

UNIVERSITY OF EDUCATION, WINNEBA

**ASSESSING CONTENT AND PEDAGOGICAL KNOWLEDGE IN PHYSICAL
EDUCATION OF MENTEES FROM THE SPECIAL
EDUCATION DEPARTMENT UNIVERSITY OF EDUCATION, WINNEBA**



CYNTHIA WISE ATTORKWE

2015

UNIVERSITY OF EDUCATION, WINNEBA

**ASSESSING CONTENT AND PEDAGOGICAL KNOWLEDGE IN PHYSICAL
EDUCATION OF MENTEES FROM THE SPECIAL
EDUCATION DEPARTMENT UNIVERSITY OF EDUCATION, WINNEBA**



**A Thesis in the Department of Health, Physical Education, Recreation and Sports,
Faculty of Science Education, submitted to the School of Graduate Studies,
University of Education, Winneba, in partial fulfilment of the requirement for
award of the Master of Philosophy (Physical Education) degree.**

October, 2015

DECLARATION

STUDENT'S DECLARATION

I, Cynthia Wise Attorkwe, declare that this thesis, 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:

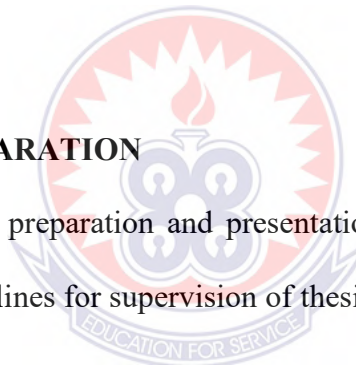
SUPERVISOR'S DECLARATION

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

Name of Supervisor.....

Signature:.....

Date:.....



ACKNOWLEDGEMENT

The completion of this thesis brings another chapter of my life to a close and assists me with beginning to formulate what I hope will be many future chapters. The researcher deem it imperative to show his love to all personalities who contributed in various ways to make this thesis a success.

First and foremost, my profound gratitude goes to the Almighty God for spiritually guiding me through the writing of this thesis.

Next, I thank Dr, Patrick Akuffo a lecturer in the Health Physical Education Recreation and Sports (HPERS) Department of the University of Education, Winneba who supervised this work. My supervisor's comments, guidelines, support and the time he spent with me made it possible for me to complete this work at the appropriate time. May the Almighty God bless him and his entire family.

I wish to express my invaluable gratitude to the following persons whose direction, support and assistance has brought me this far. Dr. Jatong Baba, Head of Department, HPERS; Professor H. A. K Pufaa a senior lecturer; Professor Seidu Sofo and Dr. Philip Omoregie, a lecturer; once again I say thank you. To my colleagues you have been great especially Richard and Paul. To my Headmistress Mrs. Esther Ofori-Adjei, I say a very big thank you for your motherly support.

I wish to register my indebtedness to the authors of books and articles I consulted during the write-up. It will have been difficult without their pacesetting role. To the rest of you whose names could not be written here, I thank you all.

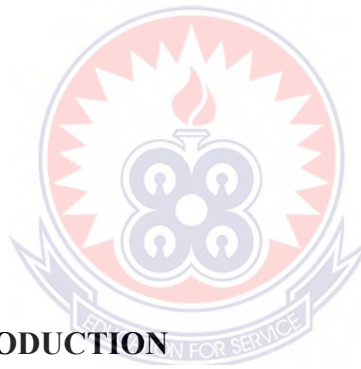
DEDICATION

This work is dedicated to my dad Gabriel, my mum Lena, my husband Benson, my brothers Jude, Reginald, Conrad, Ephraim and my girls Etornam and Esinam.



TABLES OF CONTENTS

CONTENTS	PAGES
DECLARATION	II
ACKNOWLEDGEMENT	III
DEDICATION	IV
TABLES OF CONTENTS	V
LIST OF TABLES	VII
LIST OF FIGURES	IX
ABSTRACT	X
CHAPTER ONE: INTRODUCTION	
1.1. Background of the Study	1
1.2. Statement of the Problem	7
1.3. Purpose of the Study	7
1.4. Objectives of the Study	8
1.5. Research Questions	8
1.6. Hypothesis	9



1.7.	Delimitation of the Study	10
1.8.	Limitation of the Study	10
1.9	Significance of the Study	10
1.10	Operational Definition of Terms	11

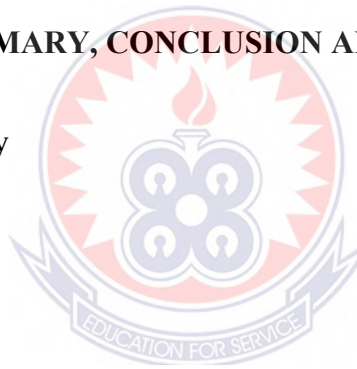
CHAPTER TWO: LITERATURE REVIEW

2.1.	Background and Concept of Physical Education PE	12
2.2	Physical Education as a Subject	16
2.3	Various Methods of Teaching Physical Education	20
2.4	The Physical Education Teaching Profession	33
2.5	Concept of Content Knowledge and Pedagogical Knowledge	35
2.6	Pedagogical Content Knowledge (PCK)	39
2.7	Concept of Physical Education Pedagogical Content Knowledge PEPCCK	45
2.8	Summary	58

CHAPTER THREE: METHODOLOGY

3.1	Research Design	60
3.2	Population	61
3.3	Sample and Sampling Technique	62

3.4	Research Instrument	62
3.5	Validity and Reliability of the Instrument	63
3.6	Data Collection Procedure	63
3.7	Data Analysis	64
CHAPTER FOUR: RESULT DATA ANALYSIS AND DISCUSSIONS		
4.1	Results and Findings	65
4.2.	Discussion of Findings	80
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS		
5.1.	Summary of the Study	86
5.2	Findings	87
5.3	Conclusions	88
5.4	Recommendations	89
REFERENCES		91
APPENDICES		
Appendix A	The Chi Square Test	99
Appendix B	Instrument	104
Appendix C	Introductory Letter	105



LIST OF TABLES

Table 4.1	Results of respondent distributions by gender	64
Table 4.2	Respondents distribution of frequencies and percentages according to section in the department of study	65
Table 4.3	Descriptive statistics of mean and standard deviation of SPED Mentees.	67
Table 4.4:	The chi square (X^2) computation of PEK of SPED Mentees	69
Table 4.5:	The chi square (X^2) computation of CK of SPED Mentees	70
Table 4.6:	The chi square (X^2) computation of PK of SPED Mentees	71
Table 4.7:	The chi square (X^2) computation of PECK of SPED Mentees	72
Table 4.8:	The chi square (X^2) computation of PEPK of SPED Mentees	73
Table 4.9:	Showing the chi square (X^2) computation of PEK, CK, PK, PECK, PEPK and PEPCK	74

LIST OF FIGURES

Fig. 4.1	Respondents' distributions by gender	65
Fig. 4.2	Respondents distribution in percentages according to sections in the department of study	66
Fig. 4.3	Pictorial presentation in mean and standard deviation of SPED Mentees	68
Fig. 4.4	Scatter diagram showing the relationship between PEPCK and PEK of mentees	76
Fig. 4.5	Scatter diagram showing the relationship between PEPCK and CK of mentees	76
Fig. 4.6	Scatter diagram showing the relationship between PEPCK and PK of mentees	77
Fig. 4.7	Scatter diagram showing the relationship between PEPCK and PECK of mentees	77
Fig. 4.8	Scatter diagram showing the relationship between PEPCK and PEPK of mentees	78

ABSTRACT

The aim of every teacher is to bring about a relatively permanent change in behaviour of learners they teach. For a teacher to be effective both the content knowledge and pedagogical skills play a vital role in their professional. Based on these observations the researcher deemed it necessary to assess the content knowledge and pedagogical knowledge in physical education of mentees originally from the Special Education Department in the University of Education Winneba. A purposive sampling technique was used to select all mentees from the Special Education Department who took courses in the P. E Department and therefore taught P.E during their out segment programme. This is because this type of sampling technique remained the only choice to help obtain the kind of data generated for the study. The researcher used purposive sampling method to select 25 student -teachers who responded to questionnaires designed in Likert format rating Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree on physical education pedagogical content knowledge. Mean and standard deviation were calculated for the variables and inferential statistic of linear regression analyses was applied to show the significant influence. With Pearson Product Moment Correlation Coefficient a significance level at 0.05 was reached with the finding that SPED mentees of the University Of Education, Winneba show a weak correlation between PEPCCK and the other variables. The main recommendations are students who may desire to work in special schools as PE teachers should read PE as main area of study and take special education as their second subject. On the other hand Adapted Physical Education should be introduced as an elective subject in the physical education department to help solve the special need issues.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Physical Education according to Bucher and Wuest (1999) 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 proper training of Physical Education teachers is a major issue in Physical Education teaching in Ghana. Understanding what happens during Physical Education lesson is crucial for effective teaching (Yilderim, 2003); this is because one of the primary roles of the physical educator is to enhance the acquisition of motor skills by individuals in a developmentally appropriate manner (Siedentop, 1991). It is only when students appropriately perform the skill assigned that the Physical Education teacher is credited with doing an effective job.

Teachers must possess pedagogical content knowledge of their content area in order to facilitate students' teaching and learning (Ball, 2000). Although content knowledge and pedagogical knowledge are very important to the teaching profession, Shulman (1986) has described pedagogical content knowledge as the

understanding of how topics and strategies in specific subject areas are understood and misunderstood.

Teachers who want to become Physical Educators need training that is specific to the subject area since subject matter knowledge and teaching skills knowledge differ as far as the different subjects' delivery are concerned. If the acquisition of the relevant knowledge is achieved the individual learners who are beneficiaries end up developing the moral qualities of honesty, courage, creativity and sportsmanship. In a broad view of education, Physical Education has unique opportunities in developing desirable character and social traits as well as defined responsibility towards physical development. The individual's objective of increase in strength and endurance, better motor skills and improved health practices are not only an end in themselves but are means of better adjustment to the society (Schofield, 2009). These suggest that the training of such individuals who teach the subject must be trained as such with all seriousness.

Shulman (1987) described Pedagogical Content Knowledge as the „blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented and adapted to the diverse interests and abilities of learners, and presented for instruction”.

Various tertiary institutions are mandated to train teachers. Apart from the Colleges of Education, Universities including the University of Education, Winneba also train teachers for the nation. Such teachers graduate and come out as specialist in the various areas in which they are trained. Is it time to find out

how much subject matter knowledge and pedagogical skill should such teachers equip themselves with before assuming the teaching position? Most often some teachers do not acquire particular subject training but they end up teaching these subjects they are untrained for. This is where we can also question how they come by the skills they need to teach these subjects.

University of Education, Winneba offers several courses in various departments including Physical Education and Special Education Departments. The academic programme of the Physical Education Department provides a broad foundation for professional course that prepares students to be successful Physical Education teachers. The department is committed to instructional excellence in these areas based on the most progressive theories and practices available. Faculty and students are encouraged to acquire disciplinary and professional expertise to solve problems in the field. The graduate provides advanced study in pedagogy. The graduate track provides opportunities to pursue professional development, promotion, and necessary background for further graduate work. The academic major in Physical Education aims to produce individuals who are physically educated; who understand and appreciate the value of fitness in human development, human interaction, human performance, and quality of life; who know and can apply sound principles for developing skills and fitness, and who are themselves active, skillful and physically fit.

The academic programmes provide a broad foundation for professional course that prepare students to be successful Physical Education teachers and coaches. The department provides advanced study in pedagogy and also

opportunities to pursue professional development, promotion, and necessary background for further graduate work. Professional capacity building in Physical Education is necessary in many societies because of inherent poor health issues. The Bachelor of Science programme in Physical Education is designed to produce higher level manpower for public organizations that need services of Physical Education of various disciplines. The goal of the programme is to provide students with scientific principles and concepts to understand, identify and analyse Physical Education (both theory and practical), and also to evaluate the risks associated with performance. The programme also equips students with the knowledge and skills required in officiating and construction of fields and courts. It is hoped that upon completion of the programme, successful candidates would not only have gained considerable insight into basic subject matter of physical activities, but also would have come to a better appreciation of the numerous physical inactivity problems.

The main aim of the programme is to produce graduates who will be useful in ensuring standards in Physical Education delivery in Ghana. The objectives are to train students to appreciate the scientific principles underlying physical activities and its management, Understand the range of suitable technologies used in physical activities, be knowledgeable about the various health problems associated with inactivity and understand the links between human health and exercise.

On completion of the programme students should be able to Provide educational counseling and behaviour change skills in a variety of setting to

impact positively on the mind set of citizens and minimizing illness, disability and premature death. They should be able to teach Physical Education, assess individual and community needs for Physical Education and Plan, implement and evaluate Physical Education programmes. Finally they should act as resource persons in Physical Education, understand current issues and trends in Physical Education and prepare action plans for implementation of programmes that will provide sound environmental health and sanitation practice, control of diseases and other priority health services.

Students who study these courses in the departments are expected to go out as teachers into the schools and with the knowledge acquired, impact on the learner entrusted to them. For the subjects to be successfully taught policymakers had put in place programmes of teacher preparation and this includes Physical Education. The courses offered in the universities are targeted at satisfying the demands of the primary, junior high secondary and senior high schools syllabi which state among other things that the reasons for offering the subject in the schools include the improvement of the general health of the individual, the community, and the nation. This is also duly enshrined in the fundamental human rights of the United Nations Education Scientific Cultural Organization (UNESCO 1994) Charter, that all children have the right to the highest level of health, free and compulsory primary education for both cognitive and physical development and thirdly, rest, leisure, play and recreation.

Physical Education on the time table of the various educational levels is not coincidence. The various benefits accrued from the subject have made it

necessary for it to be taught at these levels. Some of the reasons why Physical Education is taught include the following: development of basic muscular strength and coordination using fundamental skills, correcting sedentary habit, developing sufficient skill in motor activities to provide pleasure and satisfaction and so on. Nonetheless, P.E. also helps in the development of courage, initiative, alertness, self-control and co-operation in group activities or individual games.

Within the Physical Education context a teacher must be versatile, creative, knowledgeable and skillful. The teacher's objective should be to provide to every learner the opportunity to experience success in learning and to achieve as high standard as possible while responding to the diverse needs of learners. Siedentop (2000) stated that teachers are effective when students achieve important learning outcomes in a way that enhance their development as productive human beings and citizens. He goes on to say, nothing is more important to the improvement of schools than an effective, high-quality teaching force.

Physical Education students who take some courses from the Physical Education department turn to teach solely Physical Education in the various schools when they fully graduate, others find themselves in the classroom especially in the basic schools where they teach Physical Education as a classroom teacher and lastly others who find themselves in the special schools end up teaching adapted Physical Education which they might not have been necessarily trained for. The outcome of all these cannot be over looked.

1.2 Statement of the Problem

Physical Education is taught at various levels of education by teachers who have learnt the subject's content knowledge and pedagogical skills knowledge in Ghana. Others are those who might have read the subject as a sub-course required as part of their study towards the acquiring of a degree in the university of education to be precise. This later group of students includes students from Special Education Department (SPED) who take courses from the Physical Education Department from first to third year in addition to their main area course of study. Special education students who take some courses from the Physical Education department turn to teach solely Physical Education in the various schools when they fully graduate, others find themselves in the classroom especially in the basic schools where they teach Physical Education as a classroom teacher and lastly others who find themselves in the special schools end up teaching Adapted Physical Education which they have not been trained for. The outcome of all these cannot be over looked.

1.3 Purpose of the Study

The purpose of the study was to assess Special Education Mentees subject matter knowledge (content) and knowledge of teaching skills (pedagogy) that is Content knowledge and Pedagogical Content Knowledge in Physical Education after their internship programme.

1.4 Objectives of the Study

1. To examine the level of Physical Education Content and Pedagogical Knowledge of Special Education Mentees content knowledge in Physical Education.
2. To assess the level the Physical Education Knowledge of Special Education Mentees in Physical Education
3. To examine the level Content Knowledge of Special Education Mentees Physical Education
4. To determine the significant relationship in the Pedagogical Knowledge of Special E Special Education Mentees Physical Education
5. To show quantum of Physical Education Content Knowledge of Special Education Mentees Physical Education
6. To examine level significance in the Physical Education Content Knowledge of Special Education Special Education Mentees Physical Education.

1.5 Research Questions

The study seeks to answers the following research questions:

1. What is the level of Physical Education Content and Pedagogical Knowledge of Special Education Mentees?

2. What is the level of Physical Education Knowledge of Special Education Mentees in Physical Education?
3. What is the extent of Content Knowledge level of Special Education Mentees in Physical Education?
4. What is the extent of Pedagogical Knowledge levels of Special Education Mentees Physical Education?
5. What is the quantum of Physical Education Content Knowledge of Special Education Mentees Physical Education?
6. To what extent is the significance of Physical Education Pedagogical Knowledge of Special Education Mentees Physical Education?

1.6 Hypothesis

Only one hypothesis was tested:

There will be no significant relationship between Physical Education Knowledge (PEK), Content Knowledge (CK), Pedagogical Knowledge (PK), Physical Education Content Knowledge (PECK), Physical Education Pedagogical Knowledge (PEPK) and Physical Education Content and Pedagogical Knowledge (PEPCK) of Special Education (SPED) Mentees.

1.7 Delimitation

The study was carried out among January 2015 SPED Mentees who took second area courses in the Physical Education (P.E) Department at University of Education Winneba. These group of students studied only practical courses from the Physical Education Department.

1.8 Limitations of the study

It was difficult to get the mentees in a class situation to respond to the questionnaire after their internship programme since they could not be identified individually. This was because they were preparing for their face to face session. However, the researcher arranged and got them to complete the questionnaire after their end of semester exams sessions. This meant that the questions were answered just after writing an exam and this fatigue could affect the responds they gave.

1.9 Significance of the Study

The study is meant to come out with findings that can help in enhancing the quantum of content courses to be offered to SPED students. Again, it will lead to the sharing of literature with others in similar fields of study. Provide meaningful information for assessing teacher content knowledge and pedagogical knowledge. This study is also to help in the fulfillment of the researcher's educational requirement.

