ASSESMENT OF THE EFFECT OF POSITIVE REINFORCEMENT ON MATHEMATICS ANXIETY AMONG PRIMARY SCHOOL PUPILS IN EDU LOCAL GOVERNMENT AREA, KWARA STATE, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF EDUCATION (M. Ed) IN GUIDANCE AND COUNSELLING

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND COUNSELLING,

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ZARIA

SEPTEMBER, 2018

DECLARATION

I Abdullahi Mohammed Alhaji hereby declare that this Dissertation is a record of my research work under the supervisions of Dr. S. A Adisa and Prof. A. I Mustapha. This work has not been submitted in any form for another degree in other institution.

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Abdullahi Mohammed Alhaji Date

CERTIFICATION

This Dissertation titled “Effect of Positive Reinforcement on Mathematics Anxiety among Primary School Pupils in Edu Local Government Area of Kwara State, Nigeria” was carried out by Abdullahi Mohammed Alhaji meets the requirement leading to the award of Master of Education degree (M. Ed) (Guidance and Counselling) in the Department of Educational Psychology and Counselling of Ahmadu Bello University, Zaria and is approved for the contribution to knowledge.

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DEDICATION

This research work is dedicated to God Almighty, my Late grandparents Alhaji Mohammed Baba Lanwa, Mallam Mahmudu Adam and the entire members of my family.

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ABSTRACT

This study assessed the effect of Positive Reinforcement on Mathematics Anxiety among Primary School Pupils in Edu Local Government Area of Kwara State. Two Counselling Techniques of Token Economy and Praise were used to address the problem of Mathematics Anxiety among Primary School Pupils in Edu Local Government Area of Kwara State The study employed quasi-experiment involving pre-test and posttest research design. Six research questions with corresponding null hypotheses guided the study. The population of the study stood at 3,446 primary school pupils. Purposive sampling technique was used to draw 40 pupils from two primary schools. An instrument tagged Primary School Mathematics Anxiety Rating Scale (PSMARS) developed by Richard was adapted and used for the study. The study lasted for twelve (12) weeks in which 10 moderate mathematics anxiety subjects and 10 high mathematics anxiety subjects were treated using token economy and 10 moderate mathematics anxiety subjects and 10 high mathematics anxiety subjects were treated using praise technique. Data collected was analyzed using descriptive statistics of mean and standard deviation to answer the research questions; t-test was used for testing hypotheses. Findings showed that positive reinforcement (token economy) had significant effect on both moderate and high mathematics anxiety at the p value of 0.000. Findings also revealed that positive reinforcement (praise technique) had significant effect on both moderate and high mathematics anxiety among primary school pupils at the p value of 0.000. Another finding indicated that there is differential effect of positive reinforcement techniques of token economy and praise across the two levels of moderate and high mathematics anxiety among primary school pupils at the p value of 0.005. Token economy was found to be more effective than praise techniques in the reduction of mathematics anxiety level. Recommendations made include: counselors, Psychologists and Teachers should use positive reinforcement such as token economy and praise to readdress the problem of anxiety for mathematics among primary school pupils.

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ABBREVIATIONS

VLMA: Very Low Mathematics Anxiety

LWMA: Low Mathematics Anxiety

MDMA: Moderate Mathematics Anxiety

HGMA: Very High Mathematics Anxiety

VHMA: Very high Mathematics Anxiety

PMARS: Primary School Mathematics Anxiety Rating Scale

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

People generally are believed to exhibit some level of anxiety when they are faced with situations that could challenge or put them in reactions. The level of anxiety among the learners may be healthy at their early years in the school until they begin to realize that they are getting close to task which may pose and rise their anxiety level. At such times, learners could work harder yet, make little or no impact on their academic performance. It has been observed by Bamikole (2006) that anxiety is acommon phenomenon in schools that hinders learners' academic performance

Anxiety is a condition of metal uneasiness arising from fear, solitude and apprehension. Any situation which threatens the well-being of an organism is referred to as anxiety.Anxiety is a feeling that someone might have on a situation where performance really counts. Anxiety is not always negative but could be a normal reaction to certain situation through which one could gain motivation. When there is no anxiety, Collins (2007) says life could be boring and inefficient.

Anxiety according to Oladele (2014) is an unpleasant, complex and variable pattern of behaviour which an individual show when reacting to internal (thoughts and feelings) or external (environment situations) stimuli. This is why anxiety is perceived as a realistic response to danger in an environment (Machima,as cited in Liman, 2016). Thus, anxiety could be seen as a state of fear and worry about the future uncertainty characterized by physical and psychological disturbance such as increase in heartbeats, headache and shock. According to Bryant as cited in Ahmad (2002) anxiety is a condition of mental uneasiness arising from fear, solitude and apprehension. Any situation that threatening the well-being

of an organism is referred to as “anxiety”. Anxiety is one of the most prevalent psychological disorders which affect up to 20% of the learners population (Egbule & Egbule, 2011).

Anxiety as an emotional feature that is evident in most of the behaviors exhibited by man. Anxiety is a general state of apprehension, or psychological fear. (Wade & Tavris, 2012). (Hilgard, Atkinson and Atkinson as cited in Al-Khasawneh, 2016) defined anxiety as a state of apprehension and fear, resulting from predicting a threatening situation or event.

A low level of anxiety is normal, does motivate and adds zest to life. On the other hand, however, severe academic anxiety can be a serious problem and become more detrimental over time (Dobson, 2012). Learners experiencing academic anxiety feel apprehensive over academic tasks. In general, high anxiety level can block learning or lead to low academic achievement (Pakistan, Akhtar, Saira & Syeda, 2012).

A low level of anxiety is normal and necessary among the students in order to maintain focus and to galvanize them into action preparing, plotting and perfecting strategies that will guarantee optimum success in examinations. It is needed to motivate and help the learners to stay mentally and physically alert (Birijandi & Alemi, 2010). However, moderate level of anxiety may develop into a full blown anxiety while high level of anxiety is dangerous and can result in emotional or physical distress, concentration difficulties and emotional worries in classroom situation, most especially in Mathematics classes. Mathematics is one of the most feared and disheartening school subjects even among secondary school students however, the skills in enhancing learning has been a major concern of many scholars particularly guidance counsellors who use diverse ways of enhancing learners’ level of performance particularly in core subjects like

Mathematics(Dossey & Usiskin, 2000). Students, according to Dahir and Stone (2003), do not learn automatically, particularly in Mathematics and that they need guidance and direction before real interest is developed in the subject, eventually leading to effective learning.

Wells (2000) showed that Mathematics anxiety often manifests itself as a lack of understanding often leading to avoidance of the subject, thus creating negative attitude towards Mathematics. There are different types of counselling techniques, theories and interventions that can be used in addressing the problem of Mathematics anxiety; one of such techniques is positive reinforcement, which is the presentation of rewards for behaviour such as token and praise reinforcement with the intention of increasing the chance of that behaviour being repeated in the future.

Positive reinforcement is a behaviour modification technique aimed at giving something to somebody to make such behaviour happen again. Positive reinforcement occurs when behaviour is followed by presentation of stimulus such as praise rewards and token gifts and as a result, occurs more often in future (Flora, 2004).

According to Shira (2014), positive reinforcement is one of the types of reinforcement, which is concerned with offering desirable effects or consequence for a behaviour with the intention of increasing the chance of that behaviour being repeated in the future, where it uses the technique of reward system, like encouragement, praising and rewarding with a token of gifts.It is on the basis of the above expression that, the researcher carried out study on the effect of positive reinforcement on anxiety levels among primary school pupils using token economy and praise counselling techniques.

Token economy remains one of the main treatment options that have been scientifically approved to be effective in addressing behaviour problems presently; it provides opportunity for individuals to receive immediate feedback. This needs to be a visible and attractive material to the person receiving it so as to initiate the achievement of desired objective. When the token is attractive, it stimulates strong response from the recipient and hastens effective and active response to the desired behavior which can be considered as the appropriate behavior pattern. It is necessary to induce children to adapt a behavior model that is acceptable to the norms and values of the society early enough so that as they grow, it forms a permanent pattern of their behavior model. This to a large extent, reveals the need for the modification of negative behaviours that occur early in the life of a child.

Token economy has been described as a form of behavior modification designed to increased desirable behavior with the use of tokens. Tokens are offered to individuals as soon as they display desirably behavior. The tokens are collected and later exchanged for a meaningful object or privilege. The main objective of token economy is to elicit desirable and decreased undesirable behavior. In essence, the larger goal of token economies is to teach appropriate behavior and social skills that can be used in one's natural environment (Mohammed 2011).

Reward systems in school sometimes constitute problems of application for teachers during classroom procedures. which means that stakeholders find it difficult most time to reward all pupils in the classroom that display good behavior pattern during class work. It is a form of stimulus that helps to elicit desired behavior. Obviously, in the application of token system, there is always an opportunity for participants to gain rewards as a result of their new behavior. The reward system is a facilitating process which helps to enhance the achievement of the desired objectives, which is achieving an appropriate behavior.

Praise is a condition where a learner is motivated by the teacher to exhibit desirable behavior and to discard unwanted behavior. The whole issue of teachers' praise merits fuller comment. According to Westwood (1999), teachers' use of praise has been well researched, but its overall effects are still somewhat uncertain. But Good and Brophy (1994) have reviewed studies in this area and concluded that praise seem important for low ability anxious and dependent students, provided that it is genuine and deserved and praise worthy aspects of the performance are specified. They stressed that a child should know precisely why he or she is being praised, if appropriate connections are to be made in the child's mind between effort and outcome.

1.2 Statement of the Problem

Learners generally are believed to experience some level of anxiety but not necessarily find themselves at risk. The level of anxiety among the learners may be healthy at their early years in the school until they begin to realize that they are getting close to task which may pose and rise their anxiety level. At times, learners could work harder yet, make little or no impact on their academic performance. It has been observed that anxiety is acommon phenomenon in schools that hinders learners academic performance most especially in core subject areas like Mathematics. Anxiety for Mathematics among school children is a problem facing the educational system. There are many observable symptoms of anxiety among school children including unwillingness to attempt class work, classroom avoidance and being unusually, nervous when in Mathematics class.

It is a known fact that,primary school education serves as background to all other levels of education and forms the basis as well as foundation upon which other subsequent levels are built. It stands as a key to success and failure of the entire system. One of the basic goals of primary school education is to prepare and expose every child to basic Mathematics and manipulative skills to enable him or her function effectively in society. Mathematics is one of the core subjects at the primary education level. The researcher's fifteen years teaching experience at both primary and secondary school levels revealed that many primary school pupils do have anxiety and fear forMathematics. Some teachers at the primary school instill fears into the pupils mind that Mathematics is a difficult subject. Many pupils grow with this mentality and develop fear and anxiety for Mathematics coupled with the fact that most teachers that teach this subject do not motivate their pupils through appropriate reinforcement in the class room.

This study was therefore prompted by the researcher's deep concern over the plight of primary school pupils in Edu Local Government Area, Kwara State that exhibit anxiety for Mathematics. Statistics has shown that more than 75% of the Mathematicsfailure among primary school pupils in Edu Local Government Area, specifically Shonga District Areais attributed to anxiety leaners develop for Mathematics. It was also noticed that approximately 65% of upper primary school pupils in the District exhibit anxiety forwhich is observed to have its root in learners mainly from primary school. This problem has been adversely affecting pupils' performance in the subject. Anxiety for Mathematicsvaries among the learners. Some pupils have very high, while othershave high, moderate, low and even very low anxiety for Mathematics. The problem is attributed to a number of factors, one of which is inappropriate use of positive reinforcement during Mathematicsinstruction.

The researcher has seen that some teachers at primary school level fail to apply reinforcement techniques during Mathematics classes which may be responsible for pupils' exhibition of Mathematics anxiety behaviour and negative attitude and perception towards Mathematics as a difficult and almost impossible subject and if we must have to produce competent learners in various fields of specialization, the need to address the problem at the foundation level of education is necessary so that highly qualified individuals would be produced in the world of work The present study therefore, investigate the effect of positive reinforcement on anxiety levels among primary school pupils in Edu local Government Area, Kwara State.

1.3 Objectives

The objectives of this research were to:

1. Assess the effect of token economy on Primary School Pupils with moderate anxiety inMathematics in Edu Local Government Area, Kwara State.
2. Assess the effect of token economy on Primary School Pupils with high anxiety inMathematicsin Edu Local Government Area, Kwara State.
3. Assess the effect of praise on Primary School Pupils with moderate anxiety inMathematicsin Edu Local Government Area, Kwara State.
4. Assess the effect of praise on Primary School Pupils with high anxiety inMathematicsin Edu Local Government Area, Kwara State.
5. Assessthe difference between the effects of token economy and praise on Primary School Pupils with moderate anxiety inMathematicsin Edu Local Government Area, Kwara State.
6. Assessthe difference between effects of token economy and praise on Primary School Pupils with high anxiety inMathematicsin Edu Local Government Area, Kwara State..

1.4 Research Questions

The following research questions guided the study

1. What is the effect of token economy on Primary School Pupils with moderate anxiety inMathematic in Edu Local Government Area, Kwara State?
2. What is the effect of token economy on Primary School Pupils with high anxiety inMathematics in Edu Local Government Area, Kwara State?
3. What is effect of praise on Primary School Pupils with moderate anxiety inMathematicsin Edu Local Government Area, Kwara State?

4. What is the effect of praise on Primary School Pupils with high anxiety inMathematics in Edu Local Government Area, Kwara State?
5. Would there be any difference in the effect of token economy and praise onPrimary School Pupils with moderate anxiety inMathematicsin Edu Local Government Area, Kwara State?
6. Would there be any difference in the effect of token economy and praise on Primary School Pupils with high anxiety inMathematics in Edu Local Government Area, Kwara State?

1.5 Hypotheses

The following research hypotheses were tested in the study at 0.05 significance level:

1. There is no significant effect of token economy reinforcement on Primary School Pupils with moderate anxiety for Mathematics in Edu Local Government Area, Kwara State.
2. There is no significant effect of token economy reinforcement on Primary School Pupils with high anxiety for Mathematics in Edu Local Government Area, Kwara State.
3. There is no significant effect of praise reinforcement on Primary School Pupils with moderate anxiety for Mathematicsin Edu Local Government Area, Kwara State.
4. There is no significant effect of praise reinforcement on Primary School Pupils with high anxiety for Mathematics in Edu Local Government Area, Kwara State.
5. There is no significant difference between the effects of token economy and praise reinforcements on Primary School Pupils with moderate anxiety for Mathematics in Edu Local Government Area, Kwara State.

6. There is no significant difference between the effects of token economy and praise reinforcements on Primary School Pupils with high anxiety for Mathematics in Edu Local Government Area, Kwara State.

1.6 Basic Assumptions

The following assumptions were outlined:

1. That token economy technique may have effect on Primary School Pupils with moderate Mathematicsanxiety in Edu Local Government Area, Kwara State.
2. That token economy technique may have effect on Primary School Pupils with high Mathematics anxiety in Edu Local Government Area, Kwara State.
3. That praise technique may have effect on Primary School Pupils with moderate Mathematics anxiety in Edu Local Government Area, Kwara State.
4. That praise technique may have effect onPrimary School Pupils with high Mathematicsanxiety in Edu Local Government Area, Kwara State.
5. That token economy and praise techniques may have difference in effect on Primary School Pupils with moderate Mathematics anxiety in Edu Local Government area, Kwara State.
6. That token economy and praise techniques may have difference in effect on Primary School Pupils with high Mathematics anxiety in Edu Local Government area, Kwara State.

1.7 Significance of Study

Mathematics anxiety is a global phenomenon that is attracting the attention of several psychologists and professionals. The study of Mathematics anxiety and its effect on the education of children remains vital if their life and future educational objective can be achieved. It is expected that the results of the study would benefit counsellors and psychologists since it will expose them to the needs in their profession and then broaden their scope of scientific investigation. It will also provide them with relevant information on effective ways of managing anxiety as well as revealing more contemporary means of treating the disorder effectively in contemporary environment.

Educational managers in the classroom enrolment would enjoy the outcome of the study since it would help them to understand the critical circumstances the children with Mathematics anxiety pass through during learning process. Hence, they will be able to treat them with love and affection as well as help them to fulfill their educational aspirations.

Teachers would benefit from the outcome of the study because it would help to broaden their understanding of what Mathematics anxiety is, how it affects children in the class room and how they can be assisted to achieve their educational objectives.

Parents and families would also benefit from the study due to the fact that it would create awareness on the effect of the anxiety on the children it affected, as well as inform them on how to manage them, help and relate with them properly at home.The findings of the study would be of immense benefit to educational administrators, planners, curriculum developers, education policy development expert as well as other stakeholders in educational industry and the society at large. The outcome of the result would help to direct, channel or focus their attention towards current and contemporary needs in

education and the importance of adequate implementation of policies that would address these needs.

The results from the study would assist the educational planners and administrators in curriculum planning. The result from the research is of benefit to parents and guardians in that, it will enlighten them on the cause of and suggested solutions to Mathematics anxiety. If they are aware of these, they will be able to solve the problems in good time and would be able to make adequate provisions for their children's welfare academically. It would also be of great benefit to teachers and counsellors who are directly involved with the learners to be familiar with the causes of Mathematics anxiety and solutions recommended for use.

1.8 Scope and Delimitation of the Study

The scope of this study centered on the effect of positive reinforcement on Mathematics anxiety levels among Primary School Pupils in Edu Local Government Area of Kwara State. The study was carried out on primary schools within Edu Educational Zone in Kwara State. The choice of primary school pupils for the study was due to the fact that the key component of the work in Mathematics anxiety is basically a childhood behavioural problem. It focused on Mathematics anxiety levels which include moderate and high using positive reinforcement of token economy and praise counselling techniques

The study was delimited to primary five (5) pupils in Primary schools Shonga LGEA. The study targets Primary School Pupils because of fact that the problem at hand starts to develop among pupils in primary school. Hence, it would be necessary to take the study at the base in order to nip it from the bud.

1.9 Operational Definition of Terms

For the purpose of this research, the following terms are defined operationally

Positive reinforcement: is a behaviour modification technique aimed at giving token, praise or gifts to learner /individual in order to increase the frequency of desire behaviour and decrease the chance of unwanted behaviour being repeated in the future.

Token economy: is system of behaviour modification in which the learner can earn some types of token that can be exchanged later for a specific reinforce.

Praise: is a behaviour management technique in which the leaner is motivated to exhibit desirable behaviour and discard undesirable behaviour through the use of positive statement such as good job, clap for him/her, that is nice of you etc

Anxiety: is the fear a leaner has about the ability to understand and perform some functions such as how to work with numeracy or write an examination or test.

Moderate anxiety:it is an adequate level of anxiety with the tendency to get shoot up if not properly maintained

High anxiety:this is severe anxiety level with symptoms such pounding, sense of dread, scattered thought and erratic behaviour.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents review of related literature in relation to the topic of study. The review is presented under the following sub-headings: Conceptual framework, which is made up of: concept of reinforcement, types of reinforcement, reinforcement techniques, effect of positive reinforcement technique, concept of anxiety, concept of Mathematics anxiety, causes of Mathematics anxiety, effects of anxiety on learning and behaviour, suggested solutions to Mathematics anxiety. Others include theoretical framework in which two (2) theories; Operant Conditioning Theory of B.F Skinner and Psychoanalytic Theory of Sigmund Freud were discussed, as well as review of previous researches and summary.

2.2 Conceptual Framework

Concept of anxiety, and Mathematics anxiety,

Causes of Mathematics anxiety,

Effects of anxiety on learning

Concept of reinforcement

Types of reinforcement

Reinforcement techniques

Effect of positive reinforcement technique,

Uses of Token Economy

Effect of Token Economy

Uses of Praise

Effect of Praise

2.2.1 Concept of Anxiety

Anxiety refers to fear of an object or a particular situation that may not be harmful. It is also an enduring fear of clearly defined objects or situations that interfere with persons normal functioning. Although, they know that their fear is irrational or illogical, people with anxiety always try to avoid the sources of their anxiety. Aremu (2003) stated that anxiety is an irrational fear of things, events or places that pose little or no threat of harm. Fear is a natural response to danger in human beings but anxiety takes fear to a whole new level. People with anxiety may experience panic, horror, uncontrollable thought, rapid heartbeat, sweating, dizziness, a feeling like shortness of breath, chest pain, and many other similar cases. Many people go to a greater length to avoid being in the situation where they may have to face anxiety.

2.2.2 Levels of Anxiety

Saida and Taihira (2011) identified the following levels of anxieties that affect individuals at different situations.

