UNIVERSITY OF EDUCATION, WINNEBA

EARLY DIVERSIFICATION RATHER THAN SPECIALIZATION AS PREDICTOR OF ELITE PERFORMANCE IN SELECTED SOCCER ACADEMIES IN GHANA

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DECLARATION

STUDENT'S DECLARATION

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

Candidate‟s signature: .....

Date: .....

SUPERVISOR'S DECLARATION

I, Dr. J. A. Baba, certify that the preparation and presentation of this project report was supervised in accordance with the guidelines and supervision of the project report laid down rules and regulations by the School of Graduate Studies of the University of Education, Winneba.

Supervisor‟s Signature: .....

Date: .....

DEDICATION

I dedicate this work to my children Ibrahim Abass and Ibrahim Fauzy

ACKNOWLEGDEMENT

First and foremost, I like to express my profound gratitude to my supervisor, Dr. J. A. Baba for his criticism, patience and guidance during this work. I wish to thank him for his immense contribution to this final product.

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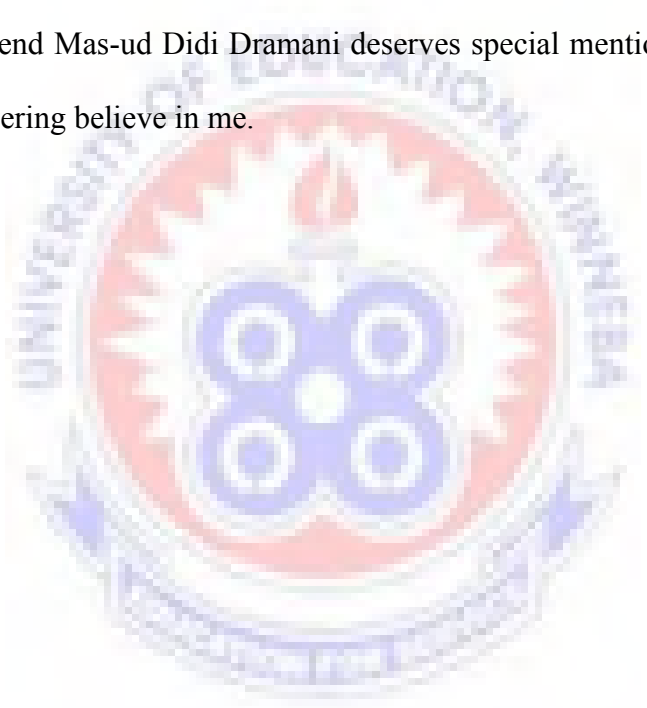

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ABSTRACT

Sporting activities are no more participated in for healthy life style only but for talent exploration and development leading to successful career. The career prospect in sports increases but with associated competition which demands thorough approach to talent development. This study examines the contribution and benefits of early diversification with late specialization versus early specialization model of teaching sport activities in physical education classes at basic schools level in Ghana. Primary data was collected by interviewing 8 Professional Soccer Coaches, 6 Physical Education Teachers and 56 soccer academy players. The result shows that early diversification with late specialization is the ideal strategy for identifying the broader spectrum of children potentials and developing them to higher professional level. It is a pre-condition for specialization, and its effectiveness leads to developing multiple skills that gives competitive advantage globally. The duration an individual spends in diversification is dependent on the capability to engage in multiple roles effectively with the minimum being up to 11years of age, and the maximum being up to 20 years of age. The development and teaching of early diversification programme for children in basic schools cover broad areas with benefits that span across behavioural development and skills acquisition. Some of the recommendations made were that, the curriculum focusing on early diversification programme should be structured, standardized and deployed in the teaching of physical education in schools. Also the curriculum and related manuals produced should be part of sports education and easily accessible to coaches, sports associations and clubs. Moreover, specialization should be widened to include at least two areas of positions where possible as a matter of gaining competitive advantage in the child"s future career.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Physical education is of great influence in the whole process of education of an individual and cannot be over emphasized. Many scholars know that physical education is the bedrock of holistic development of the child especially at its infant stage. However the recent emphasis on winning at inter-school sports and games as well as in professional sports requires a diversification of teaching methodology in physical education in our basic schools in Ghana. This necessitates a paradigm shift in physical education and sports towards the identification and development of talents and the sustainability of children"s interest in physical activity.

According to Bucher and Wuest (1999) physical education is an educational process that uses physical activities as a means to help individuals to acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical education is known as the only subject that comprises all the administrative procedures designed to develop individuals physically, socially, emotionally, and mentally to enable the child to benefit fully from school experiences and life generally (Morakinyo, 1998).

The syllabus for physical education for basic schools in Ghana (Primary 1-6) emphasize mass participation of pupils in games and sports rather than on competitive

sports which is only one aspect of the total physical education programme. It therefore encourages "width" which is diversification rather than depth, specialization, especially in the basic school.

Diversified system of teaching physical education concerns, either exposing children to many games and sports and later encouraging them to specialize in any sport or game of their choice or exposing children to many positions in a sport or specializing in a position of their choice based on ability later. This system of teaching physical education promotes intrinsic motivation through increased exposure. Specialization on the other hand, implies children from on-set select a sport and constantly practice the skills for professional development or from the on-set select a position and constantly practice the role of that position for professional development.

The theoretical framework that under-pins this study is a development model of sports participation (DMSP) by Cote, Baker and Abenethy (2007). According to them, a child will gain psychological and physical development only if they go through the three path ways towards elite participation in sports. They are:

1. Age 6 – 12, diversification in high level. This means deliberate play and low level of deliberate practice.
2. Age 13-15 recreational purpose for motivation.
3. Age 16 and above, specializing and investment. Children participate in fewer sports, less time in deliberate play and more time for deliberate practice.

Fraser, Thomas, Cote and Deakin (2005) stressed that young children‟s sports experiences should ideally foster positive youth development and a healthy and active life-style. Baker and Cote (2006) argue that deliberate play activities provide a context that fosters intrinsic motivation to participate in sports by providing greater amount of time on task rather than waiting for the next drill to begin, with deliberate practice.

The general aims of physical education syllabus for primary school are to:

2. Maintain health through physical fitness.
3. Developmental, moral and social capabilities.
4. Become a confident person.
5. Appreciate healthy competition in sports.
6. Become an active participant in sports and games.

The above aims of teaching physical education seem to necessitate the adoption of diversification system of teaching physical education in the basic schools. Despite these efforts, the number of early specialization (one-sport or single position) athletes at the basic schools level appears to be steadily increasing due to the emphasis on winning philosophy in school sports programmes.

1.2 Statement of the Problem

Some children participate in multiple positions in soccer activities without achieving maximum level in any of them, because they failed to identify from amongst the positions in soccer activities they participated in, one which could catapult them to a greater height. Some stakeholders are of the view that early positional specialization in soccer could help children to reach their peak of skill mastery earlier than through diversification practice.

The question is, should teachers encourage early diversification with specialization later in adulthood or early specialization in order to help children realize their full potentialities? The researcher therefore wants to find out whether early diversification with late specialization or early specialization will encourage the holistic development of an individual for health and life-long participation in physical activities

and sports, elitism as well as to reduce burnout. The aim is to identify a better methodological approach to select players to play certain roles in positional tactics.

1.3 Purpose of the Study

The study was to find out whether early inter-positional or role diversification and early positional or role play will help children in the primary schools to realize their fullest potentialities for maximum performance in soccer in their adulthood.

Based on the study findings, the researcher will make credible recommendations for the teaching of soccer in physical education lessons at Basic School level to be directed at the optimal development of the individual‟s knowledge of strategies and tactics of the game.

1.4 Objectives of the Study

The study aims to achieve the following objectives:

1. To identify the contribution of diversified training to specific training in specialized positions and techno- tactical development of children in the game of soccer.
2. To identify the extent to which diversification contributes significantly to positional specialization in soccer.
3. To identify the extent to which early positional specialization contribute significantly to inter-positional diversification in soccer.
4. To identify which of the two (specialization or diversification) is most influential in contributing to the realization of one‟s full potential in the game of soccer.

1.5 Hypothesis

The following hypotheses were identified and tested in this study

Hypothesis 1. Multi-positional training contributes significantly in promoting a broader spectrum of developmental experiences that enhances positional specialization.

Null Hypothesis 1: Multi-positional training will not contribute significantly in promoting any developmental experiences to enhance positional specialisation.

Hypothesis 2. Multi-positional training has a greater potential in the development of soccer talents than early positional specialisation training.

Null Hypothesis 2: The potential development of soccer talents will not be the same for both multi-positional training and early specialisation training.

1.6 Significance of the Study

The results of this study may help physical educators, and coaches to understand the best training methods to adopt in teaching game skills to basic school students. They will serve as a tool to evaluate talent development strategies in early stages of growth in a way that would challenge physical educators and coaches to be reflective practitioners using research as a tool to come out with effective teaching and coaching methods for the development of talents of children in the basic schools, especially in soccer. Finally, the findings will serve as a source of literature for future reference.

1.7 Delimitation of the Study

The study was delimited to (a) 14 experienced soccer coaches/physical education teachers who have been teaching physical education in the basic schools for at least five years in the Central Region, (b) 28 under fifteen (U-15) soccer players from the junior high in Central Region and (c) 28 under twelve (U-12) soccer players from the primary in Central Region.

1.8 Limitation of the Study

The limitations of this research were that:

Some of the participants who had been previously contacted to participate in the study were not present when the researcher visited to set up dates to conduct the interview despite the fact that they had been consulted on phone hitherto. After several attempts only 14 participated could be readily available and therefore constituted the sample of experienced soccer coaches/physical education teachers identified for the interview.

The small sample size in one way or the other affected the data collection process and may have a consequence on the recommendation of the study.

1.9 Operational Definition of Terms

Diversification: Pupils being exposed to a variety of positions rather than concentrating on playing a single position of interest.

Specialization: Selection of one play position at the beginning and continuous to towards attainment of one‟s interest in the game at the same play position.

Experienced Coach: Professionally trained soccer coach with a minimum of License "C" Coaching certificated in soccer with at least ten years coaching experience.

Elite performance: Performance at the highest level with professional touch.

Soccer **:** The American variant of English football to differentiate it from American football.

Twi : The local language of the Ashanti tribe which is widespread and spoken by majority of Ghanaians.

CHAPTER TWO

LITERATURE REVIEW

Many theories have been propounded as well as studies have also been conducted to investigate the best ways to teach physical education in the primary schools. The purpose of this chapter is to review related literature in what has already been written on the topic under review such as theories or concepts, empirical evidence as well as gaps, silence or weakness in existing literature. It was by the help of such scholarly works that brought to the fore the importance of the research problem. Since the earlier works portray lapses and loopholes of the various processes of the teaching of physical education in the primary schools the study seeks to address these processes. For the purpose of clarity the literature review has been classified into sub-headings:

1. Theoretical Framework of Diversification System of Teaching Physical Education
2. General Law of Motor Learning and Motor Skill Acquisition
3. Effective Use of Time and Skill Performance
4. Concept of Early Diversification with late Specialisation
    (i) Early Diversification with late Specialisation in Sports
    (ii) Early Diversification with late Specialisation in Positions
    (iii) Skill Development
5. Deliberate Play during the Diversification Years
6. The Channel of Information Development of Diversification and Specialisation
7. Problems with Prescriptive Accounts of Skill Learning
8. Factors Affecting Skill Development
    (i) Age

(ii) Gender

(iii) Play Materials

2.1 Theoretical Framework

In finding the effectiveness and appropriateness of diversification system of teaching physical education in the primary school, many concepts and theories of teaching were considered. Sport is an activity that requires the integration of several human abilities and process using an action-theory approach Hackfort (2006) discussed the interaction of multiple processes in the development of elite performance in sport. For example, looking at the development of expertise with sport in an action-theory perspective, it is possible to consider the affective (i.e., enjoyment, motivation) and social (i.e., interaction with others, isolation) benefits and costs associated with specific types of training and activities at different stages of development in sport.

Action-theory focuses on the person, the task, and the environment (the action situation) taking into account the cognitive, affective, and social aspects of sport performance (Hackfort, 2006). The physical processes involved in sport are obvious and include learning fundamental movement skills such as running, throwing, kicking, and catching, as well as more complex sport-specific skills such as serving in tennis and shooting in basketball. All sport activities also require a high degree of cognitive-perceptual ability, such as the capacity to perceive various stimuli and make appropriate decisions during games and performances. Furthermore, affective abilities, such as staying motivated and monitoring emotions, are needed to successfully perform sporting activities. Finally, all sporting activities take place in a social environment and necessitate, among other things, the ability to interact effectively with coaches, parents,

and peers. Action-theory provides an integrative framework for the analysis and development of elite performance in sport.

In contrast, cognitive theories, such as information-processing approaches, rely on the use of computational metaphors and terminology to describe human performance. Cognitive models of skill acquisition are concerned with the acquisition of mental structures and processes that resemble a computer-oriented way of processing and acting. The expert performance approach and the framework of deliberate practice (Ericsson, 2003; Ericsson, Krampe, &Tesch-Römer, 1993) are examples of cognitive approaches to the development of expertise in sport. According to Ericsson et al. (1993), deliberate practice is defined as a highly structured activity that requires effort, generates no immediate rewards, and is motivated by the goal of improving performance rather than inherent enjoyment. Ericsson et al. (1993) suggested that it would be next to impossible for a late starter to overcome the early advantage of those who begin deliberate practice at a young age and maintain high amounts of deliberate practice hours over time.

Although the positive relationship between times spent in practice and elite performance is consistent in sport research (see, e.g., Helsen, Starkes, & Hodges, 1998; Hodge & Deakin, 1998; Hodges & Starkes, 1996; Starkes, Deakin, Allard, Hodges, & Hayes, 1996), several other dimensions of the theory of deliberate practice have not been supported (Abernethy, Farrow, & Berry, 2003; Singer & Janelle, 1999). For example, the framework of deliberate practice focuses on cognitive learning mechanisms, largely downplaying the affective, personal, and social aspects associated with this type of practice, especially in the early years of an athlete‟s involvement in sport.

2.1.1 General Law of Motor Learning

Investigators of motor skill acquisition have continued to eschew all-encompassing theories of learning. However, the principle that skill learning is continuous has remained an important (although often implicit) general proposition. The established continuous functions created from the learning curves for perceptual-motor skills have been re-examined and compared with the learning functions for a range of cognitive skills. As a consequence of this synthesis, Heathcote, Brown, Mewhart, Staszewski and Ritter (2000) have proposed that the power law function is a general law of learning. It was further stressed that performance time, when considered as the task criterion in perceptual-motor skills, tends to decrease with practice as a function of a power law. This finding has been replicated in a number of motor performance tasks.

Newell and Rosenbloom (1981) have discerned the power law function for practice effects in skills beyond those usually classified as perceptual motor. Indeed, they showed that the general power law fits the practice data much better than exponential functions for a range of cognitive tasks in which performance time is the critical dependent variable. They explained the power law description of learning across tasks with a chunking model of information processing in skill learning, which was based upon classic account of inflammation capacity limitations. The power law of practice states that learning occurs at a rapid rate after the onset of practice but that this rate of learning decreases over time as practice continues.