1.10 Operational Definition of Terms

PEK - Physical Education knowledge generally acquired from pre-university education

CK - Content Knowledge generally acquired from pre-university education

PK - Pedagogical Knowledge thus teaching skills knowledge

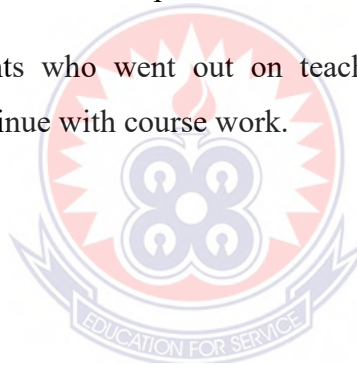
PECK - Physical Education Content Knowledge

PEPK - Physical Education Pedagogical Knowledge

PEPCK - Physical Education Pedagogical Content Knowledge

SPED - Special Education Department of the University of Education Winneba

Mentees – Students who went out on teaching practice and returned to the university to continue with course work.



CHAPTER TWO

LITERATURE REVIEW

This chapter deals with the review of related literature as documented by some authorities and scholars. This relates to topics such as:-

1. Background and Concept of Physical Education
2. Physical Education as a Subject
3. Various Methods of Teaching Physical Education
4. Physical Education as a Teaching Profession
5. Concept of Content Knowledge (CK) and Pedagogical Knowledge (PK)
6. Concept of Pedagogical Content Knowledge (PCK)
7. Concept of Physical Education in relation to Pedagogical Content Knowledge

2.1 Background and Concept of Physical Education

Physical Education can be defined as psychomotor learning that focuses on bodily exercise and movement. This area has become a major academic field in primary and secondary education levels. Physical Education incorporates various physical activities such as walking, jogging, handball, basketball, football, and more. With more development in this field, certain non-traditional sports are also becoming a major part of the curriculum. Schools across the nation have made physical education a Core subject for students. Brief history of Physical Education shows that PE has undergone many changes to evolve accordingly with

changing health trends and sports trends. Physical education was first developed by the Romans Spartans and Athenians. These civilizations introduced exercise and physical education as a necessary skill. Now we can see PE embedded in all school systems as a means to maintain healthy exercise regimes among students.

The field of physical education has gone through many cycles over its long history. These cycles range from a strict authoritarianism to the liberal democracy of today. The Spartans and Athenians were the first to have a type of physical education. Though very different, both systems served the people and their needs. The Spartan system was similar to a dictatorship. Male children were taken at the age of seven to learn basic military skills while living in barracks. The philosophy of the Spartans was basically to allow them to invade other countries if desired, and to prevent other countries from invading them. The philosophy of the Athenians was quite different compared to the Spartans. The Athenian culture was very democratic, and focused on training the mind and body. Reading and writing was a large part of society as well as physical activity which took place in the center of the city where the gymnasium was located. The physical education philosophy of the Athenians was the high point of physical education for many years.

Physical Education has definitely come a long way since the Spartans and Athenians. From an authoritarian type system to promoting lifespan physical education with many sciences studying the different intangibles of physical education in order to better the mind and body. These new sciences have obviously broadened the "umbrella of physical education", but when looking to

the future, there really is no end in sight. The growing "umbrella" will continue getting larger as new thoughts and ideas come, and with them, new sciences also.

Physical Education is concerned with the educational value of raising the human body at school. This is to say that the specific educational content of physical education resides in its concentration on the physical „as such“. This is not an obvious path to explore, because defenders of physical education as a rule have to compete against the prejudice minds that this discipline is merely an instrument to train the body or to keep it fit, and that it therefore should not be considered as a serious endeavour. Therefore, more often than not, apologists try to justify the relevance of physical education on the very ground that it is a practice that is concerned with something beyond the merely physical that is at stake in movement activity.

Physical Education develops the skills, knowledge, values and attitudes needed for establishing and enjoying an active and healthy lifestyle, as well as building student confidence and competence in facing challenges as individuals and in groups or teams, through a wide range of learning activities. PE is offered as a core subject at senior secondary education level. It emphasises the connection between theory and practical skills and is designed to develop the interest and potential of students in the areas of PE and sports. It helps students gain a deeper understanding of theories and applications in the fields of human movement and health, and it promotes the well-being of individuals and society.

The curriculum for PE builds on the prior knowledge and skills that students might have obtained through the Basic Education PE Curriculum and areas. The concept on fitness and health is strengthened and new elements on sports psychology, biomechanics, and sports and recreation is added. The senior secondary PE curriculum seeks to enhance the six strands in PE and develop students' collaboration and communication skills, creativity and critical thinking skills as a basis for further studies and career development.

It is generally accepted that encouraging a healthy lifestyle characterised by regular physical activity in children is a world-wide priority for future health to overcome the challenges posed by sedentary lifestyles. The definition and nature of the field of Physical Education involves teaching Pre-school through senior high school students the performance and understanding of basic motor skills, games, and lifelong fitness activities as well as the social and personal skills related to participating in physical activities. Physical Educators at all levels are responsible for addressing these skills on a continuum of ability levels to include meeting the needs of children with disabilities. The competency of basic locomotor and non-locomotor movements in various forms and patterns is the focus at the basic level. For example, a basic curriculum will include instruction in psychomotor skills such as running, walking, hopping, jumping, kicking, throwing, and striking. The senior high school physical education teacher typically is responsible for the future development of motor and non-locomotor movements through an array of varied organized individual and team activities. Social skills are stressed in the senior high school curriculum. Secondary physical

education stresses participation in life long activities such as aerobics, rock climbing, hiking, biking, jogging, and functional training. The high school curriculum encourages students to become proficient in activities that can be experienced over a lifetime. Some schools offer a wellness curriculum for their students that emphasize a holistic approach to wellness. This curriculum may include classes in first aid, interpersonal relationships, sexuality and nutrition in addition to sport and movement activities. Physical Educators with additional training in Adapted Physical Education are responsible for ensuring that children with disabilities receive quality Physical Education Services as mandated by the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2004). However Ghana in this case has some more work to do on this.

2.2 Physical Education as a Subject

This component refers to knowledge of Physical Education goals as a subject and its relation with other subjects in schools. That is, teachers should know the role and accountability of Physical Education as a school subject as well as the orientation and characteristics of Physical Education as a discipline. (Fernandez-Balboa, 1997) has also explained that teachers should critically examine the purpose of physical education in terms of ethical, economic and political viewpoints as well as a bio-scientific perspective in different cultures. In addition, physical educators should be aware of the relationship between physical education and other school subjects in schools in relation with a variety of additional physical activities and sports. Facilitate advanced research on Physical Education Pedagogical Content Knowledge (PE-PCK) from various perspectives and

approaches. For example, further researchers on students and /or teacher educators" perspectives of PE-PCK will be useful testing and revising the definition PE-PCK and its components. Also, research on the effectiveness on PE-PCK need to be conducted in order to analyses students learning using quantitative approaches.

Secondly, a number of studies of exemplary and expressive case study of PE-PCK need to be conducted to facilitate articulation and documentation. Studies of outstanding cases of PE –PCK enable physical educators to assess easily what has been discovered through experience and to use effectively concepts and methods that have proven workable for others in sharpening their own practice. In particular preserving and pressing on expert teachers" PE-PCK using qualitative approaches will be useful to being teachers as they come to understand the multiple component of PE-PCK and how the function in various teaching context and in guiding the acquisition of correct and workable ways to apply this understanding. Moreover depicting multiple case or example within a given unit of study will influence being teachers positive by encouraging them to an effective approach at the right time and the right context to ensure effective teaching.

Finally, future self-studies (Samaras & Freese, 2006; Wilcox, Watson,& Paterson, 2002) of the development of PE-PCK are needed to obtain processes or strategies through which novices teachers or experience teachers can effective acquire and an understanding of PE-PCK and its applications. For example the self- study type of research enable the teachers with the level of PE-PCK to

engage in practical inquires that contribute to their own capacity for expertise and lead to professional growth. The systematic engagement in the self-study of PE-PCK is a valuable approach for teachers who are striving to better assess their teaching knowledge in their own teaching practices. Just as quality student learning is essential to our students, knowledge of quality teaching and teacher education practices is also absolutely necessary to our current and future teachers.

Education can be described as a planned and programmed process which is applied in order to attain the desired changes in a person's behavior. In the general education the teaching is defined as a thoughtful, planned and systematic organization of learning. Learning is a process of acquisition of specific knowledge, skills and habits (Demirel, 1993). Physical education is defined as a process through which an individual obtains optimal physical, mental, and social skills and fitness through physical activity (Lumpkin, 1998). The examination of teaching effectiveness, within educational domains such as sport pedagogy, remains an important focus. As many different variables contribute to learning, teachers should have the skills to use a various teaching methods to match the demands of their students (Jaakkola, & Watt, 2011). In physical education, Kulinna and Cothran (2003) suggested that an effective approach to pedagogical practice is to use a number of different teaching styles. Physical education is an integral part of the educative process which uses physical activity as a primary means to promote psychomotor, cognitive, and socio-affective growth in order to enhance the quality of life (Holst, 1993). Traditionally physical education classes

have only focused on the psychomotor, or physical, aspect of learning (Poynton, 1986). The idea nowadays is to address all domains of learning.

When teaching there are assortments of styles or methods a teacher may choose from. These methods are ways of organizing and presenting the learning experiences to children. The styles range from a direct, teacher-centered approach to an indirect, more student-centered approach. In the past direct, a teacher-centered method have been used predominately, however recently the trend seems to be shifting towards a more indirect, student-centered approach. Normally the student-centered teaching style is more time consuming and requires more preparation by the teacher, however the benefits to be gained from these methods are definitely worth the extra time spent developing the lesson. The methods are not easy for a teacher to grasp without putting an effort into it. In order for a teacher to become comfortable and successful with using these methods it will take substantial practice on the part of the teacher involved. Here are some of the teaching styles discussed starting with the teacher-centered, command approach, followed by practice, reciprocal, and the task approach. There upon it will continue with increased student-centered methods, such as guided discovery, problem solving, and exploration. As you go across the continuum of teaching styles the teacher has less influence in the decision making, and the student becomes the prime decision maker.

2.3 Various Methods of Teaching Physical Education

Command:-The command style is the most teacher-directed style of the seven styles (Mosston, 1992). In this type of style the teacher is the exclusive decision maker. Decisions on what to do, how to do it, and the level of achievement expected are all determined by the teacher (Nichols, 1994).

With this style the teacher will give a demonstration of the expected performance, as well as emphasize and explain specific important points of the movement. The demonstration gives the students an opportunity to see the skill performed accurately and observe the critical elements of the task. The teacher may guide the class through the various steps in carrying out the task. The students repeat the performance many times as they put the movements together in the proper sequence and timing. The teacher also makes additional helpful commits to a student or a group of students when necessary.

Some examples of when it would be advantages to use the command style is when showing a child how to overhand throw, instructing a specific dance step, or teaching someone to shoot a free throw in basketball. These are all tasks that have to be done in a specific fashion making the command style a very efficient method of accomplishing the task.

Practice: - The practice style is one of the most common teaching strategies used in physical education (Mosston, 1992). It is very similar to the command style in that the teacher is the primary decision maker, and the task will also start with a demonstration and description of what is to be achieved. The

demonstration does not necessarily have to come from the teacher; it may come from another student or even from audiovisual aids. The students then practice the skill, either on their own or with a group, as the teacher observes their performance and offers feedback. The difference between the command and practice style is that the practice style does permit some decision making by the students. For instance, the students may decide where they will practice and if they will be working with, or without, a partner (Nichols, 1994). At the end of the session the teacher may review what they did, emphasizing the essential points to have learned.

The practice style is very useful, especially when coaching. For example, if the coach is showing the team how to forearm pass a volleyball he/she would first explain the forearm pass, telling when and why it is used and describing the critical fundamental points of the forearm pass. This would be followed with one or more demonstrations of the skill being executed, once again emphasizing the key elements of the skill. The players are then given time to practice the skill, either by themselves or with a partner. The coach can then walk around making corrections and providing encouragement. At the end of the practice the coach may ask the players to discuss the points of emphasis before going on to the next lesson.

Reciprocal: - The reciprocal style allows more decision making by the students as compared to the command and practice styles, which are much more teacher dominated. With this style the teacher develops a reciprocal task sheet which describes the task to be performed and points out what the observer should

be looking for to see if the performer is executing the task properly. The students are the observers and are responsible for viewing the performance of their classmates and providing feedback on each attempt (Nichols, 1994). The reciprocal task sheet may include pictures and a description of the task to assist the observer. It should also explain the role of the performer and observer, as well as give the amount of time or number of trials to be given in each practice session.

The session is usually initiated with a demonstration, a description of the skill, and an interpretation of the reciprocal sheet. Once this is accomplished, one student performs the task as their partner observes the performance and records when the proper criteria has been met. The observer also provides positive feedback to help improve their partners' performance of the skill. After the performer has properly executed the task a specific number of times the partners switch roles. With this style the duty of the teacher is to walk around observing the students and clarifying the tasks for both the performer and observer.

Task:- The task style still has the teacher deciding the content of what will be taught, however it allows the students some decision making and provides them with the chance to work at their own pace (Mosston, 1992). This type of style has the teacher designing an arrangement of tasks leading up to the unit outcomes. The tasks are then broken down into a group of activities, each at a different level of difficulty, in which the students' progress to achieve the final task (Nichols, 1994).

The first level of difficulty should be below the most poorly skilled students and the activities should gradually increase to a level above the most highly skilled students. More decision making is required by the students as the level of difficulty increases. During the first stage (lowest level) the teacher presents a task that is broken down into several levels of achievement. All the students are working on the same task; however the students are allowed to begin at a stage within the task that they feel comfortable with and eventually progress through the activity.

At the second level the teacher looks at the ability level of individual students and based on their level the teacher will assign specific tasks. The third level (highest level) requires the greatest amount of decision making and responsibility by the students. Each student is given a task booklet describing all the tasks to be completed in the unit. The student chooses the tasks they wish to practice and are responsible for working on each task within the unit time (Nichols, 1994). In this style the teacher is a valuable resource, however other aids should be provided, such as pictures, books, posters, and even film. If the students are not encouraged to use these other resources they may become dependent on the teacher for information. The students need to be able to determine when a task has been accomplished. This can either be decided qualitatively or quantitatively, and a partner or the teacher can perform the evaluation. Having the teacher do all of the evaluations may be wasting time, besides the students should have the chance to be responsible for their own evaluation and the evaluation of their peers (Nichols, 1994).

Guided Discovery: -The guided discovery method crosses over into the student-centered section of the continuum in education. This approach continues to use teacher-designed movement tasks; however, it is done in a way that allows the children to make individual decisions about how to move (Mosston, 1992). In other words, the teacher defines the intended outcome of the movement response, but does not determine how it will be attained. This method is useful if the teacher is trying to get the students to discover the most desirable movement for a certain task or to develop a new skill (Nichols, 1994). This allows the students to experiment with different movements in order to achieve the desired goal. It will also increase their understanding of why certain movements are more advantageous and effective than others. This method is also an ideal way for students to discover possible strategies of specific games (Rauschenbach, 1996). The idea behind this method is that the students will make up their own minds about how they will move, however limitations are enforced that narrow the students' choices, thus limiting the range of movement responses. This eventually leads to the single desired outcome the teacher was looking for. This method permits the students to experiment with the movement, to make comparisons with other movement responses, and to analyze the possible motor responses (Nichols, 1994).

Problem Solving: - The strategy of problem solving is very similar to the strategy of guided discovery except for one important difference. With the guided discovery approach there was only one proper way of performing the final movement or task, therefore the final outcome would always be the same. With

the problem solving approach several solutions can be the end result (Nichols, 1994). In problem solving, as with guided discovery, the teacher will present a movement challenge that has certain guidelines. The guidelines may be a limitation on the use of space, directions, or movements permitted. The goal is not to find a single correct answer as with guided discovery, instead the objective is for the students to find as many different solutions to the challenge as possible (Nichols, 1994). Any movement response that fits within the guidelines is totally acceptable.

Exploration: -Exploration is the most student-centered style on the continuum (Nichols, 1994). With this style the students are permitted to move as freely as they desire, while staying within the limits of safety. The style is similar to that of problem solving, except the students are exploring the movements in a less restrictive and more natural environment with much less teacher direction (Nichols, 1994). This style can be very beneficial when introducing concepts, ideas, and new equipment. It is also a good way to obtain fresh unique responses and ideas from the students. Because this style provides the students with a great amount of freedom to work at their own pace and do what they want it is important to understand that the teacher does not simply set up the equipment and let the students play totally on their own. The teacher does have some say in what the students do. For example, the teacher may ask "How many different things can you do with that ball?" The teacher must keep in mind the individual needs of students and set new challenges when they are ready to progress.

However there are merits and demerit in regards to the use of all these styles or methods of teaching physical education. The command and practice styles have very similar advantages and disadvantages. Some advantages of the styles are they provide a very direct path to the objective; as a result this gives the students a clear picture of how the expected performance is to be attained. Since the teacher chooses what will be taught and how the class will be arranged there is not much time wasted in organizing the class, thus making these methods a remarkably efficient and effective way to teach skills (Nichols, 1994). Due to the speedy organization associated with the command and practice styles each is very beneficial when dealing with large crowds or limited time.

The command and practice styles of teaching have many significant disadvantages as well. Most importantly they are both insensitive to individual differences and needs. The styles demonstrate one way of performing the skill or task and only accept one response in return. On account of this the content is generally aimed toward the students with average ability. Thus, for those students who lack the skills needed to perform at this level, as well as those who have greater skills than the activity requires, their individual needs are not met with these styles. Another notable drawback of the teacher telling the students how to respond is it does not encourage original or innovative thinking by the students.

The reciprocal style has several noteworthy advantages and disadvantages. Its advantages include such things as the clarity of the task for everyone and the opportunity for feedback with each trial, which would practically be impossible if the teacher were the only person providing feedback. The students have to

observe one another and provide feedback on their partners performance, consequently this contributes to their understanding and comprehension of the task at hand. This style makes the students assume responsibility for the learning of others; it should improve their communication skills, promote patience and tolerance, and develop analytical skills (Nichols, 1994). The disadvantages of the reciprocal style can be found within the complexity of the task and the developmental level of the student. The reading level of the reciprocal sheet may be too advanced for particular students. Many may not be able to properly analyze another's performance, thus the feedback may be inaccurate. Due to the fact that a number of students may not be socially or emotionally developed, certain students may have difficulty working with others and accepting the feedback in a positive and helpful manner. Another weakness of this style is that it is severely time consuming during the beginning stages as the student has to adjust and feel comfortable in their new role as an observer.

