PE teachers at the Senior High School. Thirty-five minutes regular lesson of each teacher were video recorded in their natural setting and ALT-PE observational instrument was used to do the analysis. Context level, learner involvement behaviours and ALT-PE scores were compared for the two groups of teachers. MANOVA results show no significant difference in students' behaviour and course content activity between groups. Only experienced teachers spent significantly more time with warm-up, strategy and scrimmage. Students in the classes of beginner teachers spent significantly more time with on-task, motor appropriate and inappropriate unsuccessful behaviours, but students in the classes of experienced teachers spent significantly more time with off-task behaviours. The results however indicated no significant difference between the groups. It seems fair to suggest that beginner and experienced PE teachers should decrease the time on management, transition, waiting, and theoretical explanations, while allocating more time on physical activity (Practice). The low ALT-PE percentages may be credited to class size, type of activity and amount of equipment, teacher behaviour, class structure and organization. From this 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.

CHAPTER ONE

INTRODUCTION

One of the important characteristics of effective teaching is to devote sufficient time to appropriate physical activity in physical education classes.

1.1 Background to the Study

Volta Region is one of Ghana's ten administrative regions, with Ho designated as the capital. It is located west of the Republic of Togo and to the East of lake Volta. It consists of 25 administrative districts with several ethnic groups such as the Ewe, the Guan and the Akan folk. According to Ghana Statistical Service (cited in Ministry of Education, 2010/11 annual report), the region has 92 Senior High Schools most of which are Government owned. These schools have physical education teachers according to the student population. While some schools have three physical education teachers, others have one or two depending on the population of the school. Most of the schools allocate 40 minutes a period for 80 minutes double period a week per class. Few schools allocate only 40 minutes single period for teaching physical education lessons.

Physical activity is necessary for healthy living especially for students from kindergarten through Senior High School. Opportunity to involve them in practical physical education class has many beneficial effects on their life. Studies related to benefits of physical activities indicate that it helps the development of flexibility, cardiovascular endurance, muscular strength and muscular endurance (Heyward, 1991). Again regular physical activity can significantly reduce the risk of developing heart disease, diabetes, colon cancer, high blood pressure (Centre for Disease Control and Prevention CDC, 1997).

Involvement of students actively in class is a major issue of teaching physical education subject. Schools are the institutions where physical activity promotion must be enhanced as students go through the pre-tertiary school of required physical education. Physical education programme for students should focus on promoting regular physical activity that would be 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.

Physical education teacher should supervise the student well to decrease the non-instructional disruptions and assign longer time for learning. Class activities must be tailored to match student abilities so that optimal amount of learning occurs. Effective teaching includes good management, good organization and sufficient time for clarification and demonstration period. In that way sufficient physical activity time can be allocated for reaching effective teaching. Also, it is argued that the potential psychological and social benefits of physical education, physical activity and sport may indirectly enhance academic performance by enhancing mental health, improving feelings of feelings connectedness with school and by enhancing positive social behaviours (Trudeau & Shephard, 2008, 2010).

In physical education lessons, selected practices, drills and other activities should be appropriate for ability and developmental level of the individual. Motor development includes the way in which individual acquire skills as a function of his age. One of the physical educator's roles is to enhance the acquisition of motor skill by individual 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).

These can be achieved only when experience is brought to bear. According to Pete Seeger (2008) “education is when you read the fine print. Experience is what you get if you don’t”. In Ghana, the standard for gaining experience on the job is five years. Also, in Ghana education service, one of the important criteria for selecting teachers among others for the best teacher award scheme is that “the teacher must have taught for a minimum of five years (Sekyere 2012). Also, this is evident in the job advertisements in the media as many advert specifically spell out five years experience. Even though experience teaches slowly according Froude (2009) its lesson is not easy to forget. With this in mind, the researcher found out the level of attainment of the study teachers at the time of conducting the study. It was evident that none of the teachers got a second degree which could influence the level of experience in teaching the subject in the categories.

Understanding what happens in physical education class is important for effective teaching. Metzler (1990) explained that children in physical education classes spend about 20-25% of their times for managerial task 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 their activities beyond or below their physical activity level in which case they become frustrated or bored. Physical education classes, where students appropriately perform the skill assigned to them; the teacher is credited for doing an effective job (Rate, 1980).

Beginner Teacher Evaluation Study (B.T.E.S) was conducted in the mid-1970s to understand the student engagement with subject matter. In this evaluation, three measures of instructional time were defined. Allocated time is the whole time a teacher allocates for instruction and practice in a particular subject area. Engaged time is the period in allocated time a student is actually involved with the subject matter. Academic Learning Time (ALT) is the amount of engaged time that the student is involved with the materials that are appropriate to his or her ability resulting in high success and low error rate (Parker, 1989). Academic Learning Time (ALT-PE) is an application of ALT in Physical Education 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 given sufficient time for suitable physical activities. It is reasonable that teacher educators can hold their students' teachers accountable for their performance during the apprenticeship or other field experiences (Siedentop, 1983).

Academic Learning Time in Physical Education has made useful improvement and provided valuable data for extending knowledge base about teaching, learning and teacher education. It also offers many opportunities for teaching and learning in unique environment (Dodds & Rife, 1983). Indeed, systematic observations of student behavior have been used as an alternative means of measuring academic performance (Mahar et al., 2006; Grieco et al., 2009).

In addition to theoretical explanations, transition and management parts, physical education class consists of series of movements, sudden actions, temporary or no producible movements; each is unique (Anderson 1983; Silverman, Dodds, placek, Shute & Rife, 1984). Assessing the students' achievement 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 interest (b) what students are doing during the class period, and (c) what portion of the class time is allocated to appropriate physical activity.

There are two crucial consideration variable for selecting ALT-PE as a student criterion variable. First students' behavior category "motor appropriate" represented the time engaged in a motor task at a difficult level, which will enhance skill development. Secondly, ALT-PE system generated data by observation of individual students. In addition, the system is relatively simple observation skills are required rather easily. Moreover, it has a popular comprehensive category that generates data regarding what the student do when they are not on the motor appropriate category (Hawkins, Wiengand & Behneman, 1983).

ALT-PE instrument is divided into two parts as content level and learner involvement levels. Content level demonstrate how much class time passes with (a) general content (b) subject matter knowledge content and (c) subject matter motor content. Learner involvement level demonstrates whether (a) the student is motor engaged (b) not motor engaged. It demonstrates how much time is allocated to a subject of the lesson and what the students tend to do in that particular time. It also shows what extent the student is active or inactive relevant to the subject matter taught in the class.

1.2 Statement of the problem

Physical education is a unique subject 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. However, it is not clear whether the professional physical education teachers effectively plan towards time management in their lesson delivery. It is the clearing of these thought that the research topic was chosen.

It is often argued that teachers who come out new from school are endowed with new knowledge and are likely to teach better than the so called experienced teachers. At the end of the study how much class time is spent to physical activity, theoretical explanation and class organizations can be determined to analyze teaching effectiveness. Furthermore, how much time is spent on class management, warm-up activities, and transition between events and breaks during the class period? Student behaviours will also be analyzed in P. E. classes. In this study, physical education teachers with above five years experiences are designated as “experienced teachers” and those five years or less “beginner teachers”

1.3. Purpose of the study

The purpose of the study was to compare; teaching effectiveness of experienced and beginner PE teachers teaching in relation with student behaviours, course content activities, and scores of Academic Learning Time in Physical Education (ALT-PE).

1.4. The objectives of the research were to;

- Find out how class time is structured by the PE teachers
- Examine the students behaviours using ALT-PE
- Find out the percentage of class time with ALT-PE

1.5. Research Questions

The following research questions were answered;

- i) How do experienced and beginner PE teachers structure their class time?
- ii) What are the student behaviours in the class of experienced and beginner PE teachers?
- iii) What percent of class time was spent on ALT-PE of experienced and beginner PE teachers?

1.6. Hypotheses

The following hypotheses was tested

- i) There will be no significant difference between experienced and beginner PE teachers in terms of lesson context as measured by ALT-PE.
- ii) There will be no significant difference between experienced and beginner PE teachers in the learner involvement level of the students as measured by ALT-PE.

- iii) There will be no significant difference in ALT-PE scores between the class of experienced and beginner PE teachers.

1.7. Significant of the Study

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

This study will serve as documentary evidence that will inform physical educators to understand the use of ALT-PE which shows that appropriate and relevant motor engagement time, has been used since 1980s (Parker, 19889; Siedentop, 1983). Also, suggestions and recommendations that will be made at the end of this study will provide policy makers with information so as to make provision for a variety of different sporting activities that could help to accommodate a variety of individuals. This work will again serve as a springboard for further research into this area.

1.8. Delimitation of the Study

The work was delimited to ten selected districts and municipalities of the Volta Region of Ghana. The districts/municipalities include Ho municipality, North Dayi municipality, Hohoe municipality, Kpando municipality, Biakuye District, Jasikan District, Ho West District, South Dayi District, Kedjebi District and Afadzato District, Physical Education teachers in the Volta Region of Ghana.

1.9. Definition of Terms

Academic Learning Time: the portion of engaged time when students are occupied with materials that are appropriate to their abilities, resulting in high successes and low error rates.

Allocated Time: The a teacher has been given for instruction and practice in a particular subject area

Background: time devoted to transmitting information about a subject matter activities such as its history, traditions, rituals etc.

Break: The portion of time devoted for rest and /or discussion of issues unrelated to the skill practice.

Cognitive: The student is appropriately involved in cognitive task.

