UNIVERSITY OF EDUCATION, WINNEBA

THE INFLUENCE OF STUDENTS' LEARNING STYLES ON TEACHERS

INSTRUCTIONAL PRACTICES: A CASE STUDY OF PUBLIC SENIOR HIGH

SCHOOLS IN BEKWAI TOWNSHIP

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DECLARATION

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

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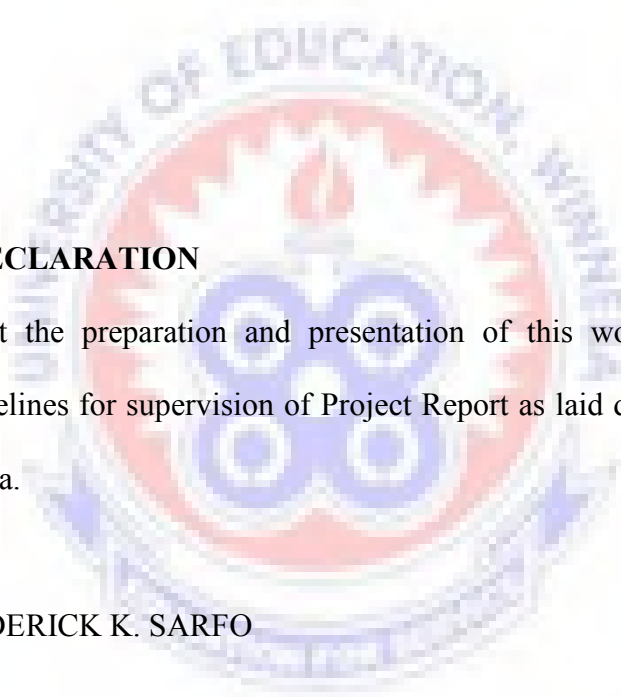
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SUPERVISOR'S DECLARATION

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

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DEDICATION

I dedicate this piece of work to my late father, Nana Kojo Okogyeabour Asibuo III.
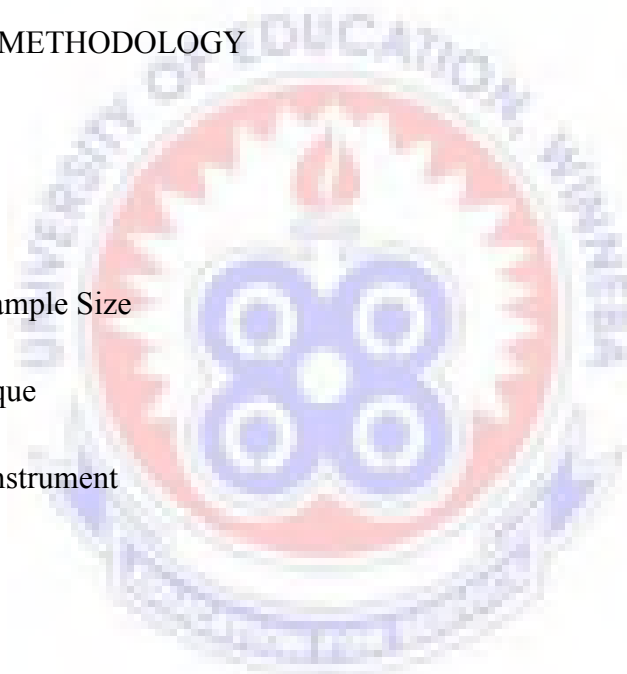
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ABSTRACT

The purpose of the study was to ascertain the influence of students' learning styles on teachers' instructional practices in public Senior High Schools within the Bekwai Township. The study was basically a cross-sectional survey which used descriptive survey (structured questionnaires) to gather the data from 60 respondents. Descriptive statistics were used to analyse the results. The results of the study revealed that majority of the teachers did not consider students learning styles before teaching. In addition, according to the findings majority of the teachers did not consider students learning styles during teaching. The study also revealed that there was no significant difference in professional and non-professional teachers in terms of consideration of students' learning styles before and during teaching. Based on the findings of the study, the researcher recommends that intensive workshop programmes should be conducted by the Ghana Education Service on regular basis for teachers to equip them with recent trends of methods to teach students with diverse learning styles. Moreover, the minority of the teachers who considered students' learning styles should be motivated by their respective heads of schools to enable them continue the process of considering students' learning styles and for others to emulate this exemplary act.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Education is under increasing pressure to produce successful students. Education, in the present day context, is perhaps the single most important means for individuals to improve their personal endowments, build capability levels, overcome constraints and, in the process, enlarge their available set of opportunities and choices for a sustained improvement and well-being. It is not only a means to enhance human capital and productivity but it is equally important for enabling the process of acquisition, assimilation and communication of information and knowledge, all of which augments a person's quality of life. Thus, it is a critical instrument for bringing about social, economic and political inclusion and a durable integration of people. The process of education and its attainment thus has an impact on all aspects of life. It therefore plays a crucial role in shaping the citizens of tomorrow; citizens who are responsible, accountable, sincere, robust, emotionally healthy and resilient (Alka, 2012).

Learning is a key process in human behaviour as it contributes to the development of an individual in totality. Parents and teachers always show concern for children's learning both at home and school. Learning influences our language, our skills, attitudes, interests and even our goals. Children learn to walk, hold pencils and to write. They learn to use language to identify some concrete objects as mangoes, oranges, letters, numbers etc. Learning therefore helps to bring about permanent change in behaviour of people or pupils (Morgan, 1995).

Learning styles indicate how a learner perceives, interacts with, and responds to the environment. In fact, learning style is a criterion for individual differences. O' Connor (1997) describes learning styles as self-made filters used by people to account for their relation with

the world. Learning styles of individuals direct their method of learning. They change the way people express their inner experiences, how they remember things, and even the words they choose. De Cecco and Crawford (1974) define learning styles as "individual ways in which people process information in learning concepts and principles". Peirce (2000) defines learning style as "the way student prefers in learning materials"(Seif, 2001).

Kolb (1984) also defines learning styles as the ways through which people produce concepts, rules and principles which direct them in new situations (Noogabi, 1999).Grasha (1996) defines learning styles as individual characteristics and qualities which influence the ability of a learner in acquiring information, interaction with learners and teacher, and his abilities to take part in learning experiences. Learning style can therefore be said to be a group of interrelated characteristics in which the general is larger than the specific i.e. learning style is gestalt in which internal and external operations are derived from individual's neural biology. It combines his personality and growth and shows them as a behaviour (Keefe & Ferrell, 1990).

Findings of researchers show that people learn more when they are aware of their learning styles (O'Connor, 1997). Researchers believe that learning style is a good predicator for individual's preferred learning behaviour (Bostrom, Olfman, &Sein, 1993). Moreover, the identification of learner's learning styles helps educational planners and teachers provide learners necessary educational support and supplies (Anderson & Elloumi, 2004) because learning styles are influential factors in learners' learning.

Individuals acquire learning styles and techniques according to their individual differences like other abilities through experience (Seif, 2001). Furthermore, the findings obtained from studies done about individual differences in learning field show how people are different in dealing with an assignment. These differences are not indicators of their intelligence or special abilities. They are related more to the preferred methods which

different people use to process and organize information to react to the environmental stimuli (Seif, 2001).

According to O'Conner (1997), a teacher can do various activities to improve learners' learning taken into account their learning styles. Studies about learning show that considering learning styles in planning and presenting education can improve learning processes meaningfully (Dwyer, 1998).Lindsay (1999) found that the harmony between learning style and teaching style increased academic achievement and satisfaction with learning. It is emphasized in most of researches that individual preferences of the teacher and educational planners in presenting topics should be based on the learners' learning styles because learning styles can influence the efficiency of educational materials, their models, and methods (Goold & Rimmer, 2000). Therefore, it is better to make learning include activities appropriate for various learning styles so that learners can choose suitable activities based on their preferred style.

According to Kolb (1984), learners with concrete-experience style prefer environments in which they are engaged. They prefer to deal with their peers not with those of responsibility and authority. They like group work and feedback of their peers. They consider their teachers as a coach or helper. These learners prefer supporting methods which allow them to interact with peers and acquire guidance for their teachers.

Learners with reflective-observation style like to observe reflectively before doing each action. This group prefers to have all necessary information in hand. They consider the teacher as a specialist. They don't like to have interaction with other people. The learners with conceptualizing abstract style prefer to deal with objects, things, and signs not with people. They like to deal with theory and organized analyses.

Active experimental learners prefer to learn through doing operational projects and group discussions. They prefer active learning methods and interactions with fellows to

acquire feedback and information. They prefer to devise criteria to evaluate situations. In addition to activities for students with various learning styles, there should be sufficient support for them. As mentioned before, most specialists believe that information should be presented in different ways to become adaptable with individual differences in processing information and to be transferred easily to the long term memory. Learning style could also be explained as the way individuals concentrate on, absorb and retain new or difficult information or skills (Ogundokun, 2011).

If teachers see pupils as individuals who have different learning styles, and that each student has a preferred way of learning, the identification of pupils' learning styles could offer insight to teachers to consider a more favourable environment for pupils to learn, and eventually improve upon their academic performance.

For many years educators have noticed that different pupils have different preferences when it comes to learning more than others. Researchers have also recognised that each student prefers different learning styles and technique to enable pupils learn effectively. Pupils may mix learning styles, which they use under different circumstances, but they individually have dominant styles developed over time to become dominant. Therefore learning styles can be grouped according to several studies.

Academic performance can be said to be the outcome of an academic examination, which is the results from learning. Academic performance is very crucial in schools. It determines the rate at which both the teachers and the pupils are performing. The higher the academic performance, the more pupils the school gets and vice versa.

In Ghana, public Senior High Schools are rated as A, B and C categories. The A schools are the schools with high academic performance, the B schools are those with moderate academic performance and the C schools are those with low academic performance. These ratings are done yearly after the pupils write their final exams.

This study is aimed at ascertaining the influence of students' learning styles on teachers' instructional practices within public Senior High Schools in Bekwai Township in the Ashanti Region.

1.2 Statement of the Problem

Since Ghana's independence in 1957, most governments have understood the importance of education for improving the lives of its citizens, to enable them become empowered through knowledge acquisition and skills development. However, the performances of these pupils are not encouraging; they are considered sub-standard. The low performance may be attributed to several factors at the public Senior High Schools including the teaching methods and learning styles of teachers and learners respectively. Teachers as professionals are taught diverse learning styles and appropriate instructional strategies to go with them. The researcher seeks to find out the influence of students' learning styles on teachers' instructional practices. This will help determine the right teaching methods to impact positively on academic performance of the pupils.

1.3 Purpose of the Study

The purpose of this study was to find out the influence of students' learning styles on teachers instructional practices.

1.4 Objectives of the Study

To achieve this purpose, the following are the objectives were used for the study:

1. To ascertain if teachers consider students' learning styles before teaching.

2. To find out if teachers consider students' learning styles during teaching.

3. To find out how teachers' professional status impact their consideration of students learning styles in teaching.

1.5 Research Questions

The following research questions are formulated:

1. To what extent do teachers consider students' learning styles before teaching?

2. To what extent do teachers consider students' learning styles during teaching?

3. To what extent does teachers' professional status impact their consideration of students learning styles in teaching?

1.6 Significance of the Study

The study would inform policy makers in education on how to achieve quality education in public Senior High Schools. The study will provide an insight into the problems associated with teaching styles in order to help bring practical actions in addressing issues related to poor academic performance.

Secondly, the result of this research will be of great interest to all stakeholders such as the Municipal Assembly, the District Education Oversight Committee (DEOC), the Board of Governors and the Parent Teacher Associations (PTA) of the schools in the Township. It will enable them know the type of teaching styles needed in accordance with the various learning styles of their pupils in order to attain high academic performance.

This study will add to the knowledge on how learning styles affect academic performance in Ghanaian Public Senior High Schools; it will also provide strategies to guide educators on how to improve the performance of learners. Again, the study will help to raise awareness of fallen standards in the public Senior High Schools for further interventions to be designed.

1.7 Delimitation

This study was delimited to the learning styles of students within public Senior High Schools in the Bekwai Township in the Ashanti Region of Ghana. It was also delimited to

how pupils are affected academically in terms of the various learning styles they use. In the light of this, it may not be possible to generalise the results of this study beyond public Senior High Schools and the research site. However this study could be replicated in other public Senior High Schools in the country.

1.8 Organisation of the Study

The study is divided into five chapters. The first chapter, which is the introduction to the study, discusses the background information related to the study, statement of the problem, purpose and objectives of the study, research questions, significance of the study, and the delimitations of the study.

Chapter two which deals with the literature related to the research topic takes a brief look at learning, learning styles, definition of learning styles and approaches and different learning style models.

Chapter three presents the research method employed for the study. It deals with population and sample size, sample and sampling procedure, research design, instrument for data collection, and data analysis.

Chapter four is the findings from the analysis of data collected from the field. It also deals with the discussion of the findings.

Finally, chapter five deals with the summary, conclusions and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a comprehensive review of relevant literature in an attempt to position the study in an appropriate conceptual and theoretical framework. The chapter discusses findings of related researches obtained from relevant articles, textbooks, journals, web sites and other credible sources of information to this study. This chapter also presents the works that have been done by other researchers which were considered relevant for the subject of study. . It covers such topics under the following sub headings.

1. The learning styles of students considered by teachers before teaching.

2. The learning styles of students considered by teachers during teaching.

3. The types of learning styles, etc.

2.2 Students Learning Styles Considered by Teachers before Teaching

As far as this work deals with the term Learning Style the researcher considers the definition of the expression relevant. Generally, most of the people definitely have an idea of what learning means. There are apparently differences in understanding the term among psychologists or teachers and, on the other hand, pupils, students and people, who are not concerned with the area of education.

Learning

The term learning is often connected with school, lessons or studying at home. As a matter of fact, learning accompanies a human being through the whole life. The Czech author Čáp defines learning as: "Everything that is not innate is learned. Learning is an acquisition of experience and formation of the individual during the course of his life." (Čáp, 1993: 62)

As suggested by Fontana (1997), the term learning means: "relatively enduring change in potential behaviour of the individual as a consequence of his experience. It seems that the course of learning can change the person in a particular way and the change is understood as the consequence of experience and, finally, causes a specific change of human behaviour. On the one hand, we can understand learning as mechanical remembering of presented information; on the other hand, learning can present energetic activity. There can be individual creativity involved to some extent.

Style

Mayer (2001) mentions the term "style" from historical times. It was connected with various kinds of art. Psychology considers style as a professional term. The same author provides a general view on "style" as "regularities in a way or form of the human activity, which are auto consistent, transversal and integrative."

2.2.1 The Concept of Learning and learning style

The precise definition of the term *learning style* seems to be a complex task. There are various concepts relating to the learning styles in the available literature. Curry (1991), as the author of one of the learning concepts, describes the situation in learning styles definitions as confused. The same opinion was expressed by Cassidy in 2003.The level of learning achieved by a learner is one of the most important factors which indicate the success of a learning environment. In order to ensure the effectiveness of teaching environments, it is important to take account of characteristics, abilities and experiences of learners as individuals or as a group when beginning to plan a learning environment (Kemp, Morrison, Ross, 1998).

It is important for the effectiveness of teaching environments to take account of group or individual learners' characteristics, competence and experiences (pre-learning) throughout

the process of planning learning environments (Kemp, Morrison, Ross, 1998). Though all human beings have common bio-psychological and social characteristics in learning process, individual preferences concerning the ways of giving meaning and acquiring information may vary. In literature there exist numerous learning styles and learning style models. The differences among definitions and models result from the fact that learning is achieved at different dimensions and that theorists define learning styles by focusing on different aspects.