The benefit of the task style is that it is very favorable in terms of recognizing particular needs and allowing for personal differences among the students. It grants students the freedom to choose not only the task they will work on but also the level at which they will start from (Nichols, 1994). Since the students work on their own, the level of success they attain is not known by anyone else. The style is designed so that the students will begin working at a level in which they feel comfortable with, thus leading to a successful experience. This style gives the teacher a chance to roam about offering assistance to anyone needing it. Whenever a situation occurs whereby a specific piece of equipment is

in limited supply, the task style can be very appealing by reason that it does not require all the students to use the same piece of equipment at the same time. Permitting the students to decide for themselves what activities they will work on and letting them work on their own may be the greatest attribute of the task style. On the other hand it may also be the greatest disadvantage of the style. Giving the students this much freedom can only work if they are willing to be responsible enough to carry out the task. The teacher must be aware of those who are not accomplishing the task and give them help in selecting the appropriate level to start from.

The advantage of the guided discovery method is it truly entices the students to think for themselves. It also supports the development of a positive self-concept on the account that each student will successfully find an answer to the movement challenges (Nichols, 1994). Furthermore, this method is useful in equipping students with the proper utensils to implement what has been learned to other movement situations. The greatest disadvantage to this kind of style is the tremendous amount of time it demands. It can take a lot of time before the teacher finally guides the students to the proper movement sequence; therefore patience is a vital quality the teacher must possess.

Problem solving, like guided discovery, involves a great deal of cognitive activity and allows the students to display even more of their individualism through the movement responses. The method allows the students to work at a pace in which they can comprehend what's happening. It also helps students develop problem solving skills, as well as enhance creativity. The main

disadvantage is once again the time consumption involved in developing the lesson and reaching the lesson objective. The teacher has to carefully plan the lesson and be able to anticipate possible solutions in order for it to be successful. Furthermore, the teacher must possess the ability to react on the spot in order to help particular students expand their movement possibilities (Nichols, 1994).

The exploration style is best used with young children involved in their first physical education experience (Nichols, 1994). The style allows the students to discover their capabilities while working on their own, consequently enhancing the creativity within the movements. The method is designed to have everyone experience instant success, thus providing the students with increased confidence in their ability to move. The major drawback is the inappropriateness of the method if a particular movement outcome is desired.

As mentioned before, the teacher-centered strategies are effective if you want an organized class, are limited in time, have a large crowd, or want the students to have a clear picture of the objective. However, the student-centered approach meets the individual needs and differences of all the students. It allows the students to be more involved in the decision making and makes them think for themselves, usually resulting in more enjoyment and a better understanding of the movements. The benefits of using student-centered styles easily outweigh the time that it demands, but there are certain concerns about using this type of strategy.

Since these methods require the students to assume more responsibility for their learning, with less direction and seemingly less structure offered by the teacher it is crucial that the teacher establish a good working relationship with the class before attempting student-centered methods (Gibbons, 1993). In order for a teacher to be effective they need to be a positive role model, an efficient planner, effective communicator, a thorough assessor of behavior, and be consistent in their expectations of children (Gallahue, 1988). The students must have an idea of what is acceptable and appropriate behavior before developing more independent learning. The teacher has to be sensitive to the student's individual needs and continually find new ways to challenge them. It is necessary for the teacher to know when to ask further questions or realize when it is time to move on to another activity. It should be done when the students have had enough time to explore possible solutions but not so much time as to lose interest in the activity. Teachers have to be aware of those who have, or have not, previously received learning experiences using the student-centered approach. Students having only experienced learning through the teacher-centered approach will normally have difficulty adjusting to the new approach. The teacher needs to gradually introduce the approach and only use it for short periods, until the class feels more comfortable in exploring movement and solving problems on their own (Nichols, 1994).

In conclusion Physical education teachers have several methods of teaching that may be employed. These methods vary in terms of who makes the decisions of what will be learned and how the learning will occur. Some methods

are teacher-centered, whereby the teacher is the primary decision maker, and others are more student-centered allowing the students increased input on what they do. As mentioned earlier the most teacher-centered is the command style. The decisions of the content to be learned, how it will be learned are all determined by the teachers. The similar practice style is also very teacher-centered. The teacher will demonstrate and clarify the skill or task, the students go and practice it while the teacher observes them and provides feedback when necessary. With the reciprocal style the students have to take on more responsibility. They are accountable for the learning of their peers as they have to analyze their partner's performance and give feedback. The task style shares the decision making. The teacher decides how and what will be learned, and the students choose the task or level at which they will begin working on. The teacher guides the students through an assortment of activities eventually leading to the discovery of the proper movements for a specific task, in the guided discovery style. Problem solving and exploration strategies are the most student-centered, by reason that they each allow the students to decide for themselves the movement responses (Nichols, 1994). In problem solving the teacher will ask certain questions, such as "how many different ways can you move in the space provided?" As long as the students' responses are within the criteria the answer is not wrong. Exploration offers the least amount of teacher direction and is particularly useful when working with young children. It is difficult to say which style offers the maximum potential for learning because not all people will receive optimal learning by use of the same style. Certain material may be presented

really well with one style and not as well with another. The availability of time is another concern affecting the style chosen. A teacher should always try to meet individual needs and personal differences of each student. The best methods to achieve these goals are found within the indirect, student-centered approach. The important thing is for the teacher to be able to determine what style is most appropriate in a given situation and apply it with determination and confidence.

Teachers should there be able to proficiently and effectively use all seven of the teaching styles depending on what the situation calls for. There are benefits and drawbacks in each of the styles, therefore it is important for the teacher to know when to use a specific style. If the goal of the lesson is to be extremely organized, have a unified response, save time, or have a quick direct route to the task then the command or practice styles are recommended. If the purpose is for the students to develop responsibility, social skills and/or analytical skills then the reciprocal or task style is recommended. It is recommended that the guided discovery method be utilized if the objective is to have the students think for themselves and develop a greater understanding of the proper movements. When the intent of the lesson is not to teach a particular outcome, but instead to improve development in conceptual, cognitive, and problem solving areas, as well as enhance creativity in the movements then the style of problem solving is surely recommended. In the event that you are working with young children who are involved with their first physical education experience it is more appropriate to allow them the freedom to work and explore movements on their own, thus it is recommended that the exploration method be used for this situation.

2.4 The Physical Education Teaching Profession

Students who plan to work in public schools must be licensed or certified in the state in which they teach. A diploma or bachelor's degree in physical education can enable you to teach the subject up to the second cycle level in Ghana. However in some universities like the University of Education, Winneba, students can offer the course as a minor programme and then end up in the classroom to teach the subject.

Elsewhere in the states, some schools offer wellness programs. To teach within these programs, it is wise for a student studying to be a physical education teacher to complete health courses or acquire a health license in addition to acquiring a physical education license. At some colleges and universities, a student interested in physical education may also focus in a particular specialty area or population such as adapted physical education, outdoor education, and/or geriatrics.

High school courses in the area of fitness, sport, biology, anatomy and physiology, and exercise physiology are useful to take in preparation before college study in this area. Courses in the area of child development (emotional, social, and physical) are also very useful. Membership in Future Teachers of America or similar high school organizations is also suggested. Finally, consider volunteering for local programs that include Special Olympics, Disability Sport Programs, or Adapted Adventure Activities.

However in Ghana the training of physical educators take place in colleges of educations and also in the universities. The University of Education, Winneba is one of such universities that are noted for training physical educator. Some individuals pursue the field of physical education because of affection with their own schooling and physical education experience. Some individuals discover their love of teaching movement through prior work related experiences. It is suggested that young people interested in the field obtain work experience that involves working with children, sport, and movement activities. Some suggested related work experiences might include babysitting, playground directors, sport instructors, youth coaches and umpires, and camp leaders.

With an undergraduate degree, graduates may acquire a full time position immediately or they may find that they have to take part time work until a full time position opens. It is advantageous if a graduate is willing to accept a position in more than one district and/or state as well as with various grade levels. Some physical educators chose to coach or officiate as well. Soon after being hired, most states require physical educators to earn advance credits or degrees. As hired physical educators become more experienced and educated, they may find individual advancement in the form of higher pay. Some physical educators advance in administrated roles as either a director of physical education, adapted physical education, athletic director, or school principal. Further academic degrees may be necessary.

2.5 Concept of Content Knowledge and Pedagogical Knowledge

Content knowledge (CK) refers to knowing the major facts, concepts and the relationships of a field. Most importantly, this knowledge is independent of any pedagogical activities or how one might use methods or strategies to teach (Cox, 2008). Content Knowledge (CK) tells about the “knowledge about actual subject matter that is to be learned or taught” (Mishra & Koehler, 2006). More clearly, teachers should know and understand the subjects that they teach, including knowledge of central facts, concepts, theories, and procedures within a given field; knowledge of explanatory frameworks that organize and connect ideas; and knowledge of the rules of evidence and proof (Mishra & Koehler, 2006). For example, a physical education teacher should know the basic understandings of motor learning & control, anatomy, sport physiology and others. According to Turkish Physical Education Curriculum (2007), a teacher should have adequate structures about Movement Knowledge and Skills and Active Participation and Healthy Life. For example, a physical education teacher should possess a basic understanding of motor learning and control, anatomy, exercise physiology, sport and exercise psychology, . According to the Turkish Physical Education Curriculum (2007), a physical education teacher should be proficient in the areas of movement, knowledge and skills and active participation and healthy lifestyles.

Pedagogical Knowledge (PK) refers to techniques or methods of teaching, strategies for evaluating student understanding (Mishra & Koehler, 2006). A teacher should know how a student constructs knowledge, acquires skills, and

develops habits of mind and positive dispositions toward learning. It is also referred to as the methods and processes of teaching and includes knowledge in classroom management, assessment, lesson plan development, and student learning. Pedagogical knowledge requires an understanding of cognitive, social, and developmental theories of learning in order to applying students in their classroom. PK focuses on a teacher's knowledge of the general pedagogical activities and strategies for motivating students, communicating with students and parents, presenting information to the students, and classroom management among many other things (Cox, 2008). When teaching a skill or a movement in physical education, a teacher should consider child development, student needs, behaviors and motivation all of which require a sufficient PK. Pedagogical knowledge (PK) refers to techniques or methods of teaching and strategies for evaluating student understanding (Mishra & Koehler, 2006). For example, when teaching a skill or a movement in physical education, a teacher should consider child development and student needs as well as behaviours and motivation. All of these aspects require a sufficient PK.

Pedagogical Content Knowledge (PCK), proposed by Shulman (1987), is the combination of the knowledge of teaching strategies and concepts to be taught. For instance, a basketball lesson cannot be taught in the same manner with basic one pupil as with year two senior high students. Concept of Content and Pedagogical Knowledge, in recent years, the rapid advancement of technology has created new interests and tools for use in the educational domain. Researchers have identified different instructional, sport and physical education-related

technologies that can potentially enhance the effectiveness of teaching physical education (Roblyer & Doering, 2005). In particular, the development of wireless technology, computer projection systems, physical activity monitoring systems, and active gaming devices (using video games for physical activity) and software provide new opportunities in the gym (NASPE,2009). Technological devices commonly used in physical education include computers and laptops, LCD projectors, digital video and digital cameras, audio equipment, heart rate monitors, pedometers, handheld devices including mobile phones, PDAs, GPS, and video game consoles including "exergame" dance mats (Mohnsen 2008). In addition to technological devices, educational sport software and the Internet are also used to support physical education courses. Kretschmann (2010) described three kinds of sports-related software to use in teaching sports and physical education:-

- 1) videos of the specific sport techniques and game Semiz and Ince 1249 tactics; 2) software for analysing game play (e.g., Simi Scout) or human movement (e.g. Simi Motion);
- 3) Commercial gaming software that can have a motivating effect in educational affairs.

Moreover, while the Internet provides easy access to knowledge about everything including scientific and non-scientific information, it also provides different platforms for easy and cheap communication with others (e.g., email, video conferencing, group discussion opportunities). Macdonald and Hay (2010)

identified the use of the above-mentioned technologies in physical education in the context of four main purposes: 1) to facilitate the integration of movement principles with movement performances; 2) to generate information for the application and evaluation of movement principles; 3) to develop formative assessment processes; and 4) to acquire summative assessment evidence for movement performances.

As previously cited examples illustrate, technology is becoming an inseparable part of physical education with each passing day. Therefore, teachers' technological knowhow has become crucial for the successful integration of technology in education (So & Kim, 2009). However, studies have suggested that many teachers remain unclear about how to use technology to assist their teaching. While teachers sometimes use the Internet to attract students' attention, they do not know how to use it to facilitate students' development (Lee & Tsai, 2008). In the teaching process, it is important not only how you teach (pedagogy) and what you teach (content) but also which materials (technology) you use while teaching (Jones & Moreland, 2004). Mishra and Koehler's (2006) technological pedagogical content knowledge (TPACK) construct explains the technological skills that teachers should have for more effective teaching. Teachers' level of TPACK is argued as the determining factor moderating teachers' abilities to successfully integrate technology into education (So & Kim, 2009; Koh, Chai & Tsai, 2010; Tee & Lee, 2011). Additionally, teachers' confidence (self-efficacy) and motivation (outcome expectations) with regards to integrating technology in education are considered important variables in teaching effectiveness

(Niederhauser & Perkmen, 2010). The technology integration self-efficacy (TISE) and instructional technology outcome expectations (ITOE) constructs have mutual relationships in the prediction of technology integration performance (Perkmen, 2008). Studies have also indicated that participants with high self-efficacy also have high outcome expectations (Wojcicki, White, & McAuley, 2009). Therefore, a study that examines the combination of these three constructs, TPACK, TISE, and ITOE, with pre-service physical education teachers may provide valuable information to the literature on the effective incorporation of technology in education. In the case of this study only one part of the constructs has been used which is the TRACK adapted to arrive at PEPCCK survey questionnaire.

2.6 Pedagogical Content Knowledge (PCK)

The coming in of PCK started in the 1980s in the U.S., where many arguments for change in public schools. At the same time, there was a strong agreement about the need for the improvement of teacher professionalism in order to improve public schools (Bullough, 2001). Neither the status of teaching in public schools nor the quality of teacher preparation programs in teacher education was positive at this time. That is, the criticism was made that teachers did not meet higher standards in teaching and that the teacher preparation programs focused primarily on „educational methods“ courses. This was because most teacher education programs rejected the tradition that focused on content knowledge and supported a new trend that emphasized the application of general pedagogical practices in the classroom, which were isolated from any relevant subject matter (Veal & Makinster, 1999). To solve these problems, „teaching as a

profession“ needed to be recognized as possessing and acting in unique intellectual knowledge and skill.

PCK was described for the first time in Shulman’s research (1986) as “the particular form of a content knowledge that embodies the aspects of content most germane to it’s “teach ability.” Also in this study, PCK was describe as “the most useful forms of [content] representation., the most powerful analogies, illustrations, examples, explanations, and demonstration... in a word, the ways of representing and formulating the subject that makes it comprehensible for others” (Shulman 1986) one year later, Shulman (1987) defined PCK as “that special amalgam of content and pedagogy that uniquely the province of teachers, their own special form of professional understanding”. Shulman research on PCK has been motivated by two political concepts or convictions (Bullough, 2001; Carlsen, 1999). The first conviction is that, by defining teacher knowledge in disciplinary terms, teachers could possess stronger status in teaching so that they would be able to claim their rights, privileges, and responsibilities like other disciplinary specialists.

Enhanced professionalism would make it possible to establish standards at national level and would provide the basis for developing teacher assessment based on teaching practice. The second political concern is a market strategy that makes teaching a more prestigious and rewarding career choice in society. This strategy requires teachers or future teachers to meet the recognized level of quality as a teaching professional. That is, not only does it become difficult for unprepared people to enter teacher preparation programs, but also many teacher

preparation programs have reformed their curriculum to enhance the quality of future teachers. As a result, Shulman (1986, 1987) seminar work on PCK has stimulated a trend to systematically identify teaching as profession and to describe what teachers should know and do in their profession. While insisting on a „missing paradigm“ on educational research, he argued that teachers should not only know about what content to teach but also how to teach that content. That is, the later knowledge is construct that can distinguish a content specialist from a pedagogue (Gess-Newsome & Lederman 1999).

A major contribution of PCK was its acknowledgement of the importance of subject specific knowledge in teaching. PCK is a teacher’s professional understanding of how to help students understands specific subject matter (Magnusson et al., 1999) PCK was accepted as academic constructs that has greatly impacted educational research and practice (Loughran et al., 2004). However, depending researchers’ perspective in regard to PCK, its conception or components differs (Van Driel et al., 2000). According to educational scholars, the PCK is called by other names such as content-specific pedagogy (Marks, 1990), pedagogical content knowledge (Grossman, 1990; Marks, 1990; Shulman 1987), pedagogical content knowing (Cochran et al., 1993), subject-specific pedagogical knowledge (McDairmid et al., 1989), subject matter-specific pedagogical knowledge (Tamir, 1988), content-specific conditional knowledge (Peterson, 1988), subject matter pedagogy (McCaughtry, 2005), and teacher pedagogical construction (TPCs) (Hasweh, 2005). In earlier research on PCK, the PCK was simply perceived as the combination of content knowledge and

pedagogical knowledge. That is, the PCK was ways of meaningful representation. Early research on PCK consisted of case studies to identify teachers' PCK for different topic areas across disciplines. Except for one study (Marks 1990), most of the early studies on PCK have used the original concept of Shulman (1986, 1987) and proved the characterization of PCK. According to Morine Dersheimer and Kent (1999), those studies were criticized because they PCK in a way that only focused on one method of content representation without considering classroom contexts.

Subsequent studies were more theoretical in defining PCK and more active in renaming its definitions (Barnett and Hodson, 2001; Cochran et al., 1993). This emphasized the socially constructed aspect of PCK and renamed PCK as PCK (Pedagogical Content Knowing) that have reflected the dynamic nature of knowledge. On the other hand, Barnett and Hodson (2001) renamed it as PCK (Pedagogical Context Knowledge) because they viewed PCK as greatly dependent on the classroom context. Kinach (2002) mentioned that the earlier studies on PCK viewed PCK as only transformed subject matter knowledge or a combination of pedagogical knowledge and content knowledge, while subsequent works on PCK perceived it as integrated with other teacher knowledge. In addition Magnusson et al. (1999) also presented PCK as more than the sum of its parts and more simply fitting together bits of knowledge from different sources.