Very Low Anxiety:maybe common in everyday life. At this level, an individual is open-minded, although stressed. One might experience this level of Mathematicsanxiety as one awaits job performance review or if one is lost in a new city. Symptoms that are likely to be exhibited by the affected person include irritability and sweaty palms.

Low Anxiety: is typically motivational, meaning that it helps the individual to focus in seeking a solution to the challenges of Mathematics anxiety one faces. This form of anxiety serves as mediating point between very low and moderate anxiety. That is to say, is a bit more than very low and slightly less than moderate.

Moderate Anxiety:at this level of anxiety, one is likely to focus exclusively on the stressful situation directly in front of one and ignore other tasks. Say you have taken a child to a playground and lose sight of the child you might experience faster heartbeat, dry mouth, sweating and stomach pain. Your speech may be rapid and high-pitched and your arms and hand movement are likely to be more exaggerated. Nervous habits, like biting your nails or wringing your hands are common. Your singular focus is likely to be where the child might be. Once you find him/her playing with other children the symptoms may subside.

Moderate Mathematics anxiety according to Aremu (2003), is a normal level of anxiety although need to be maintained by the learner to avoid shoot up to the next high level. Garry (2005) in a similar submission stated that moderate Mathematics anxiety may be reduced to a low levelwhich may require little motivation from the teacher to the learner to achieve a level of stability. He further stressed that the idea is that, it would be easier to motivate a learner from low level of Mathematics anxiety to stabilize than to reinforce a learner with high Mathematics anxiety to be calm.

High Anxiety:this is severeMathematics anxiety, symptoms intensify and others develop, such as pounding, heartbeat, chest pain, headache, vomiting or diarrhea, trembling, scattered thought, erratic behaviour and a sense of dread.

Very High Anxiety:this is the panic level of anxiety, is the most disruptive and challenging as it overwhelms your capacity to function normally. You may experience inability to move or speak, but sometimes is the opposite. Some people take off running or find it impossible to sit or stay still. Your ability to think rationally will likely be impaired and your perception might be distorted, you might not identify danger or understand your needs in

the moment. Extreme life stressors can provoke these types of reactions such as being victim of a crime or living through a disaster.

2.2.3 Concept ofAnxiety for Mathematics

Several definitions of Mathematics anxiety have been suggested by many scholars. Mathematics anxiety was first defined by Dreger and Aiken (1995) as cited in Mohammed (2011), as emotional reactions syndrome displayed towards Mathematics and Arithmetic. Balogun (2001) on the other hand, see Mathematics anxiety as a panic state which keeps one's thought under control.Mathematics anxiety is a multidimensional construct with cognitive and psychological roots (Benson, 2000). This multidimensional construct, manifests itself in individual attitudes thereby affecting individual's performance. Mathematics anxiety is one of the critical factors that can have impact on an individual's education, life and job selection. It can also be viewed as feeling of tension and anxiety that interfere with the manipulation of numbers and solving of Mathematics problems in a wide variety of ordinary life and academic situation (Wells,2000).

Alao (2000) noted that apart from poor performance of the students in Mathematics, it is a subject that most students dread a lot. Perry (2004) stated that Mathematics anxiety is global phenomenon, he said that more than 85% of students have Mathematics anxiety. Their Mathematics anxiety result from the fact that everybody around tell them or narrate stories of how they used to get frustrated when they score low marks in the subject. This notion by students on the learning of Mathematics could be what Mohammed (2011) referred to as "prior notion" or preconceived notion

Karimi and Venkatesen (2009) have noted that since the awareness of Mathematics anxiety began in the 1970s, Harper and Daane (1998) classified three specific types of Mathematics – anxious people as:

1. The MathematicsMemorizer
2. The MathematicsAvoider
3. The self-professed MathematicsIncompetent.

The Mathematics memorizer: Dogara (2015) says non creativity is associated with the Mathematics memorizer. Mathematics memorizers, according to Mohammed and Tarmizi (2010), looked for an algorithm to solve Mathematics problem. When one cannot be identified, the Mathematics memorizer assumes the problem is unsolvable. Due to the constant looking for an algorithm, the Mathematics memorizer never gives the creative part of the mind a chance to work. Resulting from this constant occurrence of denying creativity is what Mohammed and Tarmizi (2010) referred to as Psycho-pathology of non-creativity.

The Mathematics Avoider: Negativism is associated withMathematics avoider (Harper & Daane, 1998). They expressed that, the Mathematics avoider has failed in Mathematics in the past and therefore predicts future failure. This type of Mathematics anxious person creates a self-fulfilling prophecy – because of the constant attention to the believing that failure will occur, Motivation and drive to achieve and perform better in Mathematics is destroyed due to the negativism. As a result, these people do not do well in Mathematics which leads to the avoidance of attending more Mathematics classes in the future.

The Self – Professed MathematicsIncompetence: According to Harper and Daane (1998), low self-esteem is associated with the self-professed Mathematics incompetence.

Continuously encountering Mathematics problems that cannot be solved truly affects the egos of some students. The self-professed Mathematics incompetent feels he or she is the only one to blame for not being able to do Mathematics – that something is wrong with him or her and never think other people or instances might be culprit of their anxiety. As their self-esteem plummets, more Mathematics anxiety is created and their confidence lessons. Puteh (2002) sees symphonies of a Mathematics anxious person to include submittingMathematics assignments late, asking to be excused from class and saying negative things about Mathematics, feeling and thoughts about Mathematics anxiety. According to Sherman and Wither (2003), the characteristics of students with Mathematics anxiety include tension, panic, helplessness, fear, distress, shame and the inability to cope. Aremu (2003) added that Mathematics anxious people can feel confused, insecure as well as experience shortness of breath, muscles tightness or physical sickness.

2.2.4 Causes of MathematicsAnxiety

There have been varietiesof hypothesized reasons for why students develop Mathematics anxiety. One of the early Mathematics anxiety researchers, Tobias (1995) has been a significant proponent of the view that gender plays a large role in Mathematics anxiety. She has withdrawn from her belief that females are the only ones who must cope with Mathematics Anxiety in a significant way, but still recognizes obstacles that women can face. Though, Zettle and Raines(2000) do support her findings that girls exhibit more Mathematics anxiety.It would appear that most, if not all students are sometimes subject to anxiety for Mathematics. (Zakaria & Nordin 2008) In their work, effect of Mathematics Anxiety on Matriculation students. Theysubmit a set of environmental factors that many girls are exposed to which may influence their heightened anxiety. Woodard (2004) views

that cultural belief is the primary cause for girls' mathematics anxiety. This describes the conviction that girls are less proficient at Mathematics, creating a feedback loop in the zeitgeist. For girls who fail, they are likely to attribute that to their natural disposition. For some, this belief also brings with it the stigma about being a math expert and these potential mathematicians sabotage themselves. Tobias postulates that, "Ironically, fear of being too smart may lead to such passivity in the math class that eventually these girls develop a conviction that they are dumb (Woodard, 2004). Even those that persevere may find that they are isolated from peers who share an interest in Mathematics, lacking a person they can learn Mathematics fluency with, outside of a possible parent. For Tobias, the cause of Mathematics anxiety is primarily a society that artificially hampers girls' abilities, causing them to have anxiety for Mathematics.

In addition, more research must be done to determine how the history of students plays a role in how Mathematics learning programmes affect their anxiety level. There is certainly a relationship between Mathematics anxiety and performance. However, Zettle (200) suggests that there is little evidence that poor performance causes Mathematics Anxiety or even that IQ is a determining factor. To back up this idea, Pradeep (2011) implemented a programmes that adapted to the student. The program gave some students problems that they would answer with high accuracy, and others that would be answered by students with much lower accuracy. There was not a significant difference in the groups' anxiety levels at the end of the study. It is possible that the aversion and anxious thought patterns were built up over time. However, it does not appear that high levels of success have a significant effect on anxiety (Jackson ,2008).

Zettle (2000) did find evidence that Mathematics Anxiety does relate to general anxiety. This implies that rather than attempting to get rid of Mathematics Anxietys, it may be more fruitful to use generalized anxiety approaches with students. If this is the case, techniques such as cognitive therapy could become primary in treating student with Mathematics Anxiety. Note that Hembre's study does indicate that reducing Mathematics Anxiety also improves math performance, implying a causal relationship.

Pradeep (2011) identified reasons for Mathematics anxiety and are considered in three sub-dimensions asenvironment, mental and personal. Among the environmental factors are negative experiences in classroom such as teachers poor method of teaching and teaching aids other things associated with environmental factors include parental pressure on students, insensitive and pedagogically inadequate teachers, preconceptions about Mathematics formed in time (e.g. introducing Mathematics as a collection of strict rules starting from early years of educational process) and teacher centered classroom climate where students are passive. Emotional factors can be listed as teaching strategies not suitable for students learning styles, students' attitudes, easily giving in lack of motivation incorrect thoughts and prejudice students develop against their own mathematical ability, one's low perception of self-value, lack of self-confidence and way of thinking which asserts that Mathematics is not necessary. Timidity in asking questions in class, shyness self-distrust and prejudiced ideas such as thinking that only males can be successful in Mathematics are some of the personal causes.

Attitude of Parents to Mathematics as a Schools Subject

It seems that family has a part in the development of Mathematics anxiety, as well (Schwartz 2000). Schwartz states that many parents either directly or indirectly, support

another common myth that says success in Mathematics is something with which person is born. It is not uncommon to hear a parent says he or she is never good in Mathematics which explains why the child struggles.

The attitude of the parents towards developing intellectual capacity of their children is very low. Recent studies indicate that 50% of a child's intellectual or cognitive potential is fixed by age four, with an addition of 30% fixed by seven to eight. Most parents fail their children by not attending to the intellectual demand of their children at a time when they openly insist upon that attention by being persistent, continual and open questions of the world around them. Many parents are too busy to ask after the wellbeing of their children's academic work and giving them necessary support.

Onabanjo and Okpala (2004) focused on the effects of parents' supportiveness, students' locus of control and generally on the achievement of students in senior secondary Mathematics. Parents' supportiveness is the support given to the students by their parents and these supports include the obligation of the parents towards their children (i.e. providing food, clothing, shelter, and materials necessary for learning as well as parents' involvement in regular checks of what is being taught in school) and provision of direct instruction to the students when necessary.

Teacher's Own Anxiety for Mathematics: Research has shown that a teacher's own Mathematics anxiety could be a cause of anxiety for learners. Aremu (2009) stated that a teacher's own Mathematics Anxiety is likely to be transmitted to their students. In a study which determined the underlying anxiety of teacher trance, it was found that many had gaps in their Mathematics knowledge or an awareness of imperfectly learned concepts which in turn can be transmitted to the learners they teach (Martines,1987).

Another thing is the effect of having to perform and provide explanations in front of teachers or peers have been found to be the source of anxiety. There were some learners, who expressed the fact that, this was the only cause of anxiety for them, and that doing sums and working with numbers was not a source of anxiety (Mohammed, 2011).

It was found by Smith (2004) that experience of learners having been punished or humiliated at the blackboard was very damaging. Tobias (1995) concluded from her research that learners learn to do Mathematics before they are able to explain, learn to do Mathematics before, they are able to explain problem and communicate about Mathematics. To expect the learners to provide explanations to Mathematics questions could cause anxiety at the crucial age between the development of skills for doing Mathematics and the development of skills for explaining Mathematics (Tobias, 1995).

Shortage of MathematicsTeachers in Schools: There is decline in recruitment into higher education in Mathematics, science, technology and engineering noted in the United Kingdom UK and a number of anglophile countries where negative view of Mathematics and science are often cited as contributory factors. It was reported in the Times Educational Supplement that the figures of recruitment into initial teachers training in Mathematics and science were 21% and 18% below target in 1995 and 1996 respectively. Most of the Mathematics teachers recruited have little or no requirement for teaching the subject which invariably pose anxiety to students. (Sloan & Giesen 2002).

Negative Classroom Experiences and the Teaching of Mathematics

The beginning of Mathematics anxiety can often be traced to negative classroom experiences and teaching of Mathematics (Lee, 2001). It is considered critical to examine classroom practice and establish whether the roots of Mathematics anxiety may be in

instructional methods and in the quality of Mathematics teacher in elementary schools (Jackson & Leffingwel 2008). They expressed that the principal cause of Mathematics anxiety lies in the teaching methodologies used to convey basic mathematical skills. He stated that teachers create anxiety by placing too much emphasis on memorizing formulae.

Frustration: is the blocking of motivation hat has been seen as the situation most frequently giving rise to Mathematics anxiety. A number of different factors have been described as the cause of Mathematics anxiety. Sutter (2006) describes Mathematics anxiety as a result of different factors including inability to handle frustrations, excessive school absence, poor self-concept, parental and teacher activities towards Mathematics and emphasis on learning Mathematics through drill without understanding.

Lack of Confidence: A lack of confidence when working in Mathematics situations is described by Stuart (2000) as the causes of Mathematics anxiety. Failure or success in Mathematics may be related to individual learning styles and more specifically coupled with learning styles and the ways in which materials are presented.

Misconceptions: Misconceptions about the nature of Mathematics have also been investigated. Nur and Hung (2012) stated that many learners hold misconceptions about what Mathematics, which result in them performing procedures without understanding, often incorrectly distrusting their intuitions and feeling powerless when they make mistakes. These misconceptions erode the learners' confidence and contribution to their learning difficulties. Shield (2006) in the same development states that people misunderstand that in meeting the challenges of the difficulties they experience with Mathematics creates an opportunity to learn life skills.

Gender: Is another factor causing Mathematics anxiety, researches show that girls perform poorly in Mathematics than boys. In some West Africa countries some girls believed that

Mathematics is a subject for boys only. In a study by Alao and Adeleke (2000) on the prevalence of Mathematics anxiety, girls found to exhibit more Mathematics Anxiety than boys and consequently were likely to record lower performance than boys in mathematical activities. In Nigeria it is a common tradition to regard males as better problem solver than females in general life issues. Mathematics is more or less regarded either wrongly or rightly as a subject in the male domain. There is therefore the tendency to believe that males will do better, researches show that girls perform more poorly in Mathematics than boys. Jackson(2008) reported a number of studies relating to gender difference in the classroom as a factor, he explained that 69% of elementary girls reported were happy the way I am among high school students the percentage were 46% (percent) for boys only 23% for girls. That is dramatic decrease in self-esteem from elementary to high school.

Word Problems: Another source of Mathematics anxiety that has been identified is word problem. Nweke (2002) believes that word problems are the heart of Mathematics anxiety. Learners need higher level of reasoning and if not taught strategies to solve these problems, learners may grow up avoiding Mathematics and science (Rayner, Solantis & Osana, 2009). In Mathematics education, the term word problem is often used to refer to any mathematical exercise where significant background information on the problem is presented as text rather than in mathematical notation and often involve a narrative of some sort, they are occasionally also referred to as story problems and may vary in the amount of language used (Mohammed, 2011).

Word problems according to Balogun (2001), can be examined on three levels:

Level a: the verbal formulation;

Level b: the underlying mathematical relations;

Level c: the symbolic mathematical expression.

Linguistic properties can include such variables as the number of words in the problem or the mean sentence length. The logico-mathematical properties can be classified in numerous ways, but one such scheme is to classify the quantities in the problem (assuming the word problem is primarily numerical) into known quantities (the values given in the text of the problem), wanted quantities (the values that need to be found) and auxiliary quantities (values that may need to be found as intermediate stages of the problem).

2.2.5 Effects of Anxiety on Learning and Behaviour

Anxiety appears to be a fairly insubstantial obstacle, particularly when it does not involve any immediate threat to a person's survival. Therefore, it makes ones question why it appears to have a crippling effect on some students ability to do mathematics. Many students report feeling tension and fear that seems similar to experiencing a significant threat. It was observed that what was actually going on inside the mind during these phenomenon related to Mathematics anxiety by using a combination of MARS, Short Mathematics Anxiety Rating Scale, and several Mathematics problem sets (Garry,2005). While anticipating the work of doing Mathematics, he observed increased activity in parts of the brain related to visceral threat and pain, which had a direct correlation with SMARS results. So, despite no dangers of significant harm from doing Mathematics, some students seem mentally impacted as though they are.

Through cue-based mechanisms, Karimi (2012), determined that anticipation, but not the actual performance of Mathematics, caused these responses. This gives a neural explanation of why some students avoid Mathematics subject despite the career advantages for taking them. In addition to this visceral consequences, Aremu (2009) point out that worrisome thought take up mental resources that should be directed toward Mathematics. It is unclear how connected emotions and thoughts are related to anxiety and to what

extent they appear in tandem with one another. Vinson (2001) claims, “That anxious reaction causes a fall in central executive working memory functioning, something that has been shown in many studies to underpin successful mathematical processing. These studies open the door for further research, including the investigation of a Pavlovian mechanism that high anxiety students are exposed to, similar to what Gresham posits. Perhaps most significantly, this provides a new perspective on the problem, how to help students cope with the anticipation of doing mathematics in the future, rather than anxiety generated while performing the Mathematics.

It is commonly known that anxiety will influence a student’s decisions about what classes to take, often leading to avoidance of Mathematics (Pourmoslemi 2013). This can drastically alter a person’s career path. As Tobias (1995) observed, when you eliminate mathematics from your curriculum, it automatically shuts you off from being successful in most University majors, significantly narrowing a student’s options.

2.2.6 Concept of Reinforcement

Reinforcement can be defined as an event, a circumstance, or a condition that increases the likelihood that a given response will recur in a situation like that in which the reinforcing condition originally occurred (Alia, 2010).

The term reinforcement means to strengthen, and is used in psychology to refer to any stimulus which strengthens or increases the probability of specific response. For example, if you want your dog to sit on command, you may give it a treat every time it sits for you. The dog will eventually come to understand that sitting when told to, will result in a treat. This treat is reinforcing because it likes it and will result in it sitting when instructed to do so.

Reinforcement describes a relationship between learner behaviour and a consequence that follows the behavour. This relationship is only considered reinforcement when the consequence increases the probability that the behaviour will occur in the future or at least be maintained. For example, children learn to ask for something politely if they want to receive it in turn. The ultimate goal of reinforcement is to help learners with autism disorder (ASD), learn new skills and maintain their use over time in a variety of settings with many different individuals. As such, teachers and other practitioners must identify the appropriate reinforces that motivate individual learners with ASD.

Reinforcement in this research can be explained as presentation of a reward so as to motivate the learner repeat the taught skill or behaviour. Therefore, a simple definition of reinforcement is something that happens after a behaviour that makes the behaviour more likely to occur again. Reinforcers can take many forms, including tangible items such as stickers or small prizes and intangible motivators, such as social activities, sensory activities or special privileges. Every class is different and several types of reinforcers may be used to motivate different students (Cihak& Gama, 2008).

Reinforcement is a strengthening of a specific behaviour due to its association with a stimulus. A reinforce is the stimulus that strengthens the behaviour, in contrast to punishment that weakens the behaviour (Winkielman, Berridge& Wilbarger 2005).

Therefore, reinforcement refers to an enhancement of behaviour but this term may also refer to an enhancement of memory. One example of this effect is called post- training reinforcement where a stimulus (food) given shortly after a training session enhances the learning (Mondadori, Waser & Huston 2005).

Flora (2004) explained that, reinforcement means that a stimulus is added following behaviour and negative reinforcement means that a stimulus is removed following

behaviour. Here, positive and negative have mathematical meanings (addition! subtraction) rather than emotional (good/bad). These stimuli, however, can be both positive and negative depending on the environment.Positive and negative reinforcement can be used in schools, workplaces, homes and communities as mechanisms for shaping behaviour in both humans and animals.

Reinforcement is a term used in operant conditioning to refer to any thing that increases the likelihood that a response will reoccur. Note that reinforcement is defined by the effect that it has on behaviour, it increases or strengthens the behaviour (Skinner (1982)as cited in Shira,2014).

2.2.7 Types of Reinforcement

According to Jolivette, Stichter, Nelson, Scott and Liaupsin (2000) there are five types of reinforcements;

1. Natural Reinforcement: this type of reinforcement occurs naturally from the appropriate behaviour. For example, a pupil who works cooperatively with a group in a class activity is likely to receive more invitations to join such activities in the future. For most pupils, the attention that the pupils receive for helping other pupils and cooperating is positively reinforcing. The goal should always be to move the pupils towards natural and intrinsic reinforcement (the reinforcement comes from within the child such as positive thoughts or feelings).
2. Social Reinforcement: this is reinforcement that is socially motivated .by teachers, parents, other adults and peers. They express approval and praise for appropriate behaviour. Comments (excellent work," "like the way you are working with your

group"). Written approval ("way to go!") and non-verbal expressions of approval (smiling, clapping and nods of approval).