Shuell (1986) explains that "different ways used by individuals to process and organize information or to respond to environmental stimuli refer to their learning styles". Jensen (1998) defines learning style as a sort of way of thinking, comprehending and processing information. To Kolb (1984), learning style is a method of personal choice to perceive and process information. In this sense, learning style is, on one hand, sensory and, on the other hand, mental. In the context of this study, Kolb's Learning Style Model is used since it identifies with "Generative Theory of Multimedia Learning" which forms the basis of the study. Kolb states that Experiential Learning Theory, which defends that learning, is a combination of experience, cognition, perception and behavior, lays the foundation of Learning Style Model (Kolb, 1984).
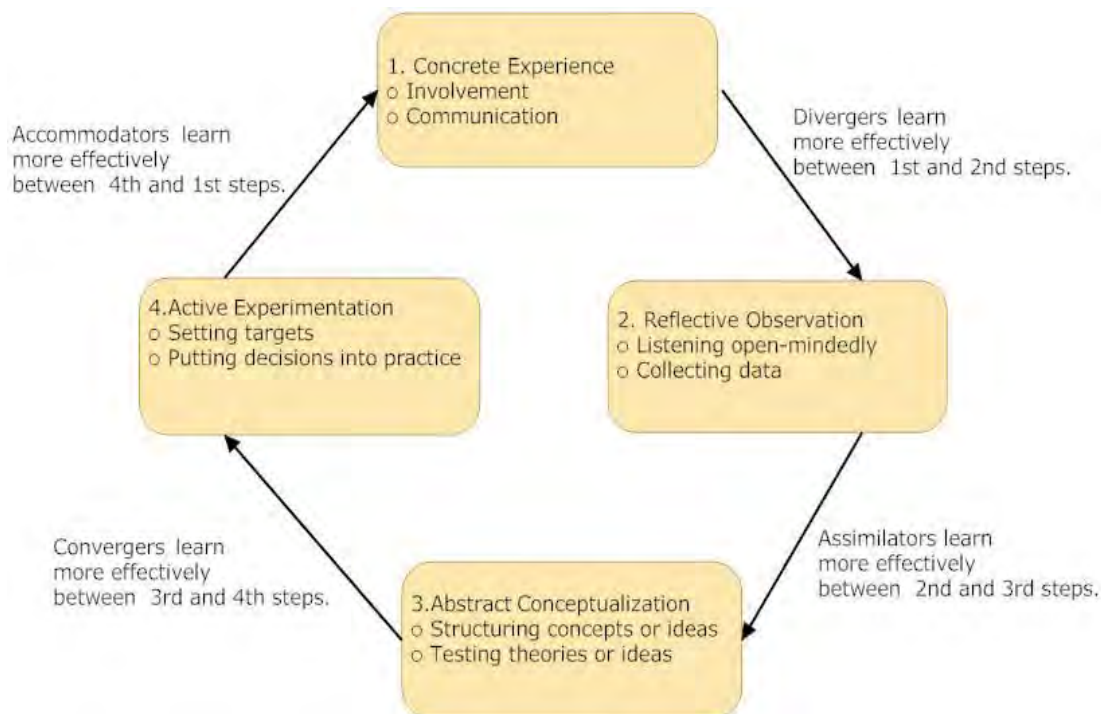
Figure 2.1: Learning styles in Kolb's learning cycle (Kolb, 1984)

Though learning styles are not stable and unchangeable elements, it takes some time for them to change. That is why, it seems as an easier and more effective way to select and organize methods and strategies, classroom environment and teaching materials according to learning styles rather than expecting the students to adapt to the existent organization. The literature is rich in studies focusing on learning environments which are designed with respect to the characteristics of the learner (Clariana, 1997; Stroot, Keil, Stedman, Lohr, Faust, Schincariol-Randall, Sullivan, Pimentel, 1999; Rourke & Lysynchuk, 2000). For the purpose of this study, three different environments are designed on the basis of Generative Theory of Multimedia Learning.

Generative Theory of Multimedia Learning developed by Mayer will be summarized before providing information about the research problem and the research process. In his Generative Theory of Multimedia Learning, Mayer defines multimedia as the presentation of a material by supporting it with a picture or a text or, in other words, in more than one form. In this context, a PowerPoint presentation, a film on television and a voiced animation

prepared on computer are examples of multimedia. According to this theory, multimedia, as a noun, refer to the technology by which a material is presented visually and verbally. The term, as an adjective, is a word which qualifies the messages and presentations related with learning.

Message/presentation refers to a presentation which includes words and pictures; and multimedia instructional message/presentation refers to a presentation which includes words and pictures with a view to ensure learning (Mayer, 2001).Mayer makes use of three cognitive theories when structuring his theory: Dual Coding, Limited Capacity, Active Processing.

Table 2.1: Theory of definition

Name of the Theory	Definition	Developers of the theory
Dual Coding Theory	Human beings use two different channels to process visual and auditory information	Paivio, 1986; Baddeley, 1992
Limited Capacity Theory	Human beings are able to process limited information in each channel simultaneously	Baddeley, 1992; Chandler & Sweller, 1991
Active Processing Theory	Human beings are active learners who perceive external information, and select relevant data and organize them into meaningful information, and then integrate this information with their prior knowledge	Wittrock,1989; Mayer, 1999

Mayer (2001), whose theory on the design of effective multimedia learning environments is based on Dual Coding, Limited Capacity and Active Processing theories, define individuals who enter into a process of learning as active learners who use two channels to process visual and auditory information, process limited information in each channel simultaneously, perceive external information, and select relevant data and organize them into meaningful information, and integrate this information with their prior knowledge. Mayer distinguishes between auditory/verbal and visual/pictorial channels used by learners to

process information. Mayer (2001) mentions that, in a presentation, verbal or nonverbal auditory elements (e.g. narration (uttered words), background music, etc.) are processed in the auditory/verbal channel and verbal or nonverbal visual elements (e.g. animation, written text, etc.) are processed in the visual/pictorial channel; and that these channels process limited amount of data in one go.

Kolb introduces the above mentioned learning styles, asserting that individuals differentiate in organizing and perceiving information. Accordingly, accommodators make use of Concrete Experience in perceiving and Active Experimentation in organizing. They learn by doing and feeling (Aşkar and Akkoyunlu, 1993; Ergür, 1998). They like new experiences and planned working. They prefer acting on the basis of their feelings rather than mental analyses and acquiring information through dialogues with people rather than technical analyses. The most outstanding strengths of the people having this learning style are practicality, leadership and courage to take risks (Kolb, 1993).

Divergers make use of Concrete Experience in perceiving and Reflective Observation in organizing. Individuals having this learning style are able to see concrete situations from different perspectives. Their approach to events is limited to observing rather than taking action. They enjoy producing various ideas on an ample scope through methods such as brainstorming. They have vast cultural knowledge and like collecting information. Among the remarkable strengths of divergers are creativity, understanding others, being aware of problems and developing a large perspective about an event by brainstorming (Kolb, 1993).

Assimilators make use of Abstract Conceptualization in perceiving and Reflective Observation in organizing. Individuals having this learning style are able to comprehend and transform comprehensive information in a large interval into a meaningful whole. They prefer dealing with abstract concepts and topics rather than tackling people. They generally attach more importance to logical validity of theories than their practical value. They are

good at planning, creating models, defining problems and developing theories. It will be useful to develop their skills through exercises on organizing information, creating conceptual models, testing theories and ideas, designing experiments and carrying out quantitative data analysis (Kolb, 1993). Covergers make use of Abstract Conceptualization in perceiving and Active Experimentation in organizing. They are quite good at taking practical advantage of ideas and theories. They prefer dealing with technical works or problems to social relations. Among their strengths are skills of problem-solving, decision-making, deductive reasoning and problem-detecting (Kolb, 1993).This study discusses the effect of learning styles on the success of individuals in various learning environments, within the framework of Mayer's information processing and Kolb's perception and organization ideas.

2.3 Learning Styles Models

2.3.1 Overview of the Basic Learning Styles Theories

Cassidy (2003), as many other theoreticians of the overview studies use the term "learning styles model", which divide particular learning styles according to the author and the theoretical view on the way of learning. Consequently, he describes the students, learning styles they use for learning. The following theoretical overview presents some of the common learning style models, which significantly influenced development of theories in this area.

2.3.2 Curry's learning style theory

Curry's theory is often cited by many authors. Mareš mentions her model theory of learning styles compared to the "onion" layers. The first part belongs to the learning preferences, the second, to the ways of information processing and the last one to the personality aspects. They are the steadiest, whereas the learning preferences could be modified in the learning environment. Additionally, the middle part – inclination to

information processing, tends to be less changeable. Claxton and Murell (cited in Mareš)) added the fourth dimension called "preference of the social interaction." The investigation of the particular levels of is realized by tools that were developed by other theoreticians. We can mention Witkin's Embedded Figures Test (EFT) or the Kolb's Learning Style Inventory (LSI).

2.3.3 Kolb's Learning Inventory Style

The theories of Piaget, Dewey and Lewin (Kolb 1984) inspired Kolb's theory dealing with four combinations of perceiving and processing, which determine one of four learning styles of how students prefer to learn. He also believes that learning styles are not fixed personality traits, but quite stable patterns of behaviour that is based on their background and experiences. Therefore, they can think of more as learning preferences, rather than styles. Kolb understands the knowledge as acquisition through experience.

The student is able to create abstract concepts through this concrete experience and his or her learning has an adaptive character on the basis of combination of the reflective perception of the reality and its generalisation. The convergent knowledge on the basis of abstract conception of and created theories is the learner able to experiment. This leads into another factual experience. (Mareš, 1998; Kolb, 1984) Consequently, Smith emphasized the Kolb's learning styles as follows: Converger, Diverger, Assimilator and, finally, Accommodator.

Kolb's model vary from others since it gives both, a way to comprehend the individual styles of learning, which he labeled as above mentioned – the "Learning Style Inventory" (LSI), and at the same time an explication of experiential learning that is applied to all learners. LSI was adapted in several versions at the end of the 20th century (Kayes, 249, cited. in Mareš, 22-24)

Kolb draws attention to the human evolution in context of experiential learning. There are three stages during the human life. The period of the first fifteen years is devoted to "acquiring new knowledge and elementary skills" and the child prefers the factual learning. The stage of "specialization" is typical from 16 to 40 and could be seen "as personal identification with the world." The final stage for people over 40 is called "integration" and it described as a "process of communication with the world" and personal fulfillment (Mareš, 22-23).

2.3.4 Honey and Mumford's Model

Kolb's theory was an inspiration for large numbers of theorists. Honey and Mumford produced their own Learning Styles Questionnaire (LSQ), which did not ask people directly how they learn, as Kolb's LSI did. Honey and Mumford gave them a questionnaire that probed general behavioral tendencies. They think, most of the people have never consciously considered how they really learn. That is why their learning cycle slightly differs from Kolb's. The items are, firstly, having an experience, secondly, reflecting on it, thirdly, drawing their own conclusions, and finally, putting their theory into practice to see what happens. The items were sequenced into the stages in the cycle and labeled as an Activist, Reflector, Theorist and Pragmatist. LSQ is aimed to search learning styles among managers. (Honey and Mumford, 2006)

2.3.5 Dunn and Dunn Model of Learning Style

Rita and Kenneth Dunn's" theory of multidimensional model is widely spread and used not only in the U.S.A. Their model described in "Teaching Students Through Their Individual Learning Styles" consists of various conditions arranged within stimuli which affect learners:" immediate environment (sound, light, temperature, and design), own emotionality (motivation, persistence, responsibility and need for structure or flexibility),

sociological needs (self, pair, peers, team, adult, or varied), physical needs (perceptual strengths, intake, time, and mobility). (Wikipedia.org "Application: Learning Styles in the Classroom") Karen Hood provides information about research results of Dunn and Dunn (1978) model:

Students can identify their own learning styles; when exposed to a teaching style that matches their learning style, students score higher on tests than those not taught in their learning style; and it is advantageous to teach and test students in their preferred modalities.

2.3.6 Carl Jung and Myers Briggs Type Indicator (MBTI)

"MBTI is known as a psychometric questionnaire to measure psychological preferences in how people perceive the world and make decisions. (Myers, Briggs, Myers,. in Wikipedia.org)

The aim of the Myers-Briggs Type Indicator personality inventory is to convert the theory of psychological types described by C. G. Jung comprehensible and useful in people's lives. The principle of the model is that much apparently random variation in the behavior is actually quite orderly and consistent, being due to basic differences in the ways individuals prefer to use their perception and judgment.

There are the following types described throughout the MBTI manual: Personality type is what we prefer when we are using our mind or focusing our attention. Extraversion can be used as quality for people who are sociable and attain their energies from active involvement. Another personality is characterised by Introversion. Such personality is typically seen as reflective or reserved, likes dealing with the ideas, pictures, memories, and feel comfortable to be alone. Additionally, Sensing or Intuition is the question of focusing on the basic information or interpreting and adding meaning. Thinking is typical for those who like to look at logic and consistency of information before making decision, whereas the Feeling type personality look at the people and special circumstances. The last two categories

used in MBTI are Judging and Perceiving. The first term labels our dealing with the outside world with things decided, while the second expression belongs to a person who prefers to stay open to new information or options.

In conclusion, the Myers-Briggs theory confirms the fact, that people with distinct preferences naturally have dissimilar interests and views. Finally, awareness of differences among personality types can help people understand and value other people who think and behave unlikely.

2.3.7 Visual Audio and Kinesthetic Learning Styles

Sharpling cites: "The original VAK concept was first developed by psychologists and teaching specialists such as Fernald, Keller, Orton, Gillingham, Stillman and Montessori, starting in the 1920's." (Sharpling: "Learning Styles")

This sensory learning styles model is probably the most common and widely-used categorisaton of the various types of learning styles. It was constructed to provide a very easy and quick reference inventory by which it can be used to assess students' preferred learning styles. Obviously, it seems to be significant to know how to design learning methods and experience that match students' learning preferences. The VAK test was (as well as most of the other learning style tests) improved or extended. While the VAK version investigates Visual, Auditory and Kinesthetic learning style, there exist another version of the test known as VARK, which was designed by Neil Fleming. It is concerned with Visual, Auditory, Reading and Kinesthetic learning types.

For Clark (2000), the role of learning preference seems to be clear. Students or people use any of the three learning styles. The dominance of one of them can vary with respect to the kind of information. Consequently, one learner can use a specific style for one task, while he or she can combine styles for a different task.

As we prevailingly deal with the visual, auditory and kinesthetic learning in the practical part of this work, we will consider all the three styles in more detail.

2.3.7.1 Visual Learner

Clark notes, that 65% of people have visual learning style dominance. To have a visual learning style means it is not that he or she learns when information is presented visually; it just means that in general, she learns new things easier when they are presented in a visual format. (Baldwin, 2005) Visual learners are those with vivid imagination. (Davis, 2007)

2.3.7.2 Auditory Learner

According to Clark (2000), the research results show that 30% of our population prefers auditory learning. They are typically learning via hearing.

2.3.7.3 Kinesthetic Learner

This type of learner likes exploring the physical world by touching and movement. Clark (2000) presents that only 5% of population has a strong kinesthetic preference. Davis (2007) points out the fact, that "the kinesthetic learner will use movement to help his or her concentration.

Kinesthetic learners reach out to touch things, collects things, talks fast using hands to communicate what they want to say, good at sports, likes to take things apart and put things together, likes to chew gum, may be considered hyperactive, good at finding their way around, and are comfortable touching others as a show of friendship. Baldwin (2005) adds kenesthetic learner has exceptional fine and gross motor coordination, uses bodily control and movement to express himself or herself.

Kinesthetic activities

Surveys, demonstrations, dance, products, body games, rocking and reading, make a video show, field trips, dress as characters, role-play/interviews, charades, pantomimes, plays, projects, walking and reading, puppet shows, musical performances, science labs.

Some authors deal with the Tactile Activities separately. There can be mentioned: modelling, scrapbooks, colouring books, artistic creations, needlework, posters, task cards, electro boards, blackboard/whiteboard activities, sandpaper/felt letters, games, calculators, puzles, collections, workbooks, sculptures, mobiles, displays, collages, turn starz, flip-gate quiz sheets, flippaz, info wheels, origami, learning circles, computers, cut-and-paste tasks, etc.

In addition, there are many other models of learning styles, that may be found beneficial. For instance Pask's Serialist/Holist/Versatilist Model, Entwiste's Deep, Surface and Strategic Learning Approach, Grasha-Reichnann Learning Style Model, Hermann "Whole Brain" model or Felder-Silverman Learning style model.