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

Games: Time devoted to the application of skills in a game setting when the participants perform without intervention from the instructor.

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

Motor Inappropriate: 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.

Interim: Students engagement in non-instructional aspect of an ongoing activity.

Off-Task: 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.

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

Scrimmage: time devoted to refinement and extension of skills in appropriate setting and during which there is frequent instruction and feedback for the participants.

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

Social Behaviour: Times devoted to transmitting information about appropriate and inappropriate ways of behaving within a context of the activity.

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

Transition: Time devoted to managerial and organizational related to instruction.

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

Waiting: The student has completed a task and is waiting for the next instruction.

Warm-Up: Time devoted to routine execution of physical activities whose purpose is to prepare for engaging in further activity.

Experienced PE teachers: PE teachers with above five years experience at Senior High Schools.

Beginner PE teachers: PE teachers with five years or less experience at Senior High Schools.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Literature related to quality physical education and academic learning time in physical education studies will be presented in this section under the following sub-headings;

2.1 The Concept of Physical Education in Ghana

The concept of physical education in Ghana is not different from other parts of globe. It is to enhance the health status and academic performance of pupils and students in first and second cycle institutions. (Ghanaweb Nov 2, 2005).The government of Ghana adopts the UNESCO charter of Physical Education which states that “every human being has a fundamental right of access to physical education and sports which are important for the full development of his personality. The freedom to develop physical, intellectual and moral powers through sports must be generated both within educational system and other aspect of social life“ Limited evidence exists on indicators of physical activity (PA) and guidelines for children and youth in Ghana, despite the growing burden of physical inactivity, obesity, and related morbidity. About one-third of Ghanaian children and youth engage in inadequate physical activity (PA). Among the main goals of Physical Education in Ghana are:

- 1: Acquisition of skills needed in basic motor activities, fitness, and self awareness and body maintenance.
- 2: Appreciation of healthy competition in sports and games

- 3: Optimal physical, mental, social and emotional development through physical activities
- 4: Appreciation of the role of movement and physical activities in human development.

It is recommended that every child have 20 minutes of recess each day and that this time be outdoors whenever possible, in a safe activity (NASPE, 2006). Consistent engagement in recess can help students refine social skills, learn social mediation skills surrounding fair play, obtain additional minutes of vigorous- or moderate-intensity physical activity that contribute toward the recommend 60 minutes or more per day, and have an opportunity to express their imagination through free play (Pellegrini & Bohn, 2005). Result from Ghana's 2014 Report Card on physical activity for children and youth compiled by (Reginald Ocansey, et. al.,) cited that, The 2014 Ghanaian Physical Activity Report Card is a maiden effort national baseline data on Physical Activity and Physical Activity enabling environments. The evidence presented is intended to inform future research and interventions towards promoting Physical Activity among Ghanaian children and youth. The report card was inspired by the Active Healthy Kids Canada (AHKC) Report Card, which has been reporting on Physical Activity and Physical Activity –enabling environments of children and youth for the past 10 years, the Healthy Active Kids Kenya Report Card (HAKK), and the Healthy Active Kids South Africa (HAKSA) Report Card.

To determine what is known about physical activity of children and youth and /or Physical Activity indicators in Ghana, a secondary research methodology was used. This method involved reviews and synthesis of existing documents and research pertaining to

the indicators of Physical Activity selected in advance by AHKC to ensure consistency among countries participating in the Global Matrix of Report Card Grades. Information generated from the desk research was used to describe a behavior and enabling environment for 9 indicators included in the 2014 Ghanaian report card.

2.2. Quality Physical Education

Physical education is a process through which an individual obtains optimal physical, mental, and social skills and fitness through physical activity. Movement has been a cornerstone of physical education since the 1800s. Early pioneers (Francois Delsarte, Liselott Diem, Rudolf von Laban) focused on a child's ability to use his or her body for self-expression (Abels & Bridges, 2010). It is believed that physical education, in order to survive as a school subject must show recognizable achievement gains. Students must know more. A longitudinal study of the kindergarten class of 1998–1999, using data from the Early Childhood Longitudinal Study, investigated the association between enrollment in physical education and academic achievement (Carlson et al., 2008). The result showed that higher amounts of physical education were correlated with better academic performance in mathematics among females. Physical education programmes should increase every individual's physical, mental and social benefits from physical activities and develop healthy lifestyle skills and attitudes (Lumpkin, 1990). We can reach these goals through the quality PE programmes. Quality PE is not a specific curriculum or programme; 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 programmes we can have physically educated person: who
 - has learned skills necessary to perform a variety of physical activities,
 - is physically fit,
 - participates regularly in physical activity,
 - knows the implications of and the benefits from involvement in physical activities,
 - values physical activity and its contribution to a healthful lifestyle (NASPE-USA, 1995).

Siedentop, (1993) defined effective teaching, as 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 reflected the characteristics of effective instruction. These characteristics were:

1. Clear and appropriate instruction
2. Well-prepared, efficient, and informative demonstration
3. Active supervision during practice,
4. Meaningful feedback and

5. Proper accountability.

Tousignant and Pierona (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 time spent by students on a task is not the best variable to predict teacher effectiveness. Teachers who provided their students with more “time to practice activities specifically related to learning objectives” were more effective. He also found out 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
- Creates and maintain soft transitions through the tasks
- Monitors the students and provide active supervision
- Holds students accountable for completing task”.

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 can be seen that in a handball class any activity

relevant to handball lesson 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 behaviour on the ALT of selected students, three teachers from the Elementary. Junior High and Senior High schools 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 the three variables: Management time, feedback and student non-engagement. ALT-PE data showed that there was an association between changes on teacher behaviour 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 that "Students who spend more time in good practice learn more, students who 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, Deville et al, 1991).

ALT-PE instrument is used for providing feedback both in the area of teaching and coaching. Richards (1981) cited in Tousignant and Purina (1983) developed a series of sub-categories under the subject matter categories of ALT-PE. His aim was to describe the specificity of the context being presented during training sessions in Hockey. As a result, he was able to provide the observed coach with specific feedback on the time devoted to the various elements of the programme, and on the athlete's behaviour in relation to a particular subject matter.

Researchers have claimed that the major determining factors distinguished PE course as the best from the poor were higher rates appropriate learning time and lower rates of non-instructional activities (Darst & Thompson 1990; Metzler 1990, Siedentop 1991) . After his view on ALT-PE, Mc Leish (1981) cited in Siedentop, (1983) reaches 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 who are performing the skill at a difficulty level which results in a level of failure rate greater than 10 percent.

Effective teaching means structure 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 (McLeish 1989. p 29).

McLeish (1981) cited in Siedentop, (1983). ALT-PE “is one system that 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)”.

Many researchers have confirmed that decreasing management time and increasing engagement time for individual student have positive relation with ALT-PE. Furthermore, Land and Hawkins (cited in Harrison & Blakemore 1992) suggest that using additional equipment and facilities decrease waiting time and increase activity time. 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 was reviewed, researchers who were interested in ALT-PE found that students spent very limited time with an appropriate physical activity 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 Physical Education classes irrespective of all limitation of the ALT-PE system. Berliner (1979) has argued that ALT is a better measure of student learning than achievement measures.

2.3 Effective instruction in physical education

Effective teachers are the backbone of education. They are not magicians; they are skill professionals, and they work hard at what they do. Their effectiveness lies in their careful and skillful application of teaching strategies to ever-changing complex situations. According to Moore (1989), teaching is a challenge that requires long hours of work and preparation. But above all, it requires skill in planning and skill in the classroom. Siedentop (1991) further emphasized that teaching is a professional behavior exhibited by teachers as they engage in their work. Teachers do such things as planning, lecturing, questioning, demonstrating, managing and feedback. However, good teaching cannot be defined because the criteria differ from every instructional situation and every teacher (Rink, 1983). Metzler (1980) on his part identified five successive conceptions of effective teaching as possession of desirable personal traits, usage of effective methods: creation of good classroom atmosphere: mastery of a repertoire of competencies : and professional decision making that does not make use of mastered needed competencies, but the application and orchestration of them. In a recent literature review, Bassett and colleagues (2013) found that physical education contributes to children achieving an average of 23 minutes of vigorous- or moderate-intensity physical activity daily.

Teaching physical education is a process and therefore requires skills to execute those processes effectively. Physical education teachers need to possess skill with which to use to benefit the student they teach. The unique contribution of physical education is learning of motor skills for an active lifestyle (Pufaa, 1998). More specialized skills such as sports skills and skillful use of fundamental patterns develop largely as a result of learning (Rink, 1993). Denscombe (1985) commented that the apparently attractive and

well planned lessons may fail to engross and absorb all pupils or students in active and productive work. Effective teaching requires the ability to organize and manage the time at the disposal of the teacher so that optimal learning takes place (Rink 1993). Lawton (1981) agrees that effective teaching may be divided into two inter related categories, namely: lesson planning and presentation. In order to manage the classroom for the students to have enough time to practice, attention must be paid to the equipment used by the teacher in relation to the size of the class. How to put the students into groups for the performance of activities must depend largely on number of equipment available. Jaggart (1986) said that equipment is always in short supply though they (equipment and facilities) greatly affect programme development and implementation. There is therefore the need for them to be used effectively where necessary it must be improvised so that effective teaching and learning can take place.

Space available and the class size are also major determinants of effective teaching that yield quality student management where class size is large; there is problem of putting students to meaningful formation. On the other hand, where the space is large, working area must be marked for easy class control.