3. Activity Reinforcers: Activity reinforces are very effective and positive for students. Allowing students to participate in preferred activities (such as games, computer time etc) is a very powerful strategy.
4. Tangible Reinforcers: This category includes edibles (food) and non-edibles such as toys, balloons, stickers and awards. These should be used with caution.
5. Token Reinforcement: Token reinforcement involves awarding point or takes for appropriate behaviour. These rewards have little value in themselves but can be exchanged for something of value.

According to Skinner Foundation (2005), reinforcement can include any thing that strengthens or increases behaviour, including stimuli, events and situations. In classroom setting, for example, types of reinforcement might include praise, getting out of unwanted works, candy, extra playtime and fun activities.

There are two major categories of reinforcement according to Skinner Foundation (2005):

1. Primary reinforcement, sometimes referred to as unconditional reinforcement, occurs naturally and does not require learning in order to work. Primary reinforcers often have an evolutionary basis in that they aid in the survival of the species. Example of primary reinforcers includes food, air, sleep, water and sex. Genetics and experience may also play a role in how reinforcing such things are. For example, 'while one person might find a certain type of food very rewarding, another person may not like the food at all.
2. Secondary reinforcement, also known as conditioned reinforcement, involves stimuli that have become rewarding by being paired with another reinforcing stimulus. For example, when training a dog, praise and treats might be used as primary reinforces.

The sound of a clicker can be associated with praise and treats until the sound of the clicker itself begins to work as a secondary reinforcement.

There are also other two (2) types of reinforcement according to Shira (2014):

A. Positive: the application of something positive that increases behaviour (i.e. attention, tokens, activities).

B. Negative: the removal of something negative that increases behaviour (i.e. no homework, no chores). According to Poling and Normand (1999), reinforcement is divided in to four categories namely:

1. Positive reinforcement (Reinforcement): which ocurs when a behaviour (responses) is followed by a stimulus that is appetitive or rewarding, increasing the frequency of that behaviour.
2. Negative reinforcement (escape), occurs when behaviour (response) is followed by the removal of an aversive stimulus, thereby increasing that behaviour is frequent.
3. Positive punishment (punishment) (also called punishment by contingent stimulus), such as introducing a shock or loud noise, resulting in a decrease in that behaviour.
4. Negative punishment (penalty) (also called punishment by contingent withdrawal"). Occurs when behaviour (response) is followed by removal of a stimulus, such as taking away a child's toy following an undesired behaviour, resulting in a decrease in that behaviour.

2.2.8 Reinforcement Techniques

Before beginning any reinforcement system, it is a good idea to survey students to find out what they find motivating. Think carefully what types of things you will be able to offer as

reinforcement and list those items or activities on a survey for your students, but allow for suggestion, they may come up with great ideas too.

Once you know what you will use to reinforce your students, you can begin to plan for how you will use these motivators. Think about what behaviour you are trying to change. Naturally, you will have some students who are already consistently performing certain desired behaviour; you do not need to wait until the entire class needs to change behaviour before using a reinforcer (Cihak& Gama, 2008 & Smith, 2009).

There are many ways to incorporate reinforcement into your classroom and three (3) examples will be discussed here- praise, token economy, class contracts and mystery motivators.

Praise: is a condition where a learner is motivated by the teacher to exhibit desirable behavior and to discard unwanted behavior. The whole issue of teachers' praise merits fuller comment. According to Westwood (1999), teachers' use of praise has been well researched, but its overall effects are still somewhat uncertain. But Good and Brophy (1994) have reviewed studies in this area and concluded that praise seem important for low ability anxious and dependent students, provided that it is genuine and deserved and praise worthy aspects of the performance are specified. They stressed that a child should know precisely why he or she is being praised, if appropriate connections are to be made in the child's mind between effort and outcome. Trivial redundant praise should be avoided because they serve no useful purpose to learners. However, descriptive praise can be extremely helpful. E.g

That is good work, Joy. I really like the way you have taken care to keep your letters all the same size; good, Jacob! those lines are really straight today because you pressed hard on

the ruler; I am very glad you asked me that question Rejoice. It shows you are really listening very carefully to the story.

Based on observations carried out in some classrooms, it has been noted that most of teachers use to praise the high – achieving students than the less – able ones. This shows that teachers are more disapproving than approving and tended therefore to create a negative classroom climate, which is not conducive for learning. Therefore, descriptive praise is advocated, especially in teaching the special needs students with visual processing deficits, because such praise will motivate and make them develop interest in the learning activity.

Token Economy: a token economy is a system in which learners earn some type of a token that can be exchanged later for a specific reinforcer. If you choose to use token economy, you will need to carefully plan the logistics of the system. Token economy can be very complex, but a few rules of thumb will help to make the system manageable. Always pair tokens with specific praise; make sure students know why they have earned a token so that you will increase the likelihood that the desired behaviour will continue.

- Learners should only earn one token at a time. Try to avoid thinking of the tokens as currency.
- Plan for regular times when learners can exchange tokens for reinforces and stick to your schedule.
- Never take away tokens a learner's has earned once a student earns something, it belongs to him/her.
- Make sure to give out your tokens consistently. Kind ways to remind yourself to catch all students being good (Rhode &Reavis, 1992).

Reinforcement in behaviour literature tends to be described as an increase in responding following the delivery of some stimulus (Samsa, 2010).According to the researcher this increases in response as a result of Stimulus has to produce an effect in the behaviour of responder.

Hence, according to Montana and Charnou (2008) Reinforcement is the process in which the reinforced behaviour will be repeated, and behaviour that is not reinforced is not likely to be repeated but the reinforced behaviour has to be beneficial to a particular person or group and to the entire society.

According to Bruskist and Davis (2008), reinforcement refers to responses that produce satisfaction which is more likely to reoccur and thus be strengthened. Reinforcement is used in operant conditioning to refer to anything that increases the likelihood that a response will occur again (Ferster& Skinner, 1957).

Therefore, reinforcement can include anything that strengthens or increases a behaviour, including stimuli, events and situations, in a classroom setting, like, praise, getting out of unwanted work, token rewards and extra play time and fun activities (Skinner, 1974),He expressed that these stimulants would seriously motivate the learners to work harder.

Reinforcement is only said to have occurred if the delivery of the stimulus is directly caused by the responses made, although in many cases in human behaviour a reinforcing. Stimulus is something which is “valued” by the individual or which the individual “likes” (e.g. money received from a slot machine, the good taste of an apple, the positive effects of a drug) (Montana, et al, 2008).

According to Huitt and Hummel (1997), there are four types of reinforcement; thus; reinforcement, negative reinforcement, positive punishment and negative punishment.

1. **Positive Reinforcement:** is the offering of desirable effects or consequences for behaviour with the intention of increasing the chance of that behaviour being repeated in the future, where it uses the reward system.
2. **Negative Reinforcement*:*** is a psychological reinforcement by the removal of an unpleasant Stimulus when desired response occurs.
3. **Positive Punishment:**most people are familiar with is positive punishment which is easier for people to identify because it is common in society. It is usually called "punishment" or "punishment by application" (Hoekenburg & Hockenbury, 2010). Positive punishment occurs when a stimulus is presented following undesirable behaviour and subsequent occurrences of the undesirable behaviour are reduced or eliminated (Cheney & Pierce, 2004).
4. **Negative Punishment:** involves removing a pleasing stimulus other than the one maintaining the behaviour in order to decrease the frequency of the behaviour, normally, the behaviour decreases immediately (Sundel, &Sundel, 2005). An example of the negative punishment might be an office worker who disrupts his/her co-works by constantly chatting about non work related subjects. His/her co-workers usually respond to him/her that, if he/she remains disruptive, he will not receive his/her yearly pay raise.

According to (Psychology.blogspot.com,2006) as cited in Shira (2014), Reinforcement is divided into four (4), namely; positive reinforcement, Avoidance, extinction and punishment.

1. Positive Reinforcement: is a reward or other desirable consequence that follows behaviour. A compliment from the boss after completing a difficult job and following a period of high performance.

2. Avoidance: also known as negative reinforcement. It is another means of increasing the frequency of desirable behaviour; the person is given the opportunity to avoid an unpleasant consequence.
3. Extinction: positive reinforcement and avoidance increase the frequency of desirable behaviour, extinction tends to decrease the frequency of undesirable behaviour e.g. frequent visit of the subordinate by manager.
4. Punishment: like extinction, also tends to decrease the frequency of undesirable behaviour. In the work place e.g. verbal or written reprimands, pay cuts, loss of privileges, lay off and termination as a result of committing an offence.

Reinforcement techniques are praises for good behaviour can influence your child to increase such behaviour in the future, reports (HealthGuid.org) you can provide praise in the form of kind words, a smile or a hug or through written communication for a job well-done, another type of reinforcement is the use of rewards.

The reward can be anything that your child enjoys, whether is an extra hour of time, playing video games, going out to eat with friends or using a sticker chart, always keep rewards based on what your child like. (Alia, 2010), this technique however has to provide a lasting behaviour modification.

According to Alia (2010), correct timing and consistency are essential for reinforcement to be successful in changing behaviour. Help Guid.org (2012), also notes that, reinforcement has to be delivered directly after the desired behaviour has occurred and on a consistent basis. The idea is that by pairing something your child likes with behaviour, they will increase that behaviour because they will want to get more of what they like.

Bonus is also another technique of reinforcement as it is stated in. If an employee receives a bonus for achieving a monthly production quota, the employee will strive to achieve those

standards the following month so he or she receives the bonus again: The employee behaviour has been positively reinforced. Their supervisor approaches them to discuss their substandard performance. To avoid this confrontation again the employee will try to achieve standard, for the next month. This is negative reinforcement, because the unpleasant stimulus is removed when the employee reaches the desired performance. According to New Jersey Education Association (2010), all of the successful teachers surveyed and interviewed referred to the necessity of enforcing their expectations and rules with rewards and punishments. Frequent use of verbal approval is the common reward mentioned. A surprising number of the successful teachers also mentioned their regular use of concrete reinforcements and privileges to motivate students' effort. All of the teachers, however, stress the need to respond immediately to unsafe or disruptive students' behaviour with unpleasant negative consequences.

Furthermore, Skinner Foundation (2005) stated that; what would happen if you rewarded on-time behaviour and ignore late arrivals instead of punishing them? Reinforcement theory as proposed by Skinner, suggests that on-time arrivals would significantly increase and late arrival would become very vase. According to this theory, environmental consequences are powerful tools that managers can use to shape behaviour. Skinner observed that either positive or negative behaviours can be targeted, but in a business setting, focusing on rewarding desired behaviour helps employees develop positive habits and is less likely to foster resentment than a more punitive approach.

Reinforcement might involve presenting praise (the reinforcer) immediately after a child puts away his/her toys (the response). By reinforcing the desired behaviour with praise, the boy/girl will be more likely to. perform the same actions again (Skinner, 1974).

Applying positive reinforcement within the classroom; teachers often focus on undesired behaviour rather than reducing /stopping the misbehaviour and this is a further disruption in the classroom, however consequences shape behaviours and enable students to work effectively (Mather & Goldstein, 2001). Mather and Goldstein outlined the process for teachers to manage pupils' behaviour using consequences:

1. Define the problem (by count or description).
2. Develop behaviour management plan to change the behaviour.
3. Identify an effective reinforcement.
4. Consistently apply the reinforcement to change the behaviour.

Positive reinforcement or punishment should be immediately applied after behaviour. Positive reinforcement and punishment can be used to decrease unacceptable behaviour in the classroom; however positive reinforcement is more effective in teaching alternative and appropriate behaviours and social skills to communicate needs (Mather & Goldstein, 2001).

Applying praise within the classroom: Praise is a form of positive reinforcement used by teachers to increase the likelihood of positive academic behaviours occurring again. Praise is a reciprocal process that can increase positive interactions between student and teacher (Conroy et al, 2009).There are many important principles of praise, howeverare:

1. Initiated by the teacher.
2. Contingent upon the desired behaviour.
3. Focus on effort or improvement.
4. Delivered in natural voice and age appropriate.
5. Students prefer to be praised privately (away from peers) to avoid being singled out (Infantilo & Little, 2005).

The barriers teachers face when applying positive reinforcement; implementing positive reinforcement within the classroom is not always easy and teachers are faced ‘with three main barriers (Briesch & Chafouleas,2009);

1. Lack of resources/time.
2. Having an entire class to manage making it hard to reinforce all desired behaviour.
3. The risk that the teacher may become the unconditioned stimuli for the behaviour (students only acts in desired way in front of specific teacher).

Class Contracts: A contract is a written statement of what is expected of the students and what is expected of the teacher, of course, there is more to making class contract successful than a simple statement of expectations you may want to include the students in drafting the contract and even have everyone sign the contract itself.

A contract should be a binding agreement, therefore, you should think carefully about how to phrase the expectations. Consider also how to set up the contract so that students are likely to earn reinforce at the end of the contract. For example, if your behaviour of concern is students arriving late to class, you may write a contract stating that if all students arrive to class on time three days in a week, the students may listen to music in class on Friday. Another way to phrase the class expectation would be to state that reinforce may be earned when a certain percentage of the students arrive on time.

Mystery Motivators: are a type of variable reinforcement (Rhode, &Reavis, 1992). The basic idea is that students have an opportunity to reveal a hidden space on a chart when they exhibit the desired behaviour. The hidden space may or may not indicate that the class has earned a predetermined type of reinforcement. When setting up your chart, think about how often you want to allow students to uncover squares and how many marked squares you want to include in your chart. For example, if you are teaching students a new

behaviour or trying to reinforce a behaviour that you have not seen at all in your class, you would probably want a high ratio of marked squares to unmarked squares so that most of the time students would earn a reinforce. However, if you are using the mystery motivator to keep students on track with a behaviour you have already taught, you may want to offer fewer opportunities for reinforces. This is an ideal strategy to use when you plan to fade reinforce quickly. Mystery motivators can also be used for individual students or altered for smaller groups of students as needed.

2.2.9 Effect of Positive Reinforcement Techniques

The effect of positive reinforcement on time estimate in children was measured. Researchers such as Ivan Pavlov discovered that he could condition a dog to salivate to a bell when that bell was followed by the stimulus of food. The dog was found to still salivate to the bell even though the food was not given afterward. The dog was determined to have been conditioned to respond this way through a process known as classical conditioning (Butcher et al,2004).

Skinner is very well known for his work with operant conditioning, and the basic idea of this theory is that the results of certain behaviours will in turn affect the behaviour itself (Cloninger, 2004). He was more concerned with a response that is intended rather that a response that a result to stimulus such as the Pavlov experiment of the dog's salivation to a bell. Skinner studied lower animals such as rats or pigeons because their lives could be highly controlled. He placed them in a controlled environment such as the Skinner box so that he could measure the responses that were, intentionally performed by the animal. Skinner believed that reinforcement wouldincrease' the frequency of a response from the animal. He determined that there were positive reinforces and negative reinforcers which would increase the rate of response. He also determined that punishment would reduce the

rate of responding in his work he found significant evidence to support his theory since he was able to train certain animals to increase their rate of response in order to receive a reward.

Another researcher who studied classical conditioning was Watson as cited in Butcher, et al, (2004) Watson had stated that "through conditioning, he could train any healthy child to become whatever sort of adult wished. He went to study the changes that could be through about in a person simply by changing the stimulus conditions a person had become accustomed to. Watson believed that the social environment played a very large part in conditioning both normal and abnormal personality development (Butcher, et al, 2004).

Many studies have been conducted regarding positive reinforcement. In a study performed by Watling and Schwartz (2004) the focus was on using positive reinforcement as on intervention in assisting children with disabilities. The article discussed the strategies involved with Applied Behaviour Analysis as a way of shaping behaviour. The article stated that "while ABA has been a mainstay of early intervention in special education for decades. Occupational therapists typically do not receive training in ABA or the instructional strategies associated with this discipline" the authors are under the impression that occupational therapist could provide much better services if they were trained in the area necessary to provided the proper reinforcement for children with disabilities. They state that, "When used appropriately, positive reinforcement can be extremely effective and developmentally appropriate for people of all ages and at all levels of development" (Watling & Schwartz, 2004).

Another example of the use of positive reinforcement is the implementation of token economies in mental hospitals. This is based upon the fact that hospitalized patients regarded some activities as more enjoyable than others and almost considered these

activities as a reward. The patients were required to have a number of tokens to participate in the activities he or she found enjoyable. These tokens were earned by performing tasks that were required of all patients such as making a bed or doing hospital jobs (Butcher et al, 2004). These token economies are also helpful in simulating the outside world since the patients are being "paid" for jobs they are performing, and they use that payment to buy what they want.

Therefore, another article in regards solely to positive reinforcement is one that was a rebuttal to an article written by Alfie (2001) titled "Five reasons to stop saying, "Good job". The authors of the rebuttal felt that John's assertions and ideas were incorrect at best. They suggest that his position "is harmful to children, families, and the professionals who serve them" (Strain & Joseph, 2004). The authors argued that positive reinforcement is a useful tool, when implemented properly, to teach children appropriate social skills and many other things that they will need in life. They concluded by saying that each child is entitled to receive the teaching work best.

According to Winkielman, Berridge and Wilbarger (2005) the effect of reinforcement may be measured as an increase in the frequency of its expression (pulling a lever more duration (e.g. pulling a lever for a longer period of time.), magnitude (pulling a lever with greater force), or decrease in latency (e.g. pulling a lever more quickly following the onset of an environmental event).

If a father gives candy to his daughter when she picks up her toys, if the frequency of picking up the toys increases or stays the same, the candy is a positive reinforcer (to reinforce the behaviour of cleaning up) (Flora, 2004).

According to Rainbow Academic Child Care (2011), it is important for teachers to use a variety of teaching techniques to provide students with a successful learning environment.

One important teaching technique that will be discussed is using positive reinforcement in the classroom with students. It is beneficial to incorporate a positive atmosphere because students feel safe and confident with others in an academic setting. A teacher that uses positive reinforcement increases positive behaviour from the students, which results in a successful learning environment. Educators from preschool and up can incorporate positive reinforcement through verbal cues.

One ways a teacher can verbally use positive reinforcement is to notice something positive about a child's behaviour. For example, if a child says the words please or thank you to another child, a teacher can say to the child, "Wow, I like the way you are using your manners and saying thank you to your friend". By reinforcing the positive behaviour the child was exhibiting, a child is more likely to repeat the behaviour. Also, children around that child will hear the teacher give the child praise for the specific action and will know the teacher is happy to hear these kind words. In turn, the child will be more likely to behave in that positive manner. Children like to get attention and it is important to provide students with positive attention rather than negative. If a child knows they will receive attention from the teacher for certain behaviour, a child is more likely to repeat it whether it is good or bad. Therefore, it is important for a teacher to provide as many opportunities as possible for catching children doing really good things in the classroom and making positive comments to reinforce the behaviour.

In addition, it is important for teachers to verbally redirect students positively by stating the behaviours that is expected. For example, if a teacher sees a student running in the classroom instead of saying, "stop running" a teacher should say, "Please use walking feet in the classroom". This relates to child psychology because when a person says for some one not to do something, it creates an image in the person's mind of that action and may be

more likely to do that action. However, when a teacher states what he/she should do. Therefore, a child will have a picture in his/her mind to use walking feet instead of running feet. This is another example of positive reinforcement because a teacher is positively speaking to a child to repeat behaviour.

As educators, it is important to remember how much of impact we have on each student, it is important to make the influence a positive one by using positive reinforcement as one of the many techniques incorporated in the classroom, we will create a successful academic setting where students feel safe and confident while learning (Rainbow Academic Child Care, 2011).

Motivating students with positive reinforcement: The positive reinforcement (including praise) in education increases student's intrinsic motivation (Willingharn, 2006), in that they are likely to engage in a behaviour for personal enjoyment such as reading a book (Lepper, Corpus &Iyengar, 2005). Praising students for appropriate behaviours has been found to decrease inappropriate behaviours (Wheatley, , West,Chalton, Sanders,Smith, & Taylor,2009). This research also demonstrated that effectively enhances intrinsic motivation to improve student behaviours in a wide variety of school settings (classroom, playground and canteen).

Positive reinforcement and the effect on learning; Research has demonstrated that positive reinforcement has beneficial effects on learning and positive reinforcement has consistently improves student's classroom behaviour (Wheatley &et al, 2009). Using praise within the classroom has been shown to decrease inappropriate behaviour (such as distracting peers and disrupting the teacher) in students and increase desired behaviours. As there were fewer distractions, students were able to have more opportunities to respond correctly to academic demands presented by the teacher.