Deductive and inductive learning

This model or concept is more about the learning process than learning style. But I have found it useful for my research. Thus it is described here theoretically. The effectiveness of deductive and inductive learning will be investigated in the practical part.

Deductive learning is an approach to language teaching in which learners are taught rules and given specific information about a language. Then, they apply these rules when they use the language. This may be contrasted with inductive learning in which learners are not taught rules directly, but are left to discover - or induce – rules from their experience of using the language (Richards et al, 1985). Harmer (1989) ascertains that these two techniques encourage learners to compensate for the gap in their second language knowledge by using a

variety of communication strategies. A number of research studies, likewise, has reported that successful learners often adopt certain learning strategies such as seeking out practice opportunities or mouthing the questions put to other learners (Peck, 1988). Inductive and deductive models offer this chance to learners because these two models foster a cooperative atmosphere among students. According to Celce-Murcia (1997), the communicative classroom provides a better environment for second language learning than classrooms dominated by formal instruction.

Benefits of Understanding the Learning Style

Carter et al. says "It is important to understand that there is no "best" way to learn. There are many different learning styles, and different styles are suited to different people and/or situations. Carter et al (1999) divided the benefits into three categories:

General Benefits of learning styles:

- You will have a better chance of avoiding problematic situations. Knowing how you learn and how you relate to the world can help you make smarter choices.

- You will be more successful on the job. If you know how you learn, you will be able to look for an environment that suits you the best and you will be able to work effectively on work teams.

- You will be more able to target areas that need improvement. The more you know about your learning styles, the more you will be able to pinpoint the areas that are more difficult for you.

Classroom Benefits of learning styles are as follows:

- You can bring extra focus to your weaker learning-style areas.

- You can ask your instructor for additional help.

- You can "convert" class material during study time.

Study Benefits of learning styles:

- Knowing your learning style presents you with study techniques that can complement your style. (Carter et al., 1999)

Finally, the main benefit of the specific learning styles is the ability to meet educational needs of individuals, so that they could succeed not only in learning, but in life as a whole.

2.4 Students Learning Styles Considered by Teachers before Teaching

2.4.1. Teacher Knowledge, Enthusiasm and Responsibility for Learning

In 1964 John Holt addressed the question: 'how children fail?' and he proceeded to analyse the state of schools and education in the USA. His conclusions were that schools did not recognise the living quality of education.

He highlighted the boring nature of repetitive tasks, the dishonesty of teachers with schooling and with themselves, the limiting of knowledge and ultimately the coercive nature of schooling (Holt, 1964: 168-179). Holt's comments are central to the creation of a classroom that reflects the teacher's knowledge, enthusiasm and the responsibility for creating a learning environment that will effectively nurture the student's desire to learn and to accept the challenges of thinking and inquiring into all that is offered by the teacher. To create this environment, the teacher must be prepared to challenge the prejudices of an education system that still reflects much of Holt's view. Teachers need to adjust their thinking about the nature of teaching; the classroom environment should mirror the teacher's reflective practices that would be central to the learning environment. There are many theories about reflective practice and thinkers like.

Baird (1991), Day (1999a & b), McMahon (1999) and Cole and Knowles (2000) provide specific direction for critical self-reflection. Day (1999a) argues that 'teaching is more than a craft', suggesting it is an 'educational science and a pedagogical art' (p.22). Day

(1999b) also suggests a model for reflective professionalism that includes the following key words: 'Learning, Participation, Collaboration, Co-operation, Activism' (p.228). These are ideas that effective teachers should keep as touchstones for their practice.

In talking on the reflective role, teachers can enjoy the process of teaching by sharing their knowledge through the creation of a reflective classroom. In such an environment the knowledge is shared; students and teachers all become learners, discovering the world of the subject. The teacher that is willing to share his knowledge unconditionally will be stepping towards the effective classroom. The passion that a teacher has for his subject will be creating a world that moves beyond the ritual of classroom activities. It is the example of passion for something that can inspire students to want to learn.

Fried (1995) sums this idea up:

The example we set as passionate adults allows us to connect to young people's minds and spirits that can have a lasting positive impact on their lives at the same time the teacher is the guardian for learning in the classroom environment. If the teacher goes in unprepared, unwilling to share, unfocussed on the process of developing a context that will encourage and stimulate an interest and a thirst for further knowledge, that teacher is considered shirking his/her responsibility. Teaching is far more than simply transferring information; it is the engaging of minds to seek out answers.

2.4.2 Classroom Activities that Encourage Learning

In many classrooms this is the key factor that supports an effective learning environment. It answers the question posed by Smith earlier in this paper as to what do effective teachers do in the classroom.

Stipek (1996) lists six practices that support the idea that an effective classroom is a classroom of opportunity and experience, where learners can explore and experiment in a climate that recognises the process of learning as the measure of success rather than the right

answer approach. It acknowledges the vital role of intrinsic motivation in creating an environment where students can feel that they are the masters of their own learning. In a different environment, but following the same basic philosophy, Alton-Lee (2003) suggests, 'quality teaching provides sufficient and effective opportunity to learn' (p.53).

Both of these writers highlight the need for the classroom environment to be a place that allows students to learn. That may be a very obvious statement but in considering the average class of senior students, many factors would in fact mitigate against a good learning environment being created and not through lack of trying or experience on behalf of the teacher. The fact that a teacher may be successful in one year does not necessarily mean that success will be continued in the next year. The teaching environment may be the same but the attitudes that each cohort brings to a classroom will always influence the outcome. A teacher must be able to identify the ebbs and flows of each class and work with the students to create the learning environment. Teachers need to be prepared to test what is going on in the class, for example, through feedback questionnaires on what they do.

In reflecting on this feedback and on the classroom activity of a year, a teacher could identify specific exercises and techniques that engaged the students. It takes patience and persistence to have the classes work cooperatively, to carry out independent research, and to report back to small groups and to the whole class – the goal is that through the teacher's endeavours, the learning will become the student's own learning. The activities need to be part of their learning regime and not something that is imposed. This is an area that requires planning, reflection and preparation.

This is clearly a central issue in this aspect of the learning environment: it is a very self-conscious action on the part of the teacher. The activities that are used in the class to engage the students must be reviewed, revisited and refocused so that they are constantly

drawing the students into an effective interaction with the subject. Effective Teaching is not a passive action.

2.4.3 Assessment Activities that Encourage Learning through Experience

A central aspect of the NCEA regime is assessment. It is the cry of teachers, students, parents and administrators that NCEA over-assesses. The point that I feel is that the assessment can be very much a part of the creation of an effective learning process. I accept that the nature of a learning environment that is dominated by assessment procedures can detract from the learning environment but I have found that if the students are able to see the value of the learning process, and the assessment is a part of the learning and not an end in itself, then they can buy into the process and actually use it to gain better results while benefiting from the learning environment which they help to generate through their self-monitoring and peer-assessment activities. This is an idea that has been demonstrated by Cameron (2002) in identifying the processes of peer tutoring, co-operative learning, reciprocal teaching through predicting answers, questioning, clarifying and summarising and collaborative reasoning (p.38-39). All of these processes when used in a classroom will empower the learners as they are the people doing the learning; echoing Smith's question: 'What do you do in the classroom?' If assessment activities are part of the 'doing' then they become a central part of the learning process. In the terms of Brown and Campione (1996, as cited in Cameron, 2002), they become a 'community of learners' (p.40).

Delandshere (2002) argues that there is a gap in the research on assessment practices. She focuses on: the inclusion of the value judgements of the assessments in the learning process, of the 'discourse, actions and transactions of individuals in participation' (p.1478), and questioning the nature of assessment and inquiry. Her questioning emphasises the nature of the debate surrounding assessment and its multi-level of inquiry (p.1481). This is an issue that has concerned me in relation to NCEA where the process of assessment of internal and

external standards and formative and summative work seems to blur the lines of assessment and inquiry. At what stage does the teacher have to step back and leave the student to complete the assessment? At what stage does inquiry become assessment?

This is a question that influences the process of learning and the creation of an effective learning environment. The effective teacher has to be aware of the debate surrounding assessment and has to be able to cope with the interplay of summative and formative tasks in the NCEA regime. Regardless of the educational structure, the effective teacher will use assessment as part of the learning environment rather than as a separate entity.

2.4.4 Effective Feedback that Establishes the Learning Processes in the Classroom

Hattie (1999) provides my teaching with a core underpinning value. I have always believed that feedback – focussed, appropriate, timely, and learning related – should be the cornerstones of the effective teacher. Hattie's extensive research highlighted the value of feedback in raising achievement. He identifies feedback as 'the most powerful single moderator that enhances achievement'. With this endorsement I focussed on trying to create a classroom where my feedback to the learners was aimed at encouraging them to become more engaged. I had to develop different methods of feedback that would allow them to engage with the learning. My explanations, my questioning methods, my instructions all had to be linked with the learning environment and all were part of the interplay of feedback and student input.

The effective classroom is one where the students actively seek feedback as they will know that their own learning will become part of the feedback process.

The nature of interplay of learning and teaching in the activities of the effective classroom adds to the value of the feedback in such an environment. Alton Lee (2003) highlights the value of feedback but warns that too much can be as detrimental as too little.

This then provides another key aspect of the effective teacher. Feedback that is appropriate and meaningful to the learner will be a central part of the effective learning environment. In a further step the feedback that a teacher gets from the students is essential to the creation of a learning environment. The more feedback that a teacher can obtain from students, and the more the teacher can act on that feedback, the better the learning environment will be created.

2.4.5 Effective Interaction between the Teacher and the Students, Creating an Environment that Respects, Encourages and Stimulates Learning through Experience

Eisner (2002), in putting forward a number of concepts that should be essential components of schools, argues: Good teaching depends on sensibility and imagination. It profits from caring. In short, good teaching is an artistic affair.

The effective teacher will be one who engages with the students in the class in a way that highlights mutual respect and an acknowledgement of the learning process that is in place. Eisner's suggestion that teaching is a caring exercise is very much part of the effective learning process. Learning is an emotional exercise. Students will engage in something that appeals to them emotionally. The teacher who brings a sense of personal involvement to the classroom, who wants to share the knowledge with the members of the class, who is prepared to show that he/she is also a part of the learning cycle, will be setting up a relationship which will encourage a good learning environment.

Wolk (2001) highlights this by emphasising those teachers 'who are passionate about learning. Create an infectious classroom environment'. The effective environment will allow students the time to learn. This is something that is mentioned frequently in the literature. Crooks (undated) emphasises that 'good learning needs time and patience'. Wolk (2001) argues that students need time 'to own their learning'. In the rushed world of Year 13, Level 3 NCEA students have about 125 in-class teaching periods to cover the entire course; it is a

difficult decision on the part of the teacher to give time' for students to explore at their own pace the work that they are doing.

This last factor is essential in creating an ethos of learning that will allow students to feel comfortable in the classroom. The working environment that is generated by the interaction and the enthusiasm of the teacher will remove the stigma of 'working' and turn the learning process into something that is rewarding and therefore to strive towards. In effect, the creation of an effective learning environment would generate a positive learning atmosphere throughout a school.

Nuthall (2001) questions the cultural myths that haunt classrooms, making teachers follow certain rituals that appear to be good practice. His suggestion that 'every generalization we make, every conclusion we draw, must be true of every individual' (p.24) highlights the very nature of the effective classroom. It is like a finely tuned instrument that needs to be nurtured, not forced into straitjackets of convention. The effective teacher will be able to orchestrate the music of the classroom, turning Yeats' 'foul rag and bone shop' into an environment of excitement and passion for learning.

Finally, I return to my original quest, having targeted five key areas that if followed might lead towards some answers in the search for that perfect lesson. The point about the process is that it is the journey that is important. As the teacher becomes more involved in the learning process, as the passion for knowledge is shared with the students, so the effective nature of that teaching and learning environment will become evident.

2.5 Students Learning Styles considered by Teachers during Teaching

Many researchers assert that, Learning outcomes specify what learners' new behaviours will be after a learning experience. They state the knowledge, skills, and attitudes that the students will gain through their course. Learning outcomes begin with an action verb and describe something observable or measurable.

The study in question was reported by Sternberg, Grigorenko, Ferrari, and Clinkenbeard (1999). In this study, 324 ''gifted and talented'' high school students were given the Sternberg Triarchic Abilities Test, which provided a rating of each student's analytical, creative, and practical ability. On the basis of this test, the authors selected a subset of 112 subjects (35%) for whom one of these three abilities was much higher than the other two, and depending on their area of strength, these subjects were assigned to the high-analytical, high-creative, or high-practical groups. (Another 87 students were assigned to two additional groups not described here, and the remaining 125 students were excluded from the study.) The participating subjects enrolled in an introductory psychology summer course at Yale University, and each student was randomly assigned to class meetings that emphasized analytical instruction, creative instruction, practical instruction, or memory instruction (a control condition).

Their course performance was assessed by raters, and the ratings were ''subjected to principal-component analyses'' (Sternberg et al., 1999, p. 7). The authors reported several analyses, and, for the analysis of the interaction of interest, they compared the course performance of matched subjects (i.e., students who received instruction that matched their strongest ability) to mismatched subjects. The article states that after the data were ''screened for deviant scores'' (Sternberg et al., 1999, p. 10), matched subjects reliably outscored mismatched subjects on two of the three kinds of assessments.

Although suggestive of an interaction of the type we have been looking for, the study has peculiar features that make us view it as providing only tenuous evidence. For one thing, the reported interaction was found only with highly derived measures (as noted above), and the untransformed outcome measures (e.g., the mean score on each final assessment) were not reported for the different conditions. Furthermore, and as noted previously, only about one third of the subjects were classified into the groups that produced the interaction. Finally,

the interaction was achieved only after the outliers were excluded for unspecified reasons. In brief, although the article presents data that may be worth following up, it has serious methodological issues. Even for those who might disagree with this judgment, the potential support that this study could provide for any of the particular interventions based on learning styles that are being marketed at the present time is extremely limited because the instructional manipulation does not seem to correspond to any of the more widely promoted and used learning-styles interventions.

2.5.1 Classroom Interactions

Effective classroom interaction has two implications. First one concerns a pleasant atmosphere in the classroom with friendly relationships among the participants of the learning process. Second one, which is mostly described in the article, encourages students to become effective communicators in a foreign language. this can be achieved through various ways: by implementing different student and teacher roles, by exposing students to a varied classroom organisation, by employing a variety of activities, by helping students to express themselves and by encouraging their use of communication strategies. If the two implications are joined, we get a pleasant classroom atmosphere in which students are trying to communicate in the foreign language. Therefore interaction is more than action followed by reaction. It includes acting reciprocally, acting upon each other. Rivers (1987) describes the word through its Latin roots: 'agere' meaning 'to do' and 'inter' meaning 'among'.

It shows us the active and social part of a human being that affects other people through interaction. Brown (2001) relates interaction to communication, saying, "…interaction is, in fact, the heart of communication: it is what communication is all about". Interaction has a similar meaning in the classroom. We might define classroom interaction as a two-way process between the participants in the learning process. The teacher influences the learners and vice versa.

Teacher   Student
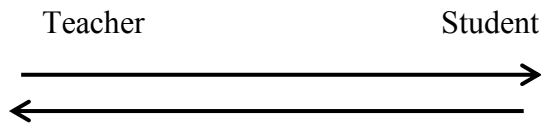
Interaction can proceed harmoniously or it can be fraught with tension. Malamah-Thomas (1987, 8) states that every interaction situation has the potential for co-operation or conflict.

How the situation actually develops depends on the attitudes and intentions of the people involved, and on their interpretations of each other's attitudes and intentions.In a traditional classroom the teacher had the dominant role of an all-knowing leader who 'filled' students' empty heads with knowledge. This role has changed and the teacher has now got many roles depending on different classroom situations.

Many factors are discussed about the classroom environment but one central argument could be the behavioral differences between male and female learners, and the reflection of gender based social divisions in such interactions. One of the little-researched areas in Teaching English as a Second Language is how a student's gender may affect teacher-student interaction in the classroom (Duffy, 2001). The research published from the 1960s to the 1990s illustrates that the expectations of teachers and the society often lead to unequal treatment of male and female students in pre-college and college-level classrooms (Brophy& Good, 1990; Sadker & Sadker, 1992; Tannen, 1991). In addition, faculty attitudes and behaviors have been found to have a profound effect on a student's intellectual development - especially for female students (E1-Khawas, 1980).