Demonstration during lesson is very vital Pitchford (1980) commenting on the essence of demonstration during teaching said, although skills, sports and physical education skills learned by the teacher are valuable and should be prized by the individual, their greatest value in teaching lies in the understanding insight into the activities they give. In physical education lessons, demonstrations are usually carried out by either the teacher or the student. Teacher demonstration is very necessary as the student sees the exact picture of the activity to be performed. Knowing an activity well according to Tousignant and

Siededentop (1983) is to guarantee that one is a good demonstrator or effective teacher. It is true also to say that a poor demonstration by the teacher is less valuable than no demonstration at all (Pitchford, 1980). Demonstration must therefore be carried out perfectly by a more conversant person in the correct position where it can be seen by all students.

Effective teaching does not require too much talking or giving instructions. Talking should be clear and brief. Pangrazi and Dauer (1985) believed that the learning environment must be organized in such a way that student learning will be promoted. Again, they said most teachers and students enjoy learning environment that is organized and efficient and that allows maximum amount of class time to be devoted to learning skills.

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 minimum number of mistakes (Lawton, 1981). Rink (1983) observed that students learned best when they had the most chance to practice the task they will be tested on. The prove of teaching effectiveness is not so much in how the teacher conducts the class but rather in what the students do in the class Doyle (1979) finally stated that effective teaching direct students to learn best by concentrating on practicing the motor cognitive or psychomotor skill by actually doing or by observing others perform the skill.

Effective teaching is characterized by a predictable set of strategies that have little to do with “methods”. Effective teachers use these strategies; teachers who are less than effective usually do not. A strategy usually consists of several discrete teaching skills.

For example, the strategy of active supervision consists of the teachers moving in unpredictable pattern around the teaching space, frequently checking on students not in close proximity, prompting on task behaviors, desisting inappropriate behavior quickly and accurately and providing academic feedback. Siedentop (1980) describes eight teaching strategies that are characterized by effective teaching. These include the following strategies;

- devote a large percentage of time to content
- minimize management, waiting, transition time in lesson routines
- devote high percentage of content time to practice
- keep students on-task
- assign tasks that are meaningful and matched students abilities
- keep the learning environment supportive and set high and realistic expectations
- give lessons smoothness and momentum
- hold students accountable for learning.

In recent years, there has been a considerable interest in the identification of teaching skills and competencies. The monitoring of standards and the quality of teaching performance has become most apparent in public schools (Mawer, 1995). The notion of being an effective teacher is an important and critical goal for educators (Bellon & Blank, 1992) if they are to become better at what they do and if knowledge base is to be developed in order to train and educate those train teachers entering the profession (Ring, 1996). Although effective teaching of physical education is a term that can be difficult to define in precise manner (Kirchner & Fishburne, 1998), it can be argued, that

teachers are viewed as effective in their teaching when students achieve intended learning outcomes (Berliner, 1987; Brophy, 1979; Haris, 1999; Rosenshine, 1987).

During the 1980s, research tried to identify the facet of teaching that promoted effective teaching environment for children. Much of what is known as effective teaching comes from this research base. This well conducted research studies attempted to identify what teachers do to produce student learning (Brophy & Good, 1986).

In a view of research studies that an impact on student achievement and learning, Borich (1996) summarized effective teaching methods and outline five key teaching behaviours that were supported by research: teacher task orientation: engagement in learning: lesson clarity: instructional variety: and student success rate. Borich also found that five other behaviours seem to be connected to effective teaching. He identified this second group of teaching behaviours as helping behaviours. However, the research identifying these helping behaviours is not extensive as the research support for the original five key behaviours. Nevertheless, using student ideas and contributions, structuring, questioning, probing and teacher effect have been identified as additional behaviors that acts as a catalyst to enhance the performance of the five key behaviours.

As majority of research on effective teaching concentrated in traditional academic subject areas such as mathematics and language arts, physical educators have been mandated to teach P E as captured in the school syllabus were left on their own to develop their own parallel research studies that were specific to their context. This conclusion is primarily base on the teachers own perception of important teaching criteria: such as explanation, feedback, demonstration, and student enjoyment.

2.4 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). One prevalent physical education model is the sport education curriculum designed by Daryl Siedentop (Siedentop, 1994; Siedentop et al., 2011). The goal of the model is to “educate students to be players in the fullest sense and to help them develop as competent, literate, and enthusiastic sportspersons” (2011, p. 4, emphasis in original). 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. Rischar (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 programme, and on the athletes’ behaviour 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,

2.5 Academic Learning Time in Physical Education

Every school has time allocated for the teaching of physical education. In some schools it is double period of forty minutes each for others it is a single period of forty minutes. Out of the allocated lies the time a teacher plans for students to be engaged in motor activities during a lesson, engaged time – time that a student is actually physically engaged in activities and academic learning time – portion of time when students are involved with relevant material and equipment appropriate to their abilities resulting in high success rate (Siedentop, 1991). The questions that arise are in which of these times mentioned above see to effective teaching and learning? Is it a longer allocated time that is needed or a longer engaged time? Research has consistently indicated that quality learning time is essential ingredient in effective schooling (Siedentop, Mand, &Tuggart, 1986). It is not all time allocated to academic activities that are actually spent engaged in these activities.

Engaged rates depend on the teacher's ability to organize and manage the classroom as an efficient learning environment where academic activities run smoothly. Engaged time according to Siedentop (1991) is a better measure of the student's opportunity to learn than allocated time.

There are several ways at which to examine the use of time in physical education classes. First, how lessons are allocated for physical education as a subject on the school time table and how much attention the teacher allocates for students learning. The second is how much of the allocated time are students really engaged? This notion exactly led to the development of the concept of ALT (Siedentop, 1991). Related to the idea of academic learning time is the idea of how teachers use their time in physical education lesson. Siedentop (1991) further recommended that a high percentage of content time be devoted to practice by issuing instructions and demonstrations quickly and efficiently and planning optimal time for students to actually practice. If we take the idea that engaging students with the content at an appropriate level of difficulty is a fundamental principle of teaching, it follows that whatever the teacher does to support engagement is appropriate and whatever the teacher does to reduce the amount of time students actually spend engaged at an appropriate level is not appropriate (Rink, 1993). This means that a judgment must be made as to whether the teacher is contributing or not to learning by using time for purposes other than students practice.

Investigations by Godbont, Brunnells and Tonsignant (1983) revealed how teachers were spending time and discovered that much time is actually being wasted because of poor organization and management as well as by just talking to students on what to do and

how to do it. The idea of increasing the amount of practice time in physical education is one of those general principles that should be applied with full understanding of its content. The misuse of this idea can affect other teaching functions and other educational goals. In general, Rink (1983) created the awareness that the teacher will want to have maximum activity time. There are times when the following situations exist and should be considered: time working and developing a good working environment is time well spent: teaching routine will actually increase practice time in later lessons. The teacher needs to take more time in task presentation so that students can practice with a clear idea of what they are trying to do. They should observe when everyone is not moving at the same time in order to provide better feedback, established accountability, or assess student performance. Safety is an issue and maximum activity would not be safe; and lastly, the teacher may want to work on affective goals that may require students interacting among themselves or with the teacher. Also, learning environment must be kept supportive and high but realistic expectation set.

Many researchers have claimed that the major determining factors distinguishing physical education as the best from the poor were higher level of appropriate learning time and lower rate 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 now conventionally referred to as learning theory. By this we mean 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 the 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).

ALT therefore appears to be not only a powerful way in which to make judgments about teacher practices but it also offers a strong proxy for student achievement.

In review, an observational system exists which is capable of producing valid and reliable measure of ALT in a physical education setting. ALT-PE setting 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.

A major benefit of the interval system is that it allows for an interval by interval comparison of the degree of agreement between two independent observers. The complete system yields great deals of useful information for example; use of the entire system will yield data on amount of time in transitions, management and practice. It can also show the degree to which time devoted to practice for the group is actually translated into motor engaged time for the individual student.

The ALT-PE system however does come with some limitations. According to Siedentop (1991) ALT-PE is a time- based concept that commonly uses interval recording techniques. As such, ALT-PE is limited by the nature of interval recording techniques.

ALT-PE provides a picture of only a small portion of what happens in physical education. As Anderson (1983) states it provides a “shadow of shadows..... a meager representation of the richness of realities”. ALT-PE does not measure the congruence between learner needs and content goals (Rink & Warner 1985).

ALT-PE does not indicate the quality of practice. Success rate may not be a discriminating enough variable. An effective teacher manages student well to decrease non- instructional disruption 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.

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

Martinerk, T. & Karper, W. (1983) listed some points to increase ALT-PE.

Do I plan ahead for reduced management time?

Do I design feedback mechanism into learning tasks for student?

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

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

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

Do I have enough equipment and facilities to maximum potential?

Is the observed range of student skill level narrow?

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

Do I plan relevant activities for student who must use for equipments?

Do I constantly monitor student time on task?

Finally, ALT-PE is not sensitive to difference among motor performance in various physical education activities. A unit of ALT-PE can refer to anything from walking on a beam balance and doing aerobic to playing goalie in soccer.

Furthermore, even within the game setting ALT-PE does not delineate what players are doing – whether they are playing the ball or playing off the ball waiting for play to occur.

The concept of ALT-PE was born at the annual meeting of the American Educational Research Association in Toronto in 1978 where several Beginning Teacher Evaluation Studies (BTES) papers were presented Siedentop, Birdwell and Metzler (1979) adapted the ALT model and presented a series of papers explaining how the ALT-PE concept could be used as a process measure in physical education.