The generality of the power law for practice over a range of performance tasks leads naturally to the proposal that it is a universal law of learning not limited to a particular behavioral sub-domain; but several limitations of the power law interpretation must be addressed. First, the power law function is typically

demonstrated in tasks where time is the dependent variable. There is little evidence of a power law for other motor performance variables. Secondly, a power law cannot accommodate practice effects where the task dependent variable is on an ordinal scale, such as producing a given set of relative motions. In this situation, the qualitative properties of the coordination mode may change from trial to trial, leading to discontinuous changes over practice time in performance measures. Third, even if performance changes on one variable (even the task criterion variable) as a power law, parallel qualitative changes may occur on other dimensions of performance.

These potential limitations of power law interpretations for both motor skill acquisition and learning in general have not been examined directly owing to (a) the narrow range of task constraints currently used to examine motor performance; (b) the fact that multiple dependent variables are rarely measured in motor learning studies; and (c) the fact that long-term practice studies are now rarely conducted, even in the motor skills domain. In spite of these reservations, the power law function for learning has gained a considerable foothold as the most robust and best-known feature of motor learning (Salmoni, 1989). Indeed, Salmoni (1989) has remarked that any theory motor skill acquisition that does not accommodate the power law function for learning can be rejected immediately.

Fundamental movement skill learning, one of the most important topics in the physical education curriculum during the early elementary years (e.g. Graham, 1991), is achieved by an active learning process interrelated with cognition (Gallahue & Cleland, 2003). Graham (1987) stressed that student should not learn to perform correctly a fundamental movement skill by being "exposed"" to the correct way of learning its qualitative aspects. In similar relation, Pangrazi (2001) emphasized that the use of cues help pupils to become involved cognitively in class, especially during the

initial stage of skill learning. Taking also into account the insufficient amount of time allotted for physical education as well as other factors which influence negatively skill development, learning the concepts that are related to successful skill performance will enable children‟s effective participation in movement activities in a variety of settings (Gallahue & Cleland, 2003).

One model that highlights the importance of appropriate training patterns and social influences throughout sport development is Côté and colleagues‟ Developmental Model of Sport Participation (Côté, 1999; Côté, Baker, & Abernethy, 2003; Côté & Fraser-Thomas, 2007). In finding the effectiveness and appropriateness of diversification system of teaching physical education in the primary school, many concepts and theories of teaching were considered.

The presentation of information on completion of the movement sequence has traditionally proved to have a very strong influence on motor skill acquisition (Adams 1971). KR of the outcome of the action has continued to be studied during the past 20 years, but there has also been a new emphasis on information about the dynamics of the just-completed movement. Adams‟s (1971) closed-loop theory of motor learning gave a strong role KR as information in strengthening the two-state memory process. Both the recall and recognition states were postulated to be strengthened over KR practice trials. Schmidt‟s (1975) schema theory proposed similar learning principles in regard to the necessity and contiguity of KR in motor learning. The informational interpretation of KR was examined by studies that provided direct tests of the processing of KR during motor learning. Rogers (1974) examined the idea that different precision levels of KR should have differential effects on learning according to the minimal amount of time allowed the learner for processing the information during the post-KR interval. The findings from a micrometer positioning task showed that increased precision of KR up

to some point facilitated learning, beyond which decrements in performance occurred. The most beneficial level of KR precision could be changed by varying the duration of the time for information processing during the post-KR interval. Thus higher levels of KR precision could be used effectively with more time for information processing. Similar manipulations have also shown that older children can more effectively utilize more precise levels of KR precision. Single degree of freedom positioning or timing tasks do not require much time to process the relevant KR provided.

The information processing hypothesis has also been tested by imposing secondary task activity during either the KR-delay interval or the post-KR interval. The basic rationale for this manipulation was that a competing secondary task restricts the capacity remaining for processing the KR. Bucher (1994) showed that reading 4- and 5-syllable words during the post-KR interval produced a detrimental effect in learning a positioning task.

In contrast, Magill (1989) failed to find interference effects as a consequence of inserting counting backwards by 3s during the post-KR interval of an angular positioning task. Marteniuk (1986) showed that the influence information processing activity during the KR-delay interval depended on the relative difficulty of the task and the secondary activity. Thus, the findings in support of the information processing idea that the subject actively operates on the KR information are suggestive rather than decisive, and are strongly influenced by task properties.

The general interpretation of KR studies has been challenged by Salmoni et al (1984), who argues that learning effects for KR can only be inferred if the performance difference from practice with KR is sustained during a subsequent no-KR test phase, such as on a retention test. They have picked up on an earlier finding by Lavery and Sudden (1962), who showed that while absolute frequency rather than relative

frequency of KR presentation was the variable that determined performance level when KR was available, the reverse effect was apparent when performance was subsequently examined over a series of no-KR trials. Using a number of experimental protocols, have provided evidence that the presentation of KR on every trial may not be the most effective KR schedule if performance is to be subsequently evaluated under no-KR conditions. This proposal for the benefits of relative versus absolute KR effect probably only holds, once the learner has produced a performance that is in the ballpark of the task goal. In other words, the intermittent schedule is more appropriate to the maintenance of performance than to the acquisition of new performance states. Furthermore, performance under no-KR conditions is only one possible scenario for transfer and retention tests and therefore should not be taken as the single measure of motor learning. The findings clearly suggest some modification to the traditional interpretation of the frequency effects of KR. However, they do not require the formation of new laws of KR as proposed by Salmoni et al (1984).

KR is very effective in single degree of freedom tasks or tasks where the scaling of a given coordination pattern is all that is required to satisfy the task constraints. The usefulness of KR to a learner in acquiring whole body actions, or in tasks where the learner needs to establish a stable coordination mode for the task at hand, has been increasingly questioned over the last 20 years. In this situation the learner requires knowledge of performance, or information about the dynamics of the just-produced movement, in addition to KR of the outcome of the action. Fowler and Turvey (1978) suggested that the information required in the feedback must contain as many degrees of constraint as there are degrees of freedom in the action to be coordinated. This proposal attempts to explain why the single degree of constraint provided by KR is sufficient in single degree of freedom positioning or timing tasks. Newell and

McGinnis (1985) suggested a framework by which to determine what information is required by a learner in a given task situation. This framework requires an understanding of the sources of constraint upon action, particularly the role of task constraints.

A number of experimental demonstrations of how task constraints determine the nature of information feedback required by the learner have been provided. It has also been shown that in many task conditions, the use of kinematic and kinetic information feedback facilitates motor learning and performance beyond those reached by means of the presentation of KR alone. The experimental study of kinematic and kinetic information feedback has been limited to one and two degree of freedom task constraints.

2.1.2 Effective Use of time and Skill Performance

Studies, conducted since 1950s in order to determine the relationship between student or teacher behaviour and student learning, have indicated that correct practice is the most crucial component of such are relationship (Metzler, 1989). According to Bloom (1985), the time needed to learn a skill is one of the fundamental variables in student for learning. Academic learning Time (ALT), which is considered to be the connection between teaching and learning, is a unit of time in which pupils are engaged in activities and instructional materials to be learned at an appropriate level of difficulty, resulting in high success and low error rates (Rink, 2002). A task is at an "appropriate level of difficulty" when the learner can be successful with effort". High success depends on the level of complexity of the skill and is defined as the performance of an instructional task with no errors (Lee, 1988).

Related studies, in which ALT was used to assess pupils‟ behaviour, were in subject matter mathematics and language (Brophy & Good, 1986). Similarly, the Academic Learning Time – Physical Education (ALT-PE) systematic observation instrument in physical education (Parker, 1989; Siedentop & Tannehill, 2000) has been applied to determine the relationship between student behaviour and motor learning (Lee, 1988; Metzler, 1989).

Even though the results were not always consistent, time appeared to be one of the variables for predicting sport skill performance. Based on the findings, motor engaged time seems to be a necessary condition for learning ice hockey (Godbout, Brunelle, & Tousignant, 1987), badminton (Beckett, 1989) volleyball (Godbout et al, 1987) and golf skills (Metzler, 1983). Similar findings were reported for swimming skills (Silverman, 1985) but only for high-skilled participants. On the other hand, Silverman (1985) found negative correlation between cognitive engagement and the achievement score in a swimming skill only for low and moderate-skilled participants. The author attributed this finding either to the inappropriate level of cognitive information or to the lag between cognitive understanding and translation of this knowledge into improved cognitive performance. On the contrary, high-skilled participants‟ scores were positively related to the cognitive engagement time. Cale and Almond (1992), Welk (2000) reported that physical activity levels of children and adults remain very low in many countries of the world.

Learning the concepts that are related to successful skill performance will enable children‟s effective participation in movement activities in a variety of settings (Gallahue & Cleland, 2003). Emmer and Evertson (1981) reported on their first studies on class management that student and teacher behaviour appeared in the early „70s and quickly occupied privileged position in research on teaching (Doyle, 1986). Reviewing

similar research in physical education, Siedentop, Mand and Taggart (1986) found that 6-22% of the class time was spent for transitional management activities, 15-22% for instructional, 22-32% for waiting, and finally only 21-30% of the class time was allocated to motor engagement. This meant that time pupils were active in was less than 30% of the total class time and the time they were engaged in motor appropriate activities was less than 15% (Godbout, Brunelle, & Tousignant, 1987). The study shown that academic learning time (time allotted to activity with high success rate) ranged between 10% (Metzler, 1989), 14.6% (LaMaster, and Lacy, 1993) of the total class time. However, the overall findings on academic learning time were inconsistent with curriculum recommendations.

As reported earlier, class time management has been related to teaching effectiveness. Most effective physical educators spent 12.1% of class time for class management, whiles the rest is spent on task relevant to lesson objectives (Philips & Carlisle, 1983). Less effective physical educators seem to make no effort to establish rules and routines, which are necessary for increasing pupils‟ activity and for learning of appropriate behaviours (Doyle, 1986). Recent studies also proved that effective physical educators minimize the time of organization, waiting and transition while they increase the time of pupils activity participation (Barret, 2000; Momodu, 2000). In addition, they continuously monitor pupils‟ behaviour and instantly correct inappropriate behaviour (Olivia & Pawless, 2001).In Greece, only recently has search started to be carried out of teachers‟ effectiveness on class time management and it was found below the acceptable level (Aliferi, Derri, Avgerinos, Antomiou & Kioumourtzoglo, 2005).

Physical education teachers spend 40.6% of the class time in managerial and organizational activities while pupils waiting time occupied 38% of the class time

(Vasiliadou, Emmanuidou & Derri, 2003). Similar studies showed that 28.7% of the total class time was devoted to organizational activities and 30.68% to teacher instruction (Tzetzis, Amoutzas & Kourtessis, 2005).

According to Hickson and Fishburne (2004), 5 hours 30 minutes training of physical education pupils or pre- service physical education teachers resulted in reduction of waiting, instruction and organization time culminating a remarkable increase in children‟s active participation time. Finally, a six week intervention programme for pre-service physical education teachers helped class management so much that the time devoted to this purpose was reduced to 10.6% of the total class time (Carlisle, Steffen, & Philips, 1986).

Despite the importance of the above findings, research on the relationship between time-related variables and skill concepts learning seems insufficient, meaning that is has been focused in subject areas like math and language. With regard to physical education, only few studies examine the relationship between ALT-PE and fundamental motor skill learning and none to our knowledge that of ALT-PE and cognitive concept related to physical education from Ghanaian perspective. A large number of time/mediating process-product studies investigated the relationship between student engagement and achievement. Although results were not always consistent, time appeared to be a promising variable for predicting achievement. Some investigators pointed out that academic learning time was related to student teaching (Beckett, 1989), while others indicated that the number of correct trials and not the engagement time was related to achievement. Sadker and Sadker, (2000) emphasized that allotted time is the time a teacher schedules for a subject for example, thirty minutes a day for month. The more time allotted for a subject, the higher pupils achievement in that subject is likely to be. This elucidates how important allocated time

is in teaching and learning of skills in practical physical education lesson. Time allotted for changing clothes before class should be established by the pupils in the orientation week discussion. Customarily five (5) minutes is sufficient time for all pupils to change and process to their places. This is really as almost one- third off the class allocated time is used in changing clothes by both the physical education teachers and the pupils.

As there is a cry for higher class allocated time for practical physical education lesson, teachers should device a strategy to minimize time spent on changing clothes for lessons. Sadker and his brother stressed that; Academic learning time engaged time with a high success rate. Many researchers suggest that pupils should get 70 to 80 percent of the answer right when working with a teacher. However, a high success rate is positively related to pupils‟ achievement. How effectively teachers provide for and manage academic learning time in their classroom is important key in determining, pupils‟ achievement. Academic learning time is qualitative aspect of the learning time. Siedentop, the founder of the concept “academic learning time, indicates that, academic learning time in physical education classes is typically quite low, often no more than 3 to 5 minutes per pupils per 30 minutes class in the secondary school. The concept of academic learning time provides a simple convenient criterion by which to judge teaching effectiveness in practical education lesson. Gallahue, and Cleland, (2003) opines that the ingredients of effective teaching in any physical education are not like teaching in any other subject area. To do thorough job you must have enthusiasm for the subject matter, a sound grasp teaching technique, and the ability to communicate effectively with children.

On the issue of time management, Gallahue and Cleland (2003) emphasized that; effective teachers are able to maximize participation on the part of all pupils. They device strategies for eliminating long time for sitting, waiting, and watching whiles

others perform. This helps pupils maximize time on task and learning. He further declared that planning is a crucial element in the success of any educational programme.

Without careful planning the physical education class ends up being little more than a glorified recess period. Experience has shown that teachers who fail to plan are really in essence planning to fail. Farrant (1986) stressed that opinions, beliefs and behaviours are often adopted quickly by people from others whom they admire as more practical form of learning by imitation through demonstration. Showing how something is done in a much more effective way of teaching than describing how it done. Indeed, what we should understand here is that, behaviours are acquired through admiration. So the best way the teacher can control good behaviour in practical physical education lesson is by making learning more practical and activity based through accurate demonstration of skill. This will prevent learners from wrong imitation from the teacher and their colleagues.

To do a thorough job you must have enthusiasm for the subject matter, a sound grasp of teaching techniques, the ability to communicate effectively with children and a continuing desire to learn more. Teachers of physical education must be able to create a highly positive atmosphere between themselves and children whom they teach. This indicates and explains that the techniques and styles for effective teaching and learning of practical physical education are expected for success. There is the need for specialization training and interest in the subject by a teacher. As a result, unless teachers in basic schools are well exposed to the styles and techniques in teaching practical physical education lesson through orientation and short courses, or experts in physical education are made to teach this subject in basic schools. The cry of low

physical education skill development in children in basic schools will take a long time to over-come if the above workable suggestions are not implemented.

Research in physical education also focused on the relationship between pupils/teacher behaviour (process) and student learning (product). Descriptive researches conducted between 1970‟s and 1980‟s on ALT of pre service and in service teachers concluded that allocated time fluctuated between 50% - 80% of the lesson time, pupils were only of motor engaged in half of the time and the rest were for management and transition. Academic learning time fluctuated between 10% - 36% and that is very low (Consineau & Luke, 1990). One of the important findings in teacher effectiveness research in physical education is Academic Learning Time-Physical Education (ALT-P E). Academic Learning Time is a powerful way to make judgment about teacher practices and is a strong proxy for student achievement (Siedentop, Tousignant, & Parker, 1982).