A report by Hall (1982) on the gender-directed behavior of university teachers stated that although university teachers generally wish to treat male and female students equitably, some may treat their male students differently. College teachers have been found to ask male students, but not female students higher-order questions demanding critical thought (Sadker & Sadker, 1992), make eye contacts more frequently with males than with females (Thorne,

1979), allow their classrooms to be male-dominated by calling on males more frequently (Thorne, 1979), allow males to interrupt females (Hall, 1982), and respond to males with attention and females with diffidence (Hall, 1982). Teachers of both genders also frequently give male students more interaction time than female students (Sadker & Sadker, 1992), and initiate more contact with male students than with female students. Hall (1982) also reported that the university classroom climate could frequently be inhospitable to women, due to the everyday inequities carried into these classrooms. Male and female postsecondary students, she noted, receive different levels of informal feedback, encouragement, and praise for their efforts. In a comprehensive review, Howe (1997) examines the role of gender in classroom interaction in four different categories: whole-class discussions, desk-based group work, group work around computers, and discussion for oral assessment. The whole-class interaction is the only part of this framework which seemed relevant to the focus of the present study. The only difference lies in the presence of laboratory equipment which is the medium of interaction in language laboratories.

Research on the whole-class interaction gained momentum in the late 1960s, in response to the belief that the educational process is as important a focus as the learning outcome. At first, the research used rather crude methods, adapted from early social psychologists, which typically involved observing behavior and coding it *in situ* into a small number of global categories, such as "praise" and "response" (Howe, 1997). Inevitably, very general conclusions were drawn. For instance, consider Flanders (1970) famous "two-thirds rule", that (a) for about two-thirds of the time someone is talking, (b) about two thirds of this talk is the teacher's, and (c) about two-thirds of the teacher's talk consists of "lecturing" or "asking questions". However, it seems clear that a great deal of classroom talk is non-interactive (e.g. lecturing), being limited to what Barnes (1973) calls the "transmissive" mode. On the contrary, the occurrence of asking questions suggests some teacher-led

interactive behavior. This impression is confirmed by the research of Sinclair and Coulthard (1975), which demonstrates, firstly, that whole-class interaction typically follows an initiation-response-feedback structure and, secondly, that responsibility for initiation and feedback lies almost exclusively with teachers.

2.5.2 Active Learning

Traditional pedagogy casts the professor as a repository of knowledge, an authoritarian expert whose role in the educative process is to convey knowledge to a receptive student audience (Barr &Tagg, 1995; McCarthy & Anderson, 2000). As such, the student learner is seen as a passive, unquestioning receptacle of that knowledge whose role is to memorize and regurgitate information. Active learning methods seek to engage students directly and actively with the course content by moving away from memorization of facts delivered unilaterally through a lecture format to a dynamic learning environment that facilitates meaning making resulting in a deeper understanding and the ability to make connections and use knowledge beyond the classroom. The use of active learning methods requires a fundamental shift in classroom pedagogy from one that is centered on providing instruction to one that focuses on learning (Barr & Tagg, 1995) and an equally fundamental change in the role of faculty in the classroom. The role of the teacher becomes that of a facilitator, which is fundamentally different from the role of the teacher as an instructor. Equally transformed is the instructor's relationship with the learner which becomes more like a partnership whose mutual goal is student growth and learning (Hansen & Stephens, 2000). In the role of facilitator, faculty become coaches and guides to learning; they make meaning and learn along with their students by moving away from memorization of facts to using and applying knowledge.

Active learning utilizes methods that involve students more directly in the learning process such as one-minute papers and in-class exercises that require active engagement with

the material and provide feedback to the student, jumbling and other reflective exercises that require the student to examine her/his experience with the process of learning as well as the product, and by asking students to prepare questions related to the material being covered and engage in class discussion. Active learning activities assist students in making the transition from a dependent relationship with the instructor as sole arbiter of knowledge to one where they recognize multiple sources and authorities of knowledge, including themselves.

2.5.3 Collaborative and Cooperative Learning

Both collaborative and cooperative learning methods emphasize the benefits to students of working directly with peers in small heterogeneous groups to engage with the material, solve problems, and learn in a communal, supportive environment. Additionally, they purposefully seek to reduce the amount of competition between individual students, stressing instead mutual learning and support.

Cooperative learning is not a zero sum game, "since the teaching methodology encourages students to work in small heterogeneous groups and to assist each other to attain mastery rather than the establishment of competition and environments of winners and losers" (Hagedorn, Moon, Buchanan, Shockman, & Jackson, 2000). The group- learning environment allows students to benefit from working in conjunction with more capable peers while those more capable students also benefit from the interaction with their less capable peers. Slavin demonstrated that cooperative learning improved academic performance and other measures of student achievement, and encouraged inter group relations with the result that students exposed to cooperative learning were more likely to develop cross-racial working relationships and friendships than those exposed only to traditional learning environments (cited in Hagedorn et al., 2000).

Collaborative learning also restructures the classroom curriculum away from the traditional lecture format toward work in small groups striving to solve complex problems through intensive interactions between students with less involvement and direct supervision from the instructor. Learning is enhanced as students develop interdependence with knowledgeable peers. "Collaborative learning calls on levels of ingenuity and inventiveness that many students never knew they had; it teaches effective interdependence in an increasingly collaborative world that today requires greater flexibility and adaptability to change than ever before" (Bruffee, 1995: p. 47).

Collaborative and cooperative learning share many of the same characteristics, however, they differ in two important ways. First, they were originally developed to meet the educational needs of people of differing ages and with differing levels of maturity and ability. Cooperative learning was originally developed for use with school children, whereas collaborative learning was designed to take advantage of the knowledge, skills, and maturity level of adolescents and adults.

Second, and partially as a consequence of their intended audiences, the two methods make different assumptions about knowledge and authority in the classroom (Bruffee, 1995). Collaborative learning is based on the concept of social constructivism that recognizes that knowledge is co-constructed, situated in the social environment, and occurs among people rather than between people and things (Gerlach, 1994). As a consequence it seeks to transfer authority and responsibility for learning from the instructor to the student groups (Bruffee, 1995). In contrast to the highly individualized, competitive environment of traditional pedagogies, students learn more effectively through non-competitive, collaborative experiences where outcomes often exceed participants' expectations for what could have been learned or accomplished separately (Bruffee, 1995).

Because cooperative learning was originally developed for use with school children, the instructor is obliged to retain a more authoritative role with more responsibility and direct involvement with the group process. The instructor may assign students to groups, may monitor and intervene frequently in the group process, and will supervise closely and assess regularly in order to "make sure that students are always accountable and neither compete individually nor become chronically dependent upon one another" (Bruffee, 1995 : p. 16). Although designed with younger students in mind, the more structured regiment of cooperative learning methods are often appropriate in many college classroom situations.

Because they both focus primarily on the benefits derived from working with peers, the distinctions between collaborative and cooperative learning are often blurred. Whether called collaborative or cooperative, working collectively requires skills and awareness that don't come naturally; teamwork must be taught and practiced as an integral component for either of these pedagogical strategies to be successful (Bosworth, 1994; Bruffee, 1995; Walker & Angelo, 1998). While active learning does not necessarily emphasize working directly with peers, the shared goal of all three of these pedagogies is to engage students more directly in the learning experience and foster a sense of involvement and responsibility for one's own learning. They may also include students more actively in the assessment/ evaluation process through such techniques as requiring students to assemble portfolios to document their academic achievement, student involvement in the grading process, and requiring accountability to self and peers as well as to the instructor (Dalziel, 1998)

2.5.4 Gains and Benefits

Although there are distinct differences among these pedagogies that distinction is often not made and the terms are frequently used interchangeably. Kuh, Pace, & Vesper (1997) found that increased faculty-student contact, cooperation among students and active learning were the best predictors of student educational gains in college. Experience with and

preferences for active and collaborative learning were found to predict gains in cognitive development, affective level, and openness to diversity (Cabrera et al., 1998).

Similarly, a study by Slavin (cited in Hagedorn et al., 2000) found that cooperative learning encouraged inter-group relations with the result that students were more likely to develop cross-racial working relationships and friendships than those exposed only to traditional learning environments. Cabrera (1998) found that the factors in the undergraduate experience that are most strongly associated with vitality in the classroom were high levels of faculty concern and interaction with students, and students' own active engagement in the academic and social structures of the institution.

In an experimental design that compared students who participated in role-plays and collaborative exercises to control groups that received only traditional instruction, McCarthy & Anderson (2000) demonstrated that these exercises contributed to increased student and engagement with the material, higher levels of student classroom interaction faction with their learning experience, and improved performance of subsequent evaluations. A meta-analysis of 133 research studies of adults comparing the relative effectiveness of cooperative, competitive, and individualistic efforts showed that cooperative learning promotes achievement, positive interpersonal relationships, and self-esteem (Johnson & Johnson, 1987). Collaborative pedagogy, particularly in a problem-based learning environment results in positive effects on student confidence, greater clarity in reasoning, analysis, and problem-solving skills, and higher levels of student achievement (Cockrell, Caplow, & Donaldson, 2000).

Benefits of these non-traditional pedagogies are numerous and perhaps of equal importance, the results hold true for students regardless of class, race, gender, and varying levels of academic preparedness (Gamson, 1994). The results are impressive, but the research focuses mainly on benefits to students and improvements in outcome measures.

Do these non-traditional methods serve students well from the students' point of view?

Do students believe that they learn best with these methods? What are their expectations for their learning environment and their involvement with non-traditional pedagogies? How do these compare with the attitudes and beliefs of teaching faculty about these new pedagogies and their students' abilities, expectations, and learning preferences?

2.5.5 Brainstorming

According to Brassard (1988), Brainstorming is a tool used by teams to bring out the ideas of each individual and present them in an orderly fashion to the rest of the team. The key ingredient is to provide an environment free of criticism for creative and unrestricted exploration of options or solutions.

Brainstorming helps a team break free of old, ineffective ideas. This free-wheeling technique for generating ideas may produce some that seem half-baked, but it can lead to new and original solutions to problems. According to Scholtes, Fergurson, Elliot (1988 (1988) some of the benefits of brainstorming include:

It encourages creativity: It expands your thinking to include all aspects of a problem or a solution.

It rapidly produces a large number of ideas: By encouraging people to offer whatever ideas come to mind, it helps groups develop many ideas quickly.

It equalizes involvement by all team members: It provides a nonjudgmental environment that encourages *everyone* to offer ideas.

It fosters a sense of ownership: Having all members actively participate in the Brainstorming process fosters a sense of ownership in the topic discussed and in the resulting activities. When the people on a team contribute personally to the direction of a decision, they are more likely to support it.

It provides input to other tools: You may want to affinitize the brainstormed ideas. And, if appropriate, you can work with the team to reduce the number of ideas by motivation. Brainstorming is useful when you want to generate a large number of ideas about issues to tackle, possible causes of problems, approaches to use, or actions to take.

2.6 Influence of Learning Style on Students

The theoretical framework for this study lies in the theories of critical thinking and learning style research. Gregorc (1985) suggested that 95% of individuals have specific learning style preferences. Some of those preferences are so deeply embedded that individuals cannot adapt to meet alternative style requirements posed by different learning situations. Gregorc (1979) purports that learning styles consist of "distinctive and observable behaviors that provide clues about the mediation abilities of individuals" (p. 19). The Gregorc Style Delineator (Gregorc, 1982a) was designed to reveal two types of mediation abilities: perception and ordering. Perceptual abilities, as defined by Gregorc, are the means through which individuals grasp information. These abilities emerge on a continuum consisting of abstractness and concreteness at opposite ends. For example, some individuals perceive things to be either right or wrong, good or bad, black or white.

These learners exhibit characteristics of concreteness. Others, however, see varying degrees of right or wrong, good or bad, and only in shades of gray. These learners are said to perceive information abstractly

A number of studies have investigated the influence of learning style on student achievement. Cano (1999) reported that the majority of students enrolled in a college of agriculture were categorized as field independent by the Group Embedded Figures Test (GEFT) (Witkin, Oltman, Raskin, & Karp, 1971). This would correspond to CS/CR learners on the Gregorc Delineator. Cano further reported that learning style differences were noted between majors within a college of agriculture. Those students identified as field-independent

were found to be more successful in higher education, based on the occurrence of disciplinary action due to poor academics.

The primary demographic variable on which a substantial amount of research has been conducted relating to learning style is gender. However, the relationship of gender and learning style is somewhat disputed in the literature. In the general population, females tend to be more field-dependent (AR/AS learners) than males (Witkin, Moore, Goodenough, & Cox, 1977).

However, this finding is not supported by several agricultural education studies (Cano & Garton, 1994; Garton et al., 1999; Rudd et al., 2000; Rudd et al., 1998). In these studies, it was reported that females within the field of agriculture tended to be more field-independent than their male counterparts. This may be explained as field ability. Hall (1982) reported that differences were found in the overall disposition toward critical thinking among college majors, but no differences based on gender.

Only two studies were found in the agricultural education literature base that investigated the relationship between learning style and critical thinking ability. Torres and Cano (1995a) reported that nine percent of the variance in student critical thinking skill was uniquely explained by learning style after controlling for other personal characteristics such as age, gender, and GPA. However, Rudd et al. (2000) found no significant difference in critical thinking disposition between individuals of different learning styles. Clearly, further studies are needed to determine this relationship.

2.7 Learning Styles and the Teaching and Learning Process

There have been several studies that has focused on learning styles. Bickel and Truscello (1996) stated that students bring their preferences and experiences into the classroom and they have their own learning styles, in the same way they bring these to practical lessons as well. Therefore, it is important to enable students to be self-aware of both style and strategies.

Dunn, Honigsfeld and Doolan (2009) focused on how learning styles were considered in different institutions. Teachers were made to answer questions on concepts such as the impact of learning styles on teaching practices, on syllabi, on values, and on how learning styles have improved instruction and student outcomes.

Dunn (1984) reported that most learners identified their learning strengths correctly and also Dunn and Dunn (1979) found that 30% of school age children were auditory learners and 40% were visual and 30% were kinesthetic.

Concerning second/foreign language learning styles Reid (1987) reported that Chinese university students who were studying in the USA favored kinesthetic and tactile styles. Melton (1990) in his investigation of learning styles of Chinese university students found that they favored kinesthetic, tactile and individual styles. Rossi-Le (1993) found that adult L2 immigrants in the USA favored kinesthetic and tactile styles.

Together with students, teachers play a critical role in the teaching/learning process with respect to considering learning styles of students. Teachers' consideration of students' learning styles impact on many different areas of instructional process such as lesson preparation, classroom presentation, activities and approaches (Masse and Popovich, 2006). The term "teaching style" refers to a teacher's personal behaviors and media used to transmit data to or receive it from the learner (Kaplan and Kies, 1995, p. 29). Peacock (2001) defined second language teaching styles as "natural, habitual and preferred ways of teaching new information and skills in the classroom". Reid (1987) stated that mismatches between learning and teaching styles often occurred and this mismatch resulted in bad effects on students' learning and attitudes to most subjects. Wallace and Oxford (1992) stated that students and teachers experienced style conflicts 82% of the time. Moreover, Willing (1988) noted that matching learning and teaching styles improved learning, attitudes and motivation. Felder (1995) also suggested a method for overcoming the mismatch. He proposed a balanced

teaching style and suggested teachers to try to accommodate all learning styles. In order to optimize styles Oxford, Hollaway & Horton-Murillo (1992) suggested that teachers assess the learning style of both the teacher and the students, to alter the teaching style to create teacher—student style matching, to provide activities with different groupings, to include and code different learning styles in lesson plans, to encourage changes in students' behavior and foster guided style—stretching. Peacock (2001) noted that when teachers consider the learning styles of students, they were likely to work harder and benefit much more from classroom instructions.

There have been several studies investigating the teaching styles. Evans, Harkins, and Young (2008) investigated the teaching styles of public school teachers and explored the relationship between teaching styles and cognitive styles. They found that public school teachers differed in their teaching styles and there is a relationship between teaching styles and cognitive/learning styles.