PCK, proposed by Shulman (1987), is combining the knowledge of teaching strategies and concepts to be taught (Jang, 2011). PCK means knowing the teaching strategies for a specific subject matter. A teacher with a good PCK

presents a subject matter with appropriate instruction strategies. For instance, a basketball course cannot be given to the third grade pupils with same instruction methods given to the sixth grade pupils. Different appropriate instructional strategies should be determined according to age & grade of the students. PCK is one of the most critical components in teaching expertise (Gess – Newsome & Lederman, 1999; Schempp, Manross, Tan, & Fincher, 1998). PCK was first introduced by Shulman (1986, 1987) as a perceived cornerstone of professional expertise (Loughran, Berry & Mulhall, 2006). According Loughran et al. (2006), PCK is part of the teachers’ knowledge that is needed for excellent teaching. It helps teachers’ understand the crucial points that teaching is more than just delivering subject content knowledge to students, and that students learning is considerably more than absorbing information.

Since the inspired works of Shulman (1986, 1987), many studies on PCK have appeared in education and content t areas of Mathematics (i.e., Kinach, 2002; Mark, 1990; Shushua, Julm, & Wu, 2004), science (i.e., Barnet & Hodson, 2001; Dijk & Kathmann, 2007; Johnston & Ahtee, 2006; Loughram, Mulhall & Berry 2004; Magnusson, Krajcik, & Borko, 1999), social studies (i.e., Bullough, 2001), and physical education (i.e., Amade Escot, 2000; Graber, 1995, 2001; Graffin, Dodds, & Rovegno, 1996; Jenkins & Veal, 2002; McCaughtry & Rovegno, 2003; mc Caughtry, 2004, 2005; Rovegno, 1992, 1994, 1995; Rovegno, Chen, & Todorovich, 2003; Tsangaridou, 2002, 2006). Even if numerous research studies exist in the subject matters, previous research on PCK has been overlooked in order to modify what PCK means in each subject matter area. That

is, most previous studies on PCK in a specific subject matter rarely identify and clarify how the concept or definition of PCK in education could be applied to each subject matter area, and what PCK look like in each subject matter.

In fact, a number of scholars have worked on the definition of PCK (Cochran, DeRuier, & King, 1993; Grossman 1990; Hashweh, 2005; Loughran, et al., 2004; Marks, 1990; Magnusson et al., 1999; Shulman, 1987; Tamir, 1998), but this scholarly examinations of definitions and elements have not considered the nature and characteristics of each individual subject matter field included in the school curriculum. When one considers the obvious fact that PCK differs considerably, depending of the specific subject matter field or topic within which it applies (Dijk & Kattmann, 2006; Tamir, 1988; Van Driel et al., 1998), an effort to portray the definition and components of PCK in each subject matter field is clearly invaluable.

To date, only one study by Magnusson et al. (1999), has attempted to describe the components of PCK for science teaching; however, this study does not provide the definition of PCK as it applies specifically to science education. As in other subject matter areas, the field of physical education has devoted little effort and attention to research on pedagogical content knowledge in physical education. (PE-PCK as I will henceforth refer to this concepts in this paper) that would serve to depict the concept and components of PE-PCK. Thus, this paper attempt to define pedagogical content knowledge in physical education (PE-PCK) and to identify the component of PE-PCK through synthesizing related literature on PCK in education and physical education. It will be meaningful for physical

educators to understand the definition and components of PE-PCK. That is, it offers a significant conceptual tool for helping teachers construct specific knowledge that they need to be effective teachers. In addition, acquiring PE-PCK will help them make decisions about planning, enacting (or implementing), and reflecting on teaching.

In sum, PCK is perceived as newly reformed knowledge that is made by integrating various sources of teacher knowledge. However, many people still viewed PCK as one type of teacher knowledge that is interactive with other types of teacher knowledge. To facilitate making PCK more meaningful and useful, both to the teaching community and the research community, there is a pressing need to deliberate on what PCK is and what it means in terms of wide range of school subject matter fields, including physical education.

2.7 Concept of Physical Education – Pedagogical Content Knowledge

Little attention is given to the concepts and components PE-PCK, even though there are some studies on PCK in physical education. According to Loughran et al. (2006), there is a need to articulate and document PCK in science teaching so that the teachers are able to access and use PCK in shaping their own practice. As with science teaching, portraying what PE-PCK has is also important. Unfortunately we have little accumulated knowledge about what PE-PCK means and what it's distinctive about the concept. In a sense, understanding and identifying PE-PCK and its components challenges educators in the area of physical education to figure out and design a conceptual tool that helps students in

the field understand not only what the concept entails but how to apply this understanding effectively in the learning process. In addition a visible map for professional learning in the kind expertise essential to teaching excellence in the area of physical education can be offered.

The effort to portray the concept of PE-PCK in this section results from the nature PCK. There is an additional reason why the original PCK needs to be re-interpreted and re-evaluated since the concept was first introduced in 1987. Regarding the nature of PCK specific to content, it is necessary to portray the concept of PCK in each school subject. Physical education is no exception. PCK in education comes from the significance of the content to be taught. Shulman (1986, 1987) criticized most teacher preparation programs for being mainly weighted on methods courses rather those content-specific courses (Bullough, 2001). According to the second work on PCK by Shulman (1987), content knowledge should be given much more weight. Regarding this point, we need to go back to the ground-breaking research on PCK by Shulman (1986). Based on first definition in 1986, the core of PCK is content. Hashweh (2005) explained that PCK was first introduced as subcategory of teacher content knowledge. It is also supported by most research on PCK conducted by various scholars with different backgrounds (Amade-Escot, 2000; Bullough, 2001; Johnston & Ahtee, 2006; Loughran et al., 2006; Magnusson et al., 1999). Without adequate content knowledge, effective teaching in all subject matters cannot be guaranteed (Johnston & Ahtee, 2006).

Thus, before portraying PE-PCK, „Content in Physical Education“ should be discussed. What is „Content“ in physical Education? Unfortunately, it is hard to find the definition of content in physical education. Recently, in JTPE (Journal of Teaching in Physical Education), there were papers about content in physical education conducted by two well-known scholars, Siedentop (2002) and Tinning (2002). First of all, Siedentop (2002) argued his views as follows: The content knowledge domain for physical education is not so easily identified. In fact, it continues to be a source of serious controversy in our field. What I will argue this morning is that we, and by “we” I mean particularly the teacher educators in physical education, have largely given up the historical content knowledge of our field, and, in so doing have virtually eliminated the possibility of developing a serious body of pedagogical content knowledge for teaching physical education.

Tinning (2002) has explained one of the reasons why content knowledge in physical education is difficult to define, unlike other school subjects such as Math, Art, Music, or English, is due to inconsistent goals of achievement in physical education. Additionally, this paper has employed terms such as sports performance (Siedentop, 2002), physical activity (practical physical activity), kinesiology (Tinning, 2002), practical knowledge and knowing how (Wright, 2000) but still has not determined what content in physical education should be. Additionally, You (2007) has confirmed that „physical activity“ could be the essence and tool of physical education content, and has also suggested that physical education is a school subject that teaches „physical activity“ (including sports) such as „knowing that“ and „knowing how“ about physical activity. In

physical education, while experiencing, performing, and appreciating a variety of physical activities, ultimately students should see, move, and understand „all about physical activities“ that encompass theory and practice of physical activity, kinesiology or human movement, etc.

Another important aspect of PCK seeks to effect student learning by understanding, not just knowing. Shuhua, Kulm, and Wu (2004) have stressed the differences between learning as knowing and learning as understanding. If a teacher holds the belief that the purpose of learning is knowing, he or she is likely to teach disconnected knowledge that emphasizes remembering facts or skills. On the other hand, a teacher with the belief that the purpose of learning is to enhance understanding will pursue the teaching of more connected and internalized knowledge that can facilitate both conceptual understanding and procedural development and consistent inquiry. Ultimately, the latter belief makes it possible to substantially enhance students“ learning and lead to content mastery. As the study mentioned, it is meaningful for teachers to have the belief that the goal of learning understands so that they will not just deliver content knowledge, but will facilitate that change of cognitive structure. For this, teachers should have a more profound knowledge and understanding of the students themselves as well as a thorough and comprehensive mastery of the content of the course. Otherwise, an emphasis on content is like simply giving knowledge to students, without considering them as learning subjects.

Based on the two aspects on the concept mentioned before, PE-PCK is viewed as synthesized knowledge embodied in various functioning facets of

teachers' knowledge and can be defined, "PE-PCK is an action-based knowledge of how to meaningfully teach intended educational contents in physical education so that students could holistically understand, perform and appreciate physical activity." In sum, PE-PCK is not perceived as "one" meaning, a single type of knowledge that physical education teachers should acquire as necessary for teaching physical education content, but the highest level of knowledge.

The construct of PEPCK just as TPACK was conceived based on Shulman's (1987) Pedagogical Content Knowledge (PCK) (Mishra & Koehler, 2006). Shulman proposed in his model that there is a certain domain of knowledge including an understanding of both pedagogy (teaching methods, student needs and readiness, etc.) and the context in which it is taught. In 2006, Mishra and Koehler defined technological knowledge (TK) as a teacher's set of skills that must be learned for meaningful teaching this accession can be adapted. Consequently, the relationship between Physical Education knowledge and pedagogical content knowledge forms the basis of Physical Education Pedagogical Content Knowledge (PEPCK).

Knowledge of Physical Education Curriculum; - This component consists of knowledge of the national (or state, district etc.) physical education curriculum and curriculum models in physical education. This knowledge enables teachers to understand the scope and sequence of contents at each grade level, and thus to design and organize learning tasks and select appropriate learning activities and materials for student learning that maintains a focus on understanding. In addition, a teacher's knowledge of curriculum models in Physical Education is

helpful in making curriculum decisions and enhancing program coherence because the models represent a general set of beliefs. Whenever teacher design a school-based physical education curriculum, the models can guide them in what to do and how to do it, offering prospective on content sequencing and delivery to learners in a manner that ensures meaningful learning (Ennis, 2003).

Knowledge of Teaching Methods in Physical Education: - This component refers to the physical education teacher's knowledge of specific teaching models, strategies, styles, and techniques that are useful in helping students comprehend content. For example, teaching methods in physical education include instructional models (Metzler, 2005) and Mosston's teaching styles (Mosston & Ashworth, 2002). Teachers who have a variety of teaching repertoires are more flexible about changing learning activities whenever appropriate and are therefore able to run their classroom smoothly (Schempp et al., 1998). Effective teachers need to judge whether or not and at what time a teaching method will be useful in supporting and extending students' comprehension in a particular teaching situation.

Knowledge of Students' Learning of Physical Education Activity: - This component includes physical education teachers' knowledge of both the students themselves and students' learning. Types of knowledge include information on students' developmental levels and ability levels as these affect participation in learning. That is, teachers should know the reasons for learning difficulties and common sources of students' errors in learning physical activities (Schempp et al., 1998). For some topics or movements, learning is difficult because the

concepts or movements are abstract and complex or they lack any connection with the students' common experiences. Teachers should know which topics or tasks fall into this category and what aspects of these topics or task student would find most inaccessible. On the other hand, knowledge of students' learning styles or modes of cognitive processes their affective dimensions and the nature of their social lives. Thus, teachers lives (McCaughtry, 2004, 2005) and of typical patterns of understanding.

Knowledge of Physical Education Assessment:-This component consists of knowledge of principles, characteristics, and methods for assessing student learning in physical education. Physical education teachers should be knowledgeable about procedures, approaches or activities in order to assess important dimensions in physical education, as well as the advantages and disadvantages associated with employing a particular assessment device or technique (Fernandez-Balboa, 1997). Of particular importance in fact that physical education assessment requires rational decision making in terms of what and how to assess within a particular unit of study. Even though similar sections are taught in many physical education classes, the contents, methods, and instruments used to assess the unit might differ. Drawing on Schwab (1964), Navak (1993) pointed out "every educational event has a learner, a teacher, a subject matter, and a social environment. I would like to suggest a fifth element-evaluation" (p. 54). In accordance with this significant observation, knowledge of physical education assessment has to become one component of PE-PCK that is

separate from knowledge of the physical education curriculum and knowledge of the teaching methods commonly used in physical education.

Knowledge of Instructional Environment in Physical Education: - This component refers to knowledge of the uses and safe function of facilities and equipment, and knowledge of managing teaching space and arrangements of learning materials and tools. Among school subjects, physical education is significantly determined by available facilities and equipment. Effective use of facilities and equipment promote students learning of physical activities, whereas ineffective use does not. For instance, the teaching space (the width and/or the distance) in the gym or playground where students move can influence learning of physical activities. Efficient use of instructional technology can be of benefit to the teaching-learning process in various ways: providing demonstrations, facilitation interactive learning activities, and giving feedback for teachers and students (Fernandez-Balboa, 1997, Silverman, 1997). Also, determining when and for how many students the teacher can provide learning materials and tools is crucial. Thus, physical education teachers should be keenly aware of the appropriate use of instructional environments for the right purpose and at the right time and place during classes.

In general education, Shuman (1987) and other scholars (Cochran et al. 1993; Grossman, 1990; Gudmundsttir, 1990; Marks, 1990; Tamir, 1988) sought to identify specific and concrete categories of teacher knowledge. Shulman and three other educational researches- Grossman, Gudmuntstti, and Tamir- aimed to show the relationship between teacher knowledge and PCK and then to describe

PCK as one of teachers knowledge. On the other hand, two studies by Cochramet al. and Marks attempted to define the components of PCK in education. Only Magnusson et al. (1999), in science education, made an effort to describe five components of PCK for teaching science. In PE-PCK there are six components and the meaning of each component are provided. These components interact in highly complex ways, that it is crucial to understand that a teachers' knowledge of a particular component may not predict her teaching practice (Fernandez-Balboa & Stiehl, 1995). Regardless of the topic or themes to be taught, all the component of PE-PCK function in practices, but the role and weight of each component may differ depending on the topic or theme. Thus physical education teachers need to develop knowledge of all components PE-PCK, and particularly those having to do with the topic or areas they teach.

The importance of PE-PCK for the Professional Learning of Physical Education is presented as a form of communicative discourse or as a practical construct. In order for excellence teaching to occur, Griffin et al. (1996) suggested that physical education should acquire PCK, because it can provide everything needed to help students learn. Magnusson et al (1999) also explained that possessing subject matter knowledge did not guarantee or necessarily accompany PCK. Additionally, the teachers should make efforts to employ the type of PCK that is being used in teaching a particular content area in particular ways in order to enhance student learning. Because PCK is a type of advanced or high level knowledge that should be achieved by teaching professionals, it needs to be developed through professional learning.

In a sense, the definition and components of PE-PCK can play an important role in guiding professional learning in physical education. Wood (2007) argued, „[teachers] need to be knowledgeable“. In order for students to achieve more valuable learning outcomes in PE, teachers should be professional learners as well. (Armour & Yelling, 2004; Wood, 2007). Professional learning enhances teachers' desire to continually improve their instruction in physical education.

The components indicated here inform teachers and teacher educators on the types of knowledge that are required or developed in pre-service physical education teacher education. In particular, a visible map of teachers' professional learning in the area of expertise essential to teaching excellence in physical education can be offered. In addition, addressing these components challenges teacher educators to figure out and design a conceptual framework that helps future teachers in the field to understand not only what the concept entails but how to apply this understanding effectively in the teaching-learning process.

Recently, Rink (2007) addressed the issue of the irrelevance of disciplinary knowledge in teacher preparation. Most argue that PETE programs currently lack appropriate contents or have difficulty applying disciplinary knowledge in complex PE contexts. The failure to select and deliver that knowledge in teacher training in a manner that is meaningful to future teachers is a long-time issue in PETE. First, the direct cause of the failure is the lack of exemplary teacher preparation programs in physical education (Fernandez-Balboa, 1997). Rink (2007) asked a thought-provoking question, “how do we give pre-service teachers the

knowledge based they need and the skill to apply it and use it effectively in their work?” (pp. 104-105). To answer this question, we should review two works that are relevant to PETE knowledge base. First, Fernandez-Balboa, (1997) proposed an alternative knowledge base in physical education teacher education that includes five general content areas and 16 components as follows:

1. Education and physical education: (a) Motor skills, sport, and the human body, (b) traditional, critical, and methods, and (c) traditional and alternative assessment-evaluation procedure.
2. Knowledge production and access: (a) diverse research methods, (b) creative, critical thinking, and innovation skills, and (c) information access and technology
3. The person in/and society: Child and adolescent psychology, (b) history, sociology, and philosophy, (c) self-knowledge, (d) cultural and human diversity, (e) communication skills, and (f) human relation.
4. Politics, leadership, and ethical and moral values: (a) political and leadership skills, (b) ethical and moral values.
5. Cross-boundary field experiences: (a) cross-curriculum themes, (b) social and professional service.

According to Fernandez-Balboa, (1997), this proposal is in the line with NASPE (1995), which suggested the national standards for beginning physical education teachers, but sought to emphasize two perspectives (critical pedagogical

orientation and teachers as transformative intellectuals) into the PETE knowledge bases.

In the meantime, NAPSE's guidelines for beginning teachers were revised in 2003 to include 10 standards; content knowledge, growth and development, devise learners, management and motivation, communication planning and instruction, student assessment, reflection, technology, and collaboration. Beginning teachers should acquire these standards before entering teaching contexts, and teacher educators should be guided by standards as they prepare future teachers to become qualified teachers in physical education. These two different frameworks can contribute to reconstructing current PETE programs, so that they prepare better teachers. That is, current knowledge bases or standards tend mainly to limit the qualifications of pre-service or novice teachers to meeting minimum standards for getting teaching certifications and hence are likely to focus heavily on the breadth rather than depth of teacher knowledge. Moreover, these two works have not addressed PE-PCK directly as one of the knowledge bases or national standards. The phenomenon might result in disregarding the existence of PE-PCK or weakening its importance for professional learning of pre-service and in-service teachers in teacher education.

In a sense, the components of PE-PCK may represent a feasible framework for presenting what and how both pre-service and in-service teachers might embark on the road to professional learning. Furthermore, the framework can be addressed in a manner that may guide teacher educators in making pedagogical decisions about educational objectives and learning experiences in

PETE programs. For example, an independent course like „understanding and developing PE-PCK“ needs to be provided to pre-service teachers before they begin student teaching. This course might give the teachers the opportunity to develop an understanding of and to practice PE-PCK in depth before student teaching practicum. That is, this course would depict the nature and purpose of PE-PCK for professional learning of all physical education teachers and deal with six components of PE-PCK indicated in this paper as main components of the course. Also in this course it could be emphasized that the components of PE-PCK intersect with and overlap each other and thus need to be implemented in an integrated manner. Ultimately, professional learning that leads to PE-PCK in this course should be simultaneously focused on the whole scope as well as on each component of PE-PCK, because the development of a component simultaneously encourages the development of other(s), and eventually enhances PE-PCK.