Research has also shown that when a teacher takes part in training on how to include positive reinforcement within their classroom students on task behaviour increases by 35% and inappropriate behaviour (disruption/distraction) decrease by 25%. Furthermore, a lack of disruptive behaviour enabled teachers to cover more content and subsequently allowed students to learn more (Lannie& McCurdy, 2007).

An important side note of the effectiveness of positive reinforcement on learning is that, the introduction of positive reinforcement produced gains in terms of classroom behaviour (more desired behaviour; less undesired behaviour) but also students working behaviour (i.e. they spent more time on task). This is likely to be extremely beneficial to teachers, classroom management which will subsequently increase academic success in students.

2.2.10 Uses ofToken Economy in Classroom

In the early stages of teaching the token economy, pair social praise with the tokens by giving a high five, a pat on the back, or tickles while at the same time labeling the behaviourwith “good sitting!” or “awesome reading!” School staff and family members working with the learner may share the responsibility of distributing tokens but as stated previously, they should be consistent in their distribution of tokens and exchanges of the back-up reinforcer. Flood the learner with tokens in the beginning so that access to the back-up reinforcer is frequent.

When introducing a token economy, remember that it is a new tool for the learner and will require a learning phase. The student may be resistant until he/she has had several opportunities to successfully earn back-up reinforcers. Once the learner learns that earning tokens leads to the back-up reinforcer, gradually lengthen the time between giving tokens and/or increase the number of tokens required.

As the time intervals between delivery of tokens and/or number of tokens required increase, continue to pair token delivery with lots of social praise. This will teach the student delayed gratification.

When a learner has earned the pre-determined number of tokens, he/she should be encouraged to remove the tokens from the board and to exchange them for the selected back-up reinforcer or allow him/her to choose one from the menu. Upon exchange, the student should be given immediate access to the back-up reinforcer.

It may be helpful to limit thelearner's choices to 2-3 items/activities as opposed to an entire menu of reinforcers. Allowing the student to participate in the token economy at this level may increase his/her own sense of control over the situation as well.

2.2.11 Effect of Token Economyin the Classroom System

Using token economy in classrooms may promote competition among learners. For example, students may compete against each other to receive the most tokens. This type of environment may decrease the likelihood that children will learn the concepts of teamwork and helping others because they are focused on winning rather than learning (Kohn, 1993). Thus, using a token economy actually may teach children that competing, rather than helping, is more effective at receiving rewards. In addition, Kohn stated that competition generates anxiety which can impair performance. In other words, the children may become anxious concerning whether or not they will receive a reward which, in turn, may interfere with their engaging in the positive behaviuor required to receive the reward.

Dependence on token economies is a philosophical concern that not only affects teachers, but can affect children as well. Jackson (2008) asserted that, the more we are rewarded, the more we come to depend on rewards. In other words, children's behaviuor will continually

be associated with external rewards, and they will become so dependent on these rewards that they may not be able to exhibit the targeted behaviuor without expecting to receive a reward. According to Kohn, dependence on reward systems is expressed by children when the targeted behaviuor decreases after the withdrawal of the system.

Another potential philosophical concern with the use of token economies to increase appropriate classroom behaviuor (e.g., sharing, staying on mat) is that the children with behaviuor problems do not exhibit these behaviuors frequently enough to receive the reward (Karimi 2008). These children even may terminate any attempts at receiving rewards because they believe that their efforts are hopeless (Jackson 2008). Finally, the risk exists that the token economy rewards may be more rewarding than the regular class activities, especially if the rewards are activity-based, causing children to perceive the regular class routine as less rewarding once the token economy is implemented. This could lead to the children only participating in the regular class activities enough to obtain the reward (Smith,2004).

Parental concerns should be considered because it is important for the children's parents to feel comfortable with the school's discipline policy. One parental concern may be that other parents could have access to information regarding their child's behaviuor. For example, parents may have access to all children's behaviuoral information (i.e., how many tokens each child received) if the teacher has not removed the tokens obtained for the day when parents enter the classroom to pick up their children. According to Jackson (2008), behaviuoral charts (e.g., star charts) that are displayed in the classroom provide evidence that students are being ranked and compared against each other. Kohn suggests that this educational environment is detrimental to children and recommends that parents remove their children from these classrooms.

Parents also may become upset or embarrassed if their child does not receive the rewards obtained by other children. Parents may feel that their child is being singled out or humiliated if he or she regularly obtains fewer tokens and rewards than other children.

Another aspect of the token economy with which parents may be concerned is the addition of a response cost. A response cost is used in most token economy systems if there are undesirable behaviuors (e.g., spitting, fighting) that potentially may compete with the desired behaviuors (e.g., sharing, playing gently with toys) (Sutter, 2006). Using a response cost is a philosophical concern with parents because such an approach utilizes punishment and parents typically are less approving of punishment approaches (Sime, 1987)

2.2.12 Uses of Praise in Classroom

The use of praise in learning has a long history. As early as the 12th century, it was reported that children were awarded figs and honey in the teaching of the Torah. Today, praise is a technique that comes to mind as a positive behaviour management tool. It is also thought to provide encouragement to students, to help build self-esteem, and to build a close teacher-student relationship. It is an integral part of classrooms. Praise is to express approval or admiration of; commend;. Within the classroom this would mean to express positive teacher affect. It goes beyond the level of simple feedback, which can be neutral, negative or positive.

Praise is consistent with an authoritarian approach, which lowers self-esteem, provokes disruptive behaviour with the outcome more important than the process.

Encouragement is the reinforcement of effort or process, consistent with his view of a democratic teacher. Encouragement focuses on strength, avoids competition, and generates

better-behaved students. Robins (2012) concurs, adding that praising for effort rather than performance also promotes risk-taking.

2.2.13 Effect of praise in the classroom

Praise preserves and supports intrinsic motivation by avoiding incentive systems or explanations that lead students to infer that they engage only to please you or to obtain rewards.

Praise is a reward (or incentive system) tied to meeting progressively demanding standards of performance with the aim to enhance intrinsic motivation.

Many researchers would agree that praise only rarely has a negative impact on intrinsic motivation.it does appear that praise is unlikely to affect intrinsic motivation if children are praised for their persistent process and sustained efforts, rather than for their intelligence or ability.

Praising a child's intelligence can be harmful, explains Zakaria (2008), as this implies a belief in an innate, fixed ability whereas more and more research in psychology supports the stance that dedication and persistence can transform the basic capacity to learn.

Praise is an intrinsic motivation is driven by personally directed and achieved goals and not controlled by external regulation. Constructivists would also argue that intrinsic motivation cannot be built by external agency – teachers and students can only create an appropriate environment in which a robust sense of self can grow and develop. And it may be that intrinsic motivation is developmental.

2.2.14 Suggested Solutions to MathematicsAnxiety in Other Literatures

The following give an overview of various research findings with respect to the solutions to Mathematics anxiety

Mathematics Teacher: Bamikole (2006), stated that the teacher is in a position to influence development of learned helplessness by changing beliefs about the causes, success and failure. Learned helplessness can be prevented in the following ways:

i. The teacher should provide learners with success experiences.

ii. Provide learners early with attributions about effort, persistence and strategy.

iii. Deemphasize that would defy negative and aptitude (Bamikole, 2006).

Different Teaching Methodologies: can be used to reduce Mathematics anxiety. Vacc (1993) believes that a personal and process – oriented teaching method which emphasizes understanding rather than drill and practice reduces anxiety. Problem solving and the discussion of various strategies for solving problems are important for the prevention of Mathematics anxiety (Greenwood, 1984).

Mathematics anxiety often begins with the teacher, Mathematics anxious teachers can result in Mathematics anxious students and helping teachers confront and control their fears and feelings of insecurities when faced with numbers is essential to stop the spread of anxiety to learners (Martinez, 1987).

Another aspect of a teacher's involvement in reducing Mathematics anxiety is the teacher's attitude to errors. Barnes (1984) noted that a positive attitude to errors is one of the most important steps in reducing anxiety classroom. Learners need to understand that errors are an essential part of the learning process and that mistakes help the learner to discover what it is they do not understand and are essential for progress (Barness, 1984). Stressing that no attempted solution is all wrong and that all solutions involve some correct, logical reasoning, helps learners realize they are not stupid if they make a mistake (Frakenstein, 1984). Another approach that teachers can use with respect to errors is to remove some of the threat and mystery of evaluation by having learners correct their own work, using an

answer key (Martinez, 1987). The teacher should have learners correct their own errors to show the causes of their mistakes and point out a pattern of errors (Gentile and Monaco, 1988). Finally, Martniez (1987) believes that letting learners control the evaluation process, they can let them control their own knowledge.

Positive transfer of learning: Positive transfer of learning is very important if any effective learning and permanent learning will take place. Onivehu and Ziggah (2004) commented that to avoid anxiety among students are far as teaching Mathematics is concerned, learning in the classroom should be transferable since transfer is the key to learning task "A" influences learning task "B" For example, teaching addition in Mathematics before subtraction and multiplication. Thus, when learning "A" facilitates learning "B" positive transfer is said to have taken place; conversely, when learning "A" inhibits learning "B", negative transfer has occurred.

Belief and Attitude of Students: a leaner's intra-psychic structure has an effect on his/her experiencing Mathematics anxiety. Millar and Mitchell (1994) point out that a learner's personal belief is being bad at Mathematics needs to be distinguished from having a poor history and not being of any good. Skiba (1990) suggests dispelling myths such as the belief that a Mathematics IQ exists and that learners whom have enjoyed past success in Mathematics should be aware that the talent still exists.

Onivehu and Ziggah (2004), Allport (1925) define attitude as a state of an individual responses to an object or situation that is related to or associated with it. Students attitude affect their performance in school, lack of interest, motivation and confidence make students view Mathematics as hard, some even do run away from the subject and likewise.

Learner's Environment: classroom has an effect on a learner's achievement as that can be seen from results of previous research. Dossel (1993) has suggested that the atmosphere in

the classroom, including perceived warmth, may lower anxiety and improve Mathematics performance. Stuart (2000) stated that students like to do what they are good at, and to fell good about Mathematics, teachers need to build up the self-confidence and refine the skills required to be successful inMathematics. Howson and Wilson (1990) points out that the teacher that lacks workspace cannot develop far as "a reflexive practitioner". This was buttressed by Franke and Carey (1997) when they asserted that the nature of the classroom environment in which Mathematicsis taught strongly influences how children perceive the subject, how it should be done and what they consider the subject and what they consider appropriate responses to mathematical questions.

2.3 Theoretical Framework

Theories play an important role in educational research, which serve as one of the useful tools utilized by educators in their course to tackle challenges of educational problems. Babbie (1999) as cited in Shira (2014), defined theory as a systematic explanation for the observations, which relate to a particular aspect of life. Theories and models direct and interpret research.

Educational theories applicable to guidance and counselling in tackling behaviour problems are numerous; two related to this study will be reviewed. One from behavioural theory, which is operant conditioning theory of Skinner and the second one in psychodynamic theory which is, psychoanalysis theory of Sigmund Freud.

2.3.1 Operant Conditioning Theory

Operant conditioning theory (or instrumental conditioning) is a form of learning in which an individual's behaviour is modified by its consequences; the behaviour may change in form, frequency, or strength. Operant conditioning is a term that was coined by Skinner in

1937. Burrhus Frederic Skinner, Popularly known as Skinner (1904-1990) an American psychologist was the founder of operant conditioning theory. Operant condition is a theory that deals with the medication of "voluntary behaviour" or operant behaviour. Operant behaviour operates on the environment and is maintained by its consequences (Shira, 2014). In this regard the researcher is of the view that one of the voluntary behaviour as indicated in operant theory found among primary school pupil is anxiety for Mathematics, which can be modified.

Reinforcement, Punishment and Extinction

Reinforcement and punishment, the core tools of operant conditioning are either positive (delivered following a response) or negative (withdraw following a responses). This creates a total of four basic consequences, with the addition of a fifth procedure known as extinction (i.e. change in consequences following a response). It is important to note that actors are not spoken of as being reinforced, punished or extinguished, it is the actions that are reinforced, punishment, and extinction are not terms whose use is restricted to the laboratory. Naturally occurring consequences can also be said to reinforce, punish or extinguish behaviour and are not always delivered by people.

1. Reinforcement: is a consequence that causes behaviour to occur with greater frequency.
2. Punishment: is a consequence that causes behaviour to occur with less frequency.
3. Extinction: is caused by the lack of any consequence following behaviour.

Here the terms positive and negative are not used in their popular sense, but rather positive refers to addition, and negative refers to subtraction. What is added or subtracted may be either reinforcement or punishment. Hence positive punishment is sometimes a confusing term, as it denotes the "addition" of a stimulus or increase the intensity of a stimulus that is over site (such as spanking or an electric shock).

The four procedures are:

1. Positive reinforcement (Reinforcement): occurs when behaviour (responses) is followed by a stimulus that is appetitive or rewarding, increasing the frequency of that behaviour.
2. Negative reinforcement (escape): occurs when behaviour (response) is followed by the removal of an aversive stimulus, thereby increasing that behaviours frequency.
3. Positive punishment (punishment) (also called punishment by contingent stimulus, such as introducing a shock or loud noise, resulting in a decrease in that behaviour.
4. Negative punishment (penalty (also called "punishment by contingent withdrawal"), occurs when a behaviour (response) is followed by removal of a stimulus, such as taking away a child by following an undesired behaviour, resulting in a decrease in that behaviour (Benedict, Horner & Squires 2007).

Steps in operant conditioning to change human behaviour:

1. State Goal (aims for the study)
2. Monitor Behaviour (log conditions)
3. Reinforce desired behaviour (give reward for proper behaviour). These steps can be followed to overcome the problem Mathematics anxiety that affects the performance of pupils in Mathematics negatively.

2.3.2 Psychoanalytic Theory

Psychoanalytic theory originated with the work of Sigmund Freud. Through his clinical works with patients suffering from mental illness. Freud (1856-1939), an Austrian Neurologist and Psychotherapist is known for psychoanalysis, the theory came to full prominence as a critical force in the last third of the twentieth as part of the flow of critical discourse after the 1960s (Basingstoke, 2008). Freud ceased his analysis of the brain and

his physiological studies in order to turn his focus to the study of the mind and the related psychological attributes making up the mind. His study then included recognizing childhood events that could potentially lead to the mental functioning of adults. He examined the genetic and then the development aspects that made the psychoanalytic theory become what it was (Conroy, Sutherland, Snyder & Al-Hendewi ,2009).

Basic Ideas

The psychoanalytic theory consists of the ideas that is based around personality, such as the division of the psyche into the id, ego and superego, repression, transference, dream-interpretationand the Oedipus complex (Conroy, Sutherland, Snyder & Al-Hendewi 2009).

The psychoanalytic theory points out that; the mind of a man is divided into three components; the id, ego and superego. These three elements of personality work together, to create complex human behaviours. The id is the only component of personality that is present from birth. This aspect of personality is entirely unconscious. The id is the human basic instinctual drives. The id contains the libido, which is the primary source of instinctual force that is unresponsive to the demands of reality (Frisoli, 2008).

In the id, contrary impulse exists side by side, without cancelling each other out. There is nothing in the id that could be compared with negation, nothing in the id which corresponds to the idea of time. It needs immediate satisfaction, and it acts according to the “pleasure principle”, seeking to avoid pain or displeasure aroused by increases in instinctual tension (Frisoli 2008).

Id, in a similar message, is an innate or inborn and is present at birth, is also a basic and central structure of personality. It functions to discharge psychic energy which when it accumulates results in tension (Tukur, Yunusa & abdulwahid 2013).

In accordance with Freud, the seeking to avoid pain and displeasure may be responsible for the avoidance of Mathematics resulting from anxiety.

Therefore, id, ego and superego are the three parts of the psychic apparatus defined in Sigmund Freud's structural model of the psyche; they are the three theoretical constructs in terms of whose activity and interaction of mental life is described. InFreud's model, the ego experiences three source of threat: those from id, those from the super ego and those from reality itself. In order to cope with these, individuals use defense mechanism.

Ego Defense Mechanism

Freud (1987)as cited in (Duntoye, Akande & Abdulkadir 2007), defined ego defense mechanism as a strategy used by the individual to defend against open expression of id impulses and opposing superego pressures, sometimes forced to take extrememeasures to relieve the pressure created under anxiety. Anxiety according to Idowu, Adeoye, Adeyemo and Salami (2009), is a state of uncontrollable tension that learners are motivated to reduce. They expressed further that, anxiety develops out of conflicts between id and superego over control of the available psychic energy, when the ego cannot control anxiety by rational and direct methods; it then relied on the unrealistic ones called ego defense behaviour. This type of behaviour is said to have been responsible for the low self-confidence, low self-esteem, wrong perception, negative attitude towards Mathematics and avoidance of Mathematics by Mathematics anxious learners (Alao, 2000).

Idowu and et al (2009), stated that, all defense mechanisms shared two common features:

1. They operate at an unconscious level and are therefore self-deceptive.
2. They distort one's perception of reality, so as to take anxiety less threatening to the individual.

Freud believed that individuals rarely rely on a single defense to protect themselves from anxiety; it is more common for people to use several mechanisms of this type. The principal defense mechanisms are repression, projection, reaction formation, fixation and regression.

Repression: it is regarded by Freud as primary ego defense, not only because it serves as a basis for more elaborate mechanisms of defense but also because it involves the most direct approach in avoiding anxiety. It is described as selective forgetting. Repression according to Balogun (2001), occur when one object choice that arouses undue alarm is forced out of consciousness by an anti-canthesis. For example, a disturbing memory be prevented becoming conscious. He expressed that the repressed impulses remain active in the unconscious and require continuous psychic energy to prevent their emergence into conscious, this persistent drain on the ego's resources seriously limit the amount of energy available for more constructive, self-enhancing and creative behaviour.

Projection: this according to Idowu and et al (2009), refers to the process of unconsciously attributing one's own unacceptable impulses, attitudes and behaviour to other people or environment, and enables us to blame someone or something else for our own deficiencies. There is therefore, a reason to state, that learners who attribute poor performance in Mathematics achievement which results from their Mathematics Anxiety from their teacher's poor teaching method may relieve themselves from such anxiety using defense mechanism of projection.

Reaction Formation: this is employed when an individual who harbours some strong destructive impulses wish against another, goes on to express an unusual considerable amount of kindness from another who ordinarily would be unconcerned with him, there is a

reason to suspect that something more than gesture presented is actually involved (Duntoye & et al 2007).

Regression: this arises when fixated individual meet with extreme difficulties in coping with the anxiety put on him/her by his new state of life that is, when a person fixated individual is retreating to earlier development level involving less mature responses and usually a lower level of aspiration (Alao, 2000)**.**

2.4 Empirical Studies

A good number of researches have been conducted on Mathematics anxiety and positive reinforcement counselling techniques. Those related to this study are reviewed. Recent development in positive reinforcement psychological works, have identified experimental research work, which reduces the incidence of Mathematics anxiety (Mather 2001) in her study, reviewed the concept of whether schools themselves have influence on learner's anxiety for Mathematics. The review used the more common multiple regression technique in analyzing 3rd and 4th grade classes in montreal public schools from 1979 – 1980. They utilized a total of 19 variables, split into four (4) major categories, thus:

1. Personal characteristics (self-concept)
2. Socio-economic variables.
3. Class variables (teacher's experience).
4. School variables (school size).

The study found that personal and socio-economic variables are the factors causing Mathematics anxiety among students as measured by uniform test scores. Class variables and school variables are found to be unimportant.

Do Paul & Barkley (1992) in their findings stated that token economy and praise techniques were found effective in the reduction of test anxiety among secondary school

students. They stressed that significant difference do not exist in the effect of the two techniques.

Manma (2015) stated that Token reinforcement and praise technique have differential effect in favor of token reinforcement.

Lynnette, Richard, and Michelle (2004) conducted a study on; the effect of peer-mediated positive behaviour of socially appropriate classroom behaviour. The students' positive behaviour support (PBS) plans included such practices as self-monitoring, teacher-peer mediated support and positive reinforcement through such means as token economy. The experiment was concerned with the PBS plans for 2 third grade students, males who were at risk of failure both academically and socially. The results showed that the students showed marked and immediate improvement in their behaviour which has maintained even as reinforcement was lessened. In a study performed by Phillip (2004), on a 5 year old girl with separation anxiety Disorder. The parent and the teacher used an approach that involve shaping, positive reinforcement and extinction, the result also showed that by the end of fifth week of treatment, the girl was attending school full-time and no longer met the criteria for a diagnosis of separation anxiety disorder. Furthermore, the results were maintained when four and twelve month follow-ups were completed.