ALT-PE is a systematic approach for studying teacher effectiveness and student participation patterns in the gymnasium or on the playing field (Siedentop, Birdwell and Metzler, 1979). ALT-PE is “defined as the amount of time a student spends in class activity engaged in relevant overt motor responding at a high success rate” (Metzler, p. 49).

ALT-PE observation instruments have been used to collect information about student time-on task, following the assumption that improvement in this variable should be related to improving student achievement in the cognitive, psychomotor and affective domains. The ALT-PE instrument was used in several initial studies and was found to be

appropriate for collecting data on student behaviour in physical education (Birdwell, 1980); Metzler (1979; Placek, et al, 1982; Shute & Rife, 1984).

Some correctional evidence exists on the positive relationship between ALT-PE accumulation and student learning (Metzler, 1989). The original ALT-PE coding instrument was revised and simplified by Siedentop, Tonsignant & Parker (1982).

2.5.1 ALT-PE as a criterion variable

Many reviewers and critics of ALT research often have pointed to the need to established more carefully the relationship between ALT variables and achievement.

Berliner (1991) argued that ALT might be a better measure of student learning than typical achievement measure and that ALT allows one to assess learning as it occurs rather having to wait until the end of a unit or a school year.

ALT-PE instrument undergo further refinement, in the direction mention, that it will gain even more credibility as a proxy variable for student learning, thus ALT-PE will continue to serve as a thoroughly legitimate criterion variable for assessing teacher effectiveness.

2.5.2 ALT-PE Answerability & Accountability

ALT has the potential to be used in a pragmatic way both in teacher education and in teaching David Halpin (1979) argued that being answerable does not entail any liability to sanction but rather was providing accurate description of what a teacher does with students and the degree to which certain obligation, typically imposed either explicitly or implicitly by the school, have been met.

It is also reasonable to expect that teacher educators can hold teachers accountable for their performance, particularly during student teaching or any of the several extended teacher education internship currently being suggested. ALT is one legitimate criterion available by which the relative performance of teaching interns might be evaluated.

ALT has three (3) determinant variables namely task relevancy, engagement and high success were conceived in classroom research but also are important in the learning of motor play activities for physical education settings. ALT has a contributing variable in the instructional process requires a major philosophical and methodological shift in analyzing effective teaching.

2.5.3 ALT-PE in Process – Product

Dunkin and Biddle (1974) urged that the influence of learning of motor play skills, the need for empirical verification still remains. In order to proceed with this process – product effort, Physical Education must develop its own means of studying the relationship between teaching and achievement. Achieving and maintaining a healthy level of aerobic fitness, as defined using criterion-referenced standards from the National Health and Nutrition Examination Survey (NHANES; Welk et al., 2011), is a desired learning outcome of physical education programming.

The study of ALT-PE is now emerging as well developed line of inquiry, we can identify determining variable of it for learning motor play skills, we know how to measure it reliably and we know how much of it students accrue in classes.

2.5.4 Relationship of Variables to ALT-PE

The following discussions pertain to how certain presage, context and process variables are associated with ALT-PE. Determination of interrelationship can only be made after rigorous experimentation with the correlated variables that surfaced in this data base.

Presage variables: Predictably, there were no significant correlations between any presage variables and ALT-PE. This supports the consensus view that these variables are not known to be greatly associated with student achievement variables in classroom education and physical education (Borich, 1988; Siedentop, 1983).

Context Variables: These variables are known to have greater association with student achievement. One variable, teacher type (whether itinerant or not), was negatively correlated with ALT-PE. This corroborates evidence by Pinkham (1988) that itinerant teachers spent more time in non-productive transition and management situation and that their students had lower ALT-PE and higher off task percentages in class.

Rog and Pinkham (1987) argued that there are inherent problems associated with itinerant teachers in physical education and that these problems could particularly affect other students.

Process Variables: These variables are known to be greatly associated with student achievement since what actually takes place in the classroom will most likely affect the student (Dunkin & Biddle, 1974).

Several correlations between ALT-PE motor appropriateness (level of learner involvement) and ALT-PE context categories correlations included management time, time spent on strategy time spent on technique and time spent on game. These

associations simply for this support the evidence that process variables (actual teaching behaviour) are important in regular education (Fisher et al, 1978).

Dunkin and Biddle (1974) identified several such research paradigms including a “Process-Product” model that studies the relationship between observed activities in the learning environment (process) and subsequent student achievement (product). The basic assumptions of this paradigm seem sound indeed especially after a long, frustrating pursuit of the “Presage-Product” model.

Academic Learning Time in Physical Education is now emerging as a well-developed line of inquiry; we can identify determinant variables of it for learning motor play skills, we know how to measure it reliably, and we know how much of its student accrue in our classes while we do yet know precisely how to interpret the descriptive data in terms of student learning opportunities, it is hard to argue that student obtain any meaningful amount of it in our classes. This realization must lead us to the next two steps of inquiry both of which can be simultaneously undertaken by following Siedentop’s (1981) call for intervention research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The purpose of this study was to compare teaching effectiveness of experienced and beginner PE teachers in relations to students' behavior in Volta Region of Ghana. This chapter focused on the research design of the study, population, sample and sampling techniques, data collection procedures and data analysis procedures.

3.1 Research Design –Comparative Design

The major aim of comparative research is to identify similarities and differences between social entities. Beginner and experienced PE teachers were the participants of the study. As direct (live) observation could be less objective and less reliable, videotape recording was used in the study. Videotape provides a permanent account of the observation for future examination (Turner & Meyer, 2000). This record could be viewed over and over again in case there is uncertainty about how a behavior was coded. Interval recording method was used in the study. Furthermore, videotape recorder was essential for intra-observer reliability. All teachers were videotaped during their one 35minutes-lesson.

Inter-observer and intra-observer agreements were conducted with 10% of total lessons.

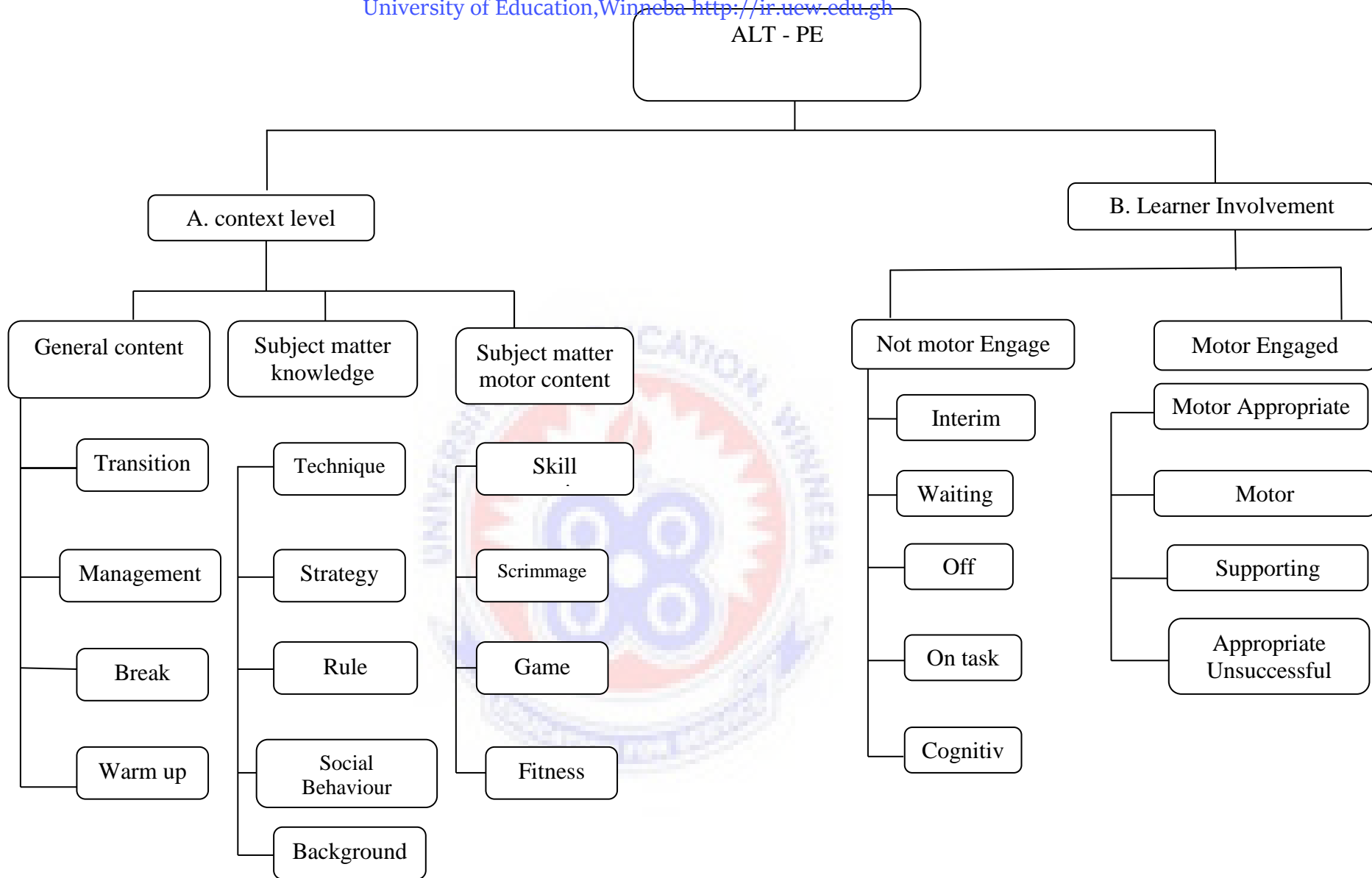


Figure 1: Graphical presentation of ALT-PE and its arrangement

3.2 Population

The population for the study was 42 comprising all physical education teachers (both experienced and beginner teachers) at Senior High School level in ten (10) selected districts and municipalities of the Volta Region of Ghana. The districts/municipalities include Ho municipality, North Dayi municipality, Hohoe municipality, Kpando municipality, Biakuye District, Jasikan District, Ho West District, South Dayi District, Kedjebi District and Afadzato District.