In related studies, learning is associated with the way the teacher uses qualitative aspect of teaching (e.g. cues, feedback, and guidelines) and the lesson time to provide learning experiences to children. Vassiliki, Kyriaki, Olga, Olave and Efthimis, (2007) conducted similar research on the relationship between Academic Learning Time and Fundamental Movement Skills Acquisition and Learning. One hundred ten (110) first grade pupils and their six physical education teachers participated. Pupils were pre, post and retention tested both qualitatively and quantitatively in overhand throwing and catching. After analysis using regression, Pearson Product Moment correlation, and t test, the results were that academic learning time was 6%, pupils‟ achievement and academic learning time categories indicated significant relationship between skill concept, learning, and ALT categories.

The finding was that time devoted to practice skills contributed to skill learning. Vassiliki, Kyriaki, Olga, George and Ethimis (2008) conducted a similar research on relationship between ALT-PE categories and skill concepts acquisition and retention of the overhand throwing and catching using specialist physical education teachers in Northern Greece. The results indicated 6% ALT-PE, significant correlation between residual acquisition and retention gain score in skill concepts and motor engaged and subject matter motor" categories of Academic Learning Time.

However, negative correlations were found between residual acquisition and retention gains and general content. Vassiliki and Pachta, (2007) conducted a study motor skill concepts acquisition and retention: a comparison between two styles of teaching. The purpose of the current study was to investigate the effect of the command and guided discovery teaching style on learning manipulative skills and concepts by primary schoolchildren. Fifty nine first grade children, 6 to 7 years of age, were randomly assigned into two treatment groups. The Test of Gross Motor Development (TGMD; Ulrich, 1985) was used for the assessment of motor performance. Skill concepts were assessed by a paper and pencil test based on those of Hopple (1995). Multivariate analysis of variance (2 styles of teaching X 3 measures) for repeated measures was used for data analysis. Results showed that both groups significantly improved skill performance. However, children in the command group, contrary to those in the guided discovery group, exhibited significantly lower scores in the retention measure, compared to their acquisition scores.

Skill concepts acquisition and retention was achieved by all children. It seems that both styles are effective for concept acquisition but the guided discovery style contributes to better motor learning gains. The Ghanaian perspective the following studies were conducted by degree students from University of Education, Winneba.

Behets (1996) (cited in Haruna, June, 2012) conducted a study on academic learning time in physical education in some selected schools. The purpose of the study was to assess pupils‟ behaviour regarding the effective use of class time. The result was that higher class time was used for management which affected the rate of achievement of pupils. Hay (2000) carried out a study on assessing managerial behaviour of physical education pupils during on-campus teaching practice.

The purpose was to assess student teachers‟ effective use of time during teaching physical education practical lessons by the use of conventional stop watch. The result was that student teacher‟ used 40% of the class time for managerial episode. This seemed to affect the achievement of pupils due to insufficient time for practicing the skill relating to the lesson objective.

2.2 Concept of Early Diversification with Late Specialisation

The concept of early diversification with specialization is about exposing of children to many sporting activities and encouraging them to specialize on the area of their specific interest. On another hand, the concerns of playing many positions in a particular sport like soccer and later specializing in the best position where efficiency can be maximised.

2.2.1 Early Diversification with Late Specialization in Sports

Studies of elite athletes in ice hockey (Soberlak & Côté, 2003), field hockey, basketball, and netball (Baker, Côté, & Abernethy, 2003), baseball (Gilbert, Côté, Harada, Marchbanks, & Gilbert, 2002; Hill, 1993), tennis (Carlson, 1988; Côté, 1999), triathlon (Baker, Côté, & Deakin, 2005), and rowing (Côté, 1999) have found that elite performance in these sports is usually preceded by a period of sampling various sports.

A common characteristic of these sports is that the age of peak performance usually occurs after the athlete has fully matured, generally in the late 20s or early 30s. Diversification develops a wide range of skills that can be transferred from one activity to another. Hill and Simons (1989) indicated that several different elements can transfer between sports (Movement elements, Conceptual elements, Perceptual elements, Physiological elements) given the transferability of all of these elements, participation in a variety of sports may accelerate skill development rather than hinder it.

Additionally, diversification avoids the negative consequences of early specialisation which lead to burnout and dropout. The benefits of this are two-fold in that it can both increase enjoyment and motivation for sport and physical activity, as well as prolong participation. After analysing the performance of youth athletes, Hill and Simons (1989) state "that sport specialization is contrary to the basic purposes of high school athletics. Thus, schools should actively promote multi-sport participation in their athletic programs".

Researchers such as Cote´ (1999) and Hill (1993) who probed into the early stages of development in elite athletes have pointed out that early sport specialization as a child does not seem to be an essential ingredient for outstanding sport performance as an adult. In the developmental models of sport skill presented to date, early participation in sport comes in the form of diversified, play-like participation with little emphasis on skill development and competition (Bloom, 1985; Cote´, 1999; Cote´ *et al*., 2003). Cote´ *et al*., (2003) indicated that expert athletes practiced a wide range of sporting activities before gradually cut down the number of activities and finally master in one activity during mid to late adolescence. They argued that play-like involvement in a number of sports is beneficial for developing the intrinsic motivation required

during later stages of development when training becomes more structured and effortful.

There is also evidence that athletes who had a diversified sport background were not at a disadvantage compared to athletes who specialized early. In a recent study of expert decision makers from the sports of basketball, netball, and field hockey, Baker *et al*. (2003) indicated that participation in other relevant activities (e.g. other sports where dynamic decision-making is necessary) during early phases of development augmented the physical and cognitive skills necessary in their primary sport.

An examination of elite field hockey, rugby and water polo players by Stevenson (1990) also suggests that those who have a diversified early involvement are not disadvantaged. More interestingly, Barynina and Vaitsekhovskii‟s (1992) study of elite swimmers indicated that athletes who specialized early spent less time on the national team and ended their sports careers earlier than athletes who specialized later.

Typically, athletes in these sports will specialize in their main sport around age 13-15 and fully invest in their training around age 16. On the other hand, in sports such as women‟s gymnastics or women‟s figure skating where peak performance usually occurs before full maturation, athletes do not benefit from a period of sampling or diversification. Studies of gymnasts (Law, Côté, & Ericsson, 2007) and figure skaters (Starkes et al., 1996) have shown that early specialization is a strong predictor of elite performance in these sports. It is important to keep in mind that peak performance in these sports generally occurs in the middle and late teens, thus vindicating the value of early specialization.

A study of Russian swimmers (Barynina & Vaitsekhovskii, 1992) demonstrated that athletes who began specialized training in swimming around age 12-13 spent a

longer time on the national team and ended their sport careers later than swimmers who specialized at around age 9-10. Gould, Tuffey, Udry, and Loehr‟s (1996) study of burnout in elite tennis players showed that a sole focus on tennis at a young age led to more youth sport dropout/burnout.

Furthermore, intense and repeated training in one sport at a young age has been associated with higher rates of injury (Law et al., 2007), which ultimately has an effect on the length of a sport career. Wall and Côté (2007) reported that young, elite, dropout ice hockey players began off-ice training (for the purpose of improving hockey performance) at a younger age and invested significantly more hours per year in office training at ages 12-13 than a group of invested, young, elite, ice hockey players who did not drop out. These results, along with the results of other qualitative studies of dropout and burnout athletes (e.g., Carlson, 1988; Gould et al., 1996), indicate that engaging in more sport-specific training activities at a young age may shorten athletes‟ careers. A study of Master triathletes showed that sampling a range of sports during childhood was associated with participation that extended into late adulthood (Baker et al., 2005).

Therefore, early specialization has been shown to shorten peak performance, increase drop out/burn out, and increase injuries in young athletes. Athletes in sports where peak performance is reached after maturation generally have a longer career than athletes from sports where early specialization is the norm, such as women‟s gymnastics and figure skating.

The influence of different sport environments on positive youth development is an area of research that has received little consideration. Nevertheless, it is obvious that different sports offer distinct social contexts and opportunities for socialization. For example, a tennis player may spend a greater amount of one-on-one quality time with

an adult (i.e., coach) than a basketball player will. On the other hand, the broader social system of a basketball team may provide learning experiences that are not available in an individual sport such as tennis. Even sports that are similar in terms of structure (e.g., soccer and field hockey) can result in very different types of experiences because of the unique context (e.g., different teammates and coaches) in which they take place. Therefore, it is suggested that early diversification has the potential to promote a broader spectrum of developmental experiences and outcomes than early specialization. In support of this postulate, Wright and Côté (2003) showed that diversified sport experiences during childhood fostered positive peer relationships and leadership skills in university level athletes.

Longitudinal studies have found that youth who are involved in varied activities score more favorably on personal and social outcome measures such as well-being (Busseri, Rose-Krasnor, Willoughby & Chalmers, 2006) and positive peer relationships (Fredricks & Eccles, 2006) than those who specialize. Furthermore, Fredricks and Eccles concluded that adolescents‟ involvement in a greater number of extracurricular activities was associated with better psychological adjustment and school belonging.

2.2.2 Early Diversification with Late Specialization in Positions

The modern trend of soccer development has placed physiological demand on both coaches and players to search for the best options in preparing and developing players for games especially soccer. It seems against this background that the ministry of education and curriculum development division placed premium in the teaching of physical education as width (diversification) and not depth (specialization) in the basic schools.

Baron (2007) carried out a study into the motion characteristics of top class soccer players, during match play, according to playing position. Three hundred top-class outfield soccer players were monitored during 20 Spanish Premier League and 10 Champions League games using a computerized match analysis system (Amisco Pro®, Nice, France). Total distance covered in five selected categories of intensity, and the mean percentage of playing time spent in each activity were analyzed according to playing position. Midfield players covered a significantly greater total distance than the groups of defenders and forwards did. Analyzing the different work rates showed significant differences between the different playing positions. There were no significant differences between halves in the total distance covered, or in distances covered at sub maximal and maximal intensities. However, significantly more distance was covered in the first half compared to the second in medium intensities (11.1–19 km/h). The current findings provide a detailed description of the demands placed on elite soccer players, according to their positional role at different work intensities, which may be helpful in the development of individualized training programmes.

This result emphasizes the need for children in the early ages to be exposed to diversified games and positions so that as they tend to 13 to 15 years coaches can identify their strength and efficient sports and positions for specialization.

2.2.3 Deliberate Play during the Diversification Years

From a motivational perspective, children become involved in deliberate play because of their own interest in the activity, as opposed to external reasons such as improving performance or winning medals (Soberlak & Côté, 2003). This type of early involvement in sport may help children become more self-directed toward their participation in sport (Ryan & Deci, 2000; Vallerand, 2001). Self-determination theory predicts that early intrinsically motivating behaviors (e.g., deliberate play) will have a

positive effect over time on an individual‟s overall motivation and ultimately the individual‟s willingness to engage in more externally controlled activities (e.g., deliberate practice). Furthermore, promoting a deliberate play environment during the sampling years is closely linked to creating a “mastery” or “task” climate in sport that will ultimately foster children‟s motivation for sport (Biddle, 2001; Treasure, 2001). This type of motivational climate and activities that promote intrinsic motivation during the sampling years will subsequently help children become more self-determined and committed in their future participation in sport.

From a skill acquisition perspective, deliberate play serves as a way for youth to explore their physical capacities in various contexts and at a minimal cost in terms of resources. Qualitative analyses of children‟s early involvement in sports such as tennis (Carlson, 1988; Côté, 1999), rowing (Côté, 1999), and baseball (Hill, 1993) showed that deliberate play-like activities were important in the first few years of elite athletes‟ engagement in sport. Soberlak and Côté (2003) showed that elite hockey players spent slightly more time in deliberate play activities than deliberate practice activities before age 20. Deliberate play activities involve an engagement of time in physical activities that is difficult to match with any kind of structured practice. When children play one-on-one basketball in a driveway for two hours, there are few periods of waiting like those found in a structured practice. Although there are obvious advantages to having a coach available to provide feedback during practice, monitor success, and provide instruction, it is unclear whether, during early stages of development, the benefits of organized practice are superior to the benefits gained from engagement in deliberate play activities.

Early adolescence (i.e., ages 13-15) is an important period for the development of psychological processes, such as identity and competence (Lerner, Freund, De

Stefanis, & Habermas, 2001). Relating this to sport, Mac Phail, Gorely, and Kirk (2003) conducted an 18 month-long ethnographic study of an English athletic club and noted "a shift of position" of its members from sampler to specialize in the 12-15 age range. During that period, the young athletes decided to focus their energy and resources on specific sporting activities in order to develop their competence and achieve a higher level of performance in fewer selected sports. Horn and Harris (2002) suggest that it is only at about the age of 12 or 13 that children are able to fully understand the effects that effort, practice, and ability have on their competence and performances. Therefore, the quality of early learning experiences through sampling and play during childhood develops perceptions of competence, which in turn leads to motivation for continued participation during adolescence (Kirk, 2005).

The important characteristics that mark the transition between the sampling and the specializing or recreational phases in early adolescence include a reduction in the number of sporting activities, an increase in practice hours and or intensity of practice, a greater emphasis on competition and success, and more support provided by the family, school, and club (MacPhail & Kirk, 2006). Soberlak and Côté (2003) showed that the total accumulated hours of sport-specific practice of professional ice hockey players from the age of 6 to 20 was 3,072 hours, of which an average of 459 hours was accumulated during the sampling years (representing 10% of the total hours invested). Conversely, an average of 2,215 hours of sport specific practice occurred during the investment years (representing 56% of the total hours invested). These findings support evidence from previous studies (e.g., Baker et al.,2003; Bloom, 1985; Côté, 1999; Helsen et al., 1998), identifying the investment years as the period in which elite athletes are devoted to specialized training. In a review of developmental factors that affect sport participation, Patel, Pratt, and Greydanus (2002) suggested that late

adolescents have the psychological, social, emotional, and physical maturity to meet the demands of competitive sports. Individuals at this stage of development also have the capacity to understand the benefits and costs of intense focus on one sport and are able to make an independent decision about investing in a particular sport.

2.4 Concept of Skill Development

The study of skill acquisition cannot be talked about without motor acquisition. Traditionally, the study of motor acquisition is viewed as distinct from the study of the related sub-domain of motor control and motor development. Motor learning originated as a branch of experimental psychology and was labeled accordingly to distinguish it from what used to be called verbal learning. The term motor control originated in physiology and was taken to represent the neurophysiology of the motor system. A behavioural focus within the study of motor control was initiated with the influential edited book of Stelmach (1976), which examined the processes that support the control movement. Motor control has since become the predominant theoretical interest of researchers with a behavioural interest in motor skills. Furthermore, with physiology increasingly using macro level behavioural experimental strategies and psychology increasingly using more micro level experimental strategies, it is becoming difficult to draw a line between the physiology and psychology of motor control issue.

This decision was made at some conceptual cost, however, because it is becoming increasingly clear that the three sub- domains of study-motor learning, motor control, and motor development hold considerable common theoretical ground. The linkage among these heretofore distinct areas of movement research has been stimulated by contemporary theoretical developments regarding perception and action. The motor skill acquisition domain also falls on the boundaries of instructional theory,

especially with respect to the role that a change agent (such as a teacher, instructor, or coach) may play in facilitating the acquisition of skill. This area of study is sometimes called training, particularly in engineering psychology or human factors research.

Physical education, apart from helping children to acquire physical, psychomotor, and affective skills, aims to enhance their cognitive skills as well. Cognition has been described as the capacity to acquire and use information in order to adapt to environmental demands (Lidz, 1997). The process, through which information is organized, stored in memory and made available for recall and application in various settings has been described as cognitive learning (Gallahue& Cleland, 2003). Cale and Almond (1992); Welk (1999) reported that physical activity levels of children and adults remain very low in many countries of the world. Learning the concepts that are related to successful skill performance will enable children"s effectiveness.