In PETE programs, two components, „early field experiences“ and „student teaching“ are representative programs that could mingle between content and pedagogy in physical education (You & McCullick, 2001). Also, the programs that form or comprise subject-specific methods classes have provided the only opportunity that pre-service teachers have been given that enables them to reflect upon the actual given that enable them to reflect upon the actual use of their content knowledge within a specific context. The reason this course is needed as a precursor to student teaching is that it would serve to correct the current shortcomings in teacher preparation. Pre-service teachers tend to enter a real teaching field without the awareness of PE-PCK in PETE programs. Within the

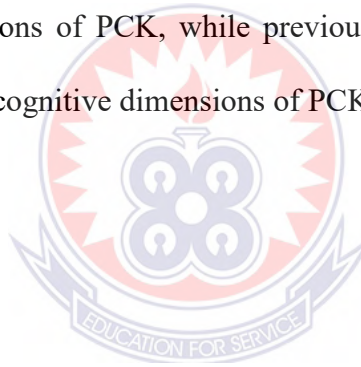
short period of their student teaching practicum, most student teachers are likely to finish field experiences with the realization of importance of PE-PCK, but have seldom had the chance to implement or develop PE-PCK during the practicum (Gess-Newsome & Lederman, 1999; Rovegno, 1992). Thus, the course allows pre-service teachers to be aware of what PE-PCK is, why it is important, and how it develops.

2.8 Summary

In summary pedagogical content knowledge in physical education (PE-PCK) identifies the components of PE-PCK by synthesizing the related literature on PCK in education and physical education. PE-PCK is defined as synthesized knowledge as it is embodied in the various functioning parts of physical education teachers' knowledge; the concept is further explained as an action-based knowledge of how to teach meaningfully intended educational contents in physical education so students may holistically understand, perform, and appreciate physical activity. In addition, six components consisting of PE-PCK were presented: (a) knowledge of physical education as a subject, (b) knowledge of physical education curriculum (c) knowledge of teaching methods in physical education, (d) knowledge of students' learning of physical activity, (e) knowledge of physical education assessment, and (f) knowledge of instructional environments in physical education. While these components are not mutually exclusive in teaching contexts or practice, it is, nevertheless, conceptually helpful to consider them as distinct components. That is, defining PE-PCK and depicting

its components can play a significant role in guiding pre-service and in-service teachers toward progressive professional learning.

Recently, Tsangaridou (2006) has argued that research on PCK in physical education needs to continue to develop, unlike other disciplines such as science and mathematics. First of all, research on PCK in physical education is neither extensive nor diverse. Most of them have focused on employing how in-service or pre-service physical education teachers acquire, elaborate, and transform their PCK (Amade-Escot, 2000; Graber, 2001; Rovegno, 2003). Recently, only a few studies (McCaughtry & Rovegno, 2003; McCaughtry, 2004, 2005) addressed the emotional dimensions of PCK, while previous research was mostly oriented to understanding the cognitive dimensions of PCK.



CHAPTER THREE

METHODOLOGY

This chapter consists of the method and procedure used in carrying out the study. The chapter is discussed under the following sub-headings:

1. Research Design
2. Population
3. Sample and Sampling Technique
4. Research Instrument
5. Validation and Reliability of Instrument
6. Data Collection Procedure and
7. Data Analysis.

3.1 Research Design

The descriptive survey design was used for this study because it 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). This design is flexible and convenient because of the ability to convey or present details and valid information. A descriptive study offers the researcher accurate description of what people in some target population do, think and perhaps allowed to represent in various ways. It involves recording, describing, analyzing and explaining conditions as they exist. It also enabled the researcher to undertake all kinds of

basic statistical analyses especially in relation to the content and pedagogical knowledge of mentee who taught Physical Education as respondents.

The descriptive survey was used because it usually does not involve the manipulation of any variable. The descriptive survey was considered the most appropriate because design for conducting the investigation since it deals with things as they currently are (Creswell, 2003). The researcher sees this design appropriate to help assess the level of knowledge of Physical Education teachers in terms of content and pedagogy based on the data collected by way of information from the respondents.

3.2 Population

The population for the study consists of Special Education (Level 400 only) students who came back from internship programme in January 2015 that took Physical Education as a second area course as part of their requirement at the Department of Health, Physical Education, Recreation and Sports, University of Education, Winneba. The choice is based on the works of Fraenkel and Wallen (2009). They 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.

3.3 Sample and Sampling Technique

The sample for this study consists of twenty-five respondents. Korthari and Garg (2014) sampling is the selection of an aggregate or totality of subjects or participation on the basis of which a judgment or inference about the aggregate or totality is made. Purposive sampling technique was used to select the respondents. Nichols (2000) states that it is prudent to obtain the set of subjects a researcher is most interested in, however the state of affairs would depend on the objective of the research and kind of questions that the study seeks to address.

3.4 Research Instrument

The instrument was an adapted questionnaire from the work of Schmidt, Baran, Thompson, Mishra, Koehler and Shin, (2009) on assessment for pre-service teachers in technology. The questionnaire was named as Physical Education Content and Pedagogical Knowledge Questionnaire (PECPKQ). The questionnaire was made up of three main parts which included instructions to the respondents and items of research questions. The main section of the questionnaire had eighteen (18) items under six (6) headings however, five (5) items were asked for bio-data. Respondents were asked to indicate their level of concern for each statement on a 5 point Likert-type scale: Strongly Agree (S A), Agree (A), Undecided (U) Disagree (D), and Strongly Disagree (SD). The first two points of the likert-scale: (Strongly Agree and Agree) show approval of perception of respondents toward the item on the questionnaire whilst the other two (Disagree and Strongly Disagree) also indicate disapproval of items on the questionnaire. However, the undecided show that the respondent could not decide

on the question posed. The third session was to give a general picture of what respondents make of SPED students second subject are in Physical Education.

3.5 Validity and Reliability of the Instrument

Developing a quality questionnaire usually involves designing the questionnaire, administering it and then evaluating to see if it measured. In order to ensure the validity and reliability of the research instrument, the questionnaire was designed to reflect on the research questions. The questions were submitted first to the supervisor for comments on the face, contents and construct of the questionnaire items. All suggestions made by the supervisor were careful utilized to correct the questionnaire before administered to ten respondents who were not part of the main study for ambiguities and construct. This was done through test-re-test method of two weeks interval with the sample set of respondents. The collected questionnaire filled was then used for the reliability of the instrument. The reliability testing is to show if it measure what it is supposed to measure. Creswel (2008) asserts that it is necessary to establish the reliability of an instrument when some modifications are made to the instrument on the ground that the original validity or reliability may be distorted due to the modifications. Thus, the researcher tested the reliability of the instrument using Cronbach alpha coefficient yielding 0.75 values.

3.6 Data Collection Procedure

Permission was be sought from both Heads of the Departments of Health Physical Education, Recreation and Sport who also signed an introduction letter for the researcher to carry out the study. The Head of Departments for Special

Education, University of Education, and Winneba permitted the researcher to have access to the mentees sampled for the study.

The mentees were available only after they wrote their end of semester exams. The respondents belonged to three section study in their department and they include the Hearing Impairment, Visual Impairment and Intellectual Disability Sections. For this reason the researcher had to visit on three occasions to meet the different sections after they took exams. This enabled the researcher to get access to all respondents to respond to the questionnaires. Prior to that, the researcher had to visit the department to get access to the exam time table which aided the movement of the researcher to get the respondents.

The consent of the respondents was sought and they were educated on the rationale for of the study. The need for honesty was also emphasized. Adequate explanation as to the demands of the questionnaire was also given. Respondents were given ample time to complete the questionnaire at their own pace. The administration of the questionnaire lasted for fifteen working days with the help of one research assistant. The direct involvement of the researcher in all data collection situations ensured hundred percent recovery of the questionnaire.

3.7 Data Analysis

The data collected through questionnaires was analysed through means and standard deviation analysis for descriptive analysis. While Chi-Square analysis was conducted to ascertain a significant influence of variables, and Pearson Product Moment Correlation was used to find the relationship among the variables used of the study.

CHAPTER FOUR

RESULT, FINDINGS AND DISCUSSION

The purpose of the study is to assess SPED Mentees subject matter knowledge (content) and knowledge of teaching skills (pedagogy) that is Content knowledge and pedagogical content knowledge in Physical Education after their internship programme. This chapter therefore presents the results and findings of the data collected for the study as well as the discussion of the findings. The analysis was organised using the statistical software (Statistical Package for Social Sciences (SPSS) following the demographical information, research questions and hypothesis gathered.

Demographic Information

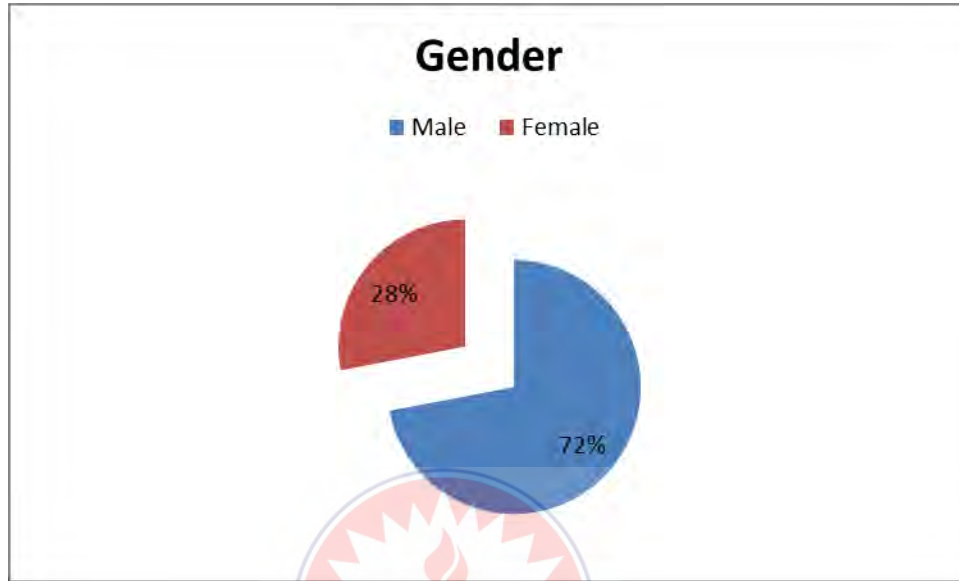
Table 4.1: Results of respondents' distributions by gender

Gender	Frequency	Percentage
Male	18	72
Female	07	28
Total	25	100

Table 4.1 describes the demographic representation of the respondents used in the study. The result shows that seventy-two percent (72%) of the respondents were males and twenty-eight percent (28%) female reflecting raw values of eighteen (18) and seven (7) respectively. These percentages do not have any positive or negative effect. This finding portrays the actual picture painted at the main Physical Education course area as well. The percentage of females in the department among PE teachers elsewhere has lesser representations as compared

to their male counterpart. It is therefore not a surprise as it was expected, however this did not have any adverse effect on the study.

Fig.4.1 Respondents’ distributions by gender



The figure above shows a vivid pictorial presentation of respondents’ gender distributions.

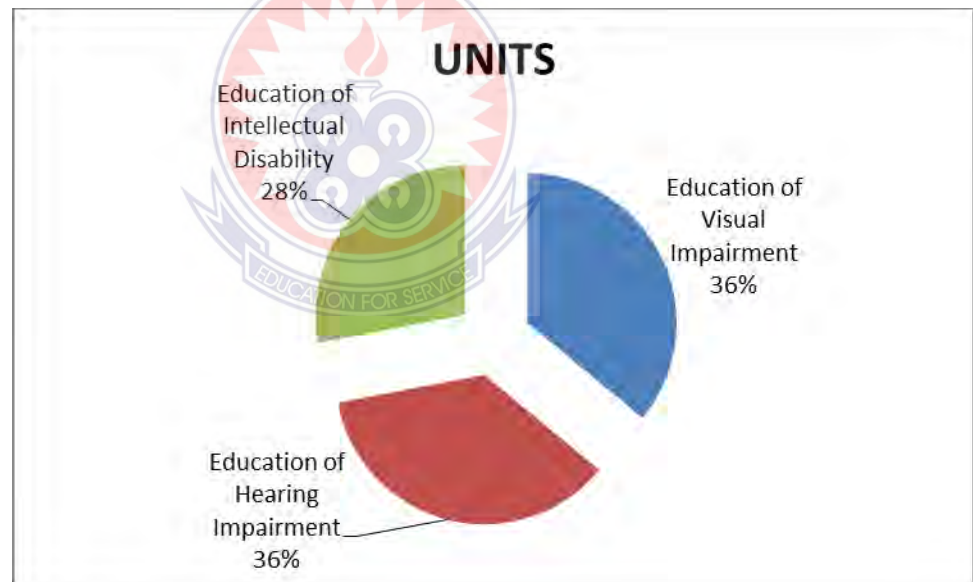
Table 4.2: Respondents distribution in frequencies and percentages according to sections in the department of study

Sections	Frequency	Percentages
Education of Visual Impairment	9	36
Education of Hearing Impairment	9	36
Education of Intellectual Disability	7	28
Total	25	100

Table 4.2 present respondents’ distribution of departmental sections in frequencies and percentages. The result showed that there were three sections in the SPED Department. Visual impairment sections consists of 9 respondents

about 36%, Hearing Impairment also consists of 9 respondents representing about 36% and Intellectual Disability having 7 respondents representing about 28%. This shows that both visual and Hearing impairment have the highest respondents sampled in the study. The picture is painted to show the different sections in which the respondents are drawn from however these figures do not have any adverse influence on the study because the three sections came together to form one class. However, it can be expected that during their pedagogical approach to the various disability groups may differ to suit the various learner.

Fig 4.2 Respondents distribution in percentages according to sections in the department of study



The figure below Fig 4.2 shows the pictorial representation of the table 4.2 above in percentages.

Research Question 1: What is the level of physical education content and pedagogical knowledge of SPED mentees?

Table 4.3: Descriptive statistics of mean and standard deviation of SPED Mentees

Variables	N	Mean	Std. Deviation
PEK	25	8.3200	2.11581
CK	25	8.0000	2.02073
PK	25	9.1200	1.53623
PECK	25	7.2400	4.11582
PEPK	25	8.3600	2.65957
PEPCK	25	8.0800	3.12143

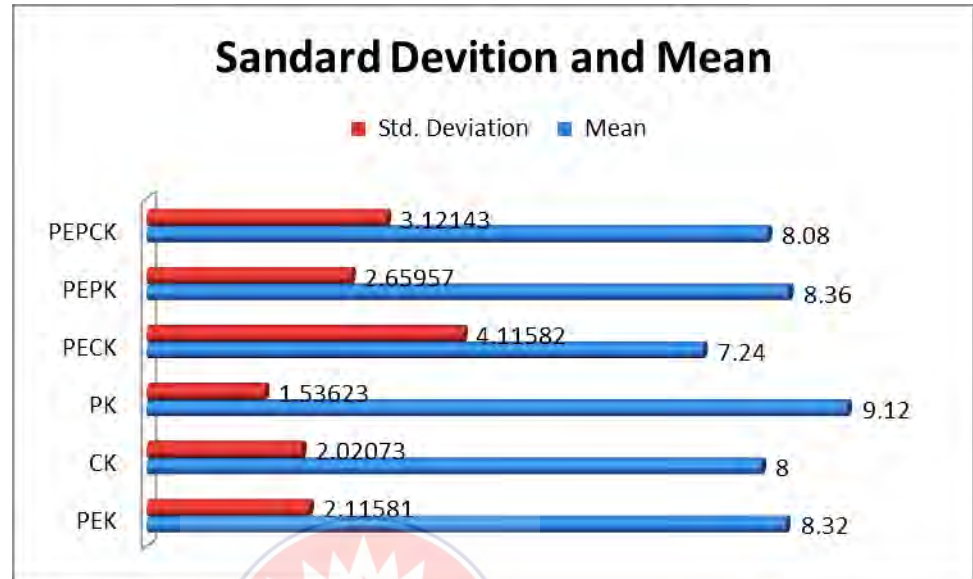
Valid N (list wise)

KEY: PEK- physical Education Knowledge; CK- Content Knowledge; PK- Pedagogical Knowledge; PECK- Physical Education Content Knowledge; PEPK- Physical Education Pedagogical Knowledge; PEPCK- Physical Education Pedagogical Content Knowledge

The above table 4.3 shows the mean and standard deviation of respondents' variances on: Physical Education Knowledge (PEK); Content Knowledge (CK); Pedagogical Knowledge (PK); Physical Education Content Knowledge (PECK); Physical Education Pedagogical Knowledge (PEPK); Physical Education Pedagogical Content Knowledge (PEPCK). The result revealed that PK has the highest mean value (9.12); followed by PEPK (8.36); PEK (8.32); PEPCK (8.08); CK (8.00) respectively, while PECK had the lowest mean (7.24) value. These results showed that mentees from Special Education Department (respondents) had better Pedagogical Knowledge, but are lower in Physical Education Content Knowledge.

Fig 4.3 pictorial presentaion in mean and standard deviation of SPED

Mentees



In Fig. 4.3 above show a bar graph presentation in standard deviation and mean of how far or near the values of the various variance are to the mean values.

Research Question 2: Will there be a significant relationship in the PEK of SPED Mentees?

Table 4.4: The chi square (X^2) PEK computation of SPED Mentees

	Observed N	Expected N	Residual		PEK
	3	3.1	-.1		
	1	3.1	-2.1		
	4	3.1	.9	Chi-Square	18.200 ^a
	1	3.1	-2.1	df	7
	9	3.1	5.9	Asymp.Sig.	.011
	5	3.1	1.9		
	1	3.1	-2.1		
	1	3.1	-2.1		
Total	25				

$(X^2 = 18.20, df 7 p < .05)$ PEK- Physical Education Knowledge

The table 4.4 above shows the result of Chi-square of relationship in the PEK of SPED mentees. The result revealed that there is a significant relationship exists ($X^2 = 18.20, df 7 p < .05$). Observed values ranges from 1 – 9, expected values is 3.1 throughout whiles the residual values ranges from -2.1 to 5.9. The chi-square value shows 18.200^a with a standard deviation of 7 and significance of .011. Hence, based on the outcome of the result the mentees seems to have pedagogical knowledge from their previous knowledge in physical education during their lower level of education.