3.3 Sample and Sampling Technique

It may not be feasible to use the whole population; hence a sample of seven (7) Experienced P.E teachers and seven (7) Beginner P.E teachers were used. Convenient sampling was done to first select the Senior High Schools. Convenient sampling is a non-probability sampling where subjects are selected because of their convenient accessibility and proximity to the researcher. As the study involves video coverage it was easier for the researcher to arrange with study participants for the coverage to be done considering the rainy season. Apart from the fact that it was inexpensive and fast, it was easy and the subjects were readily available. After the convenient sampling, simple random sampling technique was used for the recruitment of study participants. Participants were separated according to years of teaching experiences at Senior High School level. Some ballot cards were labeled Yes or No. Seven (7) “Yes” with the rest cards labeled “No” for experienced and beginner PE teachers’ categories. These teachers having been briefed were told that “Yes” or “No” cards would be used as basis for participation. A pick of a “Yes” card meant the teacher would participate in the study. A “No” card meant the teacher would not participate in the study. This technique was used to ensure fairness in

the population sampling. The labeled “Yes” or “No” cards was put in a box for teachers to pick. Teachers who picked cards labeled “Yes” were selected for the study.

3.4 Reliability of ALT-PE

Inter observer agreement (for 3 classes) was made with two observers. Intra observer agreement (for 3classes) was made in different days to ensure the accuracy of the data collection. Score-Interval (S-I) method was used to see observer reliability scores. As van der Mars (1989) stated, S-I method is considered the most rigorous method of estimating observer agreement for interval data. The formula for the S-I method is:

$$\text{Agreement} / (\text{Agreement} + \text{Disagreement}) * 100 = \% \text{ of Agreement}$$

Agreement: the number of agreements of the same lesson or the number of agreements of same observer on his or her observation at two different times

Disagreement: the number of disagreements of the observers on the same lesson or the number of disagreements of the same observer in his or her observation at two different times.

3.5 Instrumentation

Academic Learning Time-Physical Education (1982 revision) instrument was used to record the student behaviors and lesson context (Parker, 1989). The ALT-PE focuses on student behavior in relation to class content. The ALT-PE separate behavior into two levels of decision making: context level, which is concerned with the behaviors of entire class, learner involvement level, which is concerned with the individual student behavior. The context level describes the focus of the content. The behaviors recorded describe the amount of time the class is engaged in a specific behavior related to the assigned activity.

The context level divided in three subparts each containing several behavioral categories: general content, subject matter knowledge content, subject matter motor content.

3.6 Data Collection Procedures

Before videotaping beginner and experienced PE teachers' proper authorization was obtained from the school heads. First Class video and communications were those contracted to undertake the video recording exercise. They needed no much training as they were professionals in the work. Teachers were videotaped during their field experiences. Experienced and beginner PE teachers were videotaped in their schools. They were videotaped during a regular 35 minutes class period in their natural setting. Canon video camera was used. The video camera was placed so that most students and instructors were included in recordings. Cordless microphone was used to record verbal behavior of teachers.

The observation format for ALT-PE was interval recording system in which the first 6 seconds of the interval was used to observe and the second 6 seconds was used to record the observation on a coding sheet. Observation was made by the researcher with the assistance of four other observers who were sufficiently trained to ensure collection of data that would meet minimal reliability standards. The steps adopted in the training of observers were clear cut and are widely accepted in literature concerning systematic observation. The training system was centered on interval recording procedures. Initially coders were made aware that ALT-PE was one of the criterion process variables most often used to judge teaching effectiveness in practical physical education. After this, observers were provided with printed materials to learn sufficient definitions, so that

distinctions among categories are clear. Reason for this initial step was that, good definitions are the single most important ingredient in collecting data and that when observers are having problems, the difficulty is almost always traceable to definitional problems. This first step took trainees five days.

Observers at one day round table discussed the categories and other issues to eliminate many errors and correct major misconceptions. Explanation of observational skills' and demonstration by the researcher was also made at the meeting. Observers were then trained to understand that the coding format was divided into intervals, with each interval "box" having upper and lower limits.

They were guided to understand that the top limit was used to describe the context of the interval, and its ten choices were from general content. This decision was made on the basis of what the class as a whole was doing; that is, were they involved in warm-up, a lecture on strategy, or practice?. They were made to understand at the training that the lower limit of the interval box was used to describe the involvement of one student, with choices from the categories described as either "not motor engaged" or "motor engaged". In the process, coders were made to understand that a prerecorded audio tape will be used to signal the beginning and end of an observe six seconds and record six seconds format.

Observers were then made to practice observation on videotape for two weeks which was earlier on coded by an experienced observer so that trainees could compare their data with that of the experienced observer. During the observation interval, coders were expected to decide whether the student is engaged in motor activity. If the student is engaged in motor activity, the observer classifies that engagement as being Motor – Appropriate (MA), Motor –inappropriate (MI), or Motor-Supporting (MS). If the student

is not engaged in motor activity, the observer continues to define the behaviour in terms of the categories Interim (I), waiting (W), Off-task (OF), On-task (ON), or Cognitive (C). This process was to establish observer accuracy. Observer accuracy refers to the degree to which an observer agrees with pre-coded standard.

Observers at this stage were made to practice in pairs for one week so that inter observer reliability can be calculated. Inter observer reliability refers to the degree to which two independent observers working with the same definitions targeting the subject(s) at the same time record similar data. The two observers were then made to discuss discrepancies and resolve issues. Throughout the training process trainees were made to keep a decision log, a record of observer disagreement and how they were resolved. Trainees were asked to practice until they met a minimal reliability standard.

Trainees were finally guided on how to use inter observer agreement calculation techniques. They were trained to understand that data can be presented as a percentage of each category and that system provides a total picture of what the class does throughout a lesson and picture of involvement of several students.

The suggestion to trainees after training was to observe two students of different skills levels and to alternate observing them every interval. Those interval boxes marked as motor appropriate (MA) are ALT-PE intervals; their total reveals the total ALT-PE for that student during the class.

One regular class of each teacher was observed. Two target students from each class was randomly selected and observed in sequence for an entire class period. The targeted students were given differently coloured jerseys to facilitate easy identification during

coding. The behaviours put up by the three students were used to represent the whole class for the teacher in question.

A pre-programmed audiotape was used to provide observe / record signals to keep the observation in proper order and time (eg. 0 sec: observe.....6 sec: code.....12 sec: observe.....18 sec: code.....etc).

3.7 Data Analysis Procedures

Mean percentage of context level and learner involvement level was reported for both group of teachers as descriptive statistic. Multi variant analysis of variances was performed to determine differences between experienced and beginner PE teachers in terms of lesson context and learner involvement as dependent variable. Uni variant analysis of variances was performed to determine the differences between experienced and beginner PE teachers in terms of ALT-PE scores as dependent variables. The confidence level for interpretation purposes of all statistical tests was at 0.05.

CHAPTER FOUR

RESULTS, DATA ANALYSIS AND DISCUSSIONS

4.0 Introduction

The purpose of the study was to compare teaching effectiveness of Experienced and Beginner PE teachers in relation with student behaviors, course content activities, Scores of Academic Learning Time Physical Education (ALT-PE). For the purpose of clarity PE teachers above five years would be refer to as experienced teachers and those in five years and below categories would be referred as beginner teachers in this chapter. To examine the differences descriptive statistics, multivariate analysis of variances (MANOVA), and one-way analysis of variances (ANOVA) were conducted. Results of these were offered in the following sections.

4.1 Data Analysis

Having used the systematic observation instrument, academic learning time PE (ALT-PE) interval recording sheet was compiled and segmented into a range of categories according to the arrangement of the ALT-PE instrument as follows.

Figure 2 shows the results of lesson context categories of ALT-PE for experienced and beginner teachers. Lesson context level describes the context of the setting within which specific individual student behaviour occurred. Lesson Context categories are divided into three groups. These are (a) general content, (b) subject matter knowledge content, and (c) subject matter motor content. From figure 2, experienced PE teachers spent 36.0% of the class time with general content while beginner PE teachers spent 33.7% indicating that they did better than experienced PE teachers. With regard to subject matter

knowledge content, they had similar amount of 34.7% and 36.0% for beginner and experienced P E teachers respectively. However, beginner PE teachers spent 33.1% as against 28.6% for experienced teachers signifying again that they encouraged students to perform subject matter motor activities than the experienced PE teachers. Figure 2 indicates the graphical representation of the lesson context percentages of experienced and beginner PE teachers.

Figure 2: Lesson Context Level of Experienced and Beginner PE Teachers.