2.4.1 The Channel of Information Development

Information in the ecological approach to perception and action is interpreted as the means via which the learner channels the mapping of information and movement dynamics in the perceptual-motor workspace in a way consistent with the task demands (Kugler & Turvey, 1987). After Gibson and Pick (2000), is assumed that the invariant properties of the environment act as information to guide the exploratory activity of the learner. These informational properties are qualitative in nature and attune the learner to the layout of the perceptual motor workspace. One important aspect of perceptual learning is the continued differentiation by the learner of the properties of the perceptual-motor workspace. The natural learner-generated search of the perceptual-motor workspace can be supplemented with various forms of augmented information, as described previously, to facilitate the search strategy. The idea of a natural search

through the workspace by the learner is consistent with the traditional concept of discovery learning. The evidence suggests, however, that self-discovery does not always enable the learner to locate a task-appropriate mapping of information and dynamics in the perceptual- motor workspace.

Information can be used, therefore, to channel the search through the perceptual-motor workspace to locate a task-relevant solution to the coordination function. This theoretical framework involves a three-component consideration of augmented information and skill learning. The first component understands the nature of the perceptual-motor workspace in terms of the attractor equilibrium and gradient regions. The second component understands the natural search strategies used by learners to explore the space. The third component is the application of augmented information to facilitate the search.

These three components are interdependent. This orientation provides a new look at the strengths and weaknesses of traditional prescriptive and feedback accounts of augmented information techniques. Demonstrations provide some information about the nature of the desired equilibrium set of the perceptual-motor workspace, but they do not inform the learner how to navigate through the space to arrive at the task-relevant solution. In static analogy consider the problems of a traveler being given a map marked only with her current location and final destination.

Furthermore, demonstrations do not accommodate the individual nature of the layout of the perceptual-motor workspace. Information feedback, such as knowledge of results, only informs the learner of performance error in relation to the task criterion. This can be very effective when the perceptual-motor workspace supporting that activity is linear -- a condition well approximated in the traditional laboratory tasks that produce the power law for learning. However, feedback cannot provide direct

information about how one might search the nonlinear portions of the workspace to produce the qualitative changes necessary to realize new coordination modes. It has been suggested that a new class of augmented information is required to promote systematic qualitative changes in the coordination mode. This information category was labeled transition information. In effect, this information acts as another source of constraint on action in anticipation of producing a qualitative change in the coordination mode. This kind of information should prove valuable in the early stages of acquisition where the learner is attempting to find a new stable equilibrium region in the perceptual-motor workspace.

Instructors of physical activities often provide this information through instructions. The beginning golfer, for example, may be told "Keep your elbow in." The instructor does not intend the learner to keep the elbow in to this degree after she has attained the desired coordination configuration. Rather, this informational constraint acts as a control parameter to change the configuration of the coordination mode. Thus the nature of the information required by the learner seems to depend on the stage of learning. This interaction has not been examined. Perceptual-motor skills in context have rich sources of information available, but the traditional operational strategy in motor skill acquisition experiments has been to strip away from the learner the support of this information and construct impoverished environments in which skill learning is to take place. This experimental strategy has burdened the learner by providing the constraints to learning. The result has been an emphasis on cognitive operations. The emphasis of the ecological approach to information and motor learning is intimately tied to understanding the natural dynamics of the perceptual-motor workspace.

Many studies were conducted in an attempt to discover relationships between different teaching styles and student learning. In an overview of research findings from

the last 30 years related to the two different groups of styles, Byra (2000) found that it is the reproductive group which has been most commonly researched, with the exception of the self-check style. In a series of studies with fifth graders and high school pupils by Goldberger, 1983, the effects of the practice, reciprocal, and inclusion styles on hockey skill acquisition, cognitive understanding and social development of the pupils were compared. The authors concluded that although all the three styles resulted insignificant performance improvement, the practice style produced better knowledge gains while the reciprocal style enhanced social interaction among pupils. Studies conducted by Boyce (1992) and Beckett (1990) seem to support the above findings. Boyce (1992) investigated the effect of command, practice, and inclusion styles with university pupils on a rifle shooting skill and found the command and practice styles superior to the inclusion style for the acquisition and retention of the skill. Also, Beckett (1990) concluded that both the practice and inclusion teaching style were effective in improving a soccer juggling skill by college pupils.

Similarly, Harrison, Fellingham, Buck and Pellett (1995) applying the command and the practice style in college pupils to teach volleyball skills indicated that both were effective in terms of the percentage of successful trials. Moore (1996) studying the effect of practice and reciprocal style in improving volleyball skills of fifth grade pupils‟ concluded that neither style proved to be superior to the other in helping pupils acquire the skills of overhand serving and forearm passing. The learning outcome of the treatment groups revealed that the direct method was more acceptable than the indirect for teaching a motor skill like cartwheel.

In contrast with the reproductive styles, the productive have been investigated in fewer studies. For example, Salter and Graham (1985) studied the effect of the command, guided discovery, and no instruction on a novel golf task acquisition, on

cognitive understanding related to the performance of the motor skill, and on self-efficacy of elementary school pupils (3rd-6th grade). Their findings indicated no significant differences between the three groups neither in skill nor in self-efficacy. However, cognitive understanding was only improved with the command and guided discovery style, even after a 20-minute instruction. Investigating the effects of a combined command and practice style and the divergent problem solving style on elementary school pupils" divergent movement ability, Cleland (1994) found that pupils in the latter group were superior both to those in the former and in the control group. Similarly, Goldberger (1983) indicated that pupils in the divergent problem solving group exhibited better ability to identify key aspects of the problem, to search for new solutions, and to judge if more information was needed.

2.4.2 Problems with Prescriptive Accounts of Skill Learning

The theoretical perspectives on motor learning reviewed above are all prescriptive in the sense of having representational schemes at some level of analysis that prescribe the movement sequence in relation to the task constraints. Learning is viewed as the acquisition of prescriptions for action that will more appropriately satisfy the realization of the task goal. The fundamental differences among the preceding accounts of motor skill acquisition lie in the nature of the representations they posit, which are seen as reflections of what is learned with practice.

Prescriptive approaches to motor skill learning have been challenged on a number of different grounds over the last two decades. The primary challenge came from the emerging ecological approach to perception and action (Fowler & Turvey, 1978; Kugler, Kelso & Turvey, 1980). Central concerns have been the appropriateness of rule-based accounts of action and the logical difficulties of mapping symbols and

dynamics in a principled fashion (Hein & Kivimets, 2000). Advocates of the ecological position seek the solution in the mapping of perception and action with minimal resort to intelligent operations. Where representation is invoked, it is to be fashioned from law-based dynamic accounts of perception and action rather than from a discrete non-holonomic (non-integrable) symbol system logically separate from the dynamics. This central concern with prescriptive theories of motor skill learning gives rise to a number of subsidiary problems. Schema theories of motor learning cannot account for the acquisition of new coordination mode so movement forms. As Kugler et al (1980) noted, is logically difficult for rule-based schema theory to account for the instantaneous production of quadruped-like locomotion by centipedes after all but two pairs of their legs are amputated. Expressed another way, where does the centipede‟s instantaneous representation of a quadruped gait originate?

In principle, the schema rule can only accommodate the new scaling of an established coordination mode, and even here, the logic for generalizability of the changing movement dynamics is questionable. Prescriptive theories of motor learning also have trouble handling logically the compensations to perturbations of an ongoing movement sequence. The challenge of the ecological position to extant prescriptive accounts of motor skill learning has undoubtedly weakened the influence of information processing and cognitive accounts of motor skill acquisition in the 1980s. On the other hand, Adams‟s (1971) theory was limited by design to a very narrow set of task constraints, and this narrowness as fundamentally the cause of its demise. The potential generality to motor skill acquisition of the Schmidt (1975) schema theory was considerably broader but it only stimulated empirical activity on the variability of practice issue. Thus, the Adams and Schmidt theories were already waning influence in

the motor skill acquisition domain by the time the challenge to the prescriptive views arrived.

2.4.3 Skill Acquisition as a Search Strategy

Bernstein‟s (1967) insights into coordination strongly influenced the development of the ecological approach to action. He viewed "the coordination of movement as the process of mastering redundant degrees of freedom of the moving organ, in other words its conversion to a controllable system." The process of practice was characterized as the search for the optimal motor solutions to the problem at hand. It is important to note that practicing was seen as repeating the solving of the motor problem rather than repeating a particular solution to the problem. Consistent with the Bernstein proposals, Fowler and Turvey (1978) interpreted skill acquisition as the search for the optimization of the coordination and control function of several variables. Search strategies reflect the way the perceptual-motor workspace is explored to "solve" the motor problem (Newell et al., 1989). The perceptual-motor workspace is the interface between the relatively high-energy movement-kinetic field and the relatively low-energy information-kinematic flows field-~an interface that arises from the complementary influences of the perception-action cycle (Kugler & Turvey, 1987). Learning is the coordination of the perceptual environment with the action environment in a way consistent with the task constraints.

In this perspective, Gibson and Pick (2000) insights about the informational properties that organize the perceptual environment are extended to the complementary action environment. The dynamic organization of the perceptual-motor workspace can be examined through defining the layout of the gradient and singular properties of the perceptual-motor field like spaces that support the macro level coordination pattern.

The search through this workspace can be analyzed via established search and optimization procedures from biology (Gelfand & Tsetlin, 1962) and physical systems. The significance of this orientation for motor skill acquisition is that it promises to provide a principled way to accommodate the adaptive nature of the dynamics of movement control without resort to the computation intensive procedures advanced by the prescriptive accounts of skill learning reviewed above. The theoretical and experimental challenge becomes one of identifying critical perceptual and kinetic variables that are being exploited to channel the search for the appropriate mapping of information and movement kinetics in the perceptual-motor workspace. The promise is that there are relatively global macro level variables of few degrees of freedom that organize the many micro level degrees of freedom harnessed in support of action.

A central hypothesis of the search strategy approach (Newell et al, 1989) motor skill acquisition is that the learning, retention, and transfer of skill in different tasks is dependent on the similarity among the corresponding searches through the equilibrium regions of the perceptual-motor workspace, and relatively independent to the specific effect or and manipulate and utilized.

The role of research strategies in motor skill acquisition, both in tasks where the perceptual-motor work space can be specified as a priority (Krinskii & Shik, 1964) and in the more natural tasks where the work space can only be modeled post hoc, is currently being examined. The prescriptive accounts of motor skill learning hold that information strengthens the development of the respective memory constructs for action. The development of task-relevant prescriptions for action can be strengthened through the presentation of prior-to-movement in formation that specifies the to-be-produced outcome and movement dynamics. Instructions or demonstrations convey this prescriptive information (Newell et al, 1989).

Recent empirical work has focused on the role of demonstrations in motor skill: learning. The .general evidence in support of the facilitating effect of demonstrations in motor skill acquisition is not strong. This is in part because experiments have tended to use tasks already familiar to the learner. In effect, the information conveyed via the demonstration is often redundant to the learner‟s task-relevant knowledge. Bandura‟s (1986) social learning theory has stimulated a systematic set of empirical studies on the role of demonstrations in motor skill learning. The theory offers a generative schema-like account of motor learning in which the spatial and temporal elements of the movement at research symbolically coded through perceptual cues. The coding of the perceptual cues allows the development of the reference against which movement may be successively modified by appropriate feedback, and used for covert rehearsal techniques. Thus, in this view feedback information is only useful in learning when the appropriate movement reference has been developed. Carroll and Bandura (1987) have examined aspects of these theoretical ideas in a series of experiments that required subjects to learn separate arm and hand postures with specific movements between postures as a function of different modeling and visual control conditions. The results have shown that visual feedback is not useful in the early trials of learning the postural sequences, but it facilitates learning subsequently in the practice sequence; delayed visual monitoring of the just-produced movement does not affect the acquisition process; and the stronger the movement representation as determined by independent procedures) the more accurate are the subsequent recognition and reproduction of the action patterns. The use of a task that requires the production of a novel movement coordination sequence was instrumental in revealing these systematic effects of observational learning. However, early in practice, learners may not always be able to produce the new coordination mode demonstrated by the model (Martens et al, 1976).

Movement related demonstrations can be made to the learner via sensory systems other than the visual system. Zelaznik, Shapiro, and Newell, (1978) have shown that auditory demonstrations of the sound associated with rapid movements can effectively convey information about the task movement dynamics. Indeed, in these auditory demonstration protocols, subjects reduced their timing error over a series of practice trials in the absence of KR. Demonstrations can also provide information about procedural aspects of the task demands that are not directly related to the movement dynamics. In a recent study of different types of augmented in formation in learning a videogame task, Newell et al (1989) found that the demonstration of game procedural information was more effective in improving game performance over a 10-hr training period than information and specific practice on the isolated components of the movement dynamics. This finding reveals another way task properties mediate the nature of the appropriate information to support motor skill acquisition. A major challenge for the motor skill acquisition domain is to understand the nature of the information conveyed in a demonstration. Bandura‟s (1986) social learning model fails to address this issue and, in effect, holds that all aspects of the movement dynamics are in some way coded in a memory construct. Schmidt‟s (1975) schema theory proposed that the relative motion in variances is stored in memory, but no perceptual recognition tests of this hypothesis have been conducted. A perceptual orientation to demonstrations that attempts to understand what information for action is conveyed by a model that offers a new approach to this problem.

2.4.4 Factors that Affect Skill Development

Under the concept of skill development, it has been disputed that several factors account for effective development of sports skill in children apart from deliberate

practice. In order to unearth the truth, the researcher, reviewed empirical evidence on the concepts and factors the influence skill development.

Age

Maturation is the unfolding of traits potentiality present in the individual because of his/her hereditary endowment. Khadi et al.‟s (2002) study on motor and mental abilities of 90 infants from birth to five year of life revealed that motor ability of rural infants though in the normal range decreased as the age increased from fourth month onwards. Mayuri and Biliquis (1999) conducted a study on factors determining concentration, retention and intellectual abilities of rural school children. Results found that, most of the children were in the lower category on the retention measure, average category on the concentration measure and below average category on the intellectual measures. Further, result indicates as age increases children scored better on retention, concentration and intellectual abilities. Mayuri (2003) showed that the overall mean scores of children between 6 to 11 years and 12 to 18 years. It was found that as the age increased intellectual abilities of rural children were increased. Thus from the studies it can be concluded that as the age increases cognitive abilities also increases but indices remain in the normal range or decrease.

Gender

Gender has an impact on the motor and mental development. Gender differences in activity interests, opportunities for practice, availability of role models and differential treatment children receive may be more influential than genetic factors.

Singh (2006) carried out a study to determine the creative abilities of rural and urban children. Survey was carried out on 200 children with equal number of boys and

girls from rural and urban areas. Results revealed that, rural girls were superior to rural boys and urban girls in creative abilities in terms of elaboration and originality.

The comparison indicated that urban boys were better than rural boys on creative abilities in terms of elaboration and originality. Similarly, Kane and Engle (2002) indicated that girls did better than boys. They studied the effects of grade, sex and achievement levels on intelligence. Seventy two children from 3 primary schools were taken as subjects. Equal numbers of boys and girls were taken from each school, two grades (3 and 5) at two achievement levels (high and low).