Research Question 3: Will there be a significant relationship in the CK of SPED Mentees?

Table 4.5: The chi square X^2 computation of CK

	Observed N	Expected N	Residual		CK
	2	3.6	-1.6		
	7	3.6	3.4		
	1	3.6	-2.6	Chi-Square	10.000 ^a
	3	3.6	-.6		
	7	3.6	-3.4	df	6
	3	3.6	-.6	Asymp.Sig.	.125
	2	3.6	-1.6		
Total	25				

$(X^2 = 10.00, df 6 p > .05)$ CK- Content Knowledge

Table 4.5 above shows the result of Chi-square computation of the relationship in the CK of SPED mentees. The result revealed that there is a significant relationship ($X^2 = 10.00, df 6 p < .05$). Observed values ranges from 1 – 7, expected values is 3.6 throughout whiles the residual values ranges from -3.4 to 3.4. The chi-square value shows 10.000^a with a standard deviation of 6 and significance of .125. The mentees Content Knowledge significant level seems to be as a result of their previous experiences from being students who had the opportunity to be taught Physical Education at their lower levels of education.

Research Question 4: Will there be a significant relationship in the PK of SPED Mentees?

Table 4.6: The chi square X^2 computation of PK

	Observed N	Expected N	Residual	PK	
	1	4.2	-3.2		
	2	4.2	-2.2		
	1	4.2	-3.2	Chi-Square	21.800
	8	4.2	3.8	df	5
	11	4.2	6.8	Asymp.Sig.	.001
	2	4.2	-2.2		
Total	25				

($X^2 = 21.80$, $df 5$ $p < .05$) PK- Pedagogical Knowledge

The table 4.6 above shows that the result of Chi-square on relationship in the PK of SPED mentees. The result revealed that there is a significant relationship exists ($X^2 = 21.8$ -, $df 5$ $p < .05$). Observed values ranges from 1 – 11, expected values is 4.2 throughout whiles the residual values ranges from -3.2 to 6.8. The chi-square value shows 21.800^a with a standard deviation of 8 and significance of .001. This shows that the Mentees pedagogical knowledge might likely have been gotten from transfer of knowledge in their previous experience

Research Question 5: Will there be a significant relationship in the PECK of SPED Mentees?

Table 4.7: The chi square X^2 computation of PECK

	Observed N	Expected N	Residual	PECK	
	5	3.1	1.9		
	3	3.1	-.1		
800 ^a	2	3.1	-1.1	Chi-Square	21.
	2	3.1	-1.1	df	7
	6	3.1	2.9	Asymp.Sig.	.001
	2	3.1	-1.1		
	1	3.1	-2.1		
	4	3.1	9		
Total	25				

$(X^2 = 6.68, df 7 p > .05)$ PECK- Physical Education Content Knowledge

The table 4.7 above shows the result of Chi-square on relationship in the PECK of SPED mentees. The result revealed that there is no significant relationship existing ($X^2 = 6.68, df, 7 p > .05$). This result of mentees Physical Education Content Knowledge means that mentees have insignificant level of PECK. The kind of knowledge acquired may be general not in the subject area in the case of Physical Education. The table above has an observed values ranging from 1 – 6, expected values is 3.1 throughout while the residual values range from -2.1 to 9. The chi-square value shows 21.800^a with a standard deviation of 8 and significance of .001.

Research Question 6: Will there be a significant relationship in the PEPK of SPED Mentees?

Table 4.8: The chi square X^2 computation of PEPK

	Observed N	Expected N	Residual		PEPK
	1	3.6	-2.6		
	3	3.6	-.6		
	1	3.6	-2.6	Chi-Square	16.740 _a
	2	3.6	-1.6	df	6
	10	3.6	6.4		
	5	3.6	1.4	Asymp.Sig.	.010
	2	3.6	-.6		
Total	25				

$(X^2 = 16.720a, df 6 p < .05)$ PEPK- Physical Education Pedagogical Knowledge

The table 4.8 above shows the result of Chi-square on relationship in the PEPK of SPED mentees. The result revealed that there is a significant relationship ($X^2 = 16.76, df 6 p < .05$). It also shows that observed values ranges from 1 – 10, expected values is 3.6 throughout whiles the residual values ranges from -2.6 to 6.4. The chi-square value shows 16.740^a with a standard deviation of 6 and significance of .010. Physical Education Pedagogical Knowledge of mentees in this case might likely have been acquired from in their previous experiences

Hypothesis: (Ho) There will be no significant relationship between PEK, CK, PK, PEPCK, PEPK and PEPCK of SPED Mentees.

Table 4.9: The chi square X^2 computation of PEK, CK, PK, PEPCK, PEPK and PEPCK

		PEPCK	PEK	CK	PK	PECK	PEPK	PEPCK
PEK	Pearson Correlation		1	.292	.500*	.063	.445*	.210
	Sig. (2-tailed)			.156	.011	.766	.026	.313
	N		25	25	25	25	25	25
CK	Pearson Correlation	.292		1	.362	.306	.318	.502*
	Sig. (2-tailed)	.156			.075	.137	.122	.011
	N	25	25	25	25	25	25	25
PK	Pearson Correlation	.500*	.362		1	.345	.387	.198
	Sig. (2-tailed)	.011	.075			.092	.056	.343
	N	25	25	25	25	25	25	25
PECK	Pearson Correlation	.063	.306	.345		1	-.062	.307
	Sig. (2-tailed)	.766	.137	.092			.770	.136
	N	25	25	25	25	25	25	25
PEPK	Pearson Correlation	.445*	.318	.387	-.062		1	.388
	Sig. (2-tailed)	.026	.122	.056	.770		.055	
	N	25	25	25	25	25	25	25
PEPCK	Pearson Correlation	.210	.502*	.198	.307	.388		1
	Sig. (2-tailed)	.313	.011	.343	.136	.055		
	N	25	25	25	25	25	25	25

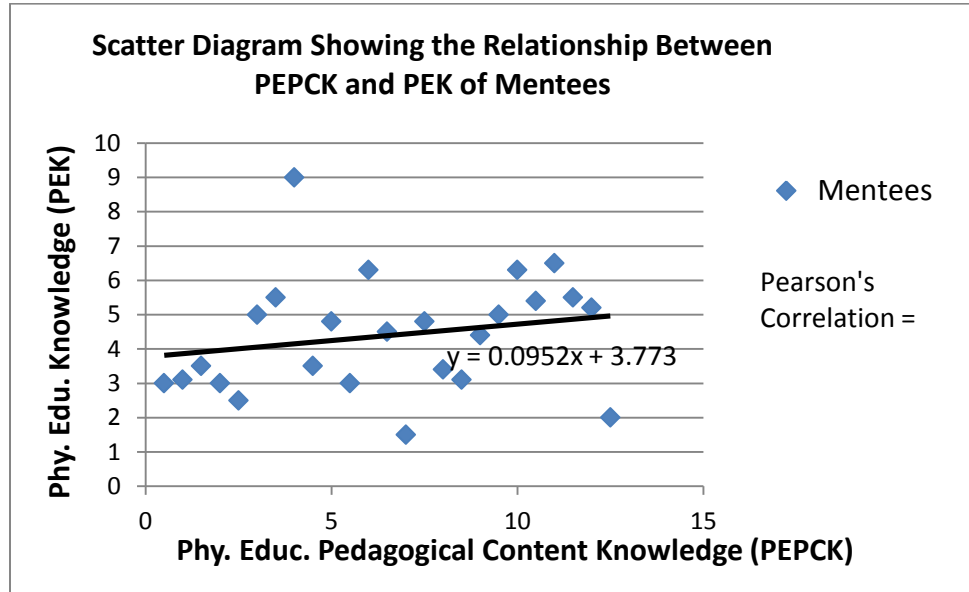
**Correlation is significant at the 0.05 level (2-tailed)*

PEK- physical Education Knowledge; CK- Content Knowledge; PK- Pedagogical Knowledge; PECK- Physical Education Content Knowledge; PEPK- Physical Education Pedagogical Knowledge; PEPCK- Physical Education Pedagogical Content Knowledge

Table 7 above shows the computation of Person correlation at significant level of 0.05 (2- tailed) among the variables measured. These variables Physical Education Knowledge; Content Knowledge; Pedagogical Knowledge; Physical Education Content Knowledge; Physical Education Pedagogical Knowledge; Physical Education Pedagogical Content Knowledge were computed to show their level of significance among each other. With the exception of Physical Education Content Knowledge, Physical Education Knowledge; Content Knowledge; Pedagogical Knowledge; Physical Education Pedagogical Knowledge and Physical Education Pedagogical Content Knowledge all showed a significant level of relationship amongst themselves as variables. However some of the levels of significance were strong while others were weak. PECK was not significant at all. The following shows their levels: - PEK relationship with PK and PEPK is at .500 and .445 levels of significance respectively. CK was at .502 significant levels at PEPCK, between PK and PEPK the level of significant is .500. However PECK did not show any level of significant meaning no relationship exists. PEPK and PEPCK recorded significant relationships where PEPCK was significant at .445 levels. With PEK and CK at significant level of .502.

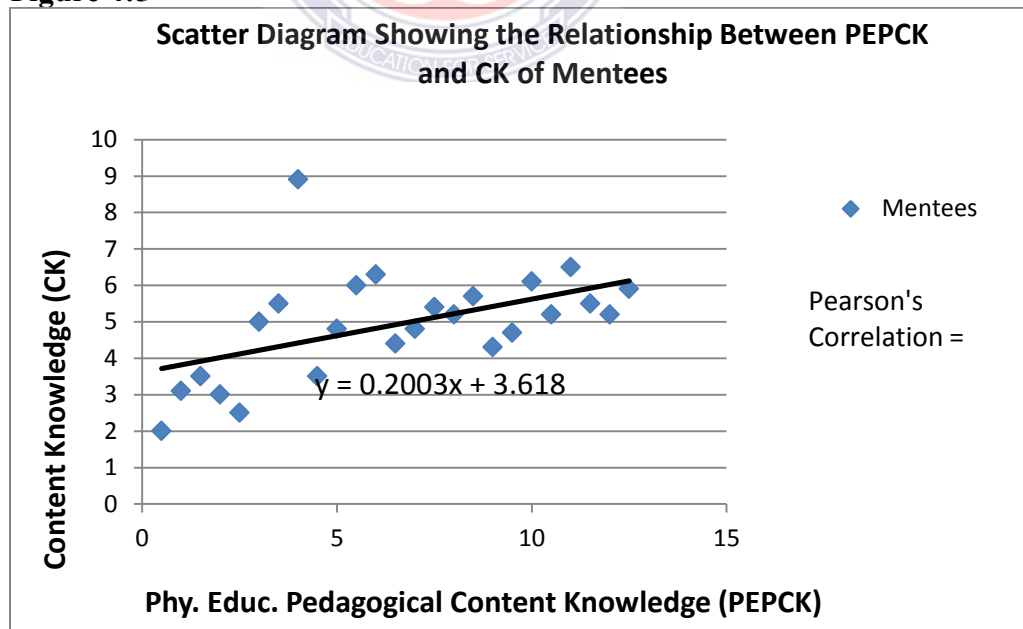
A pictorial presentation below also shows a vivid description of what has been presented above seeking to describe the hypothesis that there is will be no significant relationship between PEK, CK, PECK, PK PEPK and PEPCK.

Figure 4:4



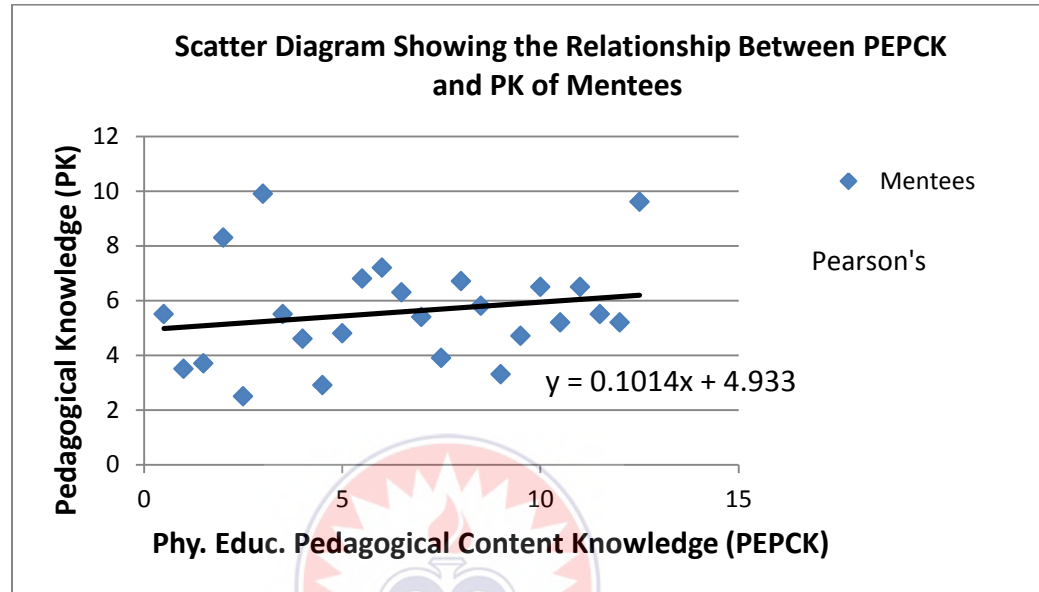
The hypothesis is rejected in figure 4.4 because there is a positive correlation between PEPCK and PEK.

Figure 4:5



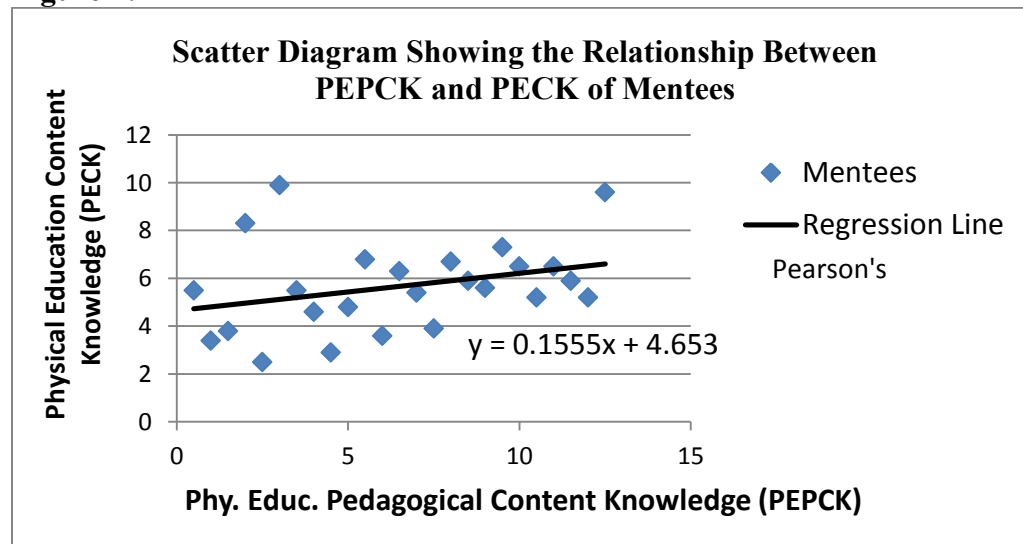
The hypothesis in figure 4.5 is rejected because there is a positive correlation between PEPCPK and CK.

Figure 4:6



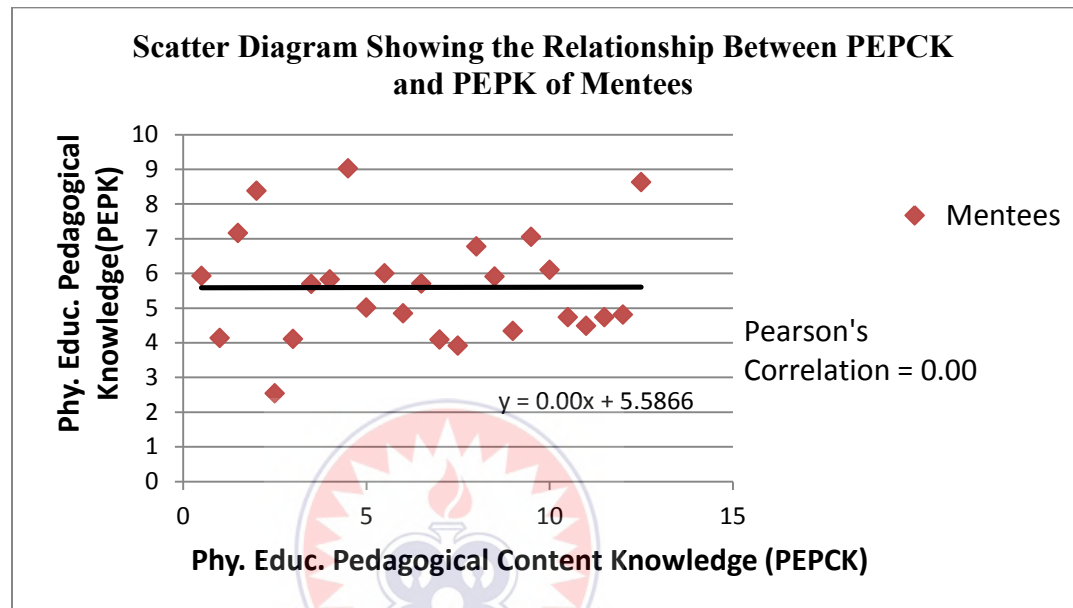
The hypothesis in figure 4.6 is rejected because there is a positive correlation between PEPCPK and PK.

Figure 4:7



The hypothesis in figure 4.7 is rejected because there is a positive correlation between PEPCPK and PECK

Figure 4:8



In figure 4.8, the hypothesis cannot reject because there is a no correlation between PEPCPK and PEPK

Discussion of the Findings

Research Question 1

The result revealed that PK has the highest mean value (9.12); followed by PEPK (8.36); PEK (8.32); PEPCK (8.08); CK (8.00) while PECK had the lowest mean (7.24) value. This showed that mentees from Special Education Department (respondents) had better pedagogical knowledge, but is lower in physical education content knowledge. It is possible that because of the course read in their mother department of which pedagogy is included there is transfer of knowledge when it comes to dealing with physical education. PK focuses on a teacher's knowledge of the general pedagogical activities and strategies for motivating students, communicating with students and parents, presenting information to the students, and classroom management among many other things (Cox, 2008). Pedagogical knowledge requires an understanding of cognitive, social, and developmental theories of learning in order to apply them to students in their classroom.