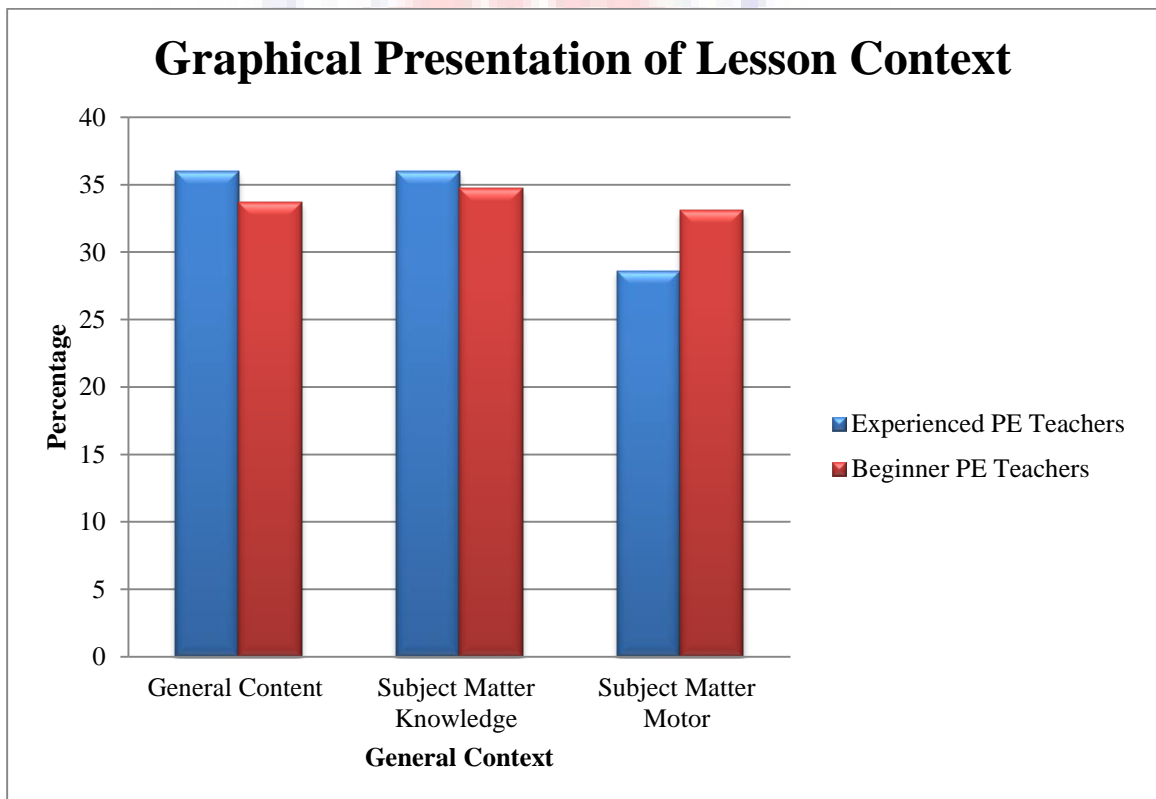


Table 4.1: Context level: General Content

| General Content | Beginner PE Teachers | Experienced PE Teachers |
|------------------------|-----------------------------|--------------------------------|
| | Mean% (STDEV) | Mean% (STDEV) |
| Transition | 8.9 (1.0) | 7.1 (0.6) |
| Management | 8.8 (0.5) | 9.7 (1.6) |
| Break | 7.1 (2.7) | 2.6 (0.4) |
| Warm-up | 8.9 (1.6) | 16.6 (1.6) |
| Total | 33.7 | 36.0 |

General Content is the class time during which students are not intended to be involved in physical education activities. Table 4.1 above showed that experienced PE teachers used 7.1% and 2.6% with transition and break between events respectively as compared to 8.9% and 7.1% for the beginner teachers signifying that they were efficient than the beginner teachers. However, beginner teachers spent 8.9% and 8.8% less than experienced PE teachers who spent 16.6% and 9.7% showing that the experienced teachers did well with time on warm-up and management. On the whole both groups of teachers did well with general content.

Table 4.2: Context level: Subject Matter Knowledge

| Subject Matter Knowledge | Experienced PE Teachers | Beginner PE Teachers |
|---------------------------------|--------------------------------|-----------------------------|
| | Mean% (STDEV) | Mean% (STDEV) |
| Technique | 10.9 (1.5) | 8.3 (1.8) |
| Strategy | 5.1 (0.6) | 2.9 (0.9) |
| Rules | 4.0 (1.1) | 4.6 (0.8) |
| Social Behaviour | 4.3 (1.1) | 4.9 (1.0) |
| Background | 11.7 (3.0) | 14 (2.4) |
| Total | 36.0 | 34.7 |

Subject Matter Knowledge Content is the class time when the primary focus is intended to be on knowledge related to physical education content (topic). Table 4.2, above showed that experienced PE teachers spent more time on technique (10.9%) and strategy (5.1%) than beginner teachers who used (8.3%) and (2.9%) respectively signifying that they work hard to guide students into getting the concept. On the other hand beginner teachers spent a high time of (4.6%), (4.9%) and (14%) on rules, social behaviour and background respectively on subject matter knowledge content, whilst the experienced PE teachers spent (4.0%) on rules, (4.3%) on social behaviours and (11.7%) on background for subject matter knowledge content indicating that their class was more of fun.

Table 4.3: Context Level: Subject Matter Motor Content

| Subject Matter Motor C. | Experienced PE Teachers | Beginner PE Teachers |
|--------------------------------|--------------------------------|-----------------------------|
| | Mean (STDEV) | Mean (STDEV) |
| Skill Practice | 17.4 (3.3) | 22.0 (3.0) |
| Scrimmage | 4.3 (.4) | 3.1 (.3) |
| Game | 6.9 (.9) | 8.0 (1.3) |
| Total | 28.6 | 33.1 |

Subject Matter Motor Content is the class time when the primary focus is intended to be on motor involvement physical education activities. Table 4.3 above indicated that experienced PE teachers spent (17.4%) on skills practice while the beginner teachers did even better with (22.0%). Also, beginner teachers perform better with game (8.0%) than experienced teachers who used (6.9%) demonstrating that students applied the skills learnt in the classes of beginner PE teachers than the experienced teachers. On the contrary, experienced teachers spent a good time on scrimmage (4.3%) than beginner teachers (3.1%).

4.2 Results of Learner Involvement level categories of ALT-PE for experienced and beginner teachers.

Learner Involvement Level describes how individual learners are involved in the physical education setting described in the context level. The learner involvement has two parts: (a) motor engaged and (b) not motor engaged. At the learner involvement level results indicated that students in the class of beginner teachers were involved longer in practical

activities with (42.4%) than the experienced teachers who spent (31.8%). On the other hand experienced PE teachers spent (68.3%) on not motor engaged activities than the beginner teachers who spent only (57.8%) indicating that students perform not motor engaged activities in experienced PE teachers class than the beginner teachers. As represented in Figure 3

Figure 3: Learner Involvement Level of Experienced and Beginner PE Teachers.

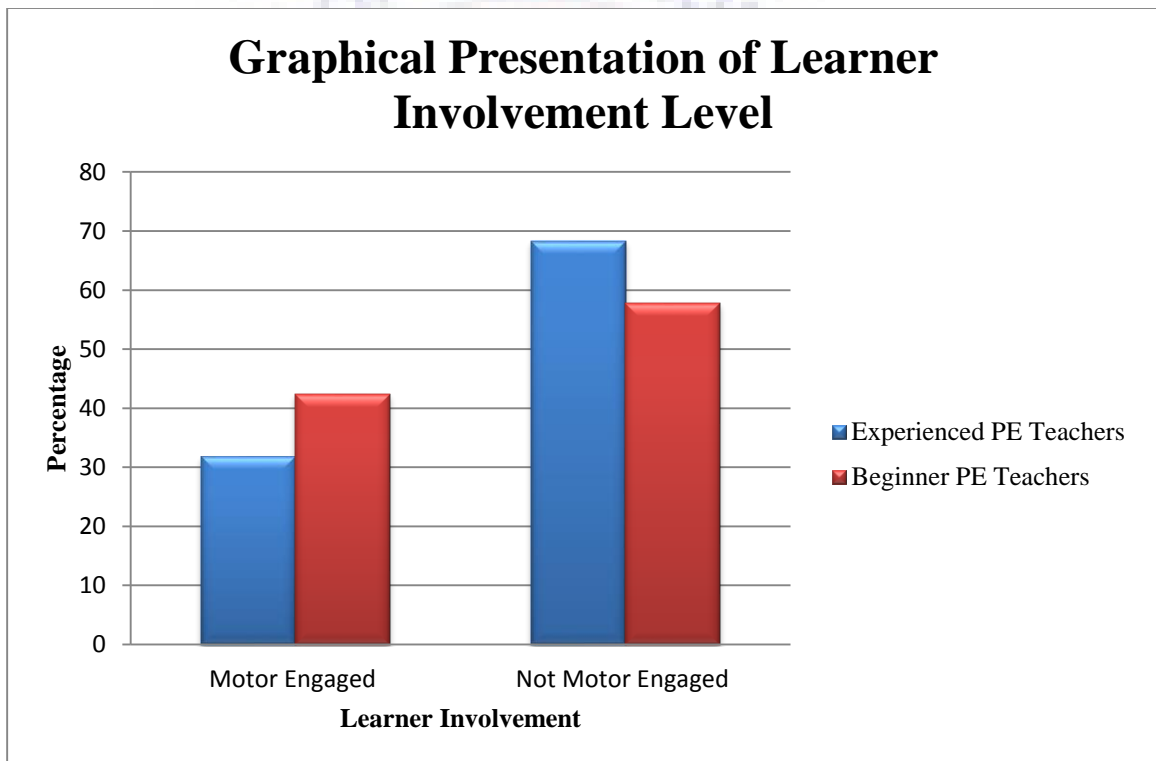


Table 4.4: Learner Involvement Level: Motor Engaged

| Motor Engaged | Experienced PE Teachers | Beginner PE Teachers |
|----------------------------|--------------------------------|-----------------------------|
| | Mean (STDEV) | Mean (STDEV) |
| Motor Appropriate | 20.0 (2.8) | 27.1 (1.9) |
| Appropriate Unsuccessful | 2.3 (0.2) | 3.1 (0.6) |
| Motor Supporting | 4.6 (1.4) | 5.4 (1.5) |
| Inappropriate Unsuccessful | 2.3 (0.3) | 3.4 (0.5) |
| Inappropriate Successful | 2.6 (0.3) | 3.4 (0.5) |
| Total | 31.8 | 42.4 |

Motor engaged is motor involvement with subject matter-oriented motor activities related to the goal of the setting. Thus the categories under the heading not motor engaged may include motor activity, but not subject matter-oriented activity. Results from table 4.4, above clearly showed that students have enough opportunities to perform in the class of the beginner PE teachers in all segment of motor engaged activities than they do in the classes of experienced teachers.