The Raven‟s coloured progressive matrices test and stroop tests were administered individually. Mayuri (2003) study on intellectual abilities of rural children of Andhra Pradesh found that, in all the three region of Andhra Pradesh girls scored better in almost all the age groups except in 6 year old than the boys of other region. Similarly, Nystrom, Braver, Sabb, Delgado, Noll and Cohen. (2002) reported that the performance of female infants was earlier in both mental (58%) and psychomotor (65%) development test items, thus signifying better performance over male infants. Male infants were lagging behind in comparison with US and Baroda counterparts in most of the items of mental and psychomotor development compared to female infants. However, Skinner and Piek (2001) in the longitudinal study from birth to three months on 30 males and 30 females reported that male infants are better on motor and mental development than females. Similarly, Singh (2006) study on birth order and intelligence showed that, boys were more intelligent than girls. The sample of the study was 120 children from 40 urban educated families from the Rohtak city of Haryana state. Raven‟s progressive matrices were used as measure in this study.

However, Bhandari and Ghosh (1980) reported that the infants did not differ significantly in the development quotient at the age of one year. They conducted a

longitudinal study on child development in relation to socio-economic factors in an urban community in 67 male and 56 female infants from urban community of Calcutta. Similarly, Omprakash (1982) in his study on socio-economic status and intelligence of 8-12 year age children from Haryana state observed that boys and girls of high caste did not differ significantly on mean Raven‟s score. Similar findings are reported by Archana (1998) that, gender does not have any significant influence on the intelligence level of subjects. The mean intelligence scores obtained by males and females were almost equal. She conducted a study on intelligence as a function of religion gender and socio-economic status. The sample consisted of 400 under graduate students aged 16-19 years. Asthana (2011) conducted a study on general intelligence, visual motor perception and memory in rural and urban children. Results found that there are no gender differences in intelligence either in rural or urban children.

Further results indicates rural children were less intelligent, visual motor perceptual ability was delayed and poor in them in comparison to urban primary school children. Urban children obtained higher mean on long term verbal memory but no significant difference was found in the immediate memory of two groups. The sample consisted of 60 rural and 60 urban primary school children in Varanasi district. Thus, it can be concluded from the above stated studies that gender of the infants influences the motor and mental development. Some of the studies revealed that boys are better, while some other reveal that girls are better in their motor and mental development.

Ordinal Position

Birth order is another variable which may affects the mental and motor level of children. The first born child occupies a unique position in the family structure. For at least a year and probably more, he is the only child and receives all the attention that

would normally be distributed among all the children in the family. Due to increased contact with adults first born child may profit more than the rest

Munroe and Munroe (1984) conducted at study on birth order and intellectual performance in three east African societies. The results indicated that over all school grades and performance was negatively related to birth order in all the three societies. Downey (1995) conducted a study to find the relationship between birth order and the intellectual ability of the children. The results revealed that first born children and children in small families achieved at a higher level than later born children and children in larger families.

Zajonc and Markus (1975) concluded that intelligence declines in relation to the increasing ordinal position of birth within the family *i.e.* first born score higher than the second born; second born score higher than third born and so on. Ramanathan (1994) also found the same results in an Indian study on Tamil sample. As the number of children increases, parents have less time and energy available to devote to any single offspring. Similarly, Mayuri (2003) reported that ordinal position and age related measures were significantly related to intellectual abilities in all the three regions.

However, Singh (2006) showed that there is no actual difference in intelligence between first born, second born and third born children. From the above studies, it can be concluded that birth order has varied influence on academic aspects of children.

Pre-School Programme and Quality

Anderson (1999) studied the effects of public day-care on infants. Results revealed that day care that begins after 6 months had more beneficial effects than day

care that began prior. The negative effects of early day-care occur primarily when the care was of poor quality.

A sample of 119 Swedish children was followed in the study. Similarly, Waisk *et al.* (1990) reported that high quality day care had positive influence on children‟s developmental outcomes and the children in educational day care program were better than those who did not participate. The sample consisted of 65 families with children at risk. Bayley scale of infant Development, Standard-Binet Intelligence test and McCarthy Scales of Children‟s abilities were administered to assess the development outcomes. Similarly, Ramey and Ramey (1998) stated that high quality intensive educational efforts beginning in early in life lead to greater cognitive gains among early interventional participants than did programs that were either less intensive or that began later in life. Similarly, Campbell and Ramey (1995) revealed that early educational intervention efforts were associated with positive effects on the cognitive development of preschoolers.

Epstein (1993) study suggests that high quality programs for young children produce significant long-term benefits. High quality programs empower young children by encouraging them to initiate their own learning activities. Similarly, Schweinhart et al., (1993) revealed that a variety of high-quality early childhood programs children had significantly better intellectual performance than no program children. Also evidence of immediate improvements in children‟s intellectual and socio-emotional performance was found from 500 study participants.

The NICHD (1997) study found positive effects of quality level and time spent in center based programs on cognitive and social development of toddlers. Similarly, Burchinal et al., (1989) reported that high quality early childhood programs typically

situated within centers or pre-schools have significant effects on early language and cognitive development for children.

Peisner-feinberg, Burchinal, Clifford, Culkin, Howes, Kagan and Yazejian (2001) revealed that child care quality has a modest long-term effect on children‟s cognitive and socio-emotional development through the elementary school years and was consistent with a bio ecological model of development that considers the multiple environmental contexts that the child experienced. A sample of 733 children was examined longitudinally from ages 4 to 8 years.

Brooks-Gunn et al. (2002) reported that the good quality care at home and at center can go a long way toward buffering the negative links between maternal employment and later child outcomes. Howes, James and Ritchie (2003) concluded that in order to enhance development or serve a protective function, child care must be of sufficiently high quality. High-quality child care goes beyond being a safe place for children to include the provision of nurturing relationships and stimulating environments that organize and scaffold children‟s learning.

However, Shonkoff and Phillips (2000) reported that age of entry into child care was not a risk factor in and of itself. However, very early and extensive care in poor quality facilities emerged as disadvantageous to children.

Loeb et al (2004) concluded that there are positive effects of center care and quality on children‟s cognitive development. Their study provided evidence on the benefits of care stability. Sample consisted of 451 children. Measures used were early childhood environment rating scale, family day care rating scale and home observation for measurement of the environment.

Larner (2005) concluded from studies that the irreducible core of the environment of early development is people. Caregivers provide food and physical

safety. They nurture and reassure the infant. They provoke and respond to the toddlers‟ overtures and offer playthings and challenges and they surround the child with language. Hence a good quality of care is most important for infants and toddlers in their development. According to Pangrazi (2001), physical education trends have been developed recently to incorporate a greater variety of activities demanding different varieties of equipment with the purpose of introducing pupils to lifetime activities at an early age, which can help pupils to develop good activity habits that they will carry over into adulthood. Teaching non-traditional sports to pupils may also provide the necessary motivation for pupils to increase their activity, and can help pupils learn about different cultures.

The role of equipment and materials in the teaching of physical education cannot be underestimated. Just as in other fields, the use of advanced materials in athletics can be justified if it turns to enhanced skill performance (Pangrazi, 2001). It is appropriate to consider the roles that sport play in our societies today. While the natural focus of attention associated with an Olympiad is on "the elite" of sport, we as administrators in the profession cannot lose sight of the fact that sport is truly an activity for everyone in society.

The optimum design of sports equipment requires the application of a number of principles, not only for enhancement of performance, but also to make the equipment as user-friendly as possible from the standpoint of injury avoidance. Designing these materials will employ science, mechanical engineering, and physics in its manufacturing. However, it is also necessary to employ the principles of Biomechanics (a science of how the body reacts to internal and external forces) in the preparation of the equipment. Thus, it is an attempt to apply the basic laws of physics and mechanics to the joints, ligaments, and tissues of the body as they are subjected to loading.

In designing sports equipment, the various characteristics of materials must be considered. Among these characteristics are strength, ductility, density, fatigue resistance, toughness, modulus (damping), and cost. To meet the requirements of sports equipment, the materials of choice often consist of a mixture of material types: metals, ceramics, polymers, and composite concepts. These are fabricated into the desired equipment, making use of creative design concepts with due attention given to biomechanical requirements.

Running shoes, in particular, have shown substantial improvements in the running events at top level competitions. The provision of adequate physical resources including facilities, equipment and maintenance can help in influencing attitudes and facilitating programme success. Wakefield and Blodgett (1999) stressed that an availability of equipment should not be an excuse for failing to organise Physical Education Programmes, this assertion is true considering the fact that most of the equipment needed for physical education lessons can be improvised. The physical education and sport programmes learning environment suggests that equipment should be available to children and adults who engaged in large-muscle activity involving climbing, jumping, skipping, kicking, throwing, leaping and catching. Those who engage in fundamental motor-skill activities and others in low organizational games need to possess equipment to aid individuals and team activities and competitions. To fulfill this goal, the following recommendations are worth considering:

- Proper facilities and equipment should be available to ensure the safety and health of the participants
- Provision of protective equipment for the safety of participants.
- Basic equipment should be provided to all Infant and Elementary and High Schools including: Balls, Skipping Ropes, Cones, Hoops, Bean Bags, Bats, etc.

- Showers and change rooms should also be installed at every Secondary School for pupils to wash, clean themselves and get themselves ready for the next lesson.
- All Kindergarten Schools should be equipped with playing space as well as facilities for climbing, crawling, jumping, etc.
- Provisions should be made for indoor sporting facilities/infrastructure/equipment (especially during the rainy season to enable pupils to be engaged in physical education throughout).

Wuest and Bucher (1999) again stated that sports provide meaningful opportunities to demonstrate once competence and to challenge ones‟ limit. Sport again is viewed as games that emphasize physical involvement where strategy and skills play a significant role in determining the outcome. Abubakar (2007) opined that adequate facilities and equipment are needed for the successful conduct of sports programmes.

At the professional and non-professional levels, sports are a highly competitive occupation with millions of dollars as reward, depending upon the kind of discipline and competition that an individual engages in. However, even the dedicated amateur sports men and women are willing to invest a great deal of money into equipment and facilities to improve their performance in sports. This was supported by Onifade, (2001) who stated that for the successful execution of any sport performance programme, there must be availability of qualitative and quantitative equipment and facilities.

Generally, it is good for teachers and learners to make use of the real and standardized equipment in the teaching and learning processes so that learners can see, feel and use the real equipment from the beginning. However, in the situation where the real equipment is not readily available, improvised material or equipment can be used

to serve the same purpose as the original one. Improvisation is a means of deriving alternative apparatus from available materials or resources other than the original one. It is therefore important to improvise in order to supplement the few existing and available materials in our schools during practical teaching so as to make things real in nature. This should however be a temporary measure until the original equipment is obtained. Lumpkin (1998) stressed that unavailability of equipment should not be an excuse for failing to make track and field programmes. Since equipment can be improvised and constructed in order to promote effective teaching and learning. This is true because there are several equipment in physical education that teachers can improvise to enhance effective teaching of practical physical education (at all levels) in the absence of the real one. Examples of this equipment can be javelin sticks, shot put missile, discus missile, hockey sticks, balls and host of others.

The apparatus requirement in an average school is quite large but most items can either be bought fairly cheaply or be made locally, since the quantity and the type of facilities and equipment available will influence the extent to which physical education programmes are effectively handled in schools (Coward & Lane, 1970). Ayi-Bonte, (1996) also buttress the relevance of improvisation of materials by stating that involvement of pupils in the production of sports equipment develops student mentally, socially and emotionally leading to efficient teaching and learning which is worthwhile for educational pursuits.

According to Entwistle (1976), teachers must learn to improvise equipment for effective teaching and learning in their schools since generally such developing countries have financial challenge of a sort. In the Ghanaian context this assertion raised by Entwistle is true since almost all the school authorities in Ghana, normally complain about lack of funds to purchase equipment for teaching physical education in

our schools. A good teacher therefore will improvise to enable each student have his or her own equipment for proper participation in activities during practical physical education lessons. This will invariably reduce the burden of the school to solely purchase standard and original equipment for teaching and learning (Umar, 2002).

Talabi (1998) also reiterated that temporary or improvised equipment or articles should be periodically checked carefully to be sure the materials are safe to avoid preventable accidents and injuries. The periodic checking of the equipment will also make room for maintenance work to ensure the longevity of the scares resources made available.

Considerable quantity of equipment are necessary for effective teaching and the cost of providing them may be astronomically great for cost effectiveness or obtained locally to help improve the teaching and learning of physical education in schools. To this effect, Bucher and Irstea (2002) opined that innovative teachers should learn to improvise and use materials in their surrounding for their physical education programmes. It is a fact that cannot be glossed over that almost in every stage of physical education programme, certain pieces of expensive equipment can be made either by the teacher, interested and carefully supervised student or local artisans can be used to improvise simple equipment to cut down cost of purchasing expensive physical education equipment by the school. Lawan (2005) also shares the same view by indicating that where standard facilities and equipment are lacking in schools improvised once at a cheaper cost could be used as a substitute. Physical education teachers and schools should therefore not use lack of fund to relegate the teaching of physical education to the background.

It is clear from the above discussion that in the absence of standard and original physical education equipment, effective physical education programme can still be

carried out by way of improvising most of the un-available equipment by using local materials at a lower cost. Mosston and Ashworth (2002) suggested that there are always two set of objectives in any teacher-learner interaction; these are specific objectives that pertain to the particular content of the episode which is performing dribbling in soccer, and objectives of human behaviour-ability to work as a team.

Researches carried out worldwide, proved that teaching learning methods and strategies used by the teacher influenced skill acquisition and retention. The student-centered (indirect) styles were also proved more effective than the teacher centered (direct) by Hansen (2008), who studied the effect of the command, practice, reciprocal and guided discovery style on skill learning and on motivation climate.

Although insightful, studies presented inconclusive results with regard to physical education. This could be attributed to the variety of skills and student ages, the shortduration of the intervention programmes (Pieron, 2002), and the performance versusthe learning issue (Lee, Burgeson, Fulton & Spain, 2007). It also seems to be true that a research has oftenfocused on student psychomotor acquisition, and especially on sport skills acquisition, ignoring the cognitive and social dimensions, despite their importance in learning. (Beckett, 1990), and b) skill acquisition has been more related with direct styles such as the command (Boyce, 1992) because the teacher has a specific task to teach (e.g. ball catching) and the qualitative elements should be often emphasized (Ratliff, Ratliff & Bie, 1991), especially in the initial stages of instruction (Cleland & Pearse, 1995).

On the other hand, there is still very little empirical evidence for the guided discovery teaching style in physical education (Blitzer, 1995; Mawer, 1995). This particular style can also be used to teach a specific task in the initial stages of instruction, and is considered most suitable for older preschoolers and primary-grade

pupils. It is also suggested for the cognitive development and especially of critical thinking since it requires evaluation, analysis, and decision making (McCullik & Byra, 2002). According to Pica (1995), with guided discovery children not only learn skills but they learn how to learn.

2.4.5 Summary of Literature Review

This chapter reviewed the existing empirical and theoretical literature relevant to the numerous ideas, opinions and suggestions that impact upon and influence talent development in soccer. It offered insight into the key theoretical models and frameworks which were identified as having relevance to the field of study.

The concept of early multi-positional training is aimed at exposing young players or athletes to do many facets of a sport activity with intent to explore the intra abilities of the individual for specialized training. While early studies concentrate on exposing children to many different sporting events at the early stage and directing them later to areas of maximum efficiency. This study focuses on diversification and specialisation within a single sport activity. The modern trend in development, due to psychological and physiological demands enjoins the coach to search for best options in maximizing player potentials and identifying the perceptual motor workspace consisting consistent with task demands. At the professional level, sport has been identified as a very highly competitive occupation with millions of dollars used to purchase players with high techno-tactical and physical abilities. Age, gender, and techno-tactical abilities of players have some important criteria for selection. In soccer, players understanding of multi-positional tactics have become those with potential to earn higher wages. This has led to a stronger preference for multi-talented players at the professional level.