Pedagogical knowledge (PK) refers to techniques or methods of teaching and strategies for evaluating student understanding (Mishra & Koehler, 2006). For example, when teaching a skill or a movement in physical education, a teacher should consider child development and student needs as well as behaviours and motivation. All of these aspects require a sufficient PK. It is therefore evident in this study that mentees from the SPED department who participated in this study might have had enough or sufficient tutelage on pedagogical knowledge. The level of PEPK as the second highest among the means of the variances describes

an assertion that the mentee could have practiced transfer of knowledge to give such a result.

Research Question 2

The findings also show that the last and last but one positions of variances on the mean table is CK and PECK respectively. These findings paint the picture that there is not enough content knowledge as well as physical education content knowledge for the mentees from the SPED department. These situations have adverse effect on the teaching of the physical education subject because it is very necessary for a teacher to have subject matter knowledge for effective delivery. Content knowledge (CK) refers to knowing the major facts, concepts and the relationships of a field. Most importantly, this knowledge is independent of any pedagogical activities or how one might use methods or strategies to teach (Cox, 2008). Content Knowledge (CK) is the “knowledge about actual subject matter that is to be learned or taught” (Mishra & Koehler, 2006). More clearly, teachers should know and understand the subjects that they teach, including knowledge of central facts, concepts, theories, and procedures within a given field; knowledge of explanatory frameworks that organize and connect ideas; and knowledge of the rules of evidence and proof (Mishra & Koehler, 2006). For example, a physical education teacher should possess a basic understanding of motor learning and control, anatomy, exercise physiology, sport and exercise psychology. According to the Turkish Physical Education Curriculum (2007), a physical education teacher should be proficient in the areas of movement, knowledge and skills and active participation and healthy lifestyles.

The explanations by other researchers above are not the situations in the findings of the mentees in this study in terms of content knowledge and physical education content knowledge. The structure of the curriculum which is offered as a second area course may also be a cause of these mentees not to acquiring adequate PECK.

Research Question 3

The result of Chi-square computation on relationship in the PK of SPED mentees revealed that there is a significant relationship ($X^2 = 21.8$ -, $df 5$ $p < .05$). The result of Chi-square relationship in the PK variable of SPED mentees revealed that Observed values ranges from 1 – 11, expected values is 4.2 throughout whiles the residual values range from -3.2 to 6.8. The chi-square value shows 21.800^a with a standard deviation of 8 and significance of .001. This shows that the Mentees pedagogical knowledge might likely have been acquired from lessons in their main department concerning pedagogy. The SPED department trains their students in pedagogy or teaching skills. It is therefore evident that the mentees who participated in the study might have had some background knowledge in PK which may not necessarily be useful as far as the teaching of Physical education is concerned. As reflected in the mean above it was observed that the value of PK was the highest of all the variables used in the study. PK focuses on a teacher's knowledge of the general pedagogical activities and strategies for motivating students, communicating with students and parents, presenting information to the students, and classroom management among many other things (Cox, 2008). The picture painted is that the mentees as well as all the

other students from the SPED department are well equipped in matters of PK but can that be said of the other subject area CK that they study as their second subject area courses which they end up teaching? From the assertion of Cox above, every subject has its own technic of delivery so it is not only enough to have a significant level of values but also the subject matter is crucial.

Research Question 4

The PECK of SPED mentees result revealed that there is no significant relationship ($X^2 = 6.68$, df, 7 $p > .05$). This result of mentees Physical Education Content Knowledge means that mentees have no or insignificant level of PECK. The kind of knowledge acquired may be general Physical Education knowledge but not necessarily to be used in the teaching of the subject. It is clear to come up with the assertion that the mentees do not acquire PECK from the course offered them in the PE Department. They might come to take the course for other various reasons not specifically to acquire the knowledge for teaching; however one cannot teach a subject without having knowledge of the subject's content. As many different variables contribute to learning, teachers should have the skills to use various teaching methods to match the demands of their students (Jaakkola & Watt, 2011). Based on this a teacher will be very ineffective when the content aspect of skill is not acquired. This is worrying because these groups of trainees later find themselves in the classroom and what then is been taught. This may lead to the short chaining of the learning.

Researchers like Veal & Makinster (1999) said most teacher education programmes rejected the tradition that focused on content knowledge and

supported a new trend that emphasized the application of general pedagogical practices in the classroom, which were isolated from any relevant subject matter. To solve these problems, „teaching as a profession“ needed to be recognized as possessing and acting in unique intellectual knowledge and skills in content as well.

Research Question 5

The result of Chi-square on relationship in the PEPK of SPED mentees revealed that there is a significant relationship ($X^2 = 16.76$, df 6 $p < .05$). It also shows that observed values ranges from 1 – 10, expected value is 3.6 throughout while the residual values ranges from -2.6 to 6.4. The chi-square value shows 16.740^a with a standard deviation of 6 and significance of .010. Physical Education Pedagogical Knowledge of mentees in this case might likely have been acquired from their previous physical education knowledge from their second course department and pedagogical knowledge from their main department experiences.

Based on the mentees Physical Education Pedagogical Knowledge (PEPK) level this is clear that the mentees might transfer knowledge from their pedagogical lessons from their main department. However, every subject has its peculiar way of teaching it. This situation does not differ with the teaching of Physical Education. The Practice Style is one of the most common teaching strategies used in physical education (Mosston, 1992). It is very similar to the command style where the task starts with a demonstration and description of what is to be achieved. The demonstration does not necessarily have to come from the

teacher; it may come from another student or even from audiovisual aids. The students then practice the skill, either on their own or with a group, as the teacher observes their performance and offers feedback.

Hypothesis

There will be no significant relationship between PEK, CK, PK, PECK, PEPK and PECCK of SPED Mentees is the hypothesis which was tested with Pearson correlation at 0.50 (2-tail level). PEK was significant at .500 and .445 for PK and PEPK respectively. CK was significant at .502 a level for PEPCK as well as PK was significant at .500 levels for PEK. PEPK was significant at .445 levels for PEK and PEPCK was also significant at .502 levels for CK. However PECK did not record any level of significance among the other variables.

From the results above it can be seen that apart from the PECK which was not significant and the hypothesis was not rejected from the Pearson Moment Product correlation calculated, all the other variables were significantly related, therefore the result leads to the rejection of the hypothesis that, there will be no significant relationship between the variables. It must be noted however that the relationships are not equal in all the situations.

PCK was described for the first time in Shulman's research (1986) as "the particular form of a content knowledge that embodies the aspects of content most germane to its teaching ability." This however does not fall in line with the finding of the study that revealed the Physical Education Content Knowledge was not significant.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study attempted to assess content and pedagogical knowledge in physical education of mentees from the Special Education Department University of Education. However, this chapter summarizes all the information gathered from the study which was done by the Researcher. It also includes conclusions drawn from the findings of the study as well as recommendations based on the findings of the study.

5.1 Summary of the study

The study assessed the pedagogical and content knowledge in Physical Education of SPED mentees who completed their out segment in January, 2015 in various pre tertiary schools in Ghana. The study sought to provide an empirical basis for the knowledge levels in content and pedagogical of these mentees who took some content courses mainly from the Physical Education Department. The study however looked at how much subject matter knowledge the mentees have and how much they can teach with this knowledge acquired.

The study which was a descriptive survey was undertaken to assessing the content and pedagogical knowledge in physical education of mentees from the SPED department of the University of Education, Winneba.

Relevant literature related to the topic was reviewed to ascertain the different opinions of other authors" subject matter. Data was collected using questionnaire from January 2015 mentees from the SPED department of the University of Education, Winneba. A sample size of twenty – five (25) was

selected which represented a hundred percent of the existing population as far as the study is concern. A purposive sampling technique used in selecting the respondents who came out with meaningful conclusion.

The data collected was analyzed using both descriptive and inferential statistics tools to present a vivid picture of the study. The accession was done by in computing standard deviation, chi square and Pearson correlation.

5.2 Findings

Based on the results and the discussions presented in relation to the five (5) research questions, the following are the major findings that:

There are more males than females in the sample though it was purposively selected. However this ratio did not have any effect on the study since other observation factually had also shown that there are more males than females in the main physical education profession. it is also interesting to also note that there seem to be almost an equal representation of all the three sections of study from the department of SPED.

The standard deviation computation shows the Pedagogical Knowledge PK had the highest values of all the variables tested. The chi square computation revealed significant relation of the entire variables except in the case of PECK which showed that there was no significant relationship. Finally the entire variable had a relationship among them with the exception of PECK again using the Pearson correlation.

5.3 Conclusions

The study was conducted to assess the content knowledge and pedagogical knowledge in physical education of mentees originally from the Special Education Department in the University of Education, Winneba. A purposive sampling technique was used to select all mentees from the Special Education Department who took courses in the P. E Department and therefore taught P.E during their out segment programme. This is because this type of sampling technique remained the only choice to help obtain the kind of data generated for the study.

The researcher used purposive sampling method to select 25 students-teachers who responded to levels concerning the Likert format rating Strong Agree, Agree, Disagree, and Strongly Disagree. Questionnaires on physical education pedagogical content knowledge were used to elicit the content knowledge and pedagogical knowledge in physical education.

Questionnaires were used in data collection from the respondents. Mean and standard deviation was calculated for the variables and inferential statistic of liner regression analyses was applied to show the significant influence. With Pearson's Product Correlation a significance level was reached to say that SPED mentees of the University Of Education, Winneba showed a weak correlation between PEPCCK and the other variables and in some cases no significant relationship at all.

5.4 Recommendations

The following recommendations are made from the confirmation derived from the findings of the study:

1. The study's findings reveal that the PECK levels among mentees is not highly significant therefore it is suggested that the content course of PE should be increased so as to allow mentees of SPED to be well equipped before stepping in the classrooms to teach.
2. A second recommendation is that students who wish to read special education but go out to teach a subject should be made to rather choose the subject area as main course areas first and then the sped as minor or second area course. This is because it has been observe from the study that the students do not get enough tutelage in the subject which they later go out to teach.
3. The authorities concerned should also make sure those teachers are employed to teach subjects they go to study in the universities. This will help to do away with semi qualified or ineffective teachers out there in the filled.
4. The PE Department and the amalgamated sports department should rather create sports clubs which will absorb students from other course areas who because of involving in sports activities rather come to do course in the PE department to satisfy their interest. These are the people who go out to teach as PE teachers.

5. Students who may desire to work in special schools as Physical Education Teachers should be advised rather to apply to read PE and take special education as their second subject. This will equip them to help in the teaching of Physical Education to the special learner. On the other hand Adapted Physical Education should be introduced as an elective subject in the physical education department to help solve the special need issues.



REFERENCES

- Amade-Escot, C. (2000). The contribution of two research programs on teaching content: “Pedagogical content knowledge” and “didactics of physical education.” *Journal of Teaching in Physical Education*, 20,78-101.
- Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT–TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computers & Education*, 52(1), 154-168
- Armour, K., & Duncombe, R. (2004). Teachers continuing professional development in primary physical education: Lessons from present and past to inform the future. 3-22. *Ayvazo*, S.
- Armour, K.M., & Yelling, M.R. (2004b). Professional development and professional learning bridging the gap for experienced physical education teachers. *European Physical Education Review*, 10(1), 71-74.
- Babbie, E. (1992). *The Practice of social research* (6th ed.). Belmont, Wadsworth Inc.
- Ball, D., & McDiarmid, G. (1990). The subject-matter preparation of teachers. In W. Houston (Ed.), *Handbook of research on teacher education* (pp.437 – 449). New York: Macmillan
- Ball, D. L., Hill, H. H., & Bass, H. (2005). Knowing mathematics for teaching: Who knows mathematics well enough to teach third grade, and how can we decide? *American Educator*, Fall, 14-46.
- Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389–407.
- Baumgartner, T. A., Strong, C. H., & Hensley, L. D. (2002). *Conducting and reading research in health and human performance* (3rd ed.). New York: McGraw-Hill.
- Brewer, D.J. & Goldhaber, D.D. (2000). Improving longitudinal data on student achievement: Some lessons from recent research using NELS: 88. In, D.W. Grissmer & J.M. Ross (Eds.), *Analytic issues in the assessment of student achievement*. Washington, DC: U.S. Department of Education.
- Creswell, J.W. (2002) *Educational Research*. New Jersey: Upper Saddle River
- Cresswell J. L. (2003). *Research Design. Qualitative and quantitative approaches* Thousand oaks, California: Sage Publications.

- Darling-Hammond, L., Wise, A.E., & Klein, S. P. (1995). *A license to teach: Building a profession for 21st-century schools*. San Francisco, CA: Westview Press.
- Ennis, C. (2003). What works in physical education: designing and implementing a quality educational program. *Educational Horizons*, 81(2), 77-82.
- Ennis, C., & Chen, A. (1995). Teachers' value orientation in urban and rural school settings. *Research Quarterly Exercise and Sport*, 66, 41-50.
- Ferguson, R.F. & Brown, J. (2000). Certification test scores, teacher quality, and student achievement. In D.W. Grissmer & J.M. Ross (Eds.) *Analytic issues in the assessment of student achievement*. Washington, DC: U.S. Department of Education.
- Fernandez –Balboa, J.-M. (1995). Reclaiming physical education in higher education through critical pedagogy. *Quest*, 47(1):91-114
- Graber, K. (1995). The influence of teacher education programs on the beliefs of student teachers: general pedagogical knowledge, pedagogical content knowledge, and teacher education course work. *Journal of Teaching in Physical Education*, 14(2), 157-178.
- Griffin, L., Dodds, P., & Rovegno, I. (1996). Pedagogical content knowledge for teachers. Integrate everything you know to help students learn. *Journal of Physical Education, Recreation and Dance*, 67(9), 58-61.
- Griffin, L., Mitchell, S., & Oslin, J. (1997). *Teaching sport concepts and skills: A tactical games approach*. Champaign, IL: Human Kinetics.
- Griffin, L., & Sheehy, D. (2004). Using the tactical games model to develop problem solvers in physical education. In J. Wright, D. Macdonald, & L. Burrows (Eds.), *Critical inquiry and problem solving in physical education* (pp. 33-48). London: Routledge.
- Grossman, P. L. (1990). *The making of a teacher: Teacher knowledge and teacher education*. New York: Teachers College Press Teachers College Columbia University.
- Grossman, P. (1991). Overcoming the apprenticeship of observation in teacher education coursework. *Teacher and Teacher Education*, 7(4), 345-357.
- Gudmundsdottir S. (1990). Values in pedagogical content knowledge. *Journal of Teacher Education*. 41 (3), 44-52.

- Hashweh, M. Z. (2005). Teacher pedagogical constructions: a reconfiguration of pedagogical content knowledge, *Teachers and Teaching: theory and practice*, 11(3), 273–292.
- Hosseini, Z. & Kamal, A (2012): Developing an Instrument to Measure Perceived Technology Integration Knowledge of Teachers: *IJITCS Journal: Advanced in Information System, E-Education & Development* 2012, Published by: IISRC Journals
- Ince, M. L. & Ok, A. (2005). Moving prospective physical education teachers to learner centered teaching: Can it be stimulated in a traditional context? *Journal of International*
- Kaul, L; (2004). Methodology of educational research, third edition, New Delhi, UBS Publishers“ Distributors Pvt Ltd.
- Khan, S. (2011). New pedagogies on teaching science with computer simulations.
- Koehler, M. J., & Mishra, P. (2009). “What is Technological Pedagogical Content Knowledge?” *Contemporary Issues in Technology and Teacher Education*, 9(1), pp. 60–70
- Kretschmann, R. (2010). Physical education 2.0. In Ebner, M. & Schiefner, M. (Eds.), *Looking toward the future of technology-enhanced education: Ubiquitous learning and the digital native*, pp. 432-454. Hershey, USA: IGI Global.
- Lee, M. (2010). Interactive whiteboards and schooling: The context. *Technology, Pedagogy and Education*, 19(2), 133–141.
- Lee, M. H., & Tsai, C. C. (2008). Exploring teachers“ perceived self-efficacy and technological pedagogical content knowledge with respect to educational use of the World Wide Web. *Instructional Science*, 38(1)1-21 <http://dx.doi.org/10.1007/s1251-0089075-4>
- MacDonald, D., & Hay, P. (2010). Health & physical education as/and technology: An Australian perspective. *Presented at Global Forum for Physical Education*
- Marks, R. (1990). Pedagogical content knowledge: From a mathematical case to a modified conception. *Journal of Teacher Education*, 41, 3-11.
- Magnusson, S., Krajcik, J. & Borko, H. (1999). Nature, sources, and development of the PCK for science teaching. In J. Gess-Newsome & N. G. Lederman (Eds.). *Examining pedagogical content knowledge* (Chapter 4; pp. 95-132) Dordrecht: Kluwer.

- McCaughtry, N. (2004). The emotional dimensions of a teacher's pedagogical content knowledge: Influences on content, curriculum, and pedagogy. *Journal of Teaching in Physical Education*, 23, 30–48.
- McCaughtry, N. (2005). Elaborating pedagogical content knowledge: what it means to know students and think about teaching. *Teachers and Teaching: theory and practice*, 11(4), 379–395.
- Metzler, M. (2011). *Instructional models for physical education*. Scottsdale, AZ: Holocomb Hathaway.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.
- Mohnsen, B. (2008). *Using technology in physical education* (6th ed.). Cerritos, CA: Bonnie's Fitware Inc.
- Morakinyo, E. O. (1998). Towards a life line for interscholastic sports in Nigeria. *Journal of the International Council for Health, Physical Education, Recreation, Sport and Dance (Special Edition)*. Pp 18-84.
- Mosston, M., & Ashworth, S. (2002). *Teaching physical education*. (5th ed.) San Francisco: Pearson.
- NASPE (2009). Appropriate Use of Instructional Technology in Physical Education. Position Statement. Retrieved May 21, 2011, from www.aahperd.org/naspe.
- NASPE. (2008). *National Standards & Guidelines for Physical Education Teacher Education, 3rd Ed.*, NASPE National Association for Sport and Physical Education. Retrieved from <http://www.aahperd.org/naspe/standards/>
- National Board for Professional Teaching Standards (2006). *NBBTS early childhood generalist stands*: Second edition, Arlington, VA: Author.
- National Council of Teachers of Mathematics (2008). *Principles and Standards for School Mathematics*. Virginia: Reston.
- Niederhauser, D. S., & Perkmén, S. (2010). Beyond self-efficacy: Measuring pre service teachers' instructional technology outcome expectations. *Computers in Human Behavior*, 26(3), 436-442.