Table 4.5: Not Motor Engaged At Learner Involvement Level

| Not Motor Engaged | Experienced PE Teachers | Beginner PE Teachers |
|--------------------------|--------------------------------|-----------------------------|
| | Mean (STDEV) | Mean (STDEV) |
| Interim | 5.7 (1.2) | 8.0 (1.0) |
| Waiting | 22.0 (3.4) | 14.6 (2.0) |
| Off-task | 4.9 (1.5) | 10.0 (1.6) |
| On-task | 24.3 (2.4) | 16.3 (2.3) |
| Cognitive | 11.4 (.8) | 8.9 (1.6) |
| Total | 68.3 | 57.8 |

Not Motor Engaged is any students' involvement rather than motor involvement with subject matter-oriented motor activities. Result of the table 4.5, clearly indicated that beginner PE teachers structure their class time such that students had enough time for interim (8.0%), and off-task (10.0%) activities than experienced PE teachers who consequently involved students for (5.7%) and (4.9%) in interim and off-task activities respectively. However, students in experienced PE teachers class spent a high 22.0% waiting compared with the beginner teachers who managed it 14.6% indicating that beginner teachers managed their better than experienced teachers. Experienced teachers perform better with (8.0%) and (2.5%) more than beginner teachers in on-task and cognitive activities respectively.

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

Multivariate Analysis of Variance was conducted to determine the effect of the two groups (experienced and beginner teachers) on the context level (transition,

management, break, warm-up, technique, strategy, background, rule, social behaviour, practice, scrimmage, game, fitness). MANOVA results showed overall no substantial differences between the groups. (Hotelling's $T^2 = 39.045$ $F_{(11, 2)} = 7.099$ $p < 0.130$) as indicated in Table 4.3.1

Table 4.6: MANOVA Results for Context Level

| Effect | F | df | Error df | Sig |
|--------------------------|-------|----|----------|-------|
| Teachers hotelings T^2 | 7.099 | 11 | 2 | 0.130 |

Follow up univariate analysis of variances established significant differences in context level between experienced and beginner teachers. Experienced PE teachers spent significantly more time with warm-up (16.6) than beginner PE teachers (8.9%).

Results also indicated that experienced PE teachers spent significantly more time with strategy (5.1%) than beginner PE teachers (2.9%). Furthermore, experienced PE teachers also gave more scrimmage activities (4.3%) than beginner PE teachers (3.1%). Later ANOVA results of context level for experienced and beginner teachers were given in Table 4.6.

Table 4.7: ANOVA Results of Context Level for Experienced and Beginner PE Teachers

| Dependent Variable | df | F | P |
|------------------------------|-----------|----------|----------|
| General Content | | | |
| Transition | 1 | 2.213 | .163 |
| Management | 1 | .868 | .370 |
| Break | 1 | 2.381 | .149 |
| Warm up | 1 | 9.759 | .009 |
| Subject Matter Knowledge | | | |
| Technique | 1 | 1.026 | .331 |
| Strategy | 1 | 3.344 | .092 |
| Rules | 1 | .148 | .707 |
| Social Behaviour | 1 | .097 | .760 |
| Background | 1 | .261 | .618 |
| Subject Matter Motor Content | | | |
| Skill Practice | 1 | .960 | .347 |
| Scrimmage | 1 | 4.122 | .065 |
| Game | 1 | .457 | .512 |

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 (experienced and beginner 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 14 experienced and beginner PE teachers

(Hotelling's $T^2 = 2.828$ $F_{(9, 4)} = 1.257$ $p < 0.443$) as Multivariate Analysis for Learner Involvement level (MANOVA)

Table 4.8: Multivariate Analysis for Learner Involvement level (MANOVA)

| Effect | F | df | Error df | Sig |
|----------------------------|-------|----|----------|------|
| Teachers Hotelling's T^2 | 1.257 | 9 | 4 | .443 |

Univariate analysis of variances on each dependent variable was conducted as summary tests to the MANOVA. There was a significant difference for on-task and off-task behavior of students in classes of experienced and beginner teachers. In the classes of beginner PE teachers, students spent significantly more time with off-task behavior (10.1%) and less time with on-task behavior (16.3%) than students who were from the classes of experienced PE teachers (4.9% for off-task and 24.3% for on-task). Students spent significantly more time in the classes of beginner teachers with motor appropriate behaviour (27.1%) than students in the classes of experienced teachers (20.0). Added to these, students spent significantly more time with inappropriate unsuccessful activities in

the classes of beginner PE teachers (3.4%) than the students in the classes of experienced Teachers (2.3%).

In fact students in the classes of both groups spent almost entire class time with four behaviors: on-task, off-task, motor appropriate and inappropriate unsuccessful with P values of 0.050, 0.054, 0.075 and 0.091 respectively and alpha value of 0.05 at 95% C.I. Graphical presentation of these mostly used behaviors was given in Figure 4.4.1. While the students of beginner teachers spent significantly more time with off-task, motor appropriate and inappropriate unsuccessful behaviors, the students of experienced 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 experienced and beginner teachers were given in Table 4.7.

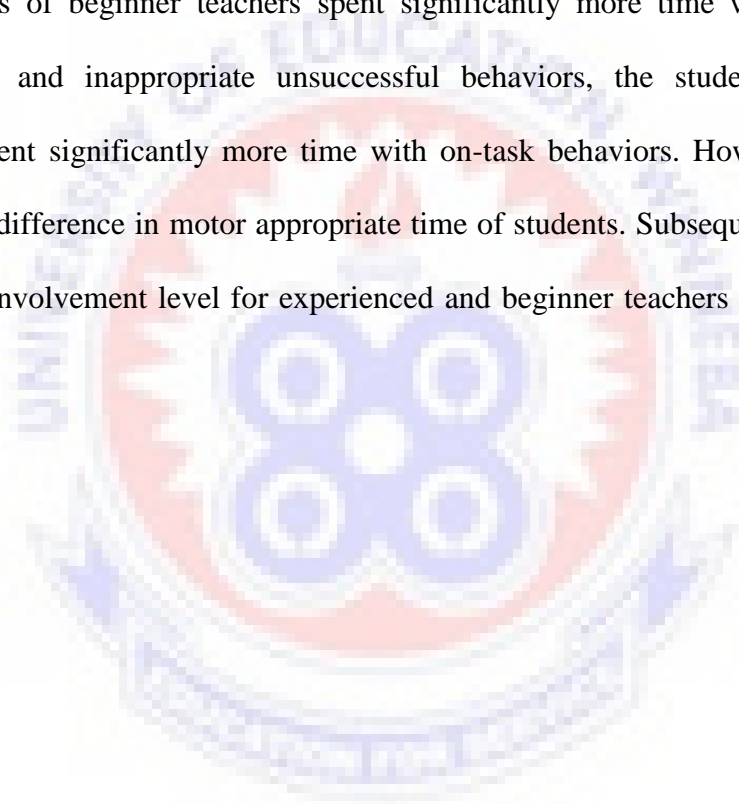


Table: 4.9 Univariate Analysis of the Learner Involvement Level

| Dependent Variable | df | F | P |
|-------------------------------|-----------|----------|----------|
| Not Motor Engaged | | | |
| Interim | 1 | 1.965 | .186 |
| Waiting | 1 | 3.041 | .107 |
| Off task | 1 | 4.569 | .054 |
| On task | 1 | 4.761 | .050 |
| Cognitive | 1 | 1.997 | .183 |
| Motor Engaged | | | |
| Motor Appropriate | 1 | 3.797 | .075 |
| Supporting | 1 | .170 | .688 |
| Inappropriate Unsuccessful | 1 | 3.379 | .091 |
| Inappropriate Successful | 1 | 1.765 | .209 |
| Appropriate Unsuccessful | 1 | 1.255 | .284 |