Aragon, Johnson and Shaik (2002) assessed learning styles of students who were in an online instructional design course and students in an equivalent face-to face course. They found significant differences between the learning style preferences of the online students and face-to-face students.

Several studies have investigated whether there is a gap between teaching styles and learning styles. Xiao (2006) investigated the difference in the teaching and learning styles from a culture-based perspective.

Peacock (2001) investigated teachers' teaching styles and learners' learning styles at a Hong Kong University. He found a mismatch and suggested that teachers should teach in a balanced style in order to accommodate different learning styles.

Moreover, a mismatch between the learning and teaching styles of teachers and students respectively have been shown to increase the disparity between how teachers teach and how students learn.

This mismatch results in an ineffective learning process in the classroom. "The notion that all cognitive skills are identical at the collegiate level or in different training programmes smacks of arrogance and elitism by either sanctioning one group's style of learning while discrediting the styles of others or ignoring individual differences altogether" (Sims & Sims, 1995). Research shows an increase in grade point average occurs when teacher and student learning style more closely matches (Gray, 2003).

Students vary in the way they process and understand information. Many instructors at the secondary level still do not realize the significance of these differences in how their students approach learning; and as a result, these instructors do not attempt to respond to these differences in how they teach (Sims & Sims, 1995).

Teachers must understand the learner (students) to be learner centered (Cross, 2001). The increasingly diverse student body requires the use of a wide variety of teaching methods and materials. For example, research shows that gifted students prefer to learn either by themselves or with an authoritative teacher. They seldom want to learn with classmates. Characteristic of lower achieving students is their poor auditory memory. "Their inability to remember facts through lecture, discussion, or reading contributes to their low performance…where most instruction is delivered by teachers talking and students listening or reading" (Sarasin, 1999). Particularly important for university faculty to understand is that individual differences (including differences in learning styles) increase with age for secondary students (Sarasin, 1999).

Sarasin outlines four steps to teaching more effectively at the secondary level. First, teachers must understand how they learn. Second, teachers must consider how they teach since we

tend to teach toward our own learning preferences. Third, teachers must assess how their students learn and lastly, teachers must find ways to accommodate their students' learning styles (Sarasin, 1999). In addition, when students understand their learning style preferences, research has shown they are more successful learners (Gray, 2003). Students reported that early knowledge of their learning style type affected how they adapted to and strengthened their strategies for learning, including how they developed their study habits (Gray, 2003). The literature reviewed gives a clear understanding that by gaining a better understanding of students' learning styles, educators can be better placed to assist students to learn with ease at a faster time.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter considered the research design, sampling technique, the sample size and the mode of data collection and analysis. The chapter ended with the ethical consideration that was followed in the conduct of this research.

3.2 Research Design

In order to explore the influence of students' learning styles on teachers instructional practices with particular focus on public Senior High Schools in the Bekwai Township, the research design employed for this study was the descriptive sample survey research design using quantitative approach. Descriptive survey was selected in order to study and observe patterns and trends of different learning styles of students across a population. Descriptive survey allowed the researcher to get information on teachers' knowledge on learners learning styles and to also learn about a large population by surveying sample (Leedy & Ormrod, 2010).

3.3 Population and Sample Size

The target population of the study was the teachers of all public Senior High Schools in Bekwai Township. The researcher's choice of Senior High Schools stemmed from the fact that the researcher teaches in one of the schools in Bekwai and has observed that students have different learning styles which impedes teachers instructional practices therefore decided to undertake the study in all Senior High Schools in Bekwai Township. Bekwai Township has two public Senior High Schools with a combined teacher population of 179. The researcher was interested in a study sample size of 60 participants within public Senior High Schools in the Bekwai Township.

3.4 Sampling Techniques

The researcher used the purposive and simple random sampling techniques to get the sample size for the study. First, purposive sampling was used to select the schools because the Senior High Schools have teachers who never enrolled as professional teachers during their post-secondary education. Secondly, random sampling was used to select respondents in each school. The teacher population was listed with numbers assigned to the units of the population (179). The researcher randomly selected 60 respondents to represent the sample size of the study.

Random sampling gave every teacher an equal opportunity and chance of being selected (Fraenkel & Wallen, 2006). Random sampling technique is also chosen because it will give a true representation of the group being which will help avoid research bias (Leedy & Ormrod, 2010).

3.5 Data Collection Instrument

A questionnaire is a predetermined standardized set of questions meant to collect numerical data that can be subjected to statistical analysis, which requires self-reporting from the participants (Leedy & Ormrod, 2010).

A structured questionnaire was personally designed by the researcher and administered to the respondents. This gave flexibility to respondents to answer the questions at their own time and convenience. Respondents who required further explanations were guided in completing the questionnaires. The participants were given hard copies of the questionnaires to be taken home. The questionnaire was divided into three parts. The first part of the questionnaire was the introduction. The second part showed the demography of respondents. The third part was made up of questionnaire items covering the three research questions. Section 'A' of part three covered questions on research question one, "to what extent do teachers consider students' learning styles before teaching?" Section 'B' covered questions

on research question two, "to what extent do teachers consider students' learning styles during teaching?" Section C however was a derivation from both research questions, one and two to find out the relationship between teachers professional status and their considerations of students' learning styles in teaching.

The questionnaire was constructed by the researcher with guidance from his academic supervisor and pretested on a sizeable number of respondents. It was a 5-point Likert scale (1= Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4= Agree, and 5 = Strongly Agree) in which higher score indicate more perceived positive responses. Refer to appendix A for the full details of the questionnaire.

3.6 Reliability

Reliability is the degree to which an assessment tool produces stable and consistent results. To ensure reliability of the questionnaire items used for the study, the researcher carried out a pilot study on a section of the respondents; after which the researcher tested for reliability using the Alpha Conbach reliability test. The reliability test value was 0.69 indicating a high degree of reliability of the questionnaire items.

3.7 Data Analysis

After the submission of the questionnaire to the researcher, the data obtained from the questionnaires was analysed by means of frequency distribution and percentages and the independent t-test using the Microsoft Excel Programme as well as Statistical Package for Social Scientist (SPSS).

3.8 Data Analysis Procedure

After sorting out the questionnaires, the data was computed and analyzed using Microsoft Excel and the Statistical Package of Social Sciences (SPSS) version 16.0. The

purpose of data analysis was to make meaning out of data collected as well as the problem at hand.

There were five main stages involved in data analysis. These were editing, categorization, coding, tabulation and statistical analysis and drawing of inferences. Every stage of the process was executed with due reference to the problem and the purpose of the study. As a result of the nature of the questionnaire items, some of the responses of respondents were redirected to reflect respondents' affirmation or disaffirmation.

3.9 Ethical Considerations

Since this study involved human subjects, ethical issues arose, especially when examining the idea of students learning styles and how they influence teachers' instructional practices. The ultimate purpose of the ethical process was to protect the human dignity of the participants in the study. Prior to conducting this study, an application for the approval of research protocol was submitted to the school and the study was conducted, subject to approval. To protect the identity of the school and the teachers, no names were included in the questionnaire used. All respondents involved in the study were assured of strict confidentiality. In addition to the above, no respondent was coerced to fill the questionnaire to be administered and each questionnaire was self-administered.

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.0 Introduction

The purpose of the study was to ascertain the influence of students' learning styles on teachers' instructional practices in public Senior High Schools within the Bekwai Township. This chapter is concerned with presentation and description of findings. Specifically, this phase describes the demography of respondents (4.1), teachers' consideration of students learning styles before teaching (4.2), teachers' consideration of students learning styles during teaching (4.3) and the relationship between teachers professional status and their considerations of students' learning styles before and during teaching (4.4)

The data collected was analyzed using Statistical Package for Social Sciences (SPSS vs. 18.0) and Microsoft Word and Microsoft Excel. The results and findings are presented below. Cronbach's Alpha was used to test the reliability and consistency of the instrument.

4.1 Demographic Characteristics of Respondents

Figure 4.1 shows the gender distribution of Respondents in this study. Forty respondents representing 67% of the respondents were male with the remaining 20 respondents representing 33% of the respondents being female. This indicated a high male teacher representation in the second cycle schools within the Bekwai Township. This finding is an indication of the masculinity of the caliber of work force in public Senior High Schools in the Bekwai Township.
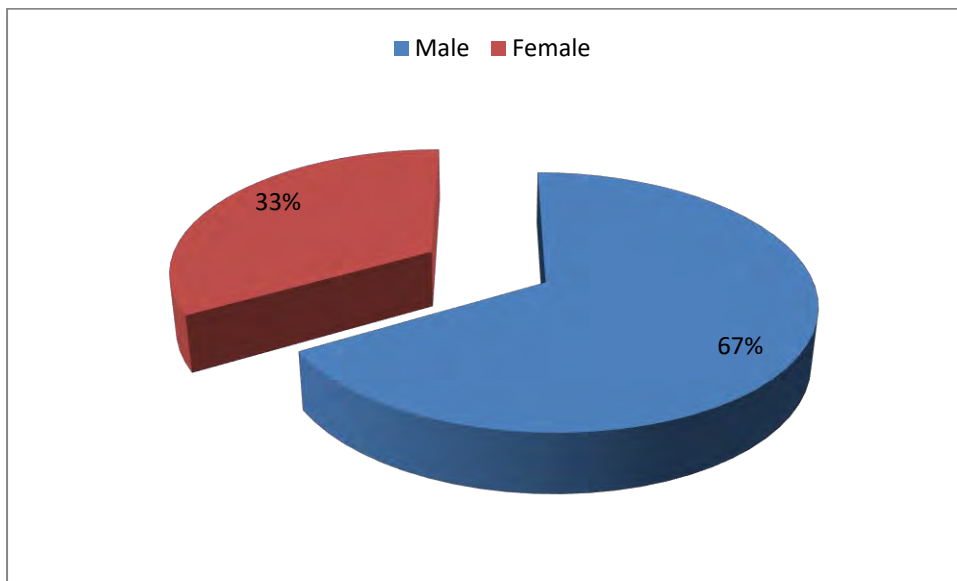
Figure 4.1 Gender Distributions of Respondents

Source: Field Survey, January, 2015

Figure 4.2 indicates the age distribution of the study respondents. This figure shows 24 respondents representing 40% of the sample were aged between 26 to 34 years. Seven (7) respondents representing 11.7 % were below 25 years, 20 respondents representing 33.3% were aged between 35 to 40 years with the remaining nine (9) respondents 15% being 41 years and above. This analysis was necessary to determine the demographic characteristics of the study population and to show whether or not particular learning style influences teaching and learning in the classroom. The finding also gives an indication that all the sampled respondents are grown enough to partake in a credible research endeavour such as this study. This finding shows a high youth population amongst teachers of public Senior High Schools in the Bekwai Township.
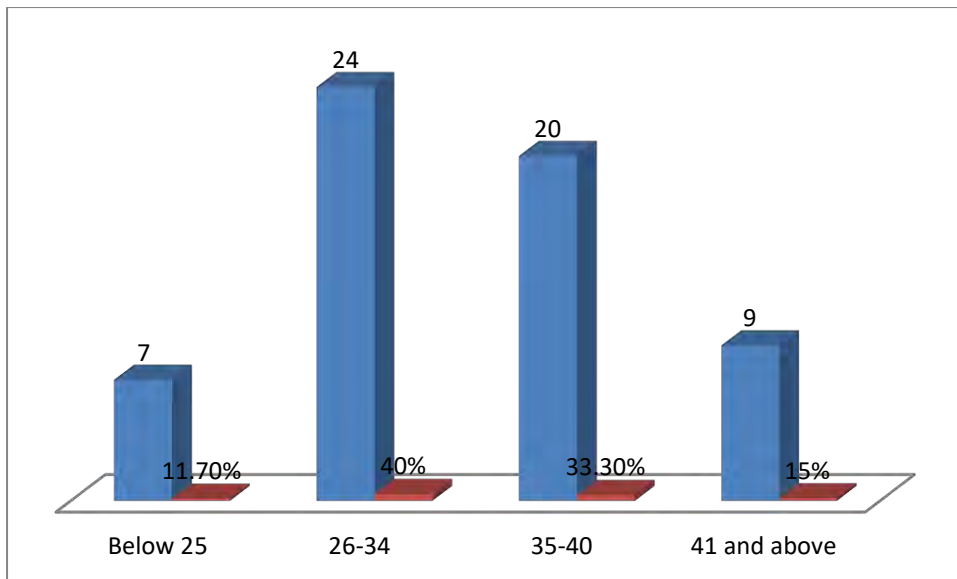
Figure 4. 2: Age Distributions of Respondents

Source: Field Survey, January, 2015

Figure 4.3 indicates academic qualification of respondents. The figure shows that 46 respondents representing 77% have had some form of Bachelor Degree, 14 respondents representing 23% have had post tertiary education (i.e., post graduate education). This finding is indicative of the high level of educational attainment amongst teaching staff of public Senior High Schools in the Bekwai Township.
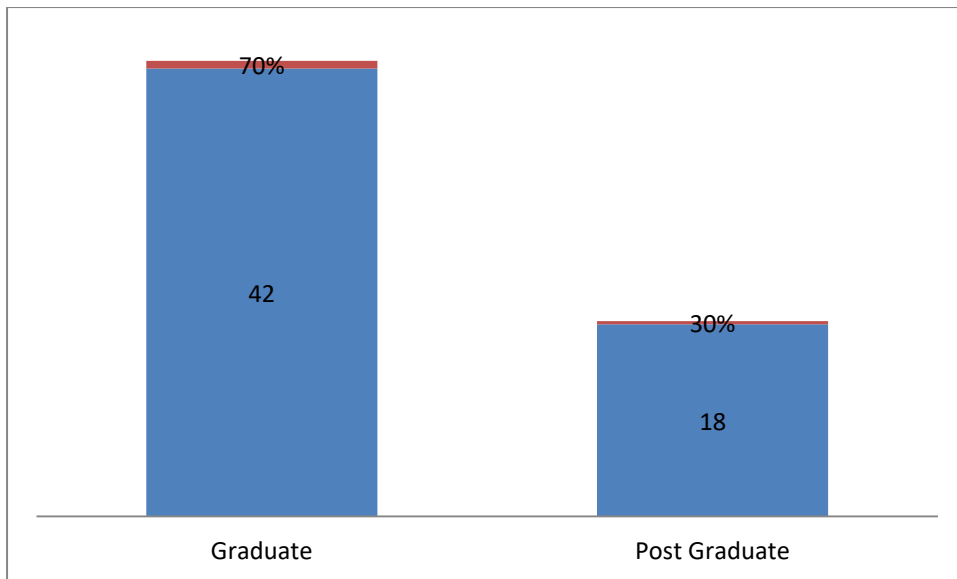
Figure 4. 3: Academic qualifications of Respondents

Source: Field Survey, January, 2015

Figure 4.4 indicates professional rank of respondents. The study revealed that 42 respondents of the teachers at the Bekwai Township representing 70% were professionals and the remaining 18 respondents representing 30% being non-professional. The finding the research can attest that there is professionalism in learning style and it influences student learning.
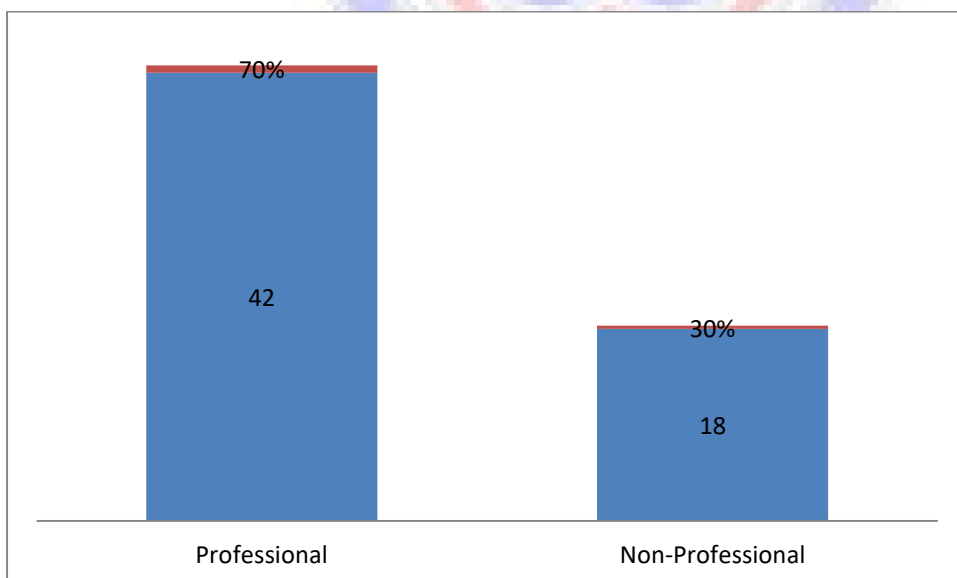

Figure 4. 4: Distributions of Respondents by Professional status

Source: Field Survey, January, 2015

4.2 Teachers consideration of students' learning styles before teaching

The term "learning styles" speaks to the understanding that every student learns differently. Technically, an individual's learning style refers to the preferential way in which the student absorbs, processes, comprehends and retains information. Teachers must prepare thoroughly before engaging students in the teaching and learning process.