CHAPTER THREE

METHODOLOGY

This chapter deals with the methods and procedures that were used in the research process. It covers the following:

1. Research design,
2. Population
3. Sample and Sampling Technique
4. Instrumentation
5. Validity of the Instrument
6. Reliability of Instrument
7. Data Collection Procedure
8. Data Analysis Procedure

3.1 Research Design

This study employed descriptive survey design taking into consideration the purpose of the study as well as the interview or survey process used for the study. The descriptive survey research design was chosen because the study focused on gathering information from subjects and describing the information systematically and accurately for the purpose of generalization. This design was viewed appropriate because the study is concerned with the systematic gathering of the opinions of the research participants concerning their views about the topic with intent to describing and analyzing these views to find out the predictive capacity of the independent variable of the study (Fraenkel & Wallen, 2009). Descriptive survey research, which is quantitative in nature and particularly falls within mixed research design, seeks to identify the

attitude or opinions of human subjects in a natural environment and also seeks to generalize the information collected from a sample to the target population (Baumgartner, Strong and Hensley; 2002)

3.2 Population

In this study, the population is comprised of physical education teachers and licensed soccer coaches who train district /regional under twelve (U-12) and under fifteen (U-15) players in Soccer Academies. These groups of individuals have common characteristics in that they are involved with identifying sports talents and training/coaching them to perform at a higher level (Pilot & Hungler, 1999).

3.2.1 Target Population

Fraenkel and Wallen (2009) describe target population as, the group the researcher would like to generalize the results. They further agreed with Creswell (2002) and Kaul (2004) that target population is a complete set of individual (subject or events) the researcher is interested in. This implies that members of the target population have identifiable demographic characteristics that make that population distinct entity. As a result, the target population conforms to specific criteria of interest to this research which offers us the possibility of generalization of our findings to similar population. The target population determines whether sampled cases are eligible or ineligible for the study. The target population, in some instances, is restricted to exclude population members that are difficult or impossible to interview. Based on these assumptions, the researcher established eligibility criteria to specify the characteristics that the people in the population must possess in order to be included in the study (Pilot and Hunger, 1999).

The eligibility criteria for this study were that a participant must be:

1. A licensed soccer coach
2. Currently coaching a youth soccer team
3. Have at least five years coaching experience at the youth level
4. Coaching in the target area in Central Region

The eligibility criteria for players were that a participant must be;

1. Either Under-12 or Under-15 soccer player
2. A student player in a soccer academy
3. Currently a pupil of a basic school in the target area
4. A resident in the target area

It is against this background that the researcher selected physical education teachers/coaches based on their rich experience in youth coaching and who have deep knowledge and specialized information about the notion of the topic under research. The targeted participants for the study are physical education teachers and licensed soccer coaches who have at least five (5) years coaching experience with the district/regional youth teams. The player participants are also under-12 and under-15years players in soccer academies who attend basic schools and play or have played for the district or regional soccer teams.

3.3 Sample and Sampling Technique

According to Morse, Barrett, Mayan, Oslon, and Spiers (2002) a well planned approach to sampling can have a huge impact on the quality of the study, as each sample should accurately reflect the characteristics and quality of the target population. Kuzel (1999); Swanson and Holton (2005) stressed that a sample should be broad enough to capture the many facets of the phenomenon under study. The researcher"s aim was to ensure that participants were licensed soccer coaches who coach or have

coached youth soccer teams especially under-12 and under-15 soccer teams from soccer academies in Central Region who were willing to share their personal experience and knowledge with the researcher. However, it was impossible for the researcher to study all relevant coaches and players as a result the need to select a sample with similar characteristics within the target population for the study. As a result, three distinct samples of participants were constituted.

The first group was made up of six P.E teachers and eight soccer coaches who teach or coach youth players in the region. All these members in this category were purposively selected. Eight (8) from the Effutu Municipal area and six (6) from Gomoa East District in the Central Region.

The second group made up of twenty eight (28) Under-12 players was constituted from a convenient sample of players from Gomoa Fetteh Soccer Academy and the National Sports College Academy in Winneba.

The third sample comprised twenty eight (28) Under-15 soccer players constituted from a convenient sample of participants selected from the two target areas. The convenient sampling technique was used to constitute members of the second and third categories of research participants because of their accessibility. Members in the first category of subjects were selected because of their unique experiences with the variables under study. De Vos, Strydom, Fouche & Delport (2005) support the use of a convenient sample, depending on the criteria stated above, as a rational choice where it is possible to identify all members of the population.

3.4 **Research Instrument**

Self-designed structured interview was used as the main instrument to collect data from the participants of the study. The instrument was made up of twelve

questions or items (Appendix A) which were carefully designed to elicit information from the participants regarding the variables under study to determine which of them has the highest predictive capacity and be encouraged for higher performance outcomes in soccer. The interview was designed to be face-to-face lasting a maximum of 10 minutes. The researcher was the interviewer and each interviewee was given some amount of latitude to express himself about the issue under discussion. The test items were mostly open-ended questions constructed to solicit opinions of interviewees based on their experience. A tape recorder was used to record the entire interview to be played back later for transcription and coding.

3.5.1 Validity and Reliability of Instrument

The structured interview questionnaire was first face-validated by two experts from the Department of Health, Physical Education, Recreation and Sports (HPERS), of the University of Education, Winneba. Glesne and Peshkin (1992) suggest that a pilot study be used to identify potential problems, test the language and substance of the questions and inform the researcher whether changes to the interview guide are needed. Therefore a pilot study of five licensed youth soccer coaches and eight under-twelve (U-12) and under-fifteen (U-15) soccer players from Utrecht Soccer Academy was conducted for content validation purposes. The structured interviews were recorded using tape recorder. It was very important to test the recorder to ensure that the interviewee‟s answers were captured and audible enough so as not to pose transcription difficulties (Bryman, 2008).

During the transcription process and coding, therefore, the researcher was able to listen to, code and analyze the style of questioning posed and answering recorded during the interview process as well as the level of ambiguity and procedure of

interview schedule. After the analyses of the pilot study, minor changes were made to the interview schedule and potential probe question were identified for the researcher to refer to during actual testing of the instruments. The pilot study confirmed that the sampling technique chosen was suitable for acquiring the required information to answer the research questions. From the pilot study however, it was discovered that some players experienced difficulty in expressing themselves in English language. This necessitated the use of local languages to pose some questions to create an enabling environment for the interviewees to express themselves in-depth. In some cases the researcher could translate the local language (Twi) to the participants. Expressions were also analysed for consistency and that allowed for identification and removal of ambiguities associated with each test item.

3.5.2 Test Administration and Data Collection Procedure

Before conducting the interview, the researcher first submitted an introductory letter from the Head of Department for Health, Physical Education, Recreation and Sports (HPERS) addressed to the research participants (in the case of the physical education teachers and coaches) or Heads of Basic schools in the two selected districts where data were gathered that sought consent for the interview so that the interview data could be scheduled. A week before the visit, phone calls were made for confirmation of interview schedule by participants. A day before the interview the researcher called the participants earlier to schedule a time convenient to each of them. This method of conduct was used by the researcher to draw an itenary for the interview. For the under fifteen (U-15) and under twelve (U-12) soccer players in the Academies and Basic schools, the researcher consulted their coaches or physical educators for a

day and time to administer the interview. On the scheduled dates for each interview, the researcher went to participants and interviewed each of them face- to- face.

Before the interview, the researcher sought permission from each interviewee to record their responses for codification and categorization purposes. The 10 minutes scheduled times for each interviewee were not strictly followed as in most cases, allowing for interviewees time to expatiate on their views. Fourteen (14) participants were interviewed a day. Fante and Twi languages were used where appropriate to help the soccer players, especially those in the primary school for further understanding of the questions before answering. Later, the responses in the local languages that were allowed for this category of respondents was later translated and transcribed into English language before coding.

3.5.3 Data Analysis Procedure

To analyse the data, the researcher first transcribed the information on the tape recorder and also translated what was recorded in the local language into English. The researcher identified themes from the transcribed data and categorized them based on the most typical responses and common relationships amongst response themes. The categorized data were later assembled in the form of frequency tables, charts and graphs. The types of responses in each category were quantified allowing for comparison using the Chi-Square test for Good men Fit statistics to determine if there were any statistically significant differences between the predictor variables and their influence on performance in soccer at the estimated probability level of 0.05. The Chi-Square test allows us to test differences between observed scores and expected or theoretical scores. It also allows us to test the hypotheses on the relevance of „diversification" compared „specialization" as the two main factors affecting positional

play in soccer. It will allow us to determine which variable is more preferred by most soccer players and coaches.

CHAPTER FOUR

RESULTS, DATA ANALYSIS AND DISCUSSIONS

This chapter of the study is concerned with the analysis and interpretation of the primary data gathered to make inference that ultimately addresses the study‟s outlined objectives and hypotheses. The data was gathered from players and coaches in academic institutions and soccer academies, through an interview guided by a semi structured questionnaire. Analysis of the interview information relied on identification of key words and phrases as well as detailed description or responses on some specific issues. For purpose of generalization and analytical summary, key responses from the interview were coded and used for analysis.The statistical software (Statistical Package for Social Sciences (SPSS) was used to analyze the data gathered from the respondents.

The responses gathered from the recorded interview were initially transcribed by listening to the recording severally and identifying the key issues. This was guided by a semi- structured template designed in Microsoft Excel where the columns represented the key fields on which the summary was being gathered and each row represented the responses of each interviewee. These responses were then numerically coded before the analysis. Major statistical outputs including cross-tabulation of two categorical variables to examine relationships, frequency tables, pie charts, and bar graphs were used for descriptive analysis of the data.The Chi-square test was applied to test the level of relationship between the 2 main variables of the study. In all, the responses were obtained from a total of 56 academy players, 6 Physical Education (P.E) teachers and 8 soccer coaches. Since the P.E teachers and the soccer coaches share similar characteristics in terms of functional role, they are treated as one group in this study and are referred to as „Coaches‟.

4.2: Analysis of Academy Players' Responses

This section of the analysis focuses only on the responses of the academy players with regards to the study objectives. Key issues discussed were the Academy players" views on, and preference of, specialization and diversification, the influence of coaches in their preferences and the associated difficulties in playing switching positions. The sample of respondents in this survey were players under 12 years of age or under15 years of age. These respondents were found to be fairly spread over almost all the positions in the field of soccer. As indicated in Figure 4.1, the years spent by the respondents in their current on-field position is fairly distributed from a year to four years.

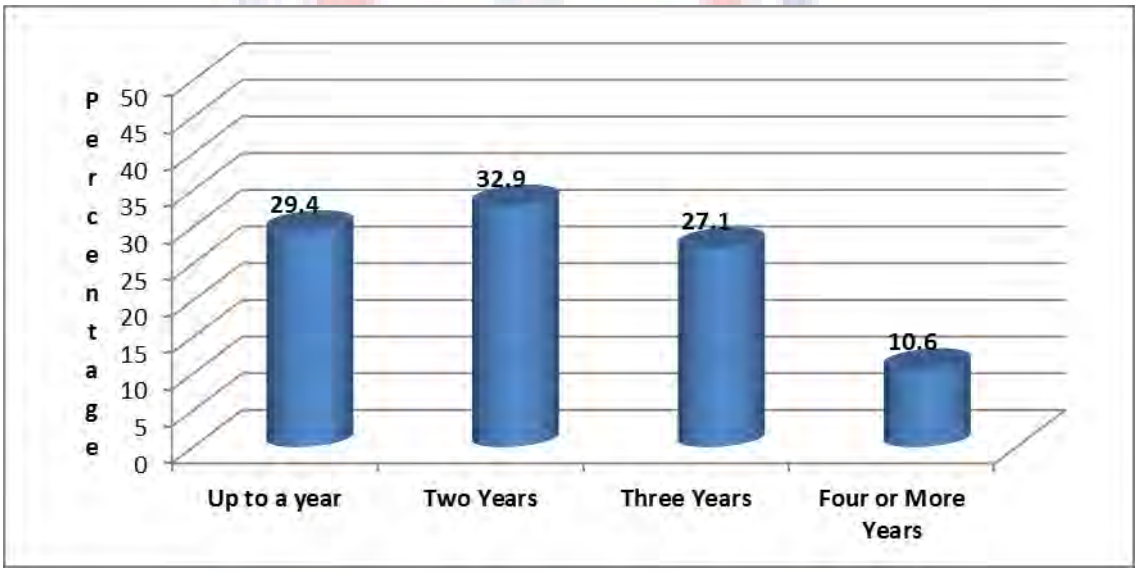

Figure 4.1: Duration of Play in Current Position

4.2.1 Academy Players' Perspective on Diversification and Specialisation of Positions

The training development approach of specialization (that is playing one position) and diversification (that is multi-positional play) have their unique role in the

game of football. The observable increasing competition and globalization in sports echo the importance of these two dimensions of sports development and career progression.

The summary of responses as indicated in Figure 4.2 revealed that, each player had previously played in two or more positions in addition to their current game position.

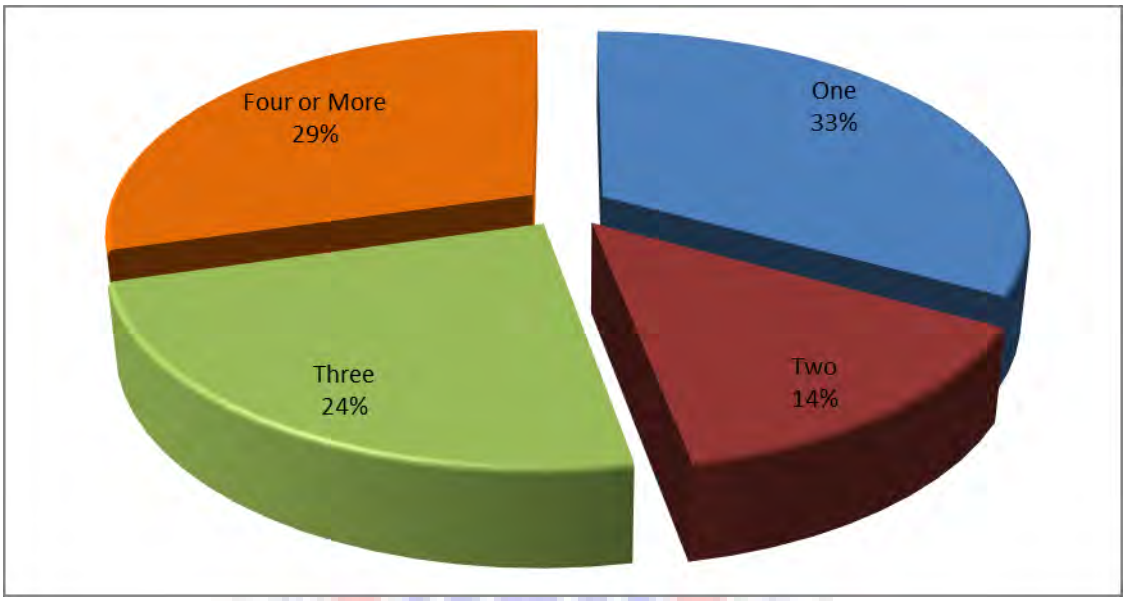

Figure 4.2: Number of Positions Played before Current Position

The involvement in playing different positions is observed to have been induced by coaches of the academy players and the personal will of the players. Table 4.1 affirm this statement by indicating the percentage of the academy players engaged in playing different positions through the suggestions by their coaches and those without any coach‟s suggestions or the free will of the players.