Carlson Man and Alexander (2000) examined the effects of response cost and rewards on the ability of 40 middle school age learners with attention deficit to finish assignments and correctly complete problems. Results revealed that the two techniques had effect on students' academic performance.

William, Daniel, Megan and Elian (2004) examined positive psychology in relation to externalizing students. They determined typical externalizing behaviour to be, but not limited to such things as, aggression, intention, arguing and rule breaking. They also

determined that for an activity to flow it must be considered enjoyable by the person who is performing the task and this is important for a sense of mastery over a task. Motivation is also necessary for success according to these researchers and students who tend to exhibit externalizing behaviour very rarely have a sense of optimism. The authors noted that teachers who claim to be positive in nature do not appear so during naturalistic observation. The teachers were observed to praise students for positive behaviour much less frequently than they reprimanded the students for negative behaviour in order to help the students achieve success, especially those with externalizing behaviours.

Aremu (2003) studied conquering Mathematics anxiety, as measured by standardized composite of Mathematics tests, administrated to students. The sample used was 25 males and 16 females, age ranging from 18 – 23 years, with mean of 20 and SD of 6.3. Independent variables included sex, socio-economic status, urban/city and teacher experience. The study which lasted for 14 days, found that socio-economic status, teacher experience and sex have an effect on students anxiety for Mathematics. Also, sex variable showed that female students have more anxiety for Mathematics than male.

In a study carried out by Herper (1998) on the causes and reduction of Mathematics anxiety, age and gender were used as variables on 25 students made up of 12 boys and 13 girls, assessed to be students with low esteem in the subject. Achievement test was administered to assess the level of the students. Two weeks after the pre test was administered, the same students were counselled using positive reinforcement. After which a post test was administered to the same group of students.

The results showed that enhancing a child's academic self- concept, is not only a desirable goal, but is likely to result in improved academic achievement as well. Also, a slight improvement was recorded among the female students in their posttest results.

In the findings of the study concluded by Clark, Clark and De Silva (1985) subjects who reported many anxiety related cognitions find them more frequent and are more emotionally intense. Such cognitions are according to the subjects difficult to remove, are less acceptable and accounted for 43% in anxiety change levels. Another study by Kent and Jambunathan (1989) found that an increase in negative thoughts increased anxiety. This is in support of an earlier view that cognitions which have been shown to be at the basis of Mathematics anxiety should focused on anxiety reduction.Group instruction was found to have a potential for anxiety prevention and also seems to offer benefits to some students who would not seek help for fear of being labeled. A study conducted by (Sime, Ansorge, Olson, Parker& Lukin 1987) found that it was more worthwhile to engage students in group intervention as long as adaptation for high versus low anxiety and motivations are made.

In the work of Darma (2010) who compared behaviour therapy with nutritional supplements on the handwriting of the children with attention disorder, revealed that nutritional supplements are significantly more effective than behaviour therapy.

Handel and Davis (1978) conducted a study to investigate the effectiveness of an intervention strategy for reducing Mathematics anxiety when they combined curricular-counselling intervention strategies for reducing Mathematics anxiety. The results showed that maximum effectiveness was achieved when participants attended Mathematics course in a support group setting. Hyman (1973) found that group treatment using desensitization was more effective than individual treatment in Mathematics anxiety reduction. It is evident from these studies that group support is an important factor in reducing Mathematics Anxiety. The use of group support and group instructed techniques in the present study was chosen on that basis.

Studies on adolescent Mathematics Achievement

An individual's perceived ability to do well in a subject, such as Mathematics, is one that has received considerable attention in psychological literature in respect of students.

The study of empirical Mathematics consists essentially of two components. Recognizing where a particular Mathematical concept , arises based on experiments and learning how to apply the Mathematics concepts more effectively, as it relates to every aspect of life.

Looking specifically at Mathematics achievement, Terwilliger and Titus (1995) studied participants in the University of Minnesota Talented Youth Mathematics Program(UMTYMP) to determine gender differences of Mathematically talented youths on attitudinal measures related to motivation, confidence, readiness support, priorities and stereotypes. It was found that males showed significantly higher levels of motivation, confidence and interest in Mathematics than females.

Focusing on risk-taking and Mathematics achievement, Ramos and Lambuling (1996) in their research spanning three years on gender risk level in Mathematics, examined females' reluctant and male tendency to be risk takers. They proposed that students are more prone to taking risks performed better on Mathematics tests. Therefore, male tendency to take more risks might explain their higher Mathematics achievement, but concluded that when females are encouraged their performance appreciated well above average.

Ramos and Lambuling (1996) offered two recommendations. Firstly, educators should emphasize females ability and competence as well as encourage them to take risk when solving Mathematicsproblems. Secondly , they have urged test constructors to consider how direction on guessing might influence female test takers. Berkovitz(1979) Butler and Sperry, (1991) on a related study on Mathematics testing concluded that when instruction and assessment reflect female perspectives, females are just as capable at Mathematics analysis as males are.

In an African context, Lee and Lockheed (1990) conducted a study on 1,012 students enrolled in mixed –sex secondary schools from ten southern States in Nigeria. The authors found that, amongst female students enrolled in he school, perceived ability positively relate to higher achievements in the female students' Mathematics performance. This is because, competition was emphasized and this helped the female students in the school to perform better in Mathematics.

Similarly, in a study on secondary school students from seven State secondary schools and one Federal College in Nigeria, Aghenta (1989) found that perceived difficulties of science occupation in a significant factor in preventing female students of science occupation is a significant factor in preventing female students from entering Mathematical fields. The altitude that the female students hold towards Mathematics and science appears to be a powerful predictor of achievements in this field. She concludes that a prior positive attitude towards Mathematics and strong positive attitude towards science both appear to play critical roles in whether African female students would persist or drop-out of the Mathematics educational pipeline. She also found that a poor attitude towards Mathematics is a barrier to access Mathematical fields. Conversely, she concludes that, good or positive attitude when one's mind has been restructured positively is one of the several factors which enhanced performance in Mathematics.

2.4.1Interventions in the Reduction of MathematicsAnxiety

A strategic intervention is one in which, there is a match among the needs of the students, the hope for outcomes (objectives) and the intervention selected. In the best of all worlds, strategic interventions would be chosen based on empirical evidence that the intervention selected produces the desired outcome when used with the intended audience, but this will

not always be possible given the status of the research on various interventions used by school counselors (Aremu, 2003).

As noted by Aremu, it is believed that when school counsellors carefully design and deliver strategic interventions aimed at reducing Mathematics anxiety, the likelihood that they will produce the hoped for outcomes is substantial.

For instance, Malinsky, Ross, Pannel and Majunkin (2006) explored the impact of peer-led group that focused on self-concept, attitude toward Mathematics school attendance and improving grades, found that students in the experimental group using cognitive restructuring techniques, have significantly reduce in their Mathematics anxiety, increased their grades, attended school more regularly.

Although the alpha level that has been used in this research is questionable because, it increased the likelihood of drawing an erroneous conclusion (chances are 1 in 10 instead of the traditional 1 in 5), it nonetheless supports the presumption that strategic interventions, when cognitive restructuring in adopted, can be used to reduce Mathematics anxiety.

Hunsley (1987) also found that an intervention composed of tutoring plus counselling, compared to tutoring alone or no treatment is an effective means for reducing Mathematicsanxiety among students. Tutoring, conducted by counsellors appears to be an effective method for reducing Mathematics anxiety, the organization and delivery of these programmes are well within the scope of school counsellors roles.

In another study conducted by Malinsky, Ross, Pannel and Majunkin (2006) in determining whether components, such as self-concept improvement or counseling, add significantly to the efficacy of the intervention of students learning, it was found that, adopting tutorial method with individual contributions and a strong sense of self belief, improved

performance in Mathematics. However, they suggested that the one on one approach in teaching shall be encouraged for effective mastery of the basic taught concepts.

According to Suinn and Winston (2003), academic and social support as the basis for classroom guidance and group counselling, is an attempt to influence the academic performance in Mathematics of 180 students. The students involved in the research scored between the 25^{th} and 50^{th} percentiles on the Florida Comprehensive Assessment Test (FCAT). It was recorded that the scores of the students increased, on independent measures. In Mathematics, 85% of the students showed improvement on the FCAT and their overall scores increased significantly on the dependent measure. Parental involvement also seems to be an effective means of improving the students' performance in Mathematics. These strategic interventions used were found to increase Mathematics performance and reduce Mathematics anxiety among students.

Psychological Solution: Psychological treatments have also been in the treatment of Mathematics anxiety. Research has shown that cognitive factors such as those described researchers in the field of psychology should be taken into account in the treatment of Mathematics anxiety. Ma (1999) noted that treatments that help students overcome their cognitive difficulties in the learning of Mathematics may be associated with an appreciable reduction in Mathematics anxiety. Handier (1990) as described by Ma (1990) suggests that a cognitive process should include making knowledge work for the learner, joining skills and content, linking motivation to cognition and using social communities. Hadfield, Maddux, Miller and Mitchell (1994) describe a successful treatment of Mathematics anxiety as involving two phases of activities. In one phase, the learner receives special tutoring with emphasis on manipulative while attempting to make the content meaningful by relating it to interest and career goals. The second phase is aimed at a different method

of evaluation where credit is given for demonstration and understanding through tutoring sessions.

It is important to say that, teachers should provide the environment and avenue for the learners to have the freedom to make their own choices such as being allowed to work by themselves, with a friend or a group of friends. Learners should have a broader and deeper understanding of how professionals feel and behave towards Mathematics, including the knowledge ofMathematicsadults have a lot of choices in how they work and with whom they work (Wells, 1994).

Pedagogical Interventions

Discourse, while it does not consistently increase mathematics performance, has been found to have a strong, positive impact on students' anxiety toward Mathematics. Dogan (2012) studied two groups, one with lecture based structure and another that was discourse based. The discourse based class made a great many all-around improvements on anxiety, fear and enjoyment of mathematics, and several other factors relating to anxiety. It is unclear what it is about the discourse focus that encourages these changes. It has been hypothesized that it could be due to the confidence from reasoning out Mathematical discoveries or from students feeling more at ease in the socially infused discourse environment.

Johnson and Vandersandt (2011) indicated that learning programmes can have markedly different effects on anxiety based on the type of students' involved in them. In her study, it appeared that additional content and pedagogy classes could have a positive effect on the anxiety and confidence levels of pre-service teachers. However, this was highly contingent on the sub-group they started in. In general, the sub-groups of pre-service teachers with the most desirable initial traits seemed to gain the most benefit. This conclusion of this paper

emphasizes that there should not be a 'one size fits all' mentality. Future research could include how sub-groups respond to a variety of other types of interventions. It is likely that for a certain type of students traditional instruction is optimal, while other groups would be served better by a variety of alternative approaches.

2.5 Summary

In summary, the conceptual frame work explains in detail the variables that make up the study, such as 'positive reinforcement' and Mathematics anxiety. The following concepts were reviewed: concept of reinforcement, type of reinforcement, reinforcement techniques, effect of positive reinforcement techniques, concept of Mathematics anxiety, causes of Mathematics anxiety, and effect of anxiety on behaviour and learning of Mathematics.

Two theories were reviewed, these are Operant conditioning theory by B.F Skinner and Psychoanalytic theory by Sigmund Freud. Operant Conditioning theory explains behaviour as learnt and can also be unlearnt through behaviour modification strategy. Concepts like reinforcement and extinction justify the applicability of the theory while Psychoanalytic theory on the other hand, explained human mind as having three components of Id, Ego and Superego these components according to the theory, work together to create human behaviour. In Freud's model, the ego experiences three forms of anxiety, those from Id, those from Superego and those from Reality (ego) itself and that an individual tries to avoid the source of this anxiety and thereby employ ego defense mechanisms to get rid of the pains from the threat. This give us the insight and realization that pupils tend to avoid the source that posed anxiety on them and therefore, employ some form of defense mechanisms and do away from anything that has to do with Mathematics.

Related empirical researches conducted in the area of this research were reviewed, suggested solutions and interventions in the reduction of Mathematics anxiety by the past researchers were also reviewed.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design, the population, sample and sampling technique, research instrument, validity, reliability, procedure for data collection, intervention and data analysis.

3.2 Research Design

The design for this study was quasi experimental involving pre-test and post-test. This design is widely used in behavioural research, primarily for the purpose of comparing groups and/or measuring changes resulting from experimental treatments (Gay, 2009). The premise behind the selection of this design was based on the fact that it has the advantage of observing the changes and testing of the results obtained from the data which were analyzed to observe the effect or otherwise of the treatment when compare with the observations and records before and after the treatment (Gay, 2009). In this form of design, the subjects were pretested before the treatment and post tested after the treatment. Thesubjects received treatment for the period of twelve weeks, after the treatment the subjects were post-tested.The design istherefore, modeled thus:

Token Economy Group	01	X	02
Praise Technique Group	03	X	04

Source: (Bello, 2014)

Where 01 & 03 are Observations before the treatment (pre-test), 02 & 04 are Observation after the treatment (post-test) X denotesTreatment

3.3 Population of the Study

The population of study comprised of primary five (5) pupils that exhibited anxiety for Mathematics from two randomly selected primary schools within Edu Local Government Education Zone. The two schools are located within the same geographical area in the zone. These are Local Government Education Authority Bindofu primary school, Shonga with a population of class five (5) pupils totaling 119, of which 15 pupils exhibit moderate Mathematics anxiety and 26 pupils exhibit high Mathematics, Local Government Education Authority Bodzo primary school, Shonga with a population of class five (5) pupils totaling 135, from which 21 pupils exhibit moderate Mathematics anxiety and 29 pupils exhibit high Mathematics anxiety, hence the total population of the two schools stands at 254.

The table below shows the population of primary five pupils with Mathematics anxiety from the two sampled schools.

Table 3.2.1 Population of Primary five (5) Pupils with MathematicsAnxiety from two Sampled Schools.

S/N	Name of School	VLMA	LWMA	MDMA	HGMA	VHMA	Total
1	LGEA Bin. Prim. Sch, Shonga	39	28	15	26	11	**119**
2	LGEA Bod. Prim. Sch. Shonga	41	34	21	29	10	**135**
Grand total		**80**	**62**	**36**	**55**	**21**	**254**

Source: School records onMathematics anxiety scale (2011)

3.4 Sample and Sampling Techniques

Purposive sampling technique was used to draw sample from the population. There are one hundred and twelve (112) primary schools in Edu Local Government Zone, which is stratified into three districts. Two schools were purposively drawn from the population;theselected schools include LGEA Bindofu primary school, Shonga, LGEA Bodzo primary school, Shonga. A sample of 40 pupils was drawn from the population which constitute the subjects that met the criteria for inclusion in the experiment based on Mathematics Anxiety Rating Scale (MARS)to comprise of (pupils with moderate and high anxiety for Mathematics). These pupils were isolated from non -moderate and non-high anxiety for Mathematics(low, very low and very high anxiety for Mathematics pupils). The researcher after the pre-test assigned twenty (20) pupils each to receive treatment of token economy and praise techniques. Ten (10) subjects each with moderate and high anxiety levels were exposed to token economy while the remaining same number of subject with moderate and high anxiety levels were exposed to praise technique.This is because the researcher's interest was on specific characteristics of the population which is the effect of positive reinforcement on anxiety levels, considering the variable of moderate and high anxiety for Mathematics. This is also enables the researcher to answer research questions raised. This sampling technique is in line with (Ali 2000 as cited in Shira, 2014).

Table 3.4.1 Detailed Distribution of the Participants to the Treatment Groups by Schools on Anxiety Level

Programme Group	Moderate Anxiety	High Anxiety	Total
LGEA Bindofu Shonga, (Token Economy)	10	10	**20**
LGEA Bodzo Praise	10	10	**20**
Total	**20**	**20**	**40**

3.5. Control of Extraneous Variables

The essence of experimental control is based on the premise that a quantifiable and manipulate-able research conditions are arranged in such a way that it could be complied with so as to ensure that their effect can be investigated. Hence without control, the effect of independent variable on dependent variable may not be determined,(Ali, 2006). One of the major problems of quasi experimental design is lack of the ability to control all the confounding factors like extraneous variables that alter the validity of a research and its outcomes.

It is obvious that such variables always present difficulty in drawing inferences or conclusion on the research. There are two aspects of these traits; external and internal validity. To effectively control all the internal and external validity traits that would arise from instrumentation and experimental mortality, some measures were taken to ensure that these confounding problems are effectively controlled as explained thus.

1. Interaction**:** in order to control this variable, 40 subjects were randomly shared to the two schools; pupils who exhibit moderate and high Mathematics anxiety in LGEA

Bindofu primary school were exposed to token economy while those in LGEA Bodzo received praise.

2. Instrument Used for the Study:there was alteration and modification made on the instrument since it was adopted from the work of Richard (2003) Mathematics anxiety scale.
3. Experimental Mortality**:** in order to control experimental mortality, two subjects were added to the sample size in each group in order to take care of subject mortality.
4. Constant Attendance: in order to ensure that the participants are always present during the treatment session, the treatment sessions were conducted during school hours. This facilitated continuity and stability of the programme throughout the sessions.where there was element of absentees, token and praise was used to reinforce continuous attendance.
5. Language Problem: to ensure clarity in understanding of the procedures and the processes involved in the treatment session, there was constant explanation of every step taken throughout the sessions. This was necessary in order to make sure that no participant was lost along the way at the same time, where there was the need for interpretation, teachers handled it effectively.
6. Effect of Noise on the Participants:to avoid the problem of unnecessary distraction as a result of noise on the participants, the participants were isolated from their mainstream class room. This was done to ensure effectiveness in participation, monitoring and observation of the participants.
7. Testing Twice:this refers to the effect of first testing upon scores of a second testing.to control this the test items of PSMARS were framed in such a way that the subjects of

the two sampled schools responded in the same manner as they did at the first and second administration.

3.6. Instrumentation

The instrument (Primary School Mathematics Anxiety Scale)was an adapted scale from Richard (2003). The instrument was used to identify levels of Mathematics anxiety exhibited by pupils.

3.6.1. Primary School Mathematics Anxiety Level Rating Scale

The instrument consists of sections A and B, section A consists of subjects' bio data, while Section B Comprises of 30 item questions that were structured to give the best feelings of the subjects which are to be answered in 5-point Likert scales as follows.

Strongly Disagree (DA) =1

Disagree (DA) =2

Undecided (UD) =3

Agree (AG) =4

Strongly Agree (AS) =5

The instrument was reversed to identify the genuine subjects. The reversed instrument consists of the same item statements with the order of scale

Strongly Agree (AS) =5

Agree (AG) =4

Undecided (UD) =3

Disagree (DA) =2

Strongly Disagree (DA) =1

3.6.3. Scoring of the instrument

Primary School Mathematics Anxiety Level Rating Scale consisted of thirty (30) items that measure characteristics of Mathematics anxiety level as (1) very low Mathematics anxiety type, (2) low Mathematics anxiety type, (3) moderate Mathematics anxiety type, (4) high Mathematics anxiety type and (5) very high Mathematics anxiety type,. The scale was delineated on a five point Likert scale ranging from 1(SD), 2(DA), 3(UD), 4(AG) and 5(SA). Thus, the highest possible Mathematics anxiety level scores a subjects will get on the scale is (150 i.e 30 x 5), while the lowest Mathematics anxiety mean scores a respondent will get the scale is 30items (30 x 1). The instrument was scored by adding the individual scores of all 30 item questions together where possible range can be between 1-150 the higher the score, the more Mathematics anxiety pupils have, considering SD=1, DA=2, UD=3, AG=4 and SA=5.

i.e (no of SD X 1) + (no of DA X 2) + (no of UD X 3) + (no of AG X 4) + (no of SA X 5).

The range of possible score s for Mathematics subtypes include: very low Mathematics anxiety (30 -53), low Mathematics anxiety (54-77), moderate Mathematics anxiety (78-102), high Mathematics anxiety (103-126) and very high Mathematics anxiety (127-150)

3.6.4. Validity

The instrument was presented to the researcher's supervisors and four lecturers in the Department of Educational Psychology and Counselling, Faculty of Education, Ahmadu Bello University, Zaria for revalidation as the changes in use of language were effected to suit the environment of this research who ascertained face and content validity of the instrument.

3.6.5. Reliability

The data obtained from the pilot test, was analyzed for the purpose of reliability. The researcher used test retest method in order to ascertain reliable result. After two weeks, the same instrument was re-administered to the same students in order to correlate the result. Pearson Moment Correlation was used to obtain coefficient of 0.92. This reliability coefficient was considered adequate for the internal consistency of the instrument. This was a confirmation of test of reliability which according to Karimi (2008), an instrument is considered reliable if its reliability coefficient lies between 0 and 1 and that the closer the calculated reliability coefficient is to zero the less reliable is the instrument, and that the closer the calculated reliability coefficient is to one the more reliable is the instrument. This therefore confirmed the instrument used for this study as highly reliable. The measures of data obtained with such instrument do not vary because it maintains constant accuracy in its form.