Table 4.1: Frequency and percentages of teachers' considerations of students' learning styles before teaching.

Learning Styles of students before lessons	SD	D	N	A	SA	Mean	SD
1. Before presenting lessons, I do not have to consider only the visual and audio learners	9 (15)	9 (15)	7 (11.7)	25 (41.7)	10 (16.7)	3.3	1.331
2. I do not analyse students before teaching because I want to know their learning styles	13 (21.7)	18 (30)	6 (10)	17 (28.3)	6 (10)	2.75	1.348
3. I consider the instructional objectives and not the learning styles of the student before teaching	12 (20)	23 (38.3)	10 (6.7)	10 (16.7)	5 (8.3)	2.55	1.227
4. Before teaching, I see it necessary to consider students who can only see or hear	16 (26.7)	19 (31.7)	7 (11.7)	15 (25)	3 (5)	2.5	1.269
5. Before teaching, I prepare the same activities for students	3 (5)	10 (16.7)	8 (13.3)	22 (36.7)	17 (28.3)	3.67	1.203
6. Only pictures which are attractive and beautiful are what I consider before teaching	10 (16.7)	26 (43.3)	10 (16.7)	10 (16.7)	4 (6.7)	2.53	1.157
Total Average	10.6 (17.7)	17.5 (30)	8 (11.9)	16.5 (27.5)	7.4 (12.5)	2.80	1.250

1= strongly disagree; 2=disagree; 3=Neutral; 4= Agree; 5=Strongly Agree

Source: Field Survey, January, 2015

Table 4.1 presents an analysis of teachers' responses on students' learning styles they consider before teaching. Questionnaire items have been analysed individually as follows:

Item 1 on Research Question 1

The researcher wanted to find out from teachers if they do not have to consider only the visual and audio learners before teaching. Ten (10) respondents representing 16.70% strongly disagreed that they do not have to consider only the visual and audio learners, 25 respondents representing 41.70% disagreed, seven (7) respondents representing 11.70% remained neutral, nine (9) respondents representing 15% agreed whilst 10 respondents representing 41.7% strongly disagreed. The mean for the distribution was 3.3 and standard deviation of 1.331 indicating that respondents were neutral to the view of not considering only visual and audio learners before preparing lessons.
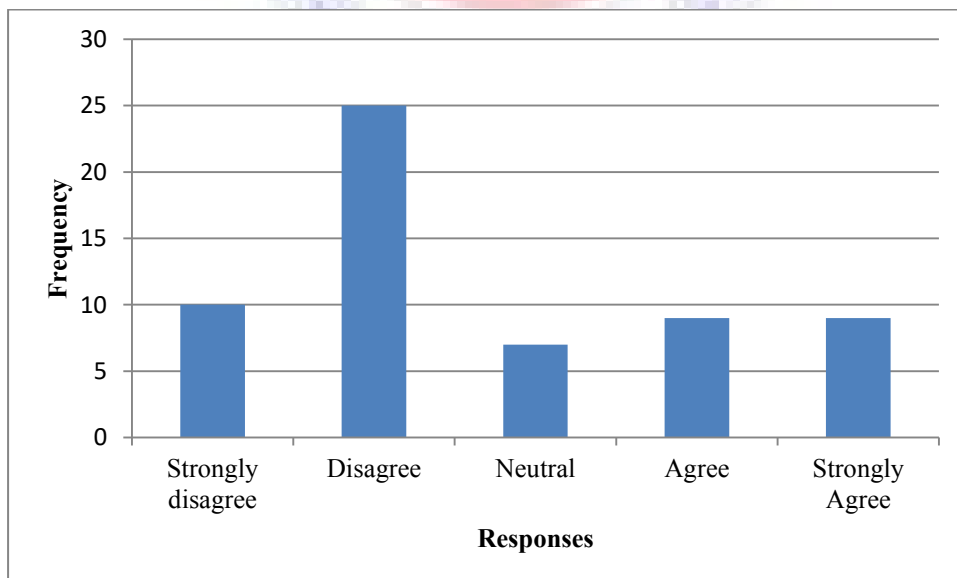

Figure 4. 5: Teachers consideration for only visual and audio learners

Item 2 on Research Question 1

Respondents were asked whether they do not analyse students before teaching because they want to know their learning styles. Six (6) respondents representing 10% strongly agreed that they do not analyse students before teaching, 25 respondents representing 41% agreed, six (6) respondents representing 10% remained neutral, 18 respondents representing 30% disagreed whereas the remaining 13 respondents representing 30% strongly disagreed. The mean score for the responses was 2.75 indicating respondents neutrality with the view that teachers do not analyse students before teaching.
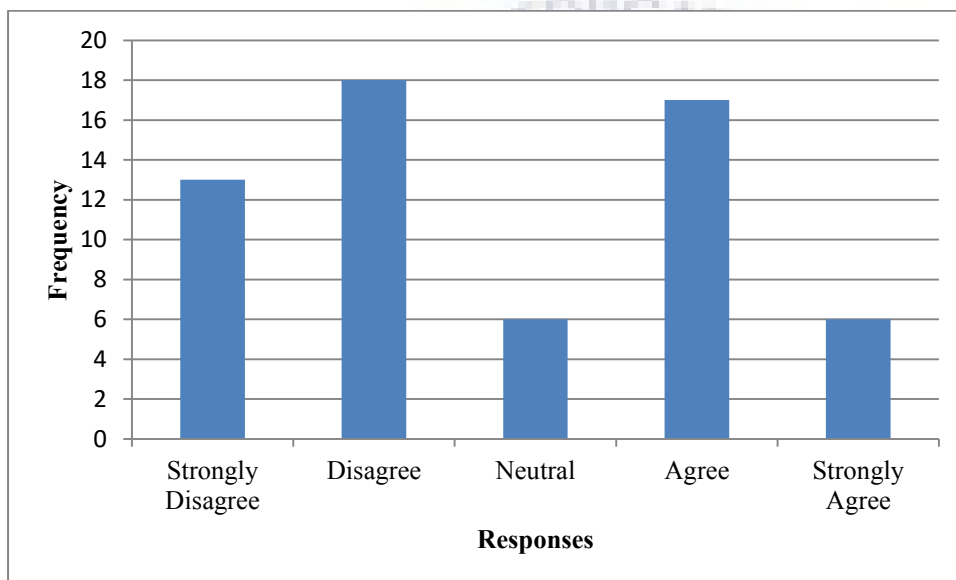
Figure 4. 6: Teachers' analysis of students learning styles

Item 3 on Research Question 1

The researcher wanted to find out whether respondents considered instructional objectives and not the learning styles of the students before teaching. Five (5) respondents representing 8.3% strongly agreed that they considered the instructional objectives and not the learning styles of students before teaching, 10 respondents representing 16.70% agreed, 10 respondents representing 16.70% remained neutral, 23 respondents representing 38.30%

disagreed whilst 12 respondents representing 20% strongly disagreed. The mean score for the responses was 2.55 which show neutrality from respondents that teachers have to only consider the instructional objectives and not the learning styles of students.
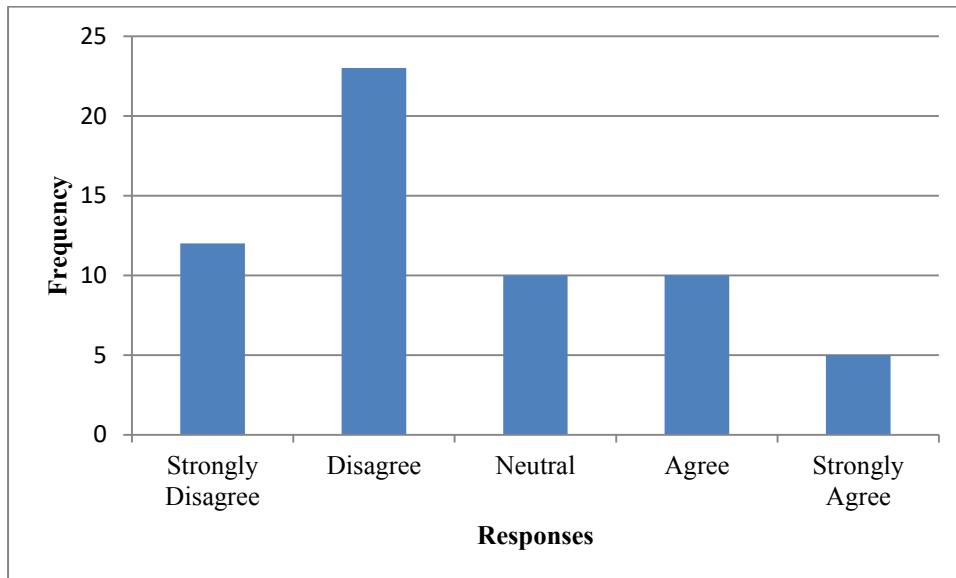
Figure 4. 7: Teachers consideration of instructional objectives and not learning styles of students

Item 4 on Research Question 1

Respondents were asked whether they considered students who can only see or hear. Only 3 respondents representing 5% strongly agreed that they considered students who can only see or hear, 15 respondents representing 25% agreed, seven (7) respondents representing 11% remained unsure, 19 respondents representing 31% disagreed with 16 respondents representing 26.70% strongly disagreeing. The mean score was 2.5 also showing disagreement from respondents on the fact that teachers should only consider the students who can only see or hear.
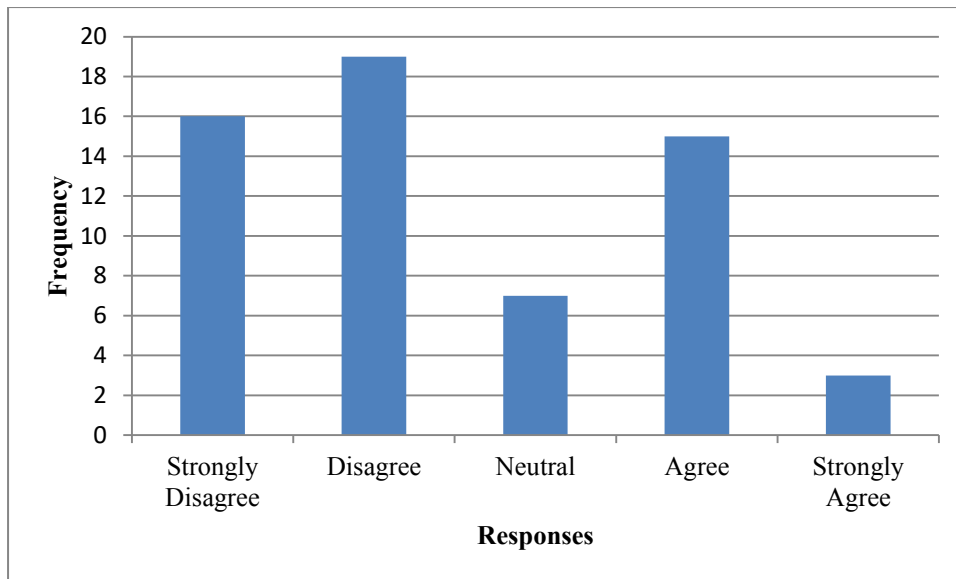
Figure 4. 8: Teachers consideration for students who can only see or hear

Item 5 on Research Question 1

Respondents' responses were taking on whether they prepare the same activities for students before teaching. Seventeen (17) respondents representing 28.30% strongly agreed that they prepare the same activities for students, 22 respondents representing 28.30% agreed, eight (8) respondents representing 13.30% remained neutral, 10 respondents representing 16.70% disagreed whilst only three (3) respondents representing 5% strongly disagreed. The mean score was 3.67 showing an agreement level to the fact that teachers prepare the same activities for students.
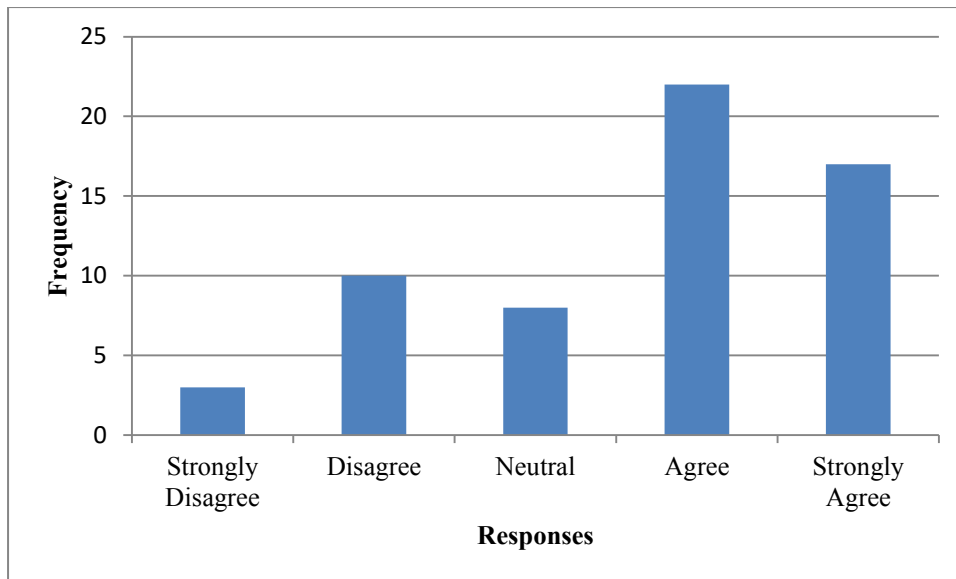
Figure 4. 9: Teachers' preparation of same activities for students before teaching

Item 6 on Research Question 1

Respondents were asked whether they considered the use of only pictures which are attractive and beautiful before teaching. Four (4) respondents representing 6.70% strongly agreed that they considered the use of only pictures which are attractive and beautiful before teaching, 10 respondents representing 16.70% agreed, 10 respondents representing 16.70% remained neutral, 26 respondents representing 43.30% disagreed with the remaining 10 respondents representing 16.70% strongly disagreeing. The mean score for the responses was 2.53 indicating a disagreement from respondents with the view that only pictures which are attractive and beautiful should be considered before teaching.
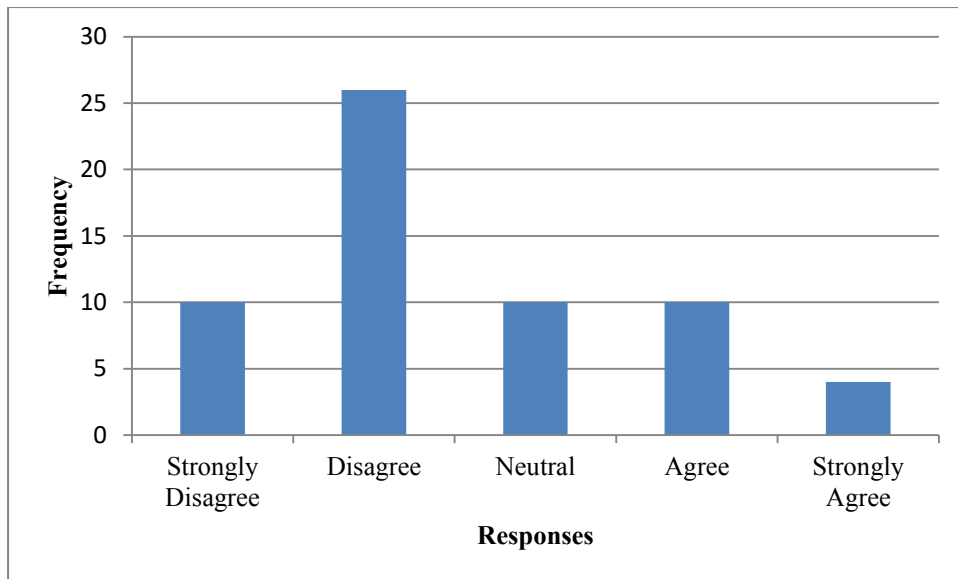
Figure 4. 10: Teachers use of only attractive pictures

It is important to note that item one (1) in table 4.1 was redirected as respondents' responses were taken in the opposite direction to reflect the discussions of the study.