Table 4.1: Has your coach ever suggested a change of positions?

Response	Frequency	Valid Percent
No	26	46.4
Yes	30	53.6
Total	56	100

About 53.6% of the respondents confirmed that, their coaches have ever suggested switching their positions while the rest of the academy players had been engaged in multi-positional play at their own will.

4.2.2 Difficulty with Multi-Positional Play or Positional Switching

The involvement in several positional plays is seen to be associated with some level of challenge for the study participants. Table 4.2 summarizes the respondents‟ views with regards to the extent of difficulty associated withswitching positions.

Table 4.2: Level of Difficulty Associated with Constant Change of Positions

	Frequency	**Percent**	**Valid Percent**
No difficulty	28	50.6	50.6
Moderate difficulty	18	31.8	31.8
Very Difficult	10	17.6	17.6
Total	56	100	100

It is observed from table 4.2 that, 50.6% of the participantsdo not experience difficulty in switching positions when required to do so.

Table 4.3 below summarizes the comparison of the level of difficulty associated with switching positions among players whose coaches have ever suggested a switch into new positions against those without coach‟s suggestions of new positions. This comparison is to determine whether the level of difficulty experienced is the same among players who switch positions under the influence of their coaches or those who engages in positional switching on their own.

Table 4.3: Positional Switching Suggested by Coach and Personal Choice Engagement

Asked by Coach to Switch Position	Levels of Difficulty			Total
	No Difficulty	Moderate Difficulty	Very Difficult	
Yes	11	11	18	30
No	17	7	2	26
Total	28	18	20	56
Total (%)	50.6	30.8	17.6	100

It can be observed from Table 4.3 that, only 50.6% of the participants who have ever switched position either through suggestions by their coaches or made their own personal choice do not perceive any difficulty in playing the new positions.

Among the players whose coaches had suggested switching of positions, majority (81%) perceive the outcome of playing in the new position as very helpful. This is pictorially illustrated in Figure 4.3 below.

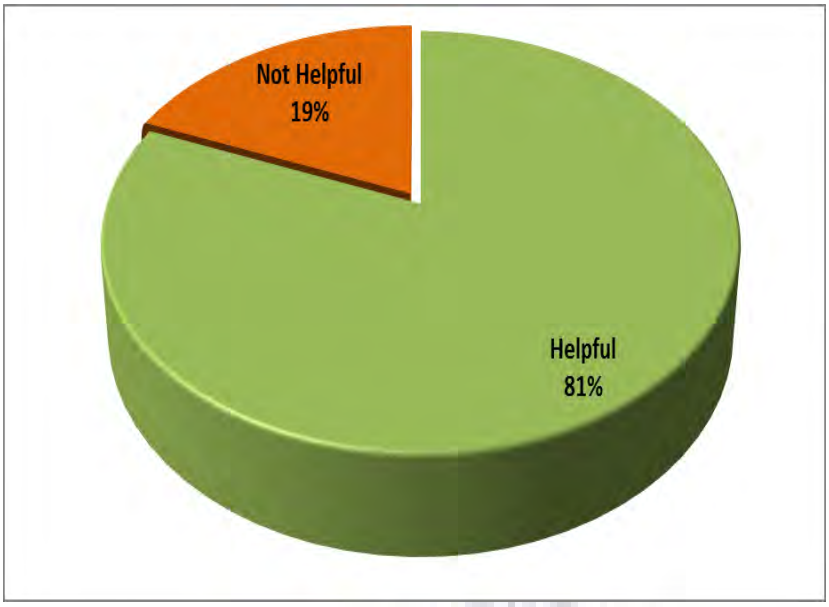

Figure 4.3: Perceived Outcome of Coaches' Suggestion to Switching Position

Further analysis was conducted to investigate the high level of difficulty experienced in switching positions among the research participants who are usually under the influence of their coaches. This was assessed by examining whether the level of difficulty associated with the players was the same or varied between those who perceived their coaches‟ suggestions to be impactful as against those who perceived the suggestions as not having any impact on them. That is, whether a player‟s conclusion on the impact of coaches‟ suggestions to play different positions is influenced by the level of difficulty experienced.

A Chi-Square test was conducted to test whether there is a significant difference between the level of difficulty associated with switching positions as a personal choice and as suggested by coaches. This statistical test was used to examine the existence of differences between two categorical data or variables. In this case, the two variables are the "level of difficulty in switching position" and "the influence of coaches in players switching positions".

The Pearson Chi-square test (χ^2) is a statistical test applied to sets of categorical data to evaluate how likely it is that any observed differences between sets of data own by chance. It tests the null hypothesis stating that the frequency distribution of the observed events from our sample is consistent with a particular theoretical distribution. Our interest is to test null hypothesis that the variables are independent, in order to assess whether the paired observation on our two variables in Table 4.4 are independent of each other.

Our test produced a Pearson chi-square value with a corresponding p-value. A large Pearson chi-square value with a corresponding small p-value would indicate that, there was a significant difference between the two sets of categorical variables as displayed in Table 4.3. The p-value would be considered small when it is smaller than the selected level of significance. In this study, the selected significant level was p =0.05.The test result is summarized in Table 4.4 below. The obtained χ^2 value of 5.517 was significant at df (56) =79.08, 95% level of confidence. This showed that there is no statistically significant difference in the performance difficulties in our two sets of data.

Table 4.4: Chi-Square Tests to Determine the Differences between Coaches' influence on Multi -positional play and level of Difficulty encountered by Players

	Observed Value	Degree of Freedom	Asymp. Sig. (2-sided or p-value)
Pearson Chi-Square	5.517	2 (5.991)	0.0633
Number of valid responses	56		

4.2.3 Multi-Positional Play and Specialization: Preference and Impact

The preference for either multi-positional play or specialization is assessed by their impact as seen by the participant. Perception of high impact of a particular category is an indication of high preferences and vice versa. The summary of the responses of the study group with regards to the impact of multi-positional play and specialization were indicated in Table 4.5.

A view of Table 4.5 that, the proportion of participants in support of the views that playing many positions (multi-specialization or diversification) has more impact than playing a single position tends to be higher than those in support of the single position strategy (specialization). Almost all the respondents with the former view that attributed their choice to the fact that diversified positional play provides them with a wider opportunity for team selection becomes the criteria for membership of a team travelling abroad, for instance, as a social dynamic among Ghanaian sports teams.

Table 4.5: Impact of Multi-Positional Play and or Specialization

	Frequency	Valid Percent
Playing One Position has more impact than playing many positions (Specialization)	24	42.9
Playing many positions has more impact than playing a single position (Diversification)	32	57.1
Total	56	100

The level of perceived difficulty associated with the switching of positions was examined to ascertain whether it influences the preference for multi-positional play or specialization. Table 4.6 gives the summary output of the cross-tabulation between the

"Level of difficulty in switching position" and the "Preference for specialization or multi-positional play".

According to the data in Table 4.6, majority of the players who experience little or no difficulties in switching positions prefer multi-positional play (playing several positions) to specialization. Majority of the players who experience difficulty in switching positions prefer specialization to multi-positional play.

Table 4.6: Level of Difficulty Associated with Switching Positions its influence on Preference for Multi-Positional Play and Specialization

Preference for specialization and multi-positional play	Level of Difficulty			Total
	Not Difficult	Moderate Difficult	Very Difficult	
Specialization in one position	9	8	7	24
Diversification or multi-positional switching	19	10	3	32
Total	28	18	10	56
Total (%)	50	32	18	100

A critical look at the Table 4.7 below shows that the value for Pearson chi-square, which is 5.370, at df (56), was significant only at p= 0.68 level of significance which has the same value. Our research confidence level was set at 95% ($p<0.05$) which makes our χ^2 value insignificant at that level. Since the p-value was greater than the significance level set for the hypothesis that multi-positional specialization training has greater potential in the techno-tactical development of football talents than early positional training, the researcher failed to reject the null hypothesis. This means that

both multi-positional and single position specialisation training have equal potential in developing the techno-tactical knowledge acquisition of play among talented players.

Table 4.7: Chi-Square Tests to Determine Level of Difficulty in Switching Position and Preference of Multi-Positional Play and Specialization

	Observed Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.370(a)	2(5.991)	.068
Likelihood Ratio	5.381	2	.068
N of Valid Cases	56		

4.2.4 Influence of Coaches on Players' Preference for either Multi-Positional Play or Specialization

The analysis earlier established that about half of the players who are engaged in multi-positional play do so through their coaches‟ suggestions. Being in the centre of affairs in the development of the youth career, coaches have the tendency to influence the mindset and decision making of their players. The preference for either specialization or diversification is therefore examined to identify the nature of influence that coaches exert on their players.

In analysing the influence of coaches on players‟ perception about specialization and multi-position play a contingency table was generated to examine the level of influence suggestibility has had on player‟s preference.This is summarized in Table 4.8.

Table 4.8: "Coach ever suggested Switching Position" against "Preference for Multi-Positional Play or Specialization"

Asked by coach to switch position?	Level of Difficulty		Total
	Not Difficult	Moderately Difficult	
Yes	9	21	30
No	14	12	26
Total	23	33	56
Total (%)	41	59	100

Majority of the coaches, (84.7%), were of the view that the ideal age range to begin specialization is from age 12 years to age 20 years. Thus, early multi-positional play takes place throughout the early age of growth until age of about twelve years of age when it is advisable to implement position specialization.

4.3: Analysis of Coaches' Responses

This section of the analysis focuses only on the responses of the 14 coaches with regards to the study objectives. It showswhat coaches support as best methodological practices in the developmental process of youth talents in soccer specifically. Since this category of research participants are engaged in the performanceof similar function, they were jointly referred to as „coaches" in this study.

4.3.1 Coaches Perspective on Multi-Positional Play

The analysis of the participants‟ responses indicated that, these coaches have also been involved in playing different positions in their career life-time before specializing in a single position. Majority of the coaches (85.7%) confirmed that, their involvement in diversification was through the recommendations and suggestions by their previous coaches.

The participants testified that the application of multi-positional play among youth players has always been associated with some level of difficulty. A majority (72.7%) of the coach-participants confirmed that players who are advised and have been involved inmulti-positional playusually experience some level of difficulty mastering requisite skills and competences for high performance.

Table 4.9: Views of Coaches on the Level of Difficulty Associated with Multi-Positional Play by Players

Responses	Frequency	Percent
No Difficulty	3	21.4
Moderate Difficulty	3	21.4
Very difficult	5	35.7
Sub-Total	11	78.6
Indecisive	3	21.4
Total	14	100

From the coaches‟ perspective, each position requires unique skills, mindset and tactical practice. Therefore a change demands a lot of effort to adjust and effectively

play in the new position. One has to train extremely well and be intelligent to catch up with those players who have specialized to play that position.

Multi-positional play and specialization have their role to play in the development of talents in sports among the youth. Soliciting the views of this category of participants as to which option is most appropriate for talent development among players, almost all the coaches interviewedshare similar opinion. Comparatively, the analysis revealed that, there is a strong affinity for multi-positional playas the best option for talent development in sports than specialization. A total of 77% of the coaches testified that only multi-positional play is the best option for talent development while 23% were of the view that both multi-positional play and specialization are equally important for developing a player"s talent in sports. The summary of the responses are indicated in Figure 4.5.

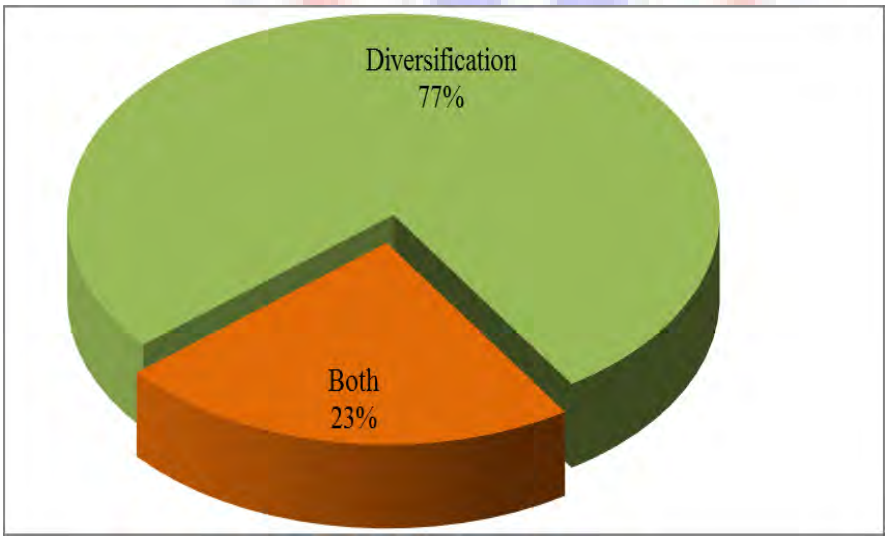

Figure 4.4: Preference of Multi-Positional Play and Specialization among Coaches

The high preference for diversification was largely attributed to changing trends in football game strategy and the increasing competitiveness in international tournaments for positions and opportunities. The participants explained that football is

not only about playing the game but working together as a team. This entails being able to help in the event of difficulty encountered getting a specialist for a particular position. Multi-positional specialization offers wider spectrum of opportunities both nationally and internationally. The benefit to the individual player is conspicuous when engaged in foreign clubs where there may be more than one player with same position. The player with diversified positional play knowledge and experience stands a better chance of being utilized often during matches for strategic purposes. It is understood that modern game calls for players to move forward into attack and backward to defend which demand a lot of multi-positional skills, knowledge and experience. Also, introducing and developing the multi-positional system, however calls for studying the different types of talents among the players to know who can play in more than one position.

Among the comments by the few coaches in support of specialization were:

- one learns the totality of the position, gains more experience and develop confidence, and courage which is needed for top soccer competition
- One masters the position, adds new approaches and responds effectively
- One is able to identify and correct mistakes leading to perfection
- One gets to know exactly what to do when faced with difficulty and makes decisions within the shortest time on the field of play.

Participant coaches also noted that the advantages of multi-positional specialization far outweighs the perfectionist tendency of early specialization because in team sport, understanding the skills and comprehension associated with each position of play helps increase the performance output of players.

4.3.3 Periods for Positional Diversification and Specialization

Further investigation to identify the appropriate period for the practice of early multi- positional playshowed conflicting results.Figure 4.6 graphically illustrates the summaryof participants‟ responses with the number of years needed for practicing of these two variables.