3.7 Procedure for Data Collection

A letter of introduction for field work was collected from the Department of Educational Psychology and Counselling, Faculty of Education, Ahmadu Bello University, Zaria. The letter was presented to the Head of School Services in Edu Local Government Education Authority, Lafiagi. Another letter was reissued by the Head of the School Services introducing the researcher to the sampled schools.

The researcher while in each of the sampled schools after self-introduction explained the instrument to the subjects on how to fill in their true behaviour about their anxiety for Mathematics. The researcher also sought for the assistance of some school teachers to assist in monitoring and supervision of the subjects to ensure compliance to the guidelines for filling in the instrument.

An on-spot method of instrument administration was used to ensure that the instruments administered to the subjects were fully returned. The instrument was scored to identify various indices (levels) of anxiety for Mathematics among primary five pupils from the sampled schools. The subjects with moderate and high Mathematics anxiety constituted treatment group from each school. One group was exposed to Token economy while the other group was exposed to the treatment of praise. After the groups were exposed to the treatments, the researcher then post-tested the subjects with the same instrument to observe the effect of the treatments and possible changes on the two treatments groups and to further observe the relative effect of the two techniques. Here, data was collected usingMathematics Anxiety Rating Scale from the schools that were involved in the study using experimental study process. Teachers were involved as research assistants during the treatment session. The purpose was to reduce difficulties normally experienced by researchers during data collection and to also maintain some degree of certainty in the data collection process. The research assistants were and given short period of orientation before embarking or commencing the treatment. This was necessary because teachers are very vital tools for effective educational measurement in schools.

3.8.1 Procedure for Intervention

The intervention procedures were divided into three phases as follows:

Pre – treatment phase, treatment phase and post treatment phase.

3.8.2 Pre-treatment Phase

At the pre –treatment phase, the researcher engaged in an interactive session with the Pupils from the sampled schools. During the session, the pupils'consent was sought to participate in the session. The researcher then explained to them, what the study was all about. Later, the pupils were given Primary School Mathematics Anxiety Rating Scale (PMAS) and they

were instructed to select single response for each item that best describ the frequency of the specific behaviour displayed by the pupils with the help of the class teacher.

The pre-testing was done during their normal classroom period. Primary School MathematicsAnxiety Rating Scale (PMAS) was later collected, scored and analyzed by the researcher this pupils with moderate and high Mathematics anxiety were identified. The result of the pre-test was kept for future comparismwith the post-test result in order to determine the effect or otherwise of the treatment.

3.8.3 Treatment Phase

The treatment session involved the provision of counselling interventions using positive reinforcement such as token economy and praise techniques on pupils with Mathematics anxiety. The treatment sessions were conducted for a period of twelve weeks consecutively. Two categories (levels) of Mathematics anxiety (moderate & high) received reinforcement,(token economy and praise). The two schools received treatment for twelve sessions which lasted for 30 – 35 minutes. There were sessions in every week for the two schools on Mondays and Wednesdays.

A detailed description of each therapy and systematic outline of sessions activities for both reinforcement techniques are stated in appendices 1 and 2.

3.8.4 Post – Treatment Phase

The treatments were evaluated by administering PMAS instrument on both moderate and high Mathematics anxiety subjects to determine the effect of the treatments on moderate and high Mathematics anxiety among the subjects and to also establish the relative effect of the two reinforcement techniques on anxiety levels. The results of the pre – test (before treatment) and post - test (after the treatment) were analyzed for the significant effect and relative effect of the techniques on the two levels of moderate and high Mathematicsanxiety

among the subjects. The significant and relative effects of the techniques on moderate and high Mathematics anxiety among primary school pupils was determined by the extent at which Mathematics anxiety mean scores reduced when pre and post – test were compared. The less the Mathematicsanxiety means scores, the more the effectiveness of the treatment.

3.9 Procedure of Data Analysis

In answering the research questions and testing the hypotheses raised in the study, the data collected from the subjects were analyzed using t-test and mean and standard deviation; in reaching any decision on the significance level the cal-t was compared with t-table value at 0.05 level of significance. Here, t-test was used to test the hypotheses because two independent samples were involved while mean and standard deviation were used to answer the research questions raised in the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1Introduction

This chapter presents the results obtained from the study. Itpresents answers to research questions using mean and standard deviation. T-test was used to test the null hypothesis. The basis for acceptance or rejection of the hypotheses is at 0.05 level of significance. Similarly, frequencies, percentages and graphs were used to present the data collected from the subjects. The chapter is presented in the following order: Introduction data presentation answers to research questions, hypothesis testing, summary of findings and discussion.

4.1 Data collected for the Study

The data collected for the study covered the following distribution of subjects into groups.

Table 4.1 Distribution of SubjectsbyTreatments Group

Group	Frequency	Percentage
Token Economy	20	50%
Praise 20	50%	
Total	40	100%

Table 4.1 shows the distribution of subject by treatments group. Forty (40) subjects were used in the study representing 100%. FromTable 4.1, twenty (20) pupils were treated using token economy which represents 50% while another twenty (20) subjects were treated using praise technique representing 50%.The experimental group consisted of forty (40) subjects representing 100% and the same number and percentage for the control group.

Table 4.2Distribution of Subjects intoLevels of Anxiety.

Treatment	Levels of anxiety	Frequency	Percentage
Token Economy	Moderate	10	25%
Token Economy	High10	25%	
Praise	Moderate	10	25%
Praise	High10	25%	
Total		40	100%

Table 4.2 shows the distribution of subjects into treatment groups across levels of anxiety. Twenty (40) subjects were used in the study representing 100%. From the table, ten (10) pupils with moderate anxiety behaviour were treated using token economy representing 25%, ten (10) with high Mathematics anxiety level were treated using token economy which represents 25% while twenty (20) subjects were treated with praise with ten (subjects) each across the two levels of anxiety representing 50%.

4.3 Answering Research Questions

The six research questions raised in chapter one were answered using mean and standard deviation.

Question one: What is the effect of token economy on moderate Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State?

Table 4.3 Pretest and Posttest Moderate MathematicsAnxiety Means Scores of Subjects Exposed to Token Economy.

Variable	Group	N	Mean	SD	Decision
Pretest Moderate Mathematics Anxiety	Token economy	10	74.7	8.27	
					Effective
Posttest moderate Mathematics Anxiety	Token economy	10	46.1	2.51	

Table 4.3shows the pre-test, and post-test moderate Mathematics anxiety mean scores of the subjects exposed to token economy. From Table 4.3 the pre-test and post-testmean scores of the subjects with moderate anxiety level exposed to token economy were 74.7 and 46.1. This shows that token economy can be used to reduce anxiety level for Mathematics among primary school pupils,as the lesser the mean the more effective is the technique.

Figure 4.1Line Graph Showing the Effect of Token Economy on Moderate MathematicsAnxiety Among the Subjects

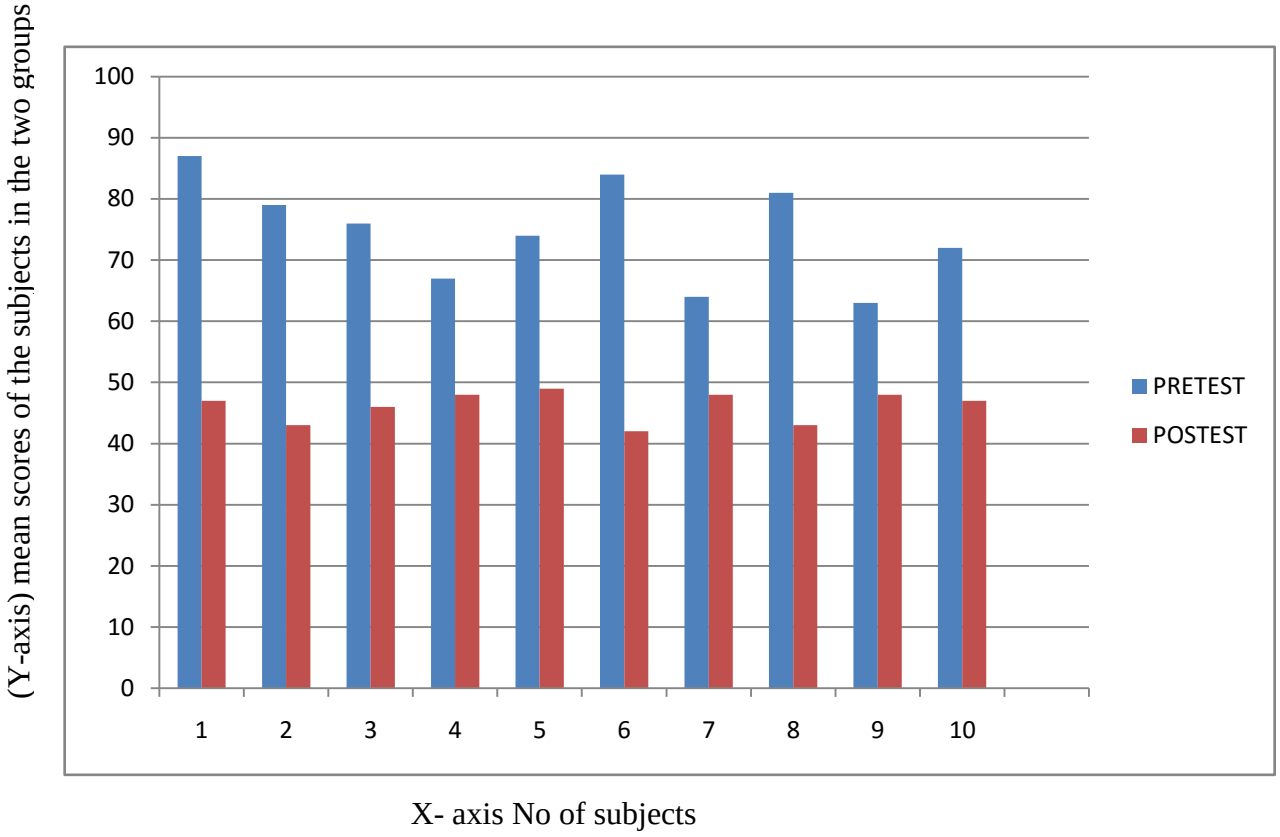

Figure 4.1: shows the overall scores of moderate Mathematics anxiety of subjects exposed to token economy. Y-axis represents the scores of the subjects while X-axis represents number of subjects. From the graph, the scores of subjects with moderate Mathematics anxiety exposed to token economy at the pre-test are 87, 79, 76, 67, 74, 84, 64, 81, 63 and 72 while that of the post-test are 47, 43, 46, 48, 49, 42, 48, 43, 48 and 47. It can therefore be deduced that token economy can be used to reduce moderate Mathematics anxiety among primary school pupils.

Question two: What is the effect of token economy on high Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State?

Table 4.4 Pretest and Posttest High Mathematics Anxiety Means Scores of Subjects Exposed to Token Economy.

Variable	Group	N	Mean	SD	Decision
Pretest high Mathematics Anxiety	Token economy	10	107.2	9.50	
					Effective
Posttest high Mathematics Anxiety	Token economy	10	80.6	8.80	

Table4.4 shows the pre-test, and post-test high Mathematics anxiety mean scores of the subjects exposed to token economy. From table 4.4,the pre-test and post-test mean scores of the subjects with high anxiety level exposed to token economy were 107.2 and 80.6. This shows that, token economy can be used to reduce high anxiety for Mathematics among primary school pupils, as the lesser the mean the more effective is the technique.

Figure 2Line Graph Showing the Effect of Token Economy on High Mathematics Anxiety among the Subjects

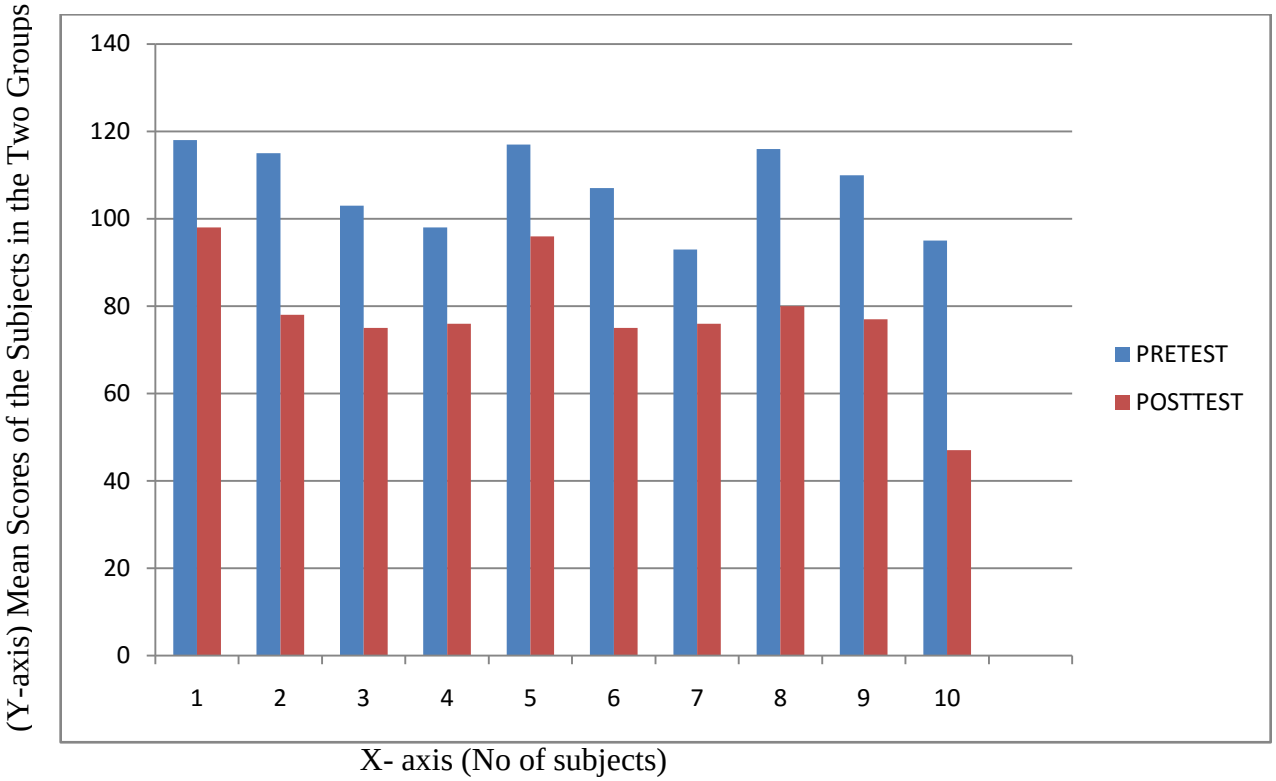

Figure 4.2: shows the overall scores on the high Mathematics anxiety of subjects exposed to token economy. Y-axis represents the scores of the subjects while X-axis represents number of subjects. From the graph, the scores of subjects with high Mathematics anxiety exposed to token economy at the pre-test are 118, 115, 103, 98, 117, 107, 93, 116, 110 and 95 while that of the post-test are 98, 78, 75, 76, 96, 75, 76, 80, 77 and 75. It can therefore be observed that token economy can be used to reduce high Mathematics anxiety among primary school pupils.

Question three: What is the effect of praise technique on moderate Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State?

Table 4.5Pretest and Posttest Moderate Mathematics Anxiety Means Scores of Subjects Exposed to Praise Technique

Variable	Group	N	Mean	SD	Decision
Pretest moderate Mathematics Anxiety	Praise technique	10	76.8	8.90	
					Effective
Posttest moderate Mathematics Anxiety	Praise technique	10	48.7	1.49	

Table 4.5 shows the pre-test and post-test moderate Mathematics anxiety mean scores of the subjects exposed to praise. From table 4.5, the pre-test and post-test mean scores of the subjects with moderate anxiety level exposed to praise were 76.8 and 48.7 respectively.This shows that praise can be used to reduce high anxiety for Mathematics among primary school pupils as, the lesser the mean the higher the effectiveness.

Figure 4.3 Line Graph Showing the Effect of Praise on Moderate Mathematics Anxiety among the Subjects.

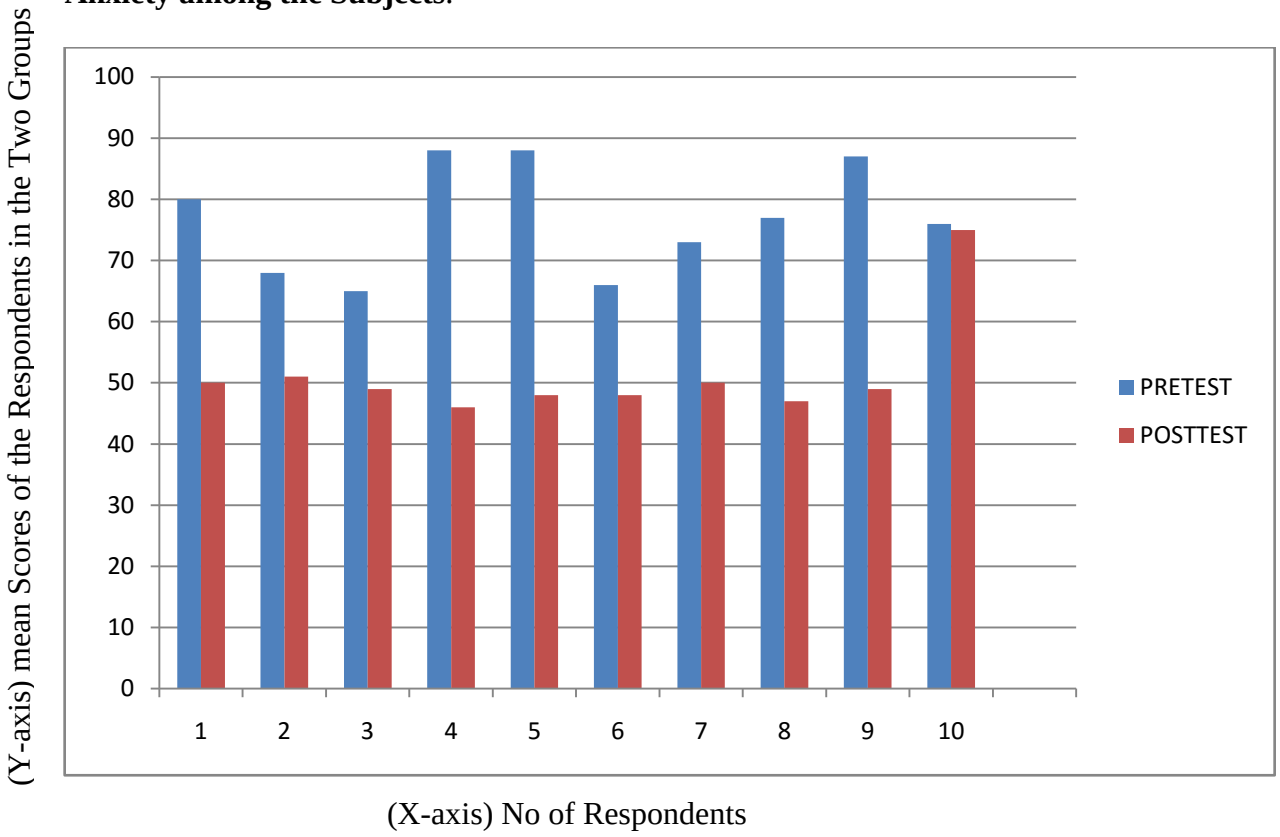

Figure 4.3: shows the overall scores of the moderate Mathematics anxiety subjects exposed to praise. Y-axis represents the scores of the subjects while X-axis represents number of subjects. From the graph, the scores of subjects with moderate Mathematics anxiety exposed to praise at the pre-test are 80, 68, 65, 88, 88, 66, 73, 77, 87 and 76 while that of the post-test are 50, 51, 49, 46, 48, 48, 50, 47, 49 and 49. It can therefore be deduced that praise technique can be used to reduce moderate Mathematics anxiety among primary school pupils.

Question four: What is the effect of praise technique on high Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State?

Table 4.6 Pretest and Posttest high MathematicsAnxiety Means Scores of Subjects Exposed to Praise Technique.