- Nwana, O.C. (1992). *Introduction to Educational Research*. Ibandan: Heinemann Educational Books (Nig.) PLC.
- Park, S. & Oliver, J. S. (2008). Revisiting the Conceptualisation of Pedagogical Content Knowledge (PCK): PCK as a Conceptual Tool to Understand Teachers as Professionals. *Research in Science Education*, 38, 261–284. *Education*, 41, 44-52.
- Peil M. (1995). *Social science research methods a handbook for Africa*, 2nd rev.ed).
- Perkmen, S. (2008). Factors that influence pre-service teachers' technology integration performance. (Doctoral Dissertation, Iowa State University, 2008) *Dissertation Abstracts International*, 69 (06), 109.
- Physical Education Curriculum Analysis Tool (2011): *A Guide for Physical Education Teacher Preparation Programs in Institutions of Higher Education*. Atlanta, GA: CDC
- Roblyer, M. D., & Doering, A. H. (2005). *Integrating educational technology into teaching*. Lebanon: Pearson.
- Rink, J. E. (2002). *teaching physical education for learning* (4th ed.) New York: McGraw Hill. New York: McGraw-Hill.
- Rink, J.E. (2001). Investigating the assumptions of pedagogy. *Journal of Teaching in Physical Education*, 20(2), 112-128.
- Rovegno, I. (1993). Content knowledge acquisitions during undergraduate teacher education: overcoming cultural templates and learning through practice. *American Educational Research Journal*, 30 (3), 611-642.
- Rovegno, I. (1994). Teaching within a curricular zone of safety: school culture and the situated nature of student teachers' pedagogical content knowledge. *Research Quarterly for Exercise and Sport*, 65 (3), 269-279.
- Rovegno, I. (1995). Theoretical perspectives on knowledge and learning and a student teacher's pedagogical content knowledge of dividing and sequencing subject matter. *Journal of Teaching in Physical Education*, 14(3), 284-304.

- Semisiz, K. & Ince, M. L. (2012). Pre-service physical education teachers' technological pedagogical content knowledge, technology integration self-efficacy and instructional technology outcome expectations. *Australasian Journal of Educational Technology*, 28(6), 1248-1265. <http://www.ascilite.org.au/jet/ajet28/semiz.html>
- Shulman, L. S. (1987). "Knowledge and Teaching: Foundations of the New Reform". *Harvard Educational Review*, 57, pp. 1-22.
- Siedentop, D. (1989 / 2002) Content Knowledge for Physical Education, [Keynote Address presented at the C&I Academy Conference at the AAHPERD National Convention in Boston, April 1989]. *Journal of teaching in physical education*, 21(4), 368-377.
- Siedentop, D. (1994). *Sport Education: Quality PE through positive sport experiences*. Champaign, Ill.: Human Kinetics.
- Siedentop, D. (1998). New times in (and for) physical education. *Proceeding of the International AIESEP World Congress* (pp. 210-212), July, Adelphi, USA.
- Siedentop, D. (1998/2002). *Sport Education: A retrospective*. [paper presented at the 1988 AIESEP World Congress held at Adelphi University Garden, City, NY]. *Journal of teaching in physical education*, 21(4), 427-440.
- Siedentop, D. (2001). To inform their discretion. In P. Ward & P. Doutsis (Eds.), *Physical education in the 21st century* (pp. 187-197). Lincoln: University of Nebraska: DHHP.
- Siedentop, D., & Locke, L. (1997). Making a difference for physical education: What professors and practitioners must build together. *Journal of Physical Education, Recreation and Dance*, 68(4), 25-30.
- Silverman, S., & Subramaniam, P.R. (1999). Student attitude toward physical education and physical activity: a review of measurement issues and outcomes. *Journal of Teaching in Physical Education* 19(1), 97-125.
- Silverman, S.J., & Ennis, C.D. (Eds.) (1996/2003). *Student learning in physical education, applying research to enhance instruction*. Champaign, Ill: Human Kinetics.

- Schmidt, D., Baran, E., Thompson, A., Koehler, M. J., Shin, T., & Mishra, P. (2009). Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice teachers. *Presented at the annual meeting of American Educational Research Association, April 13-17, San Diego, CA.*
- Shulman, L. S. (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher*, 15(2), 4– 14.
- Shulman, L. S. (1987). Knowledge and Teaching: Foundations of the New Reform, *Harvard Educational Review*, 57(1), 1–22.
- Shulman, L. S. (1993). Conference presented at the University of Santiago de Compostela, Spain, July 6- 10, 1992. Published as “Renewing the pedagogy of teacher education: the impact of subject-specific conceptions of teaching”. In L. Montero & J. M. Vez (Eds.) *Las didácticas específicas en la formación del profesorado* (pp. 53-69). Santiago, Spain: Tórculo.
- Shulman, L. S. (1999). Foreword (In Gess-Newsome, J., Lederman, N. G. (Eds.), *Examining Pedagogical Content Knowledge*. (pp. ix–xii). Dordrecht: Kluwer).
- Shulman, L. S. (2004). Toward a pedagogy of substance. In *Teaching as Community property*, (Chapter 7, Pp. 128-138), San Francisco, CA: Jossey Bass.
- Shulman, L. S. (2007). Interview conducted at the Annual Meeting of the American Educational Research Association, in Chicago, April. Part of the text is reproduced in Berry, Loughran & Van Driel (2008) reference.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.
- Schempp, P. (1989). Apprenticeship of observation and the development of physical education teachers. In T. Templin & P. Schempp (Eds.), *Socialization into physical education: Learning to teach* (pp. 13- 38). Indianapolis, IN: Benchmark Press.
- Siedentop, D., Hastie, P., & van der Mars, H. (2011). *Complete guide to sport Education*, (2nd ed). Champaign, IL: Human Kinetics.
- Siedentop, D. (1991). *Developing teaching skills in physical education*. (3rd Ed.). Mountain View, CA: Mayfield Publishing Company.
- Shulman, L. S. (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher*, 15(2), 4–14.

- Shulman, L. S. (1987). Knowledge and Teaching: Foundations of the New Reform, *Harvard Educational Review*, 57(1), 1–22.
- Tsangaridou, N. (2002). Enacted pedagogical content knowledge in physical education: A case study of a prospective classroom teacher. *European Physical Education Review*, 8, 21-36.2011
- Tsangaridou, N. (2005) Classroom teachers’ reflections on teaching physical education. *Journal of Teaching Physical Education*, 24(1): 24-50.
- Tinning, R. (2010). *Pedagogy and human movement: Theory, practice, research*. London: Routledge.
- Tinning, R., Macdonald, D., Wright, J., & Hickey, C. (2001). *Becoming a physical education teacher: Contemporary and enduring issues*. Frenchs Forest, NSW: Pearson Education.
- UNESCO, MINEPS III, (1998) Recommendations to the 3rd International conference of ministers and senior officials responsible for physical education, Punte del Este: 30 November – 3 December, Uruguay.
- Van Dreil J., H., De Jong, O., & Verloop, N. (2002). The development of pre-school chemistry teacher’ pedagogical content knowledge. *Science Education* 86,572-590.
- Van Dreil J., H., Verloop, N., & De Vos, W. (1998). Development science teacher’ pedagogical content knowledge. *Journal of Research in Science Education* 86,572-590.
- Wuest D.A. & Bucher C.A. (1999). *Foundations of Physical Education and sport*, (13th ed.). New York, McGraw-Hill Companies Inc. 536p.
- Wright, J. (2000) Bodies, meanings and movement: A comparison of the language of a physical education lesson and a Feldenkrais movement class. *Sport, Education and Society*, 5(1), 35-50.
- Wright, S., McNeill, M., Fry, J., Tan, S., Tan, C., Schempp, P. (2006). Implications of student teachers’ implementation of a curriculum innovation. *Journal of Teaching in Physical Education*, 25, 310-328.
- Wojcicki, T. R., White, S. M., & McAuley, E. (2009). Assessing outcome expectations in older adults: The multidimensional outcome expectations for exercise scale. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 64B (1), 33-40

APPENDIX A

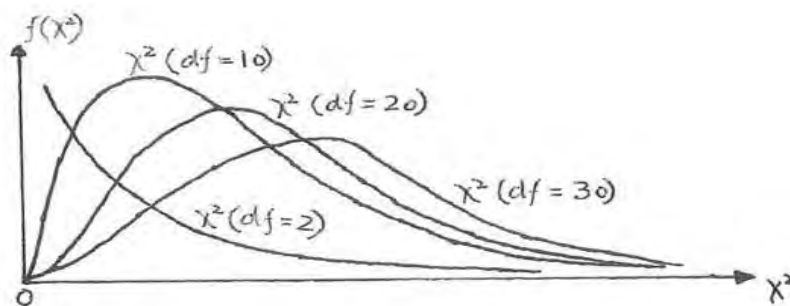
THE CHI-SQUARE TEST

The Chi-square test allows us to test hypothesis using nominal or categorical data. Chi-square's purpose is to determine how a set of proportions that is thought to be true (Expected) compare with a set of data that have been observed (Observed).

Reading from the Chi-square table in Appendix A, if the Actual Data (Observed) and Expected Data (Expected) do not show any difference or are identical, the Chi-square (χ^2) value is 0, i.e. $\chi^2 = 0$. A bigger Chi-square (χ^2) value i.e. $\chi^2 > 0$ shows that there is a bigger the difference between the Actual Data (Observed) and Expected Data (Expected).

Interpretation

Greater differences between expected and actual data produce a larger Chi-square value. The larger the Chi-square value, the greater the probability that there really is a significant difference. The Chi-square values are derived from the sum of



square of random variables therefore cannot be a Negative and by extension is bounded on the left by Zero (0) on the graph plot, thus it extends to the right side of the x-axis, and in other words, it is only right tailed.

DEGREE OF FREEDOM (df): is the number of observations contained in a set of sample data which can be freely chosen. It refers to the number of independent variables (x) which vary freely without being influenced by the restrictions imposed by the sample statistic to be computed.

Chi-square(χ^2): the chi-square random variable is the sum of several independent, squared standard normal random variables.

The Nature of the Graph

- i. If the df is larger than the (χ^2) values, the (χ^2) distribution is skewed to the right.
- ii. If the df is smaller than the (χ^2) values, the (χ^2) distribution is skewed to the left.
- iii. If the df is the same as the (χ^2) values, the (χ^2) distribution assumes a normal curve

Scenario I:

If the Chi-square value is greater than or equal to the critical value

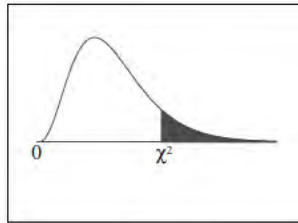
There is a significant difference between the groups we are studying. That is, the difference between actual data and the expected data (that assumes the groups aren't different) is probably too great to be attributed to chance. So we conclude that our sample supports the hypothesis of a difference.

Scenario II:

If the Chi-square value is less than the critical value

There is no significant difference. The amount of difference between expected and actual data is likely just due to chance. Thus, we conclude that our sample does not support the hypothesis of a difference.

Chi-Square Distribution Table



The shaded area is equal to α for $\chi^2 = \chi^2_{\alpha}$.

<i>df</i>	$\chi^2_{.995}$	$\chi^2_{.990}$	$\chi^2_{.975}$	$\chi^2_{.950}$	$\chi^2_{.900}$	$\chi^2_{.100}$	$\chi^2_{.050}$	$\chi^2_{.025}$	$\chi^2_{.010}$	$\chi^2_{.005}$
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	37.916	41.337	44.461	48.278	50.993
29	13.121	14.256	16.047	17.708	19.768	39.087	42.557	45.722	49.588	52.336
30	13.787	14.953	16.791	18.493	20.599	40.256	43.773	46.979	50.892	53.672
40	20.707	22.164	24.433	26.509	29.051	51.805	55.758	59.342	63.691	66.766
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	74.397	79.082	83.298	88.379	91.952
70	43.275	45.442	48.758	51.739	55.329	85.527	90.531	95.023	100.425	104.215
80	51.172	53.540	57.153	60.391	64.278	96.578	101.879	106.629	112.329	116.321
90	59.196	61.754	65.647	69.126	73.291	107.565	113.145	118.136	124.116	128.299
100	67.328	70.065	74.222	77.929	82.358	118.498	124.342	129.561	135.807	140.169

The following remarks should be copied to their appropriate locations in the document.

From table 4.4, the significant level $\alpha = 0.011$ and the degree of freedom ($df = 7$) gave rise to a Chi-square value of $\chi^2 = 18.20$, (reading taken from the Chi-square Distribution Table at Appendix A). The Chi-square value is relatively large, and therefore, we reject the hypothesis that there is no relationship between the Pedagogical Knowledge of SPED Mentees and their previous Knowledge in Physical Education at their lower level of education.

From table 4.5, the significant level $\alpha = 0.125$ and the degree of freedom ($df = 6$) gave rise to a Chi-square value of $\chi^2 = 10.00$, (reading taken from the Chi-square Distribution Table at Appendix A). The Chi-square value is relatively large, and therefore, we reject the hypothesis that there is no relationship between the Content Knowledge of SPED Mentees and their previous Knowledge in Physical Education at their lower level of education.

From table 4.6, the significant level $\alpha = 0.001$ and the degree of freedom ($df = 5$) gave rise to a Chi-square value of $\chi^2 = 21.80$, (reading taken from the Chi-square Distribution Table at Appendix A). The Chi-square value is relatively large, and therefore, we reject the hypothesis that there is no relationship between the Pedagogical Knowledge of SPED Mentees and their previous Knowledge in Physical Education at their previous experiences.

From table 4.7, the significant level $\alpha = 0.001$ and the degree of freedom ($df = 5$) gave rise to a Chi-square value of $\chi^2 = 21.80$, (reading taken from the

Chi-square Distribution Table at Appendix A). The Chi-square value is relatively large, and therefore, we reject the hypothesis that there is no relationship between the Physical Education Content Knowledge of SPED Mentees and their previous Content Knowledge generally acquired pre-university education.

From table 4.8 the significant level $\alpha = 0.010$ and the degree of freedom ($df = 6$) gave rise to a Chi-square value of $\chi^2 = 16.740$, (reading taken from the Chi-square Distribution Table at Appendix A). The Chi-square value is relatively large, and therefore, we reject the hypothesis that there is no relationship between the Physical Education Pedagogical Knowledge of SPED Mentees and their previous Content Knowledge generally acquired pre-university education.



**PHYSICAL EDUCATION PEDAGOGICAL AND CONTENT KNOWLEDGE
QUESTIONNAIRE**

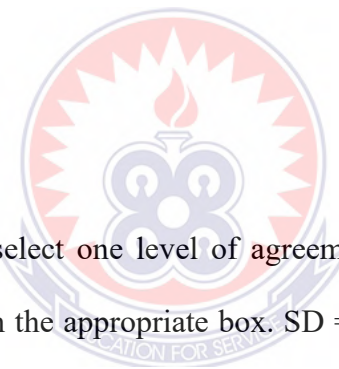
Dear Respondent,

I am an M.Phil. Student of the Department of Health Physical Education and Recreation and Sport, Faculty of Science, University Of Education, Winneba. This questionnaire is to solicit your views on the above topic. You are kindly requested to complete this questionnaire as frankly as possible.

Your response will be kept confidential and shall be used only for this research work only.

Thank you.

Cynthia Wise Attorkwe.



Instruction: Please kindly select one level of agreement for each statement to indicate how you feel. Place a (√) in the appropriate box. SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree and Strongly Agree

S/N	ITEMS	SD	D	U	A	SA
	Physical Education Knowledge					
1.	Know how to solve my own activities problems					
2.	I can learn physical education easily					
3.	I had sufficient opportunities to work with different physical education equipment and facilities					

Content Knowledge						
4.	I have sufficient knowledge about physical education and movement skills					
5.	I have sufficient knowledge about healthy and active living skills					
6.	I have various ways and strategies of developing my understanding of physical education and sports					
Pedagogical Knowledge (PK)						
7.	I can adapt my teaching based-upon what students currently understand or do not understand					
8.	I can use a wide range of teaching approaches in a classroom setting (collaborative learning, direct instruction, inquiring learning, problem/project based learning etc.)					
9.	I can adapt my teaching style to different learners					
Physical Education Content Knowledge (PECK)						
10.	I can adapt my teaching based-upon what students currently understand or do not understand in physical education					
11.	I can adapt my teaching style in physical education to different learners					
12.	I know how to select effective teaching approaches to guide student thinking and learning in physical education and sports					
Physical Education Pedagogical Knowledge (PEPK)						

13.	I know about methodologies that I can use for understanding and doing physical education and sports					
14.	I can choose methods that enhance students' learning for a lesson in physical education					
15.	My teacher education programme has caused me to think more deeply about how physical activities could influence the teaching approaches I use in my classroom					
	Physical Education Pedagogical and Content Knowledge (PEPCK)					
16.	I can teach lessons that appropriately combined physical education and sports, technologies and teaching approaches.					
17.	I can select methods to use in my classroom that enhance what I teach and what students learn					
18.	I can choose methods that enhance the content for a lesson					

II. Place a (✓) where appropriate.

19. Male ()

20. Female ()

21. Education of Visual Impairment ()

22. Education of Hearing Impairment ()

23. Education of Intellectual Disability ()



UNIVERSITY OF EDUCATION, WINNEBA
DEPARTMENT OF HEALTH, PHYSICAL EDUCATION,
RECREATION AND SPORTS

P. O. BOX 25, Winneba, Ghana, Tel: (03323) 22494 E-mail: hpers@uew.edu.gh

20th April, 2015

The Head of Department
Special Education
UEW

Dear Sir,

LETTER OF INTRODUCTION:
MS. CYNTHIA WISE ATTORKWE

This is to introduce to you a student MS. CYNTHIA WISE ATTORKWE with Index Number 8130090003 who is pursuing M.Phil. Programme in Physical Education in the Department of Health, Physical Education, Recreation and Sports (HPERS) at the University of Education, Winneba.

She is researching into the topic: **ASSESSING CONTENT AND PEDAGOGICAL KNOWLEDGE IN PHYSICAL EDUCATION OF MENTEES FROM THE SPECIAL EDUCATION DEPARTMENT, UNIVERSITY OF EDUCATION, WINNEBA**

We would be grateful if you could accord her the necessary assistance.

Thank you.

Yours faithfully,

Dr. J. A. Baba
HOD, HPERS

② BAA
PP. let long case
me ② Apr
thly
AB

received
08/05/15