The summary of responses showed that 28 respondents representing 47.70% strongly disagreed and disagreed to the fact that they considered students learning styles before teaching, eight (8) respondents representing 11.90% remained neutral whiles the remaining 24 respondents representing 41.40% strongly agreed and agreed that they considered students learning styles before teaching.
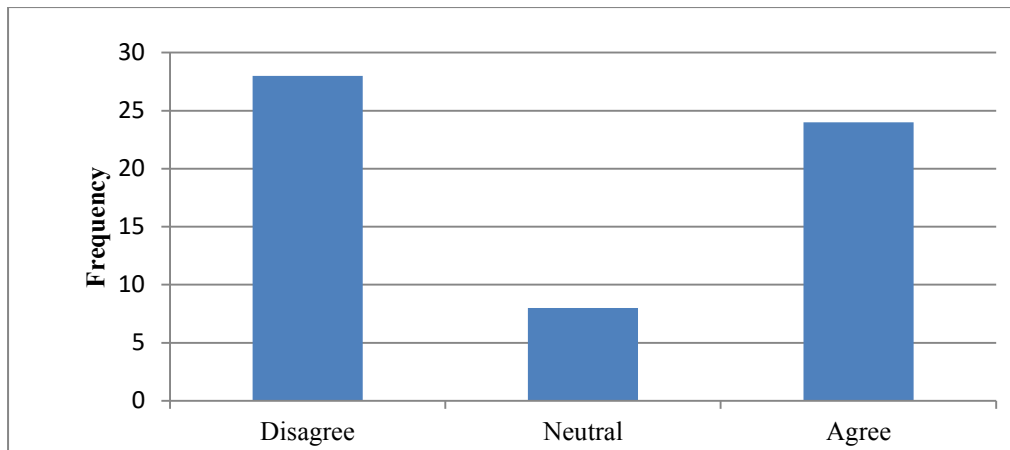
Figure 4.11: Summary responses to teachers' consideration of students learning styles before teaching.

Figure 4.11 highlights these findings indicating that majority of the teachers do not consider students learning styles before teaching. These findings from the study contradicts the view of Masse and Popovich (2006) who posited that teachers consideration of students learning styles impact many different areas of the instructional process such as preparation, classroom presentation, activities and approaches to teaching. Thus it is always important for the teacher to consider the learning styles of students before presentation since it affects the preparation stage of instructional delivery. This is supported by Felder (1995) who recommended that teachers adopt the balanced teaching style in order to accommodate all forms of students with different learning styles. Furthermore, Oxford et al. (1992) suggested that teachers assess the learning style of students in order to include and code different learning styles in lesson plans before lessons.

4.3 Teachers consideration of students' learning styles during teaching

Teachers' consideration of students' learning styles gives the teacher a fair idea of students' preferred learning modes which will allow the teacher to adopt the appropriate teaching strategies.

Table 4.1: Frequency and percentages of teachers considerations of students' learning styles during teaching.

Learning Styles of students before lessons	SD	D	N	A	SA	Mean	SD
When I give students exercise, I let all do it by writing	6 (10)	16 (26.7)	3 (5)	29 (48.3)	6 (10)	3.22	1.236
I let all of my students respond to activities by acting or saying	6 (10)	19 (31.7)	5 (8.3)	22 (36.7)	8 (13.3)	3.12	1.277
In teaching specific objectives, I do not have to vary my teaching methods	25 (41.7)	20 (33.3)	6 (10)	7 (11.7)	2 (3.3)	2.02	1.142
It is important to teach so fast to finish my lesson within the stipulated time	23 (38.3)	16 (26.7)	9 (15)	11 (18.3)	1 (1.7)	2.18	1.186
In a class, I am teaching to groups of individuals, I therefore have to give exercises in different ways	2 (3.3)	18 (30)	2 (3.3)	28 (46.7)	9 (15)	3.41	1.176
During teaching, I see it a waste of time to let some of the students touch objects or materials	31 (51.7)	10 (16.7)	1 (1.7)	15 (25)	3 (5)	2.15	1.412
Mean (frequency and percentage)	15.5 (25.8)	16.5 (27.5)	4.3 (7.2)	18.7 (31.1)	4.8 (8.1)	2.6	1.23

1= strongly disagree; 2=disagree; 3=Neutral; 4= Agree; 5=Strongly Agree

Source: Field Survey, January, 2015

Table 4.2 shows the major considerations of students learning styles by teachers during instructional delivery in the classroom. All items are discussed individually as follows:

Item 1 on Research Question 2

The research took respondents view on whether they give students exercise, they let them do it all by writing. Six (6) respondents representing 10% strongly agreed they let students do exercises by writing, 29 respondents representing 48.30% agreed, three (3) respondents representing 5% remained neutral, 16 respondents representing 26.70% disagreed with the remaining six (6) respondents representing 10% strongly disagreeing. The mean score for the responses was 3.22 indicating neutrality in respondents responses.
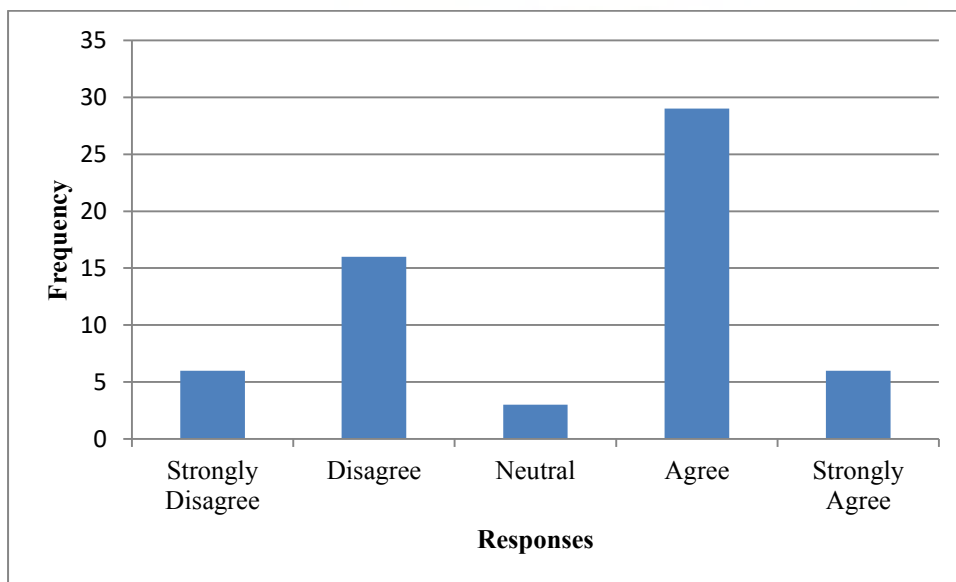
Figure 4.12: Teachers insistence on doing exercise by writing

Item 2 on Research Question 2

Respondents were asked whether they let students respond to activities by acting or saying. Eight (8) respondents representing 13.30% strongly agreed that they let students respond to activities by acting or saying, 22 respondents representing 36.70% agreed, five (5) respondents representing 8.3% remained neutral, 16 respondents representing 26.70% disagreed whilst six (6) respondents representing 10% strongly disagreed. The mean score for

responses was 3.12 which shows that respondents were unsure on whether students responding to activities by acting or saying was the best option of adopting to students learning styles.
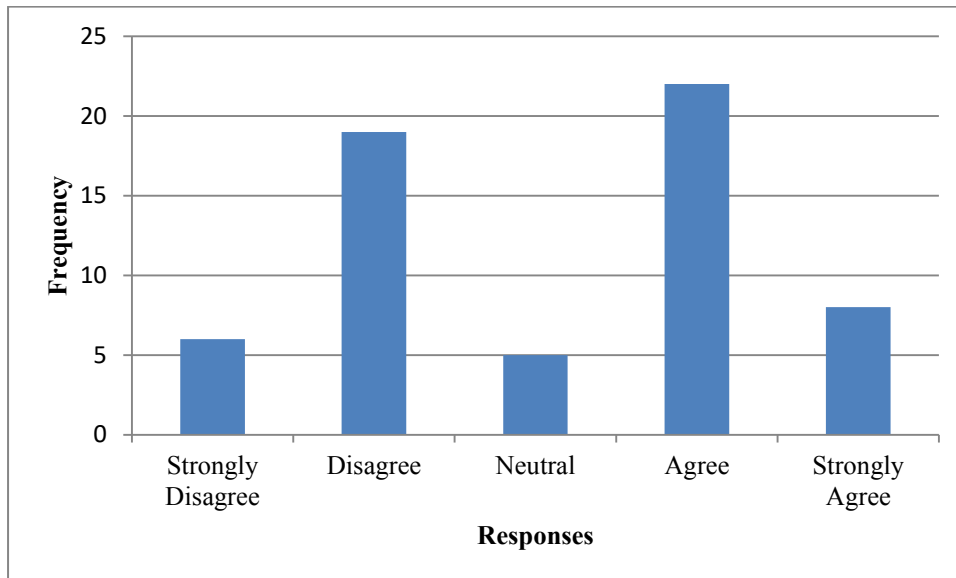
Figure 4. 13: Students response to activities by acting or saying

Item 3 on Research Question 2

The researcher took respondents view on whether they vary teaching methods when teaching specific objectives. Only one (1) respondent representing 1.70% strongly agreed that he/she vary teaching methods when teaching specific objectives, seven (7) respondents representing 11.70% agreed, six (6) respondents representing 10% stayed neutral, 20 respondents representing 33.3% disagreed whilst the remaining 25 respondents representing 41.70% strongly disagreed. The mean score for the responses was 2.18 which indicate a higher disagreement to the fact that teachers do not vary their teaching methods when teaching specific objectives.
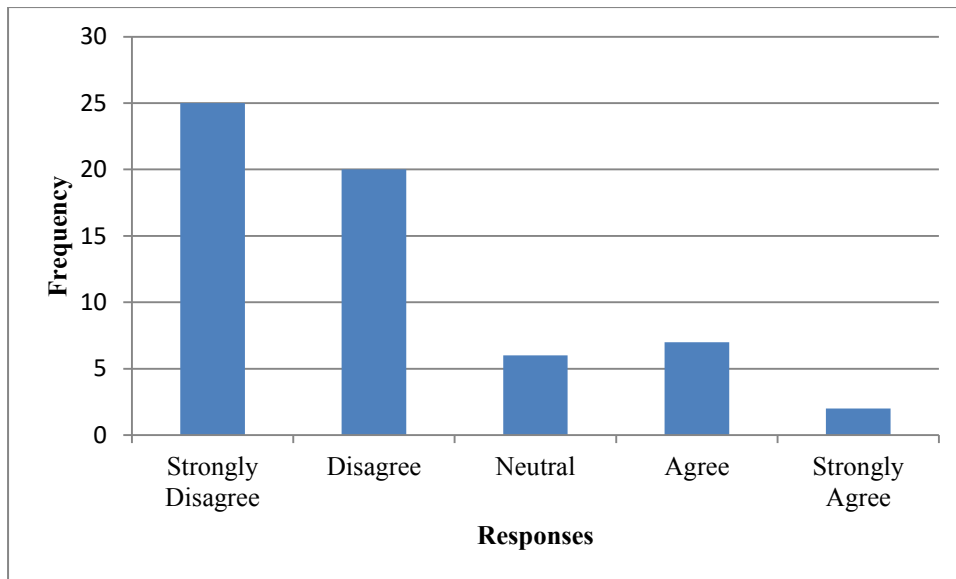
Figure 4. 14: Teachers variance of teaching methods

Item 4 on Research Question 2

Respondents' views were also taken on whether it is important to teach so fast to finish lessons within stipulated times. Only one (1) respondent representing 1.70% strongly agreed that it is important to teach so fast to finish lessons within stipulated time, 11 respondents representing 18.30% agreed, nine (9) respondents representing 15% remained neutral, 16 respondents representing 26.70% disagreed with the remaining 23 respondents representing 38.30% strongly disagreeing. The mean score was 2.18 positing a strong disagreement from respondents to the fact that teachers teach fast to finish lessons within stipulated times.
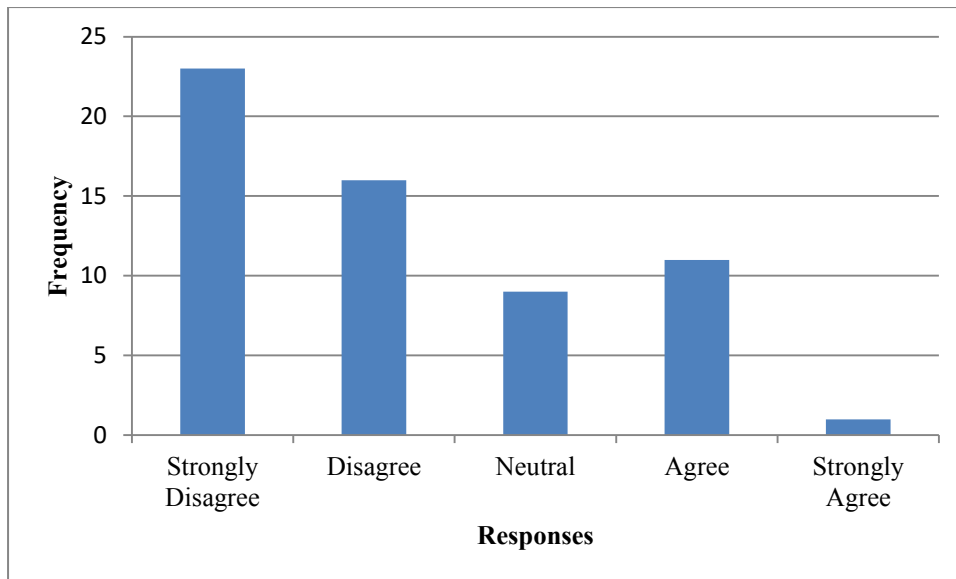
Figure 4. 15: Teachers' response on teaching so fast to finish lessons on time

Item 5 on Research Question 2

Respondents' views were taken on whether they gave exercises in different ways. Nine (9) respondents representing 15% strongly agreed that they give exercise in different ways, 28 respondents representing 46.70% agreed, two (2) respondents representing 3.30% remained neutral, 18 respondents representing 30% disagreed whereas the remaining two (2) respondents representing 3.30% strongly disagreed. The mean score was 4.2 indicating strong agreements to the fact teachers have to give exercises in different ways.
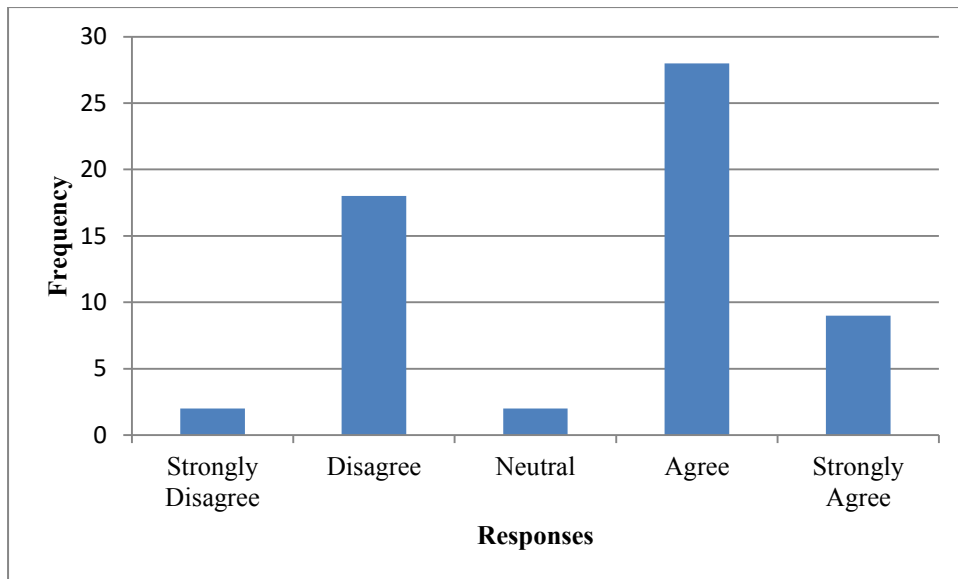
Figure 4.16: Teachers responses on giving exercises in different ways

Item 6 on Research Question 2

Finally respondents were asked whether they see it a waste of time to let some of the students touch objects or materials. Only three (3) respondents representing 5% strongly agreed that they see it a waste of time for students to touch objects during teaching, 15 respondents representing 25% agreed, only one (1) respondent representing 1.70% remained neutral, 10 respondents representing 16.70% disagreed whiles the remaining 31 respondents representing 51.70% strongly disagreed with this view. The mean score was 2.15 indicating disagreement to the fact that it is a waste of time to let some of the students touch objects or materials during teaching.