Variable	Group	N	Mean	SD	Decision
Pre-test High Mathematics Anxiety	Praise Technique	10	108.4	10.42	
					Effective
Posttest high Mathematics Anxiety	Praise Technique	10	83.6	9.25	

Table4.6 shows the pre-test and post-test high Mathematics anxiety mean scores of the subjects exposed to praise technique. From table 4.6, the pre-test and post-test mean scores of the subjects with high anxiety level exposed to praise were 108.4 and 83.6 respectively.This shows that praise can be used to reduce high anxiety for Mathematics among primary school pupils, as the lesser the mean the higher the effectiveness.

Figure 4.4Line Graph Showing the Effect of Praise on High Mathematics Anxiety among the Subjects

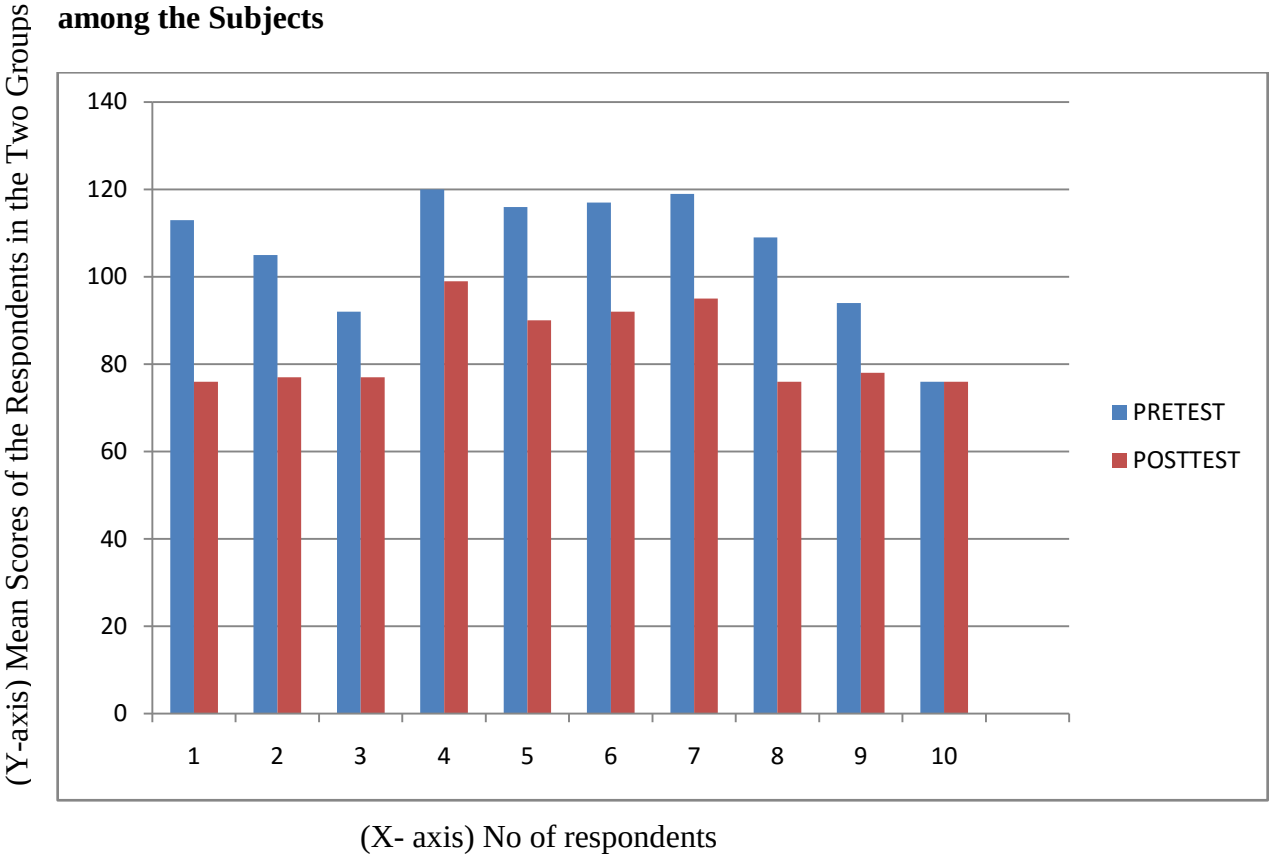

Figure 4.4: above shows the overall scores of the high Mathematics anxiety of subjects exposed to praise technique. Y-axis represents the scores of the subjects while X-axis represents number of subjects. From the graph, the scores of subjects with high Mathematics anxiety exposed to praise at the pre-test are 113, 105, 92, 120, 116, 117, 119, 109, 94 and 99 while that of the post-test are 76, 77, 77, 99, 90, 92, 95, 76, 78 and 76 respectively. It can therefore be concluded that praise technique can be used to reduce high Mathematics anxiety among primary school pupils.

Question five: What is the differential effect of token economy and praise techniques on moderate Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State?

Table 4.7Posttests on Differential Effect of Token Economy and Praise Techniques on Moderate Mathematics Anxiety among Primary School Pupils in Edu Local Government Area, Kwara State

Variable	Group	N	Mean	SD	Decision
Token economy Posttest	10	46.1	2.51		Difference exist
Praise technique	10	48.7	1.49		

The table 4.7shows the post-test of the subjects exposed to token economy and those exposed to praise technique. It can be observed from the table 4.7 that, the mean scores of the moderate Mathematics anxiety of subjects exposed to token economy and those exposed to praise technique at the post-test are 46.1 and 48.7 respectively; This shows that the two techniques canbe usedto reduce moderate Mathematicsanxiety level among primary school pupils as difference is observed between the two techniques in favour of token economy.

Figure 4.5Line Graph Showing Differential Effect of Token Economy and Praise on Moderate Mathematics Anxiety among the Subjects

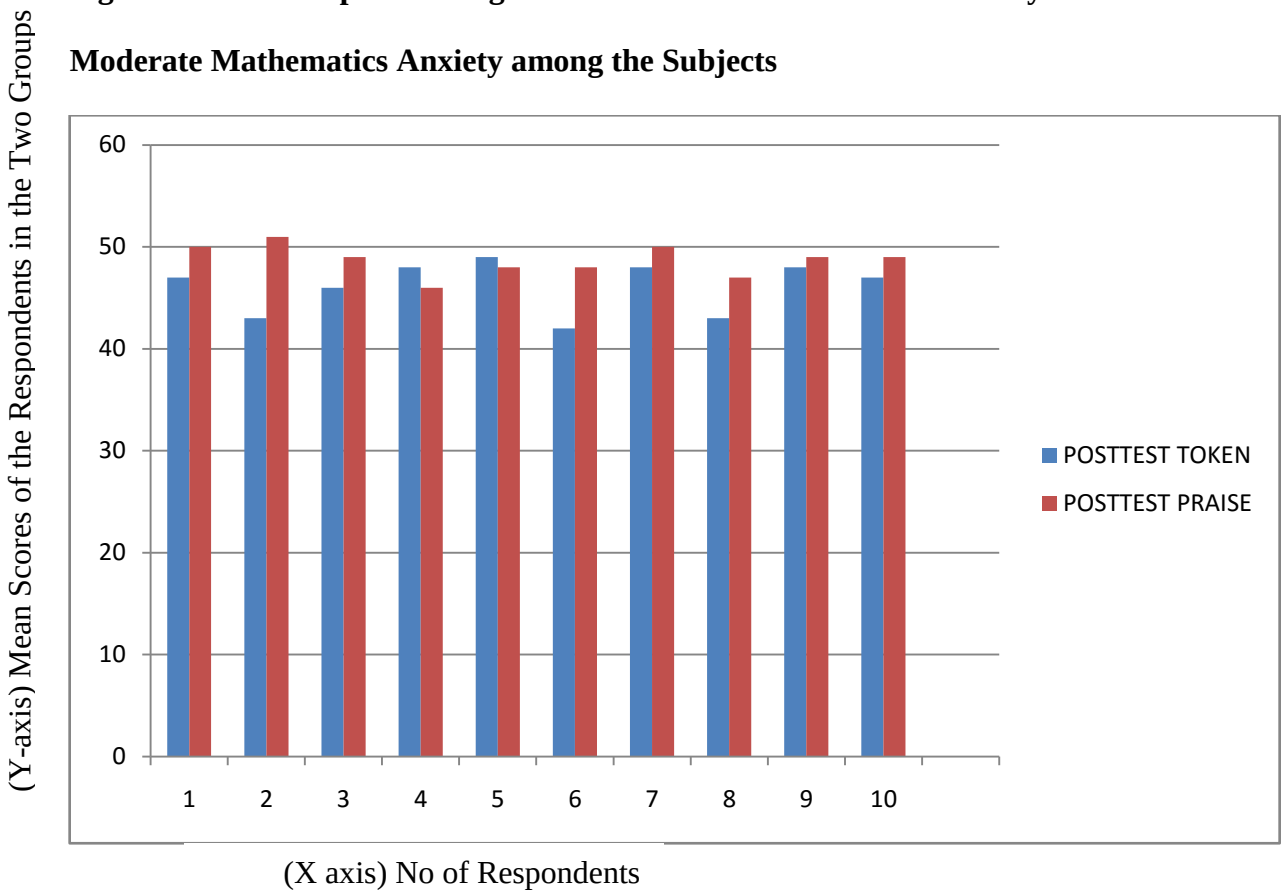

Figure 4.5: shows the differential effect of token economy and praise techniques on moderate Mathematics anxiety among the subjects. Y-axis represents the overall scores of the subjects while X-axis represents the number of subjects. From the graph, the scores of subjects exposed to token economy at the post-test are 47, 43, 46, 48, 49, 42, 48, 43, 48 and 47 while those exposed to praise are 50, 51, 49, 46, 48, 48, 50, 47, 49 and 49. It can be concluded that token economy and praise techniques can be used to reduce moderate Mathematics anxiety among primary school pupils.

Question six: What is the differential effect of token economy and praise techniques on high Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State?

Table 4.8Posttests on Differential Effect of Token Economy and Praise Techniques on High Mathematics Anxiety among Primary School Pupils in Edu Local Government Area, Kwara State

Variable	Group	N	Mean	SD	Decision
Posttest	Token economy	10	80.68.79		Difference exist
	Praise technique	10	83.69.25		

The table 4.8shows the post-test of the subjects exposed to token economy and those exposed to praise technique. It can be observed from table 4.8 that, the mean scores of the high Mathematics anxietylevel mean scores of subjects exposed to token economy and those exposed to praise technique at the post-test are 80.6 and 83.6. This shows that the two techniques can be used to reduce high anxiety level for Mathematics among primary school pupils as difference is observed between the two techniques in favour of token economy.

Figure 4.6 Line Graph Showing Differential Effect of Token Economy and Praise on High Mathematics Anxiety among The Subjects

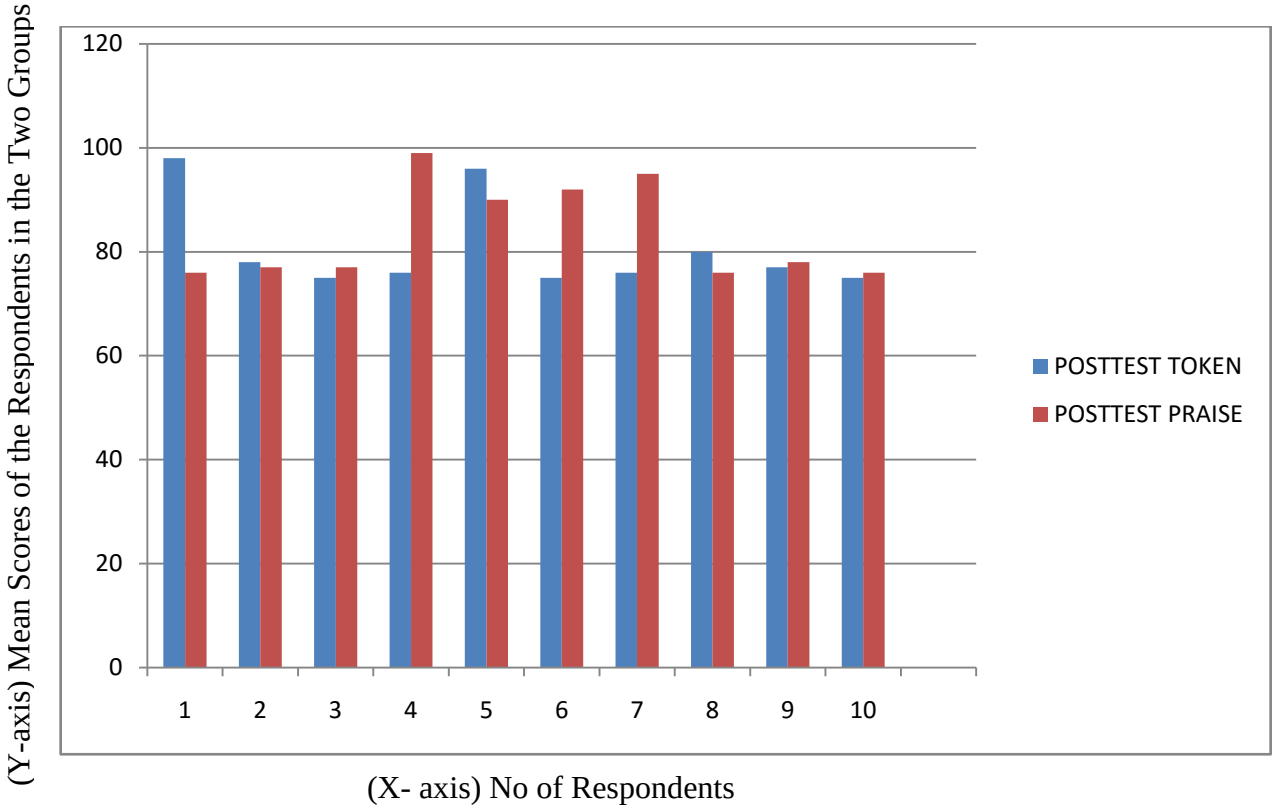

Figure 4.6: shows the differential effect of token economy and praise techniques on high Mathematics anxiety among the subjects. Y-axis represents the overall scores of the subjects while X-axis represents the number of subjects. From the graph, the scores of subjects exposed to token economy at the post-test are 98, 78, 75, 76, 96, 75, 76, 80, 77 and 75 while those exposed to praise are76, 77, 77, 99, 90, 92, 95, 76, 78 and 76 respectively. It can be said that token economy and praise techniques can be used to reduce high Mathematics anxiety among primary school pupils.

4.4 Test of Hypotheses

Six hypotheses were formulated and tested at 0.05 level of significance using t-test statistics.

Hypothesis One: There is no significant effect of token economy on moderate Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State.

Table 4.9Independent t-test Statistics on Effect of Token Economy on Moderate Mathematics Anxiety among Primary School Pupils in Edu Local Government Area, Kwara State

Variable		N	Mean	SD	df	t-cal	p
Moderate Mathematics Anxiety	Pre test	10	74.7	2.27	9	8.963	0.000
	Post test	10	46.1	2.51			

t(9) = 1.96 p> 0.05

From the analysis inTable 4.9,the calculated p value of 0.000 is lower than the 0.05 alpha level of significance, while the calculated t value of 8.963 is higher than the 1.96 t critical at df 9. This means that, the null hypothesis which states that, there is no significant effect of token economy on moderate Mathematics anxiety level among the subjects is rejected.

Hypothesis Two: There is no significant effect of token economy on high Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State.

Table 4.10 Independent t-test Statistics on the Effect of Token Economy on High Mathematics Anxiety among Primary School Pupils in Edu Local Government Area, Kwara State

Variable		N	Mean	SD	df	t-cal	p
High Mathematics Anxiety	Pre test	10	107.2	9.49	9	11.281	0.000
	Post test	10	80.6	8.79			

$t(9) = 1.96$ $p > 0.05$

From the analysis in Table 4.10, the calculated p value of 0.000 is lower than the 0.05 alpha level of significance, while the calculated t value of 11.281 is higher than the 1.96 t critical at df 9. Therefore, the null hypothesis which states that, there is no significant effect of token economy on high Mathematics anxiety among the subjects is rejected.

Hypothesis Three: There is no significant effect of praise technique on moderate Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State.

Table 4.11 Independent t-test Statistics on Effect Of Praise Technique on Moderate Mathematics Anxiety Among Primary School Pupils in Edu Local Government Area, Kwara State

Variable		N	Mean	SD	df	t-cal	p
Moderate Mathematics Anxiety	Pre test	10	76.8	8.90	9	9.204	0.000
	Post test	10	48.7	1.49			

t(9) = 1.96 p> 0.05

From the analysis in Table 4.11, the calculated p value of 0.000 is lower than the 0.05 alpha level of significance, while the calculated t value of 9.204 is higher than the 1.96 t critical at df 9. Therefore, the null hypothesis which states that, there is no significant effect of token economy on Mathematics anxiety among the subjects is rejected. This means that praise technique had positive effect on moderate Mathematics anxiety.

Hypothesis Four: There is no significant effect of praise technique on high Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State.

Table 4.12Independent t-test Statistics on Effect of Praise Technique on High Mathematics Anxiety among Primary School Pupils in Edu Local Government Area, Kwara State

Variable		N	Mean	SD	df	t-cal	p
High Maths Anxiety	Pre test	10	108.4	10.41	9	11.486	0.000
	Post test	10	83.6	9.25			

t(9) = 1.96 p> 0.05

From the analysis inTable 4.12, the calculated p value of 0.000 is lower than the 0.05 alpha level of significance, while the calculated t value of 11.486 is higher than the 1.96 t critical at df 9. Therefore, the null hypothesis which states that, there is no significant effect of praise on high Mathematics anxiety among the subjects is rejected. This means that praise technique had positive had effect on high Mathematics anxiety.

Hypothesis Five: There is no significant differential effect of token economy and praise techniques on moderate Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State.

Table 4.13 Paired t-test Statistics on Differential Effect of Token Economy and Praise Techniques on Moderate Mathematics Anxiety among Primary School Pupils in Edu Local Government Area, Kwara State

Variable		N	Mean	SD	df	tcal	p
Moderate Mathematics Anxiety	Token Economy	10	46.1	2.51	18	2.751	0.022
	Praise Technique	10	48.7	1.49			

t(9) = 1.96 p> 0.05

From the analysis in Table 4.13, the calculated p value of 0.022 is lower than the 0.05 alpha level of significance, while the calculated t value of 2.751 is higher than the 1.96 t critical at df 18. Therefore, the null hypothesis which states that, there is no significant differential effect of token economy and praise techniques on moderate Mathematics anxiety among the subjects is rejected. This means that token economy and praise techniques had significant differential effect on moderate Mathematics anxiety, which means that the effect is in favour of token economy,

Hypothesis Six: There is no significant differential effect of token economy and praise techniques on high Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State.

Table 4.14 Independent t-test Statistics on Differential Effect of Token Economy and Praise Techniques on High Mathematics Anxiety among Primary School Pupils in Edu Local Government Area of Kwara State.

Variable		N	Mean	SD	df	tcal	p
High Mathematics Anxiety	Token Economy	10	80.6	8.79	18	5.630	0.005
	Praise Techniques	10	83.6	9.25			

$t(9) = 1.96$ $p > 0.05$

From the analysis on table 4.14, the calculated p value of 0.0005 is lower than the 0.05 alpha level of significance, while the calculated t value of 5.630 is higher than the 1.96 t critical at df 18. Therefore, the null hypothesis which states that, there is no significant differential effect of token economy and praise techniques on high Mathematics anxiety among subjects is hereby rejected. This means that token economy and praise techniques had significant differential effect on high Mathematics anxiety, which means that the effect is infavour of token economy.

4.5 Summary of Findings

From the result of the analysis presented in Tables 4.1 to4.14 above, the findings of this study are thus summarized with direct reference to t-values, p-values and α level.

1. Token economy reinforcement technique had positive effect on moderate Mathematics anxiety among the treatment group.

2. Token economy reinforcement technique had positive effect on high Mathematics anxiety among the treatment group.
3. Praise reinforcement technique had positive effect on moderate Mathematics anxiety among the treatment group.
4. Praise reinforcement technique had positive effect on high Mathematics anxiety among the treatment group.
5. Token economy and praise reinforcement techniques had positive relative effect on moderate Mathematics anxiety among the treatment group.
6. Token economy and praise reinforcement techniques had positive relative effect on high Mathematics anxiety among the treatment group.

4.6 Discussion of Findings

In this study there were six research questions that were answered with corresponding hypotheses tested.

The first research question was asked to find out the effect of token economy on moderate anxiety for Mathematics among primary school pupils in Edu Local Government Area, Kwara State. The anxiety mean score before the treatment as presented in Table 4.3 was 74.7, after the treatment using token economy, the anxiety mean score reduced to 46.1. This shows that the technique is effective. Behaviour can be modified as noted by Glasser (1968) who maintained that people suffering from psychological difficulties like anxiety lack proper involvement with someone, a person who genuinely cares.