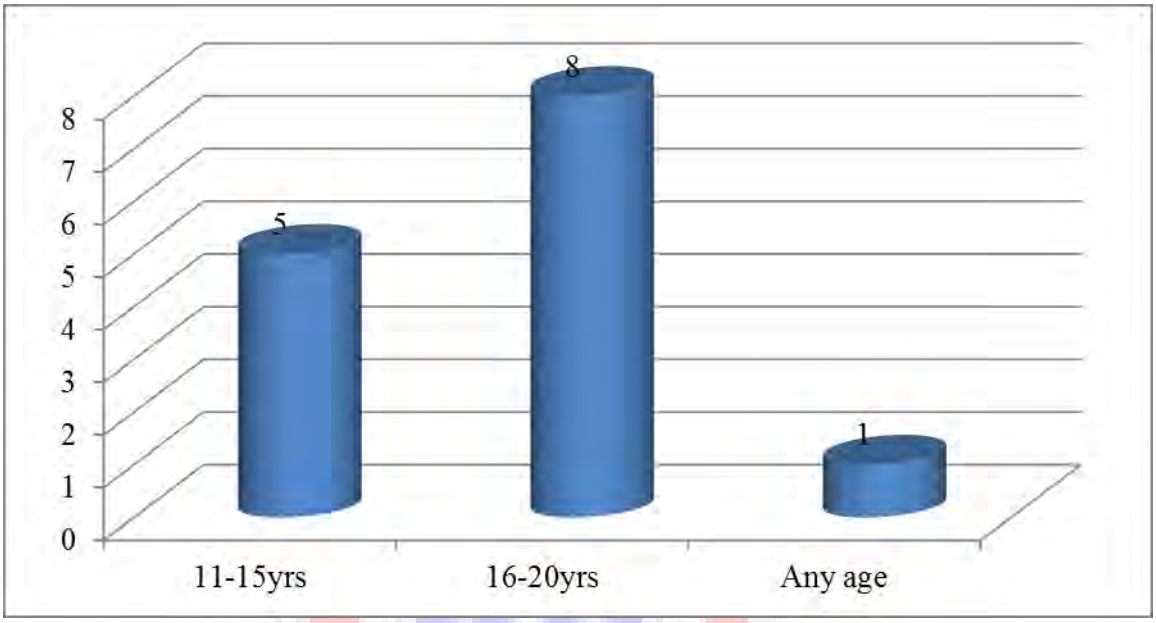

Figure 4.5: Views of Coaches regarding the right Age at which Early Diversification or Specialization should begin.

According to the data in Figure 4.6 multi-positional play is implemented at the developmental stage of the person through to the amateur period which varies between 11 years and 20 years of the player‟s age. Majority of the coach participants (57.1%) opted for an age range between 16-20 years needed for multi-positional play after whichspecialisation can begin while 35.7% of them believed that specialisation should begin at age 11 and above.

4.4 Discussion

The first hypothesis for discussion was to find out whether multi-positional training contributes significantly in promoting a broader spectrum of developmental experiences that enhance positional specialization.From the analysis of the data, it was revealed that multi-positional play is highly preferred and perceived to have more impact than, positional specialization by both the coaches and the participants. A total of 77% of the coaches testified that only multi-positional play is the best option for talent development while 23% were of the view that both multi-positional and specialization are equally important for developing a player‟s talent in sports. The multi-positional play is the preferred choice for players because it provides them with a wider opportunity for team selection which becomes a handy criterion for selection when it comes to team travel. This social dynamic notwithstanding, there was no significant difference in the value associated with both research variables. Thus, the practice of multi-positional play has virtually been experienced by every player although its impact on players‟performance couldnot be established in this study.

The high preference for multi-positional play was largely attributed to changing trends in football game strategy and the increasing competitiveness in international tournaments for positions and opportunities. The participants explained that football is not only about playing the game but working together as a team. This entails being able to help in the event of difficulty encountered getting a specialist for a particular position. Multi-positional specialization offers wider spectrum of opportunities both nationally and internationally. The benefit to the individual player is conspicuous when engaged in foreign clubs where there may be more than one player playing in one position. The player with multi-positional play knowledge and experience would stand a better chance of being utilized often during matches for strategic purposes. It is understood that modern game calls for players to move forward into attack and

backward to defend which demand a lot of multi-positional skills, knowledge and experience.

Though the key reason among the participants for engaging in multi- positional play is being future oriented and having keeping an eye on the international scene where competition is unavoidable, existing studies have outlined numerous benefits associated with diversification. Studies by Busseri, Rose-Krasnor, Willoughby, and Chalmers (2006), and Fredricks and Eccles (2006) reported that youth who are involved in varied activities score more favourably on personal and social outcome measures such as well-being and positive peer relationships than those who specialize. This observation of a number of players being allowed to play different positions is in line with a number of existing studies such as that of:

- Soberlak and Côté, (2003) who explained that, children become involved in deliberate play because of their own interest in the activity, as opposed to external reasons such as improving performance or winning medals.
- Ryan and Deci (2000) and Vallerand (2001), based on Self-determination theory predicts that early intrinsically motivating behaviours (for example, deliberate play) will have a positive effect over time on an individual‟s overall motivation and ultimately the individual‟s willingness to engage in more externally controlled activities (for example, deliberate practice).
- Biddle (2001) and Treasure (2001) argue that promoting a deliberate play environment during the sampling years (that is the period of playing in different positions) is closely linked to creating a “mastery” or “task” climate in sport that will ultimately foster children‟s motivation for sport.

The participants that are of the opinion that playing one position is more important than many positions largely considered their ability to play effectively in that position, compared to their poor delivery and difficulty in the other assigned positions. Finally, the Chi-Square test for independence that was used to analyse our first hypothesis as to whether multi-positional training contributes significantly in promoting a broader spectrum of developmental experiences that enhance positional specialization (p.89). The observed value (5.5170) was smaller than the value at df (56) =5.991 whiles the p-value of 0.06 obtained was greater than our pre-research confidence level of p=0.05. This statistically means that the hypothesis cannot be rejected.

The second hypothesis for discussion was whether multi-positional specialization training has greater potential in the techno-tactical development of football talents than early positional training.The study revealed that 85% or more of coaches and participants prefer early multi-positional play and late specialization at ages about 16 to early positional specialization.

Clearly, multi-positional play precedes specialization. This preference is however higher among the participants in the multi-positional play through their coaches (93.3%) than those engaged in multi-positional play at their own volition (75%). The high preference for early multi-positional play and late specialization system of tactical development is largely attributed to the statement that, football is a team sport, and getting the understanding of the skills and comprehension associated with each position of play helps increase the performance output of players.

This finding is in consonance with many existing studies‟ findings that further confirms that early multi-positional play has the potential to promote a broader spectrum of developmental experiences and outcomes than early specialization. Wright

and Côté (2003) showed that multi-positional play experiences during childhood fostered positive peer relationships and leadership skills in university level athletics. Barros, Misutal, Menezes, Figueroa, Moura, Cunha, Anido and Leite (2007) recommended that multi-positional play in sports (especially soccer) is a necessary tool in grooming youth athletes and sportsmen for the future.

However, other studies have highlighted the negative consequences of early sport specialisation such as the existence of high risk of injury (Dalton, 1992), slower rate of maturation (Caine et al., 2003), decreased sport enjoyment (Law et al., 2007), dropout (Wall & Côté, 2007), and burnout (Harlick & McKenzie, 2000). Studies involving elite athletes (for example Soberlak & Côté, 2003; Baker et al., 2003) have revealed that early specialisation is not an essential component of elite sports development.

The study established that, 49.4% of the player participants experience difficulty in switching positions or engaging in multi-positional play. The two categories of research participants confirmed that, every position demands some amount of unique skills and approaches which has to be learned despite one‟s experience in other positions. The ability to master new positions is conditioned on the player‟s level of intelligence, commitment and dedication and willingness to practice new positions.

The study further revealed the existence of significant relationship between the level of difficulty and the influence of coaches in players‟ decision to engage in multi-positional play. A total of 62.2% of the players that are engaged in multi-positional play through the influence of their coaches perceived difficulty in switching positions while only 34.7% of the players engaged in multi-positional play on their own volition perceive difficulty in switching positions. The high number of players perceiving

difficulty in switching position under the influence of coaches is expected because the players are tried in different positions in order to identify their true potentials. Depending on the outcome of playing in new positions as judged by the coach, the player either continues in the new position or is changed until the true talent is identified.

Another finding from the study in relation to the level of difficulty experienced in switching position is that, players who experience little or no difficulties in switching positions prefer multi-positional play to specialization while those that experience more difficulty in switching positions prefer specialization to multi-positional play.

The study identified that the period of early multi-positional play takes place throughout the early age of the child growth until age of between twelve years and 20 years where specialization begins to be implemented. This period of early multi-positional play and late specialization is similarly reported in existing studies but in different sports and in different age ranges. Lerner, Freund, De Stefanis, and Habermas (2001) described the age range of 13-15 years as early adolescence and an important period for the development of psychological processes such as identity and competence. Mac Phail and Kirk (2006) indicated that the important characteristics that mark the transition between the early multi-positional play and the late specialization phases in early adolescence include a reduction in the number of sporting activities, an increase in practice hours and or intensity of practice, a greater emphasis on competition and success, and more support provided by the family, school, and club.

Mac Phail, Gorely, and Kirk (2003) in their 18 month-long ethnographic study of an English athletic club, reported “a shift of position” of members from sampler to specialize in the 12-15 age range. Horn and Harris (2002) suggested that it is only at about the age of 12 or 13 that children are able to fully understand the effects that

effort, practice, and ability have on their competence and performances. However, studies revealed that maturation is very important in talent development of players. Maturation is the unfolding of traits potentiality present in the individual because of his/her hereditary endowment.

The Chi-Square test for independence was used statistically to analyse the second hypothesis that multi-positional specialization training has greater potential in the techno-tactical development of football talents than early positional training(p.93).The observed value (5.570) was smaller than the value obtained atdf(56) =5.991 with a p-value of 0.07 greater than the previously established confidence level of 95%. This led to the retention of our null hypothesis.

In conclusion, majority of the research participants were of the view that multi-positional training at the early ages and late positional specialization is beneficial to soccer players in promoting a broader spectrum of developmental experiences as well as the techno-tactical development of football talents than early positional specialization training. However, the case may not be the same in other skill areas as talent development is dependent on age, gender, ordinal position of birth, socio-economic status of parents, parental educational level, family size, playing materials and pre-school programme.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This is the final chapter of the study presents the summary of findings in relation to the study objectives, conclusion and recommendations. The study addressed its main objective of investigating and identifying the best methodological approach to select players to play certain roles in positional tactics.

Employing the use of primary data gathered from academy players and coaches through interview and conducting statistical analysis by computing descriptive statistics and statistical testing by chi-square analysis, the summary of the findings are below.

5.1 Summary of Findings

The study revealed that multi-positional play with late specialization is highly preferred and is perceived to have more impact than early positional specialization by both coaches and players. A total of 77% of the coaches testified that multi-positional play is the best option for talent development. The study revealed that, each player had previously played in two or more positions in addition to their current play position. Thus, the practice of multi-positional play has virtually been experienced by most players.

The high preference for multi-positional play with late specialization was largely attributed to changing trends in football game strategy and the increasing competitiveness in international tournaments for positions and opportunities. The participants explained that football is not only about playing the game but working together as a team. This entails being able to help in the event of difficulty encountered getting a specialist for a particular position. It appears to most research participants that multi-positional specialization offers a wider spectrum of opportunities both nationally

and internationally. The benefit to the individual player is conspicuous when being contracted by foreign clubs where there may be more than one player with same position. The player with multi- positional play knowledge and experience stands a better chance of being utilized often during matches for strategic purposes.

The study revealed that 85% or more of research participants prefer early multi-positional with late specialization to early single positional specialization. Another finding revealed in this study was that only 18% of the participants complained of difficulty in switching positions during training. Again, almost all participants claimed that their coaches had suggested their current positions to them which ended up being helpful in their carrier development.

Finally, the chi-square statistical analysis was used to test our second hypothesis that multi-positional specialization training has greater potential in the techno-tactical development of football talents than early positional training. The chi-square value obtained was highly significant at the critical level of significance ($p= 0.05$) which supports our null hypothesis confirming the importance of multi-positional training in player development.

5.2 Conclusion

The current trend in sport programming which is characterised by elitism in early selection, and specialisation as confirmed in this study. The teaching of physical education programme in the basic schools in Ghana places premium in the diversification system of teaching sports skills so that as learners move higher in education they may continue to refine these skills for life-long participation in sports. The assertion that the incorporation of a great variety of activities at the developmental stages of skill acquisition with the purpose of introducing learners to lifetime activities

at an early age, with the purpose of developing activity habits is supported by Pangrazi (2001) in physical education studies.

However, data from the study showed that the advantages of, and preference for, multi-positional specialisation at the developmental early stages of training in soccer outweigh those associated with single positional specialisation. According to Williams (2000), diversification in sports is a necessary tool in grooming youth athletes for the future. The high preference for multi-positional system of play is to exhaustively explore all the potential skills of a player and identify the key areas to advance through specialization.

Multi-positional play and uni-positional specialization complement each other although the former must precede the latter. Though uni-positional specialisation is recommended by most coaches for ages above 12 years in a player‟s career development, the future prospect associated with multi-positional specialisation continues to make it a preferred choice even in the later years. Consequently, early specialization has been shown to shorten peak performance, increase drop out/burn-out, and increase the rate of injuries in young athletes. Athletes in sports where peak performance is reached after maturation generally have a longer career than athletes from sports where early specialization is the norm.

Coaches are seen to be contributing positively to the development of multi-positional play among young footballers as well as through assigning critical and difficult positions to test the abilities of these young football players as well as changing their mind set towards the choice of systems of play. This helps coaches to develop better training models to assist the young players to sustain their developmental goal and enhance their abilities to function well as individual and team players. As a result developmental stages of skill acquisition will help learners in

developing good activity habits as they mature towards single positional specialisation for life-long development in their soccer carrier.

6.3 Recommendations

The recommendations below are based on the findings of the study.

i. There is a need for high support and preference for multi-positional training with late uni-positional specialisation to be used as a strategy for the development of policies and teaching methodology frameworks to be extended through training workshops for coaches‟ and PE teachers to provide them with basic training on the growth and development patterns of soccer players. The Block Practice training method is therefore recommended to precede the Random Block Practice approach for players under the age of 12 years to acquire all the basic tool kits for later carrier objectives.

ii. Coaches should be encouraged to adapt the multi-positional skill learning approach in soccer rather than the single positional play in order to make informed suggestions for player‟s later positional roles in the game.

iii. Sports programmes at early stage should focus on the development of sport skills to maximize participation and minimize the dropout rate. This could be used as an indicator of the internal efficiency of a soccer programme for upcoming players, thereby, creating satisfaction and continuity in the game.

iv. It is recommended that for soccer academies to concentrate on the development of specific skills for all position of the rather than the current competitive approach. This latter approach compels the young players to plunge into competitiveness and over indulgence in aggressive play which produce several sports injuries limiting the sport longevity of these players.

5.5 Suggestions for Further Research

Result of this study suggests that further studies are needed to understand this illusive phenomenon of sport specialisation or diversification in elite performance in soccer, because there is still some evidence of controversy regarding the choice of multi-positional skill learning for youth players who may have limited capacities to learn several techno-tactical skills associated with the game.

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APPENDIX A

Soccer Coaches/PE Teachers/Soccer Players Questionnaire

1. What position do you play?
2. How long have you been playing this position?
3. How many positions have you played before your current position?
4. Has your coach ever suggested to you a change of position?
5. A) If he did, has it helped you?

   B) If he did not, do you want to change position?

6. How difficult was it when you changed your position?
7. Was there difference between the new position and the old position?
8. Do you think playing one position makes more impact in you than playing many position?
9. At what age do you think you should restrict yourself to playing one position?

   (6-12years/13-15years /16years and above)

10. Which of these systems would you prefer?

    a) Early position diversification and late specialization

    b) Early positional specialization