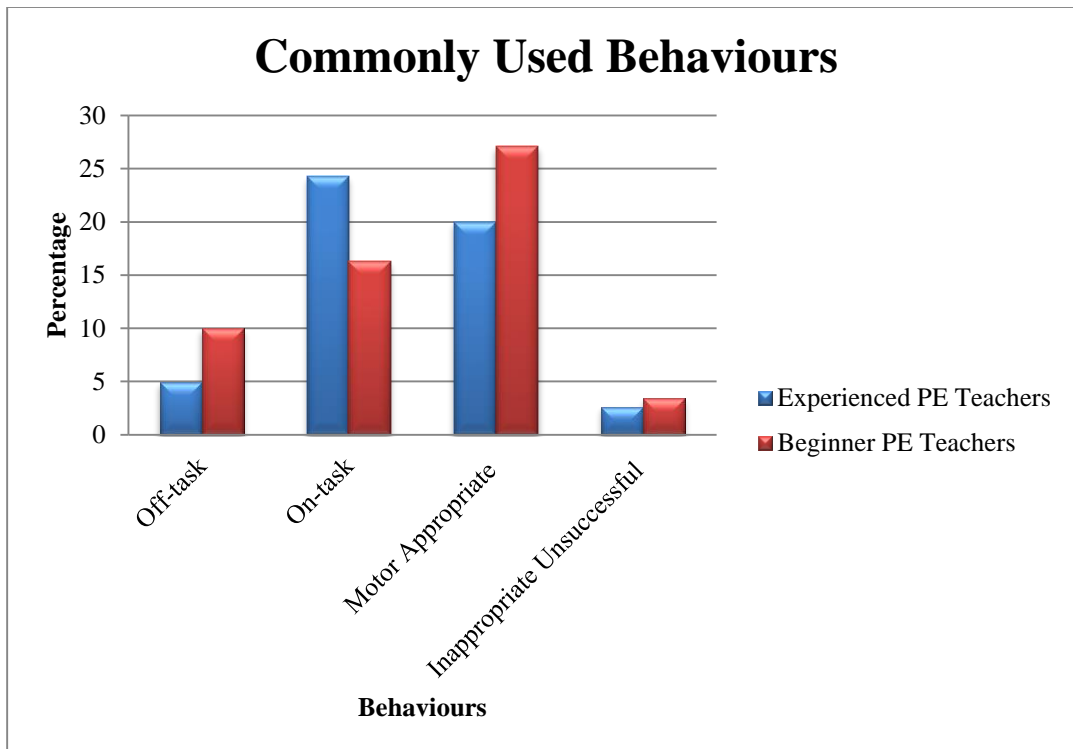


Figure 4; Graphical presentation of commonly used behaviours

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 (experienced and beginner teachers) and dependent variable was the mean ALT-PE scores. The ANOVA result was not significant, $F_{(1,10)} = .628, p = .451$

4.6 Discussion of Results

The results have been presented in graphs, figures and tables and the three research questions have been addressed. It is important, however, to discuss the results and to see how the results from this study compare to similar studies.

In an attempt to keep the results segmented, the results will be discussed in line with the three hypotheses.

In the first hypothesis, it was declared that there will be no significant difference between experienced and beginner PE teachers in relation to lesson context in practical PE classes. MANOVA results of the study indicated that there was no significant difference between experienced and beginner PE teachers in terms of lesson context. This finding supports the hypothesis one, therefore the hypothesis was adopted by the study.

Span of warm-up time, strategy and scrimmage time were significantly different between experienced and beginner teachers at context level.

Univariate ANOVA result showed that experienced teachers spent significantly more time for warm-up activities than did beginner PE 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 beginner PE teachers spent only 8.9%, and experienced teachers spent 16.6% of total class time with warm-up activities. Both categories of teachers performed way below the range indicating that warm up was insufficient.

Only strategy was significant out of the total percentage of class time spent on knowledge content (technique, strategy, rules, social behavior, and background). Experienced teachers and beginner PE teachers spent (36.0%) and (34.7%) respectively for knowledge content. But experienced teachers provided significantly more strategy time than the beginner (5.1% and 2.9% respectively). This is in line with the literature that effective teaching means structure the time 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 (Mcleish, 1989. p 29). 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. The two teacher categories spent percentage higher than the range indicating that the short fall in general content was spent with subject matter.

One more important section of PE class at context level was providing subject matter motor content for effective PE teaching. In this study, it was found that experienced and beginner PE teachers spent 28.6% and 33.1% of class time with subject matter motor (practice, game, or fitness) respectively. There was significant difference of scrimmage between the groups but beginner PE teachers spent slightly more time with motor activity than did experienced teachers. This result disagrees with the finding Graham (1993) who 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 beginner teachers (8.3%) than experienced teachers (10.9%). Moreover, experienced 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 committed to subject matter (motor and knowledge) content was 68.4% for beginner PE teachers and 72.0% for experienced PE 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 motor engaged.

Findings indicated that experienced and beginner PE teachers spent 68.3% and 57.8% of class time with “not motor engaged” activities respectively. And the remaining one third of the class time was assigned with “motor engaged” content for experienced and beginner teachers.

Hypothesis two stated that there was no significant difference between the learner involvement level of the students of experienced and beginner teachers. Results of the study indicated that there was no significant difference between experienced and beginner PE teachers in terms of learner involvement. This finding also supports the hypothesis two therefore the hypothesis was adopted by the study. ANOVA results demonstrated that off-task, on-task, motor appropriate, and inappropriate unsuccessful behaviours of students were significantly different for experienced and beginner PE teachers.

Percentages of class time spent for on-task behavior of students was significantly different between the groups (16.3 % for beginner PE teachers and 24.3% for experienced PE teachers). Indeed, systematic observations of student behaviour on task

have been used as an alternative means of measuring academic performance (Mahar et. al., 2006; Grieco et. al., 2009). 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 10.0% of class time with off-task behaviours in the classes of beginner PE teachers but this rate was fifty percent over than in the classes of experienced PE teachers. Really, off-task was related with on-task behaviour as one increase, the other decreases and vice versa. Earlier 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 14.6% to 22.0% of their class time waiting. The main reason for waiting time might be organizing practices with inadequate equipment. For example, in soccer lesson, two students had one ball to use but in long jump or triple jump lesson students had one take-off board to use. So every student had to wait until the other student complete the drill. Other reason could be the grouping students in one queue during activities. Physical education teacher must consider using 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 adjust practices and games to allocate more direct student participation.

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.

Good teaching is context specific, and the contexts for teaching physical education vary greatly across schools, teachers, classes, programmes and communities Bassett (2013).

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 student's 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 experienced and beginner PE teachers. Results of the study indicated that there was no significant difference between experienced and beginner PE teachers in terms of total ALT-PE scores.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The purpose of the study was to compare the lesson context, learner involvement behaviors and ALT-PE scores of experienced and beginner PE teachers in Senior High School classes by using ALT-PE observational instrument. This chapter summaries the main findings of the study as well as suggests some recommendations for more research.

5.1 Summary of Findings

An insight into why the researcher chose such a topic was given in chapter one. It went on further to state which people will gain from such a study. In addition to the structure of the ALT-PE observational instrument which include the Content level and Learner Involvement level. It went on to talk about area of study and took into consideration the practical aspect of the lesson.

Literature compiled earlier by expert from empirical studies on the topic was presented in chapter two. It also talked about the concept of physical education in Ghana, effective instruction in physical education; ALT-PE in physical education for coaching and ALT-PE instrument used in collecting data and finally enumerated the limitations of using such an instrument. Not all, studies in this chapter talked about how the ALT-PE can be used as process-product, accountability and as criterion variable.

Chapter three discussed the methodology used in sample and sampling technique, Population, Scoring of the instrument, and how valid and reliable the instrument is. It also gives an insight into what physical education teachers do in class. This chapter also shows the graphical presentation of the ALT-PE and its sub levels. Finally on the analysis and the computation of the data collected.

Analysis of data collected from administering the instrument and the findings of the study was dealt with in chapter four.

The results of the study were discussed in the outline that incorporated the differences in general content, subject matter motor content, and subject matter knowledge content at context level and “motor engaged” and “not motor engaged” behaviours 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 behaviour was and (3) what percentages of class time was spent with motor appropriate activities. Although health-related fitness lessons taught by experienced physical education teachers result in greater student fitness gains relative to such lessons taught by other teachers (Sallis et. al., 1999), beginner physical education teachers are capable of providing opportunities to be physically active within the classroom (Kibbe et. al., 2011)

5.2 Conclusion

It is factual that the final goal of PE class is to let all children and students participate and enjoy the benefits of physical activities for a lifetime. Structuring quality physical

education programs for the purpose of developing physical skills, allow students to participate comfortably in physical activities. It is then expected that students would join physical activities through much of their later life. But this study showed that experienced and beginner PE teachers have not given sufficient time for skill learning. Research showed that Children respond faster and with greater accuracy to a variety of cognitive tasks after participating in a session of physical activity (Tomporowski, 2003; Budde et al., 2008; Hillman et al., 2009; Pesce et. al., 2009; Ellemberg & St-Louis-Deschênes, 2010).

The low ALT-PE percentages may be credited to class size, type of activity and amount of equipment, teacher behaviour, class structure and organization. From this 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.

5.3 Recommendations

For the study the following recommendations could be considered for future research;

1. More research could be done on increasing the time that children are engaged in the task. At present, results returning from studies suggest that far too much of the lesson time is being wasted in non learning time. Physical education teachers as a group need to become more aware of the importance of effective time management.
2. More research needs to be conducted on the relationship of time to student achievement. The importance of ALT-PE in relation to teacher effectiveness needs to be clearly established amongst physical education teacher. Once the

importance of ALT-PE is understood and teachers begin to place importance on it then the quality of lessons will improve in physical education.

3. The variable of maximum participation should be promoted until it becomes a major aim of physical educators.
4. Further studies may investigate differences in the amount of ALT-PE between teachers base on selected aspects of PE syllabus. Variables such as years of service, and educational levels could still be considered



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