In summary, 32 respondents representing 53.30% strongly disagreed and disagreed that they consider students learning styles during teaching, four (4) respondents representing 6.70% remained neutral with the remaining 24 respondents representing 39.20% strongly agreeing and agreeing that they consider students learning styles during teaching.
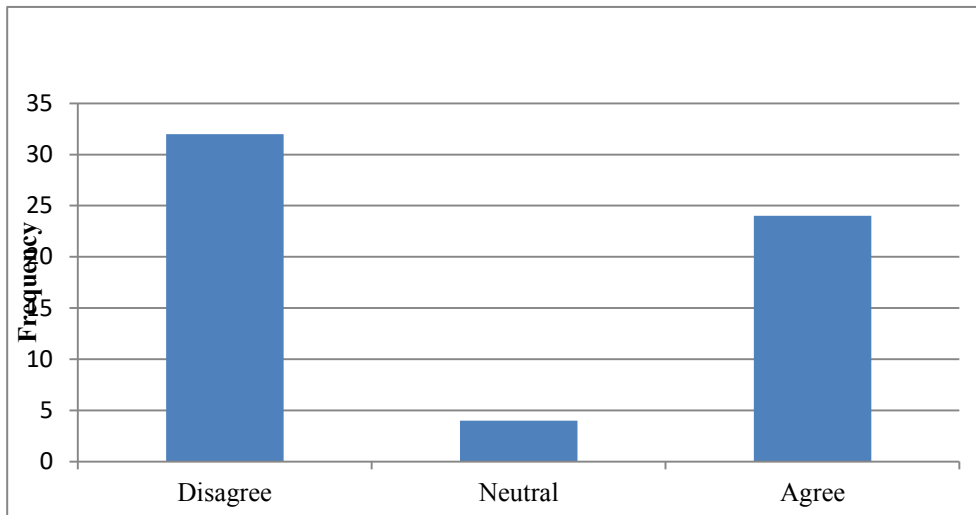
Figure 4.17: Summary responses to teachers' consideration of students learning styles during teaching

Figure 4.18 highlights these findings indicating that majority of the teachers did not consider students learning styles during teaching. These findings buttresses the view of Sims & Sims (1995) who posited that students vary in the way they process and understand information and many instructors do not realize the significance of these differences in how their students approach learning; and as a result do not attempt to respond to these differences. Cross (2001) on the contrary stated that teachers must understand the learner (students) to ensure the teaching is learner centered. In Cross' (2001) view, the increasingly diverse student body requires the use of a wide variety of teaching methods and materials. Peacock supported Cross (2001) view stating that teachers should teach in a balanced style in order to accommodate different learning styles. Furthermore, Peacock (2001) posited that students are likely to work harder and benefit much more from classroom if teachers do consider their learning styles during instructional delivery.

4.4 Teachers' professional status and its impact on students' learning styles

To answer research question three, an independent sample t-test was conducted to compare their means. The test was meant to identify whether the mean for the consideration of learning styles before or during teaching in the classroom by professional and non-professional teachers differ or not. Table 4.5 presents the results of the analysis.

Table 4. 2: Independent sample t-test on the differences between professional and non-professional teachers consideration for students' learning styles

	Mean		Standard Dev.		T	Df	Sig. (2-tailed)
	Professional	Non-professional	Professional	Non-professional			
Before presenting lessons, I do not have to consider only the visual and audio learners	3.36	3.17	1.340	1.339	0.505	58	0.616
I do not analyse students before teaching because I want to know their learning styles	2.71	2.83	1.367	1.339	0.314	58	0.119
I consider the instructional objectives but not the learning styles of the students before teaching	2.45	2.78	1.367	1.339	1.046	58	0.325
Before teaching, I see it necessary to consider students who only see or hear	2.60	2.28	1.363	1.018	0.995	58	0.317
Before teaching, I prepare different kinds of activities to engage students in the learning activity	3.79	3.39	1.200	1.195	1.177	58	0.397
Only pictures which are attractive and beautiful are what I consider before teaching	2.50	2.61	1.153	1.195	0.334	58	0.111
When I give students exercise, I let all do it by writing.	3.21	3.22	1.317	1.060	0.025	58	0.008
I let all of my students respond to activities by acting or saying	3.26	2.78	1.231	1.353	1.304	58	0.484
In teaching specific objectives, I do not have to vary my teaching methods	2.02	2.00	1.115	1.237	0.070	58	0.024
It is important to teach so fast to finish my lesson within stipulated time	2.19	2.17	1.273	0.985	0.078	58	0.024
In a class, I am teaching to groups of individuals, I therefore have to give exercises in different ways	3.39	3.44	1.202	1.149	0.164	58	0.054
During teaching, I see it a waste of time to let some of the students touch objects or materials.	2.07	2.33	1.369	1.534	0.626	58	0.262
Total Average	= **2.79**	= **2.75**	**1.27**	=**1.22**	**t=0.55**	**df=58**	*P*= **.296**

Source: field survey

The independent sample t-test performed showed no significant difference between professional and non-professional teachers and their use of students learning style on their instructional practices as their means and standard deviation depicted. From table 4.3, the difference between the means (2.79 and 2.75) and standard deviations (1.27 and 1.22) of professional and non-professional teachers respectively gave a clear indication of this insignificant difference. This finding seems surprising as professional teachers are assumed to have been taught the relevance of students' learning styles and thus should influence their teaching. The reasons might be that they were not taught at all, they did not understand or they did not see it as a complex task looking at the workload they face in their respective schools. The researcher believes teachers should be given extensive workshops on students' learning styles after completing their courses. Heads of schools should endeavour to motivate teachers who consider students learning styles in their instructional practices. Teachers should also be taught the concept of learning styles to enable them integrate it in their instructional practices.
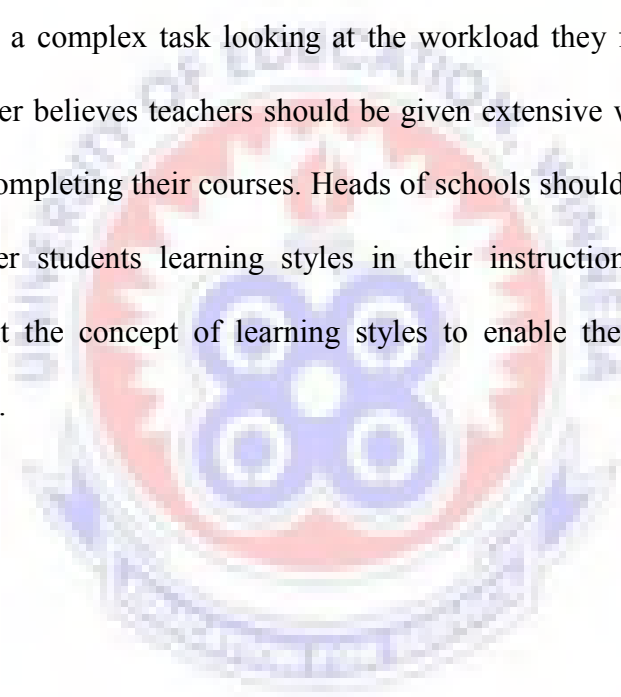
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

The purpose of the study was to ascertain the influence of students' learning styles on teachers' instructional practices in public Senior High Schools within the Bekwai Township. The final chapter gives a summary of the findings, implications of the findings and suggested relevant recommendations.

5.2 Summary of Findings

The purpose of the study was to ascertain the influence of students' learning styles on teachers' instructional practices in public Senior High Schools within the Bekwai Township. The objectives of the study were to ascertain if teachers consider students' learning styles before and during teaching and also find out how teachers' professional status impact their consideration of students learning styles in teaching. The descriptive sample survey research design was employed for the study. The judgmental and random sampling techniques were used with the researcher arriving at 60 respondents for the study. Questionnaires were used as the data collection instrument for the study which helped the researcher to answer the following research questions:

1. To what extent do teachers consider students' learning styles before teaching?

2. To what extent do teachers consider students' learning styles during teaching?

3. To what extent do teachers' professional status impacts their consideration of students learning styles in teaching?

The main findings of the study showed that 28 respondents representing 46.70% strongly disagreed and disagreed to the fact that they considered students learning styles before

teaching, whiles 24 respondents representing 41.40% strongly agreed and agreed. This indicates that majority of the respondents do not consider students' learning styles before teaching. Moreover, 32 respondents representing 53.30% strongly disagreed and disagreed that they consider students learning styles during teaching but 24 respondents representing 40.4% strongly agreed and agreed indicating that majority of the respondents do not consider students learning styles during teaching. On whether there was difference in professional and non-professional teachers in terms of observing students learning styles, the study recognized statistically no significant difference in the relationship between teachers' professional status and their consideration of students learning styles before and during teaching even though there were significant differences in certain variables or parameters used for the measuring of students' learning styles.

5.3 Conclusion

O' Connor (1997) describes learning styles as self-made filters used by people to account for their relation with the world. Learning styles of individuals direct their method of learning. The role that teachers play in considering learning styles of students before and during teaching has become integral to the academic achievement of students. The researcher, based on the findings of the study concludes that majority of the teachers at public SHS in the Bekwai Township do not consider students' learning styles before teaching. The reasons for these findings might be that teachers are not motivated enough to consider the learning styles of students before teaching. Moreover, teachers might not have been taught or perhaps did not understand the concept of learning styles and how it influences instructional practices of teachers. Based on the data, it was observed that, teachers did not consider the learning styles of students during instructional delivery. The reasons could be that teachers see it as a waste of time due to the workload associated with the completion of the lengthy syllabus. It could also be that teachers did not understand the concept of students' learning styles. The study

also revealed that there was no significant difference in the relationship between teachers'
professional status and their consideration of students learning styles before and during
teaching. Based on the findings from a careful systematic analysis of the study, the researcher
found that teachers in Bekwai Twonship irrespective of their professional status do not
consider students learning styles before and during teaching. This could be attributed to the
fact that even though teachers might have been taught the concept of learning styles did not
understand them in order to apply them in the classroom. It could also be that some teachers
were not taught the concept of learning styles at all.

5.4 Recommendations

Based on the findings of the study, the researcher made the following
recommendations.

1. Intensive workshop programs should be conducted by the Ghana Education Service
   on regular basis for teachers to equip them with recent trends of methods to teach
   students with diverse learning styles.

2. Teachers who consider students' learning styles should be motivated by their
   respective heads of schools to enable them continue the process of considering
   students' learning styles and for others to emulate this exemplary act.

3. Colleges of Education should emphasize the study of students' learning styles in their
   programmes.

4. The Ghana Education Service (GES) should conduct adequate monitoring and
   supervision in schools to ensure that teachers teach with consideration of students'
   learning styles.

5. Since the results from the independent t-test revealed no significant difference
   between professional and non-professional teachers and their use of instructional
   strategies with respect to students' learning styles, both professional and non-

professional teachers should be equally sensitized to use instructional strategies and practices based on students' learning styles. More importantly, further studies should be conducted to confirm or disconfirm the finding.

5.5 Suggestions for Further Studies

The small sample size representing the teachers in the Bekwai Municipality reduces the generalizability of findings of the study. A larger sample size comprising many more schools will enhance the generalizability of the findings to senior High Schools in Ghana. Since the findings of the t-test which showed no significant difference between professional and non-professional teachers consideration of students' learning styles, further studies should be conducted to confirm or disconfirm this finding.

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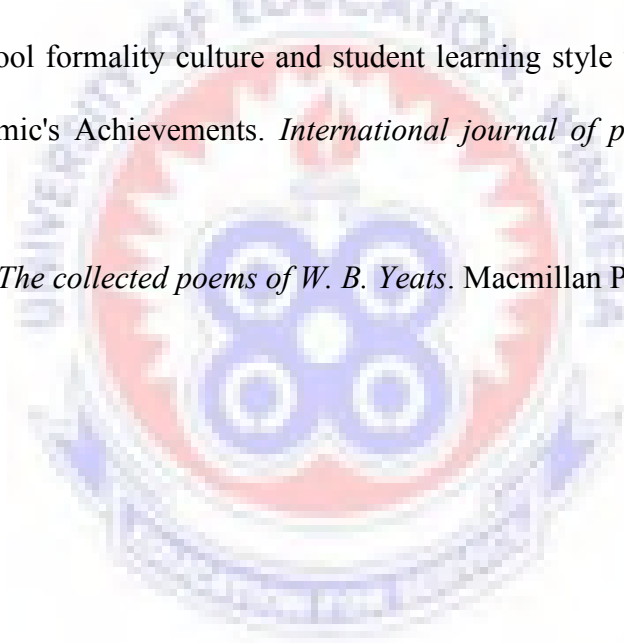
APPENDIX A

QUESTIONNAIRE FOR TEACHERS

Dear Respondent,

The researcher has randomly and conveniently selected you as a respondent in administering this questionnaire that seeks information that will help bring about effective teaching and learning to help produce holistic students. Please you are assured that any information you provide will be used solely for academic purposes and will be treated confidentially. Thank you in advance for responding to this activity.

Please, supply the following facts about yourself to help the researcher classify your responses.

1. Gender of Respondent: Male [   ]   Female [   ]

2. Your Age (years):   Below 25[   ]   26-34 [   ]   35-40 [   ]   41above [   ]

3. Qualification: Below Diploma [   ]   Diploma [   ]   Degree [   ]   Postgrad. [   ]

4. How long have you been teaching: <1 – 3 [   ]   4 – 6 [   ]   7 – 10   [   ] 11 + [   ]

5. Are you a Professional teacher [   ] or Non Professional Teacher [   ]

Please fill in the blank spaces

Learning styles considered by teachers before teaching

Please indicate with a tick ( ) the extent of which you agree or disagree with each of the

following statements, numbered 7-12

Statement	Strongly Disagree	Disagree	uncertain	Agree	Strongly Agree
1. Before presenting lessons, I do not have to consider only the visual and audio learners					
2. I do not analyse students before teaching because I want to know their learning styles					
3. I consider the instructional objectives but not the learning style of the student before teaching					
4. Before teaching I see it necessary to consider students who can only see or hear					
5. When preparing teaching and learning materials, I consider the student learning style					
6. Only pictures which are attractive; beautiful are what I consider before teaching					

Learning styles considered by teachers during teaching?

7. When I give students exercise I let all do it by writing						
8. I let all of my students respond to activities by acting or saying						
9. In teaching specific objectives, I do not have to vary my teaching methods						
10. It is important to teach so fast to finish my lesson within the stipulated time						
11. In a class, I am teaching to groups of individuals, I therefore have to give exercises in different ways.						
12. During teaching, I see it a waste of time to let some of the students touch objects or materials.						

Thank You.