Theoretically, the findings were supported by Thorndike's law of effect, Ivan Pavlov and Psychoanalytic theory. The law of effect states that when a modifiable connection between stimulus and response is made and is accompanied or followed by a satisfying state of

affairs that connection strength is increased when made and accompanied or followed by annoying state of affairs its strength is decreased. While Pavlov states that most of our learning is associated with the process of conditioning which helps us to learn what is desirable and assist in eliminating and avoiding undesirable habits, fear, anxiety through conditioning. According to Psychoanalytic theory, human beings are generally pleasure-seeking, and they try to avoid painful experience or source of their anxiety which may be unconscious. Freud further said that man's anxiety may be repressed through the process of changing their unconscious state of mind to conscious.

The second research question was asked to find out the effect of token economy on high anxiety for Mathematics among primary school pupils. The pre-test anxiety mean score of the subjects exposed to token economy as presented in Table 4.4 was 107.2 while the post-test anxiety means score was reduced to 80.6 indicating that token economy is effective in the reduction of high anxiety for Mathematics. This finding is in line with Bawa (2017) who is of opinion that motivation with token economy has high tendency to reduce Mathematics phobia and enhance academic performance.

The third research question was asked to find out the effect of praise technique on moderate anxiety for Mathematics among primary school pupils. The anxiety means scores before and after the treatment as presented in the Table 4.5 stood at 76.8 and 48.7 respectively. This means that praise reinforcement counselling technique is effective in the reduction of moderate anxiety for Mathematics among primary school pupils. This is in agreement with Weller (2005) who stated that techniques like praises are significantly effective in reducing anxiety among school children and boosting learners' academic performance.

The fourth question was asked to find out the effect of praise technique on high anxiety for Mathematics among primary school pupils. The result of the finding from Table 4.6

revealed that the treatment technique is effective in the reduction of anxiety level because the mean anxiety score before and after the treatment were 108.4 and 83.6. This agrees with work Filcheck and MC Neil (2004) that praise reinforcement technique is effective in producing behaviour change in many settings including the classroom setting.

The fifth question was asked to find out differential effect of token economy and praise techniques on moderate anxiety for Mathematics among primary school pupils. The post-test moderate anxiety mean scores of the subjects exposed to token economy and those exposed to praise technique as presented in Table 4.7 were 46.1and 48.7, this means that the two techniques were found effective in the reduction of moderate anxiety for Mathematics, hence significant difference do not exist in the effect of the two techniques as those treated with both techniques had reduced level of anxiety for Mathematics.

Theoretically, the finding is supported by B.F Skinner's postulation of operant conditioning that response can be increased or decreased by consequences that are rewarding or punishing. The theory which features reinforcing and punishing consequences to effect behaviour change are bases for behaviour modification. This finding is supported by Solato (1990) who conducted an intervention study with 20 pre- scholars with attention deficit to investigate the effect of token and praise techniques on children impulsiveness. Finding indicated that there were no significant differences in the effects of token and praise in decreasing children's impulsiveness.

The finding is contrary to Carlson Mann and Alexander (2002) ywho examined the effect of token economy and praise on DHD. The results revealed that Token economy was more effective than Praise.

The sixth question was asked to find out the differential effect of Token economy and praise technique on high anxiety for Mathematics. The post-test high moderate anxiety

mean scores of the subjects exposed to token economy and those exposed to praise as presented in Table 4.8 were 80.6 and 83.6, indicating that the two techniques areeffective on high moderate anxiety for Mathematics, hence significant differences do not exist in the effect of the two techniques, as both treatments group had reduced level of anxiety for Mathematics. This finding is supported by the work of (Do Paul & Barkley 1992) who states that token economy and praise techniqueswere found effective in the reduction of test anxiety among secondary school students. They stressed that significant difference do not exist in the effect of the two techniques.

This finding is contrary to the findings of Manma (2015) who stated that Token reinforcement and praise technique have differential effect in favor of token reinforcement.

CHAPTER FIVE

SUMMARY, CONCLUSSION AND RECOMMENDATIONS

5.1Introduction

The focus of this chapter is the summary of the entire study, conclusion and recommendations. The outline of the chapter is as follows: Introduction, Summary of the Study, Conclusion, Recommendations, Implications for Guidance and Counselling, Limitations and Suggestions for Further Research Studies.

5.2 Summary of the Study

This study was conducted to examine the effectiveness of positive reinforcement on anxiety level among primary school pupils. The researcher raised six research questions with corresponding hypotheses in chapter one which were answered and tested respectively. in chapter two, the concepts of anxiety and positive reinforcement were discussed. This research was hinged on Operant Conditioning and Psychoanalytic theories. Literatures were reviewed on some of the behavioural problems affecting learners.

Chapter three focused on describing the types of design: Pre-test, Post-test control group design. The total population for the study was 254. Two primary schools were selected as sample. The schools are LGEA Bindofu Primary school, Shonga and LGEA Primary school Bodzo.

Sample size of forty (40) subjects were used for the study. To answer research questions, charts, mean and standard deviation were used, while t-testwas used in testing the formulated hypotheses. Chapter four focused on data presentation, answers to research questions, testing of null hypothesis, summary of findings and discussion of result. Chapter five contains the summary of the entire study, conclusion, recommendations, implications for guidance and counselling, limitation and suggestions for further study.

5.3 Conclusion

Evidence from this study shows that positive reinforcement (token economy and praise) techniques significantly reduce Mathematics anxiety among primary school pupils. Therefore, token economy and praise techniques are effective in reduction of anxiety for Mathematics, it can therefore be concluded based on this research finding that token economy and praise reinforcement technique as utilized in this study are effective counselling strategies for reducing moderate and high Mathematics anxiety among primary school pupils. This is clear from the Mathematics anxiety mean scores in which significant effect was observed between the two techniques across two levels of anxiety on the finding in relation to the differential effect of the treatments on the subjects, it was concluded that the two (techniques economy and praise) had relative effect in reducing Mathematics anxiety among primary school pupils in Edu Local Government Area, Kwara State

5.4Recommendations

Consequent upon the findings of this study, it is recommended that:

1. Since the findings of this study revealed token economy is effective, government at all levels, should as a matter of national responsibility, provide token economy reinforcement facilities/ material such as Mathematics text books, Mathematical sets, pencils, cleaners, sharpeners, biros etc to enhance quality delivery of Mathematics teaching in schools.
2. Since the two techniques were found to be effective on the Mathematics anxiety reduction, school counsellors should utilize the techniques in their counselling practice either through individual or group counselling.

3. Since this study focused on only two levels of anxiety for Mathematics, it is recommended that other levels of Mathematics anxiety be replicated to ensure generalization of this research work.
4. Reinforcement counselling techniques should be inculcated into the school curriculum in order to reduce mathematics anxiety levels among primary school pupils.
5. Training and retraining of counsellors should be organized through seminars, workshop and symposium with more emphasis on reinforcement counselling techniques to deal with other related problems irrespective of difference in anxiety levels.
6. Teachers should be made aware of Mathematics anxiety symptoms for early diagnosis and referral. In addition, they should be trained on classroom management of learners with Mathematics anxiety.

5.5 Suggestion for Further Studies

Based on the delimitations of this study the following suggestions are made for further studies.

1. The Scope of this study covered only public primary schools. It is therefore suggested that similar study be replicated to cover private schools.
2. The population for this research was only primary five pupils, it is suggested that this study be replicated to cover other primary school levels.
3. The present study used positive reinforcement techniques, other studies could be carried out using other behavioural techniques.

5.6 Implications for Guidance and Counselling

From the study, so many things are of great importance to the area of guidance and counselling to the school authority and also to the parents. The findings of the study

revealed that reinforcement counselling technique is effective in reducing anxiety level among primary school pupils in Edu Local Government Area, Kara State.

The guidance and counselling would benefit from the finding of the study because the techniques of reinforcement can now serve as a new method for addressing the problem of anxiety among primary school pupils. More so, teachers should be good role model. Some teachers have been found to have anxiety for Mathematics; such teachers could find this study highly beneficial.

5.7 Limitations of the Study

This study has some limitations which include the following:

1. The study was restricted to only two primary schools in Edu Local Government Area, Kwara State.
2. A sample size of only 40 subjects of class five pupils was involved in the study. It may be possible that if larger sample size had been used different results would have been obtained.
3. The study was also restricted only to primary five pupils in Edu Local Government Area, Kwara State. If the entire upper primary school pupils were used in the area different result would have also been obtained.

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APPENDIX 1 COUNSELLING SESSION

TREATMENT SESSIONS

The treatment was administered for twelve weeks at the rate of two sessions per week to each group with the order of proceedings for training in the following format

Week One (Creating Rapport)

The researcher will exchange greetings and introduce himself to pupils in all sessions. This will create a friendly environment for the pupils by making them feel secured and relaxed with an assurance that whatever discuss during the training session shall remain confidential.

Objective: At the end of sessions, subjects are expected to learn what anxiety is and how it affects their performance level in Mathematics.

Treatment: The councilor will start by teaching the subject what anxiety is and how it affect the pupils' level of performances in Mathematics. And praise the subject (s) that participates well in the class.

Class Work: The Counsellor asks the subjects to briefly write down how each one of them will feel when they achieve success in Mathematics problem.

Evaluation: The Counsellor evaluates by checking the answer written by each pupils for marking and to make and write positive statement for pupils that express very well such as very good, that is good of you.

Assignment: Home work will be given to the subjects count 18 stones and bring them to the next class.

Closing: The Counselor thanked the subjects for their cooperation

Week two:

The Counsellor will welcome the participants to the new session and solicit for their normal cooperation. The Counsellor will them, review the activities in week one.

Objective: At the end of this session, pupils are expected to open up to the Counsellor on the areas of Mathematics that pose anxiety on them which inhibit their performance level.

Treatment: The Counsellor will ask the subjects to express those areas of Mathematics that creates fear on them. The Counsellor then, itemize those specific areas and break them down to units from simple – Complex for subsequent training programe the pupils that perform better in the assignment and class training. The pupils that express better will be reinforced with positive remark.

Class Work: The counselor will ask the subjects to count 4 stones each out of those stones brought to the class and another 25times will be asked to count by the subject and add them together each student will be ask to write down the answer for making.

Evaluation: The Counsellor will evaluate the subjects by looking at the answers recorded by each subjects. The pupils that get the correct answer will be rewarded by positive statement such as good job and corrections will be practically done in the class for those that did not get the answer correctly.

Assignment: home work will be given to the subjects e.g

$$\begin{array}{r} 28.2 \\ +11.3 \\ \hline \\ \hline \end{array}$$

Closing Remark: The counselor thanks the subjects for attending and reminds them of time, venue and solicits for further cooperation.

Week Three

Opening remark: The counselor will welcome the subject to session and collected their last assignment given. The counselor will review the work of last session

- ❖ Addition and subtraction of whole number
- ❖ Addition and subtraction of word problem
- ❖ Addition and subtraction in decimals.

Objectives: At the end of the session the pupils should be able to:

1. Multiply figure with 0
2. Multiply figure with 2 and 3
3. Multiply 2 and 2, digits with

Treatment: The counselor will teach the pupils with appropriate praise rewards to pupils who performed better during the process

EX1	1 x 0 =0
	2 x 0 =0
	3 x 0 =0
Ex2	0 x 4 =0
	0 x 5 =0
	0 x 6 =0
Ex3	1 x 1 =1
	2 x 1 =2
	3 x 1 =3
	4 x 1 =4

Ex4 1 2 3

X 2 1

1 2 3

\+ 2 4 6

25 8 3

Ex5 2 4

X 5 2

4 8

1 2 0

1 2 4 8

Class work: The counselor will give the following calss work to the pupils

1. 10 x 0
2. 0 x 13
3. 21 x 1
4. 1 x 7
5.

1 7

X 1 1

6.

1 2 1

X 1 2

Evaluation: The counselor will cross check the pupils class work to mark and asses the treatment effect on the pupils performance gives the home work to the subject.

1. ½ x ½ = ☐
2. 2/5 x 1/3 = ☐
3. 4/5 x 2/3 = ☐

Closing Remark: The counselor appreciate the subject for the commitments.

Week Four

Opening remark: the counsellor will welcome the subjects to another session. The home work will be collected for marking and appropriate praise reinforcement. The work of last session will as usually be reviewed to the subjects by the counselor.

Objectives: At the end of the session, the pupils should be able to calculate squares of simple figure without fear or with normal level of anxiety.

Treatment: The counselor will teach the pupils with reinforcement (praise) to pupils who performed better in class

Ex1 1^2 (one square)

$\underline{1^2 = (1 \times 1) = 1}$

One stone in one place

Ex_2 2^2 (Two square)

$2^2 = (2 \times 2) = 4$

(Two stones in two places) = 4 stones

Ex_3 4^2 (Four Square)

$4^2 = (4 \times 4) = 16$

(Four Stones in four places) = 16 stones.

Class Work: The counselor will give class work to the subject as

1. $3^2 =$ ☐
2. $6^2 =$ ☐
3. $(1/2)^2 =$ ☐

Evaluation: The Counsellor evaluates the subjects by marking their class works to ascertain the efficacy of the treatment on the problem at hand (Mathematics anxiety) and by asking them any area that require clarification.

Assignment : The Counsellor gives the assignment thus:

1. $2^2 + 3^2 =$ ☐
2. $3^2 - 1^2 =$ ☐

Hence, the researcher re-test the subjects, scored them and records were kept for analysis.

Closing Remark: The researcher thanked the subjects for cooperation so far.

Week Five

Opening: The counselor will welcome the subjects to another session of the programmed. The counselor will ask the subjects to summit their homework. After which the previous work will be reviewed.

Objective: At the end of the session the subjects should be able to divide simple figures without any manifestation of anxiety for Mathematics.

Treatment: The counselor will teach pupils how to multiply divide simple figure with using reinforcement as technique for the reduction of anxiety for Mathematics. It gives in the proceedings below.

Ex_1 10 ÷ 2

= 5 10

- 10

00

Ex_2 1 4 ÷ 2

7

= 2 14

74

00

Ex_3 125 ÷ 5

25

= 5 125

10

25

- 25

00

Class Working: The counselor gives the class work to the subjects as

1. 12 ÷ 4 = ☐
2. 22 ÷ 2 = ☐
3. 33 ÷ 11 = ☐

Evaluation: The will evaluate the pupils by marking their class work and ask how they feel with Mathematics as regarding anxiety in the program.

Assignment: the counselor asks the pupils to write down what their feelings are about Mathematics since the beginning of the programmed to the present level.

Class Remark:the researcher will thank the pupils for the cooperation accorded him.

Week 6

Opening: the counselor welcomes the subject to another session. The counselor reviews the work of last session.

Objective: at the end of session the subjects should be able to calculate and find the value of x.

Treatment

Example 1

2x = 10

X = 5

Class work

Solve

3x = 6

4n = 8

Assignment

Researcher gives home work

1. 3x = 7
2. 4x =10

Closing: the counselor thanked the subjects for the cooperation occurred in.

Week 7

The researcher welcomes the subjects to another session. The works of previous session were briefly reviewed.

Objective: at the end of the session the subjects should be able to collect the like terms

Treatment

Solve

$4x + 3 = 11$

Subtract 3 from both sides

$4x + 3 – 3 = 11 – 3$

$4x/4 = 8/4$

$X = 2$

Class work

Solve the following

1. $3x + 1 = 9$
2. $6x – 3 = 9$

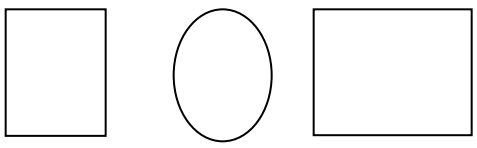
Closing: the counselor thanked the subjects for their cooperation and regular attendance.

Week 8

Opening

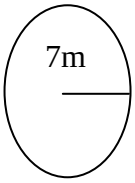
Objective: at the end of the session the pupils should be able to identify circle from other shapes.

Treatment: the names of various shapes were taught in the class room.



Class work

List the part of circle you know

Assignment 

Calculate the area of circle.

Hence, the researcher re-test the subjects, scored them and records were kept for analysis.

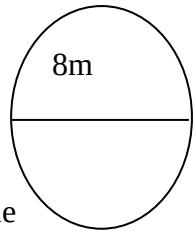
Closing: the counselor thanked the subjects for their cooperation and regular attendance.

Week 9

Opening

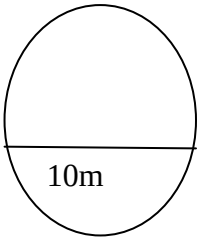
Objective: at the end of the session the subjects should be able to identify

1. Circumference of circle
2. Radius
3. Diameter



Class work

Find the area of a circle

Assignment 

Closing: the counselor thanked the subjects for their cooperation and regular attendance.

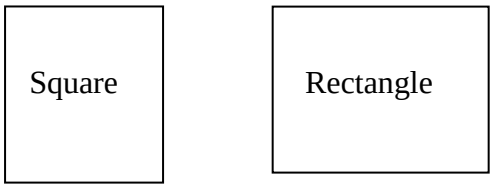
Week 10

Opening The counselor will welcome all the subjects and express further appreciation for their participation and sacrifice and pray that they will benefit from the discussion and programe.

The counselor will brief them that this is the last session and that the previous discussions will be reviewed.

Objective: at the end of the session the subjects should be able to differentiate between the square and rectangle.

Treatment: differentiate between the shapes below

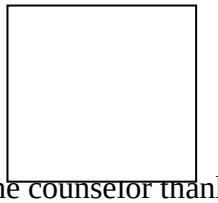


Class work

Write on difference between the square and rectangle

Assignment

Find the perimeter of the square shape

4cm 

Closing: the counselor thanked the subjects for their cooperation and regular attendance.

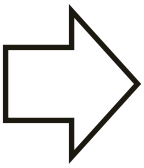
Week 11

Opening: The counselor will welcome all the subjects and express further appreciation for their participation and sacrifice and pray that they will benefit from the discussion and programe.

The counselor will brief them that this is the last session and that the previous discussions will be reviewed.

Objective: at the end of the session the subjects should be able to draw various shapes

shape

Treatment: 

Week 12

Topic:- review

Objectives: To intimate the subjects with previous teachings and enumerate all the elements of proper reviews.

Opening Remark

The counselor welcomed all the subjects and express further appreciation for their participation and sacrifice and pray that they will benefit from the discussion and programe.

The counselor will brief them that this is the last session and that the previous discussions will be reviewed.

The subjects were guide on how to quickly run through the proceedings steps again. This is to review the whole sessions so far and what is expected of them in their academic activities for them to be successful during and after their school life and were post-tested

TREATMENT PACKAGE (TOKEN ECONOMY)

Pre – Treatment Assessments.

The objective of the treatment package was to reduced Mathematics anxiety of the subjects and to improve in the performance of Mathematics in the class room instruction.

Before twelve weeks Mathematics training commences on subjects using token Economy" technique, all the subjects were Pre- tested with Mathematics Anxiety scale (MAS) to identify the subjects that meet the criteria for inclusion in the treatment group of token economy i.e moderate and high anxious pupils. Token will be given to the pupils informed of fancy cards that are not producible by them. The chart below illustrates when and how many token to be earned to have tangible by each pupil.

TOKEN ECONOMY CHART

WEEK/DAY / CONDITIONS		TOKEN FOR CLASS ATTENDANCE	TOKEN FOR CORRECT RESPONSES TO QUESTIONS	TOKEN FOR CLASS WORKPERFORMANCE IN GRADES (0 - 5 MARKS)			TOKEN FOR ASSIGNMENT PERFORMANCE IN GRADES (0 - 5 MARKS)			TOKEN TO BE EARNED IN WEEKS INTERVAL	No of token	Tangibles
				0-1	2-3	4-5	0-1	2-3	4-5			
1	**MON**	Introduction, pretest exercise and explanations on how and when to earn a token collect tangible										
	WED											
2	**MON**	1	1	0	1	2	0	1	2	16	1	Cleaner
	WED	1	1	0	1	2	0	1	2	16	2	Sharpener
3	**MON**	1	1	0	1	2	0	1	2	16	3	Sharpener +cleaner
	WED	1	1	0	1	2	0	1	2	16	4	Pencil
4	**MON**	1	1	0	1	2	0	1	2	16	5	Pencil + cleaner
	WED	1	1	0	1	2	0	1	2	16	6	Ruler
5	**MON**	1	1	0	1	2	0	1	2	16		
	WED	1	1	0	1	2	0	1	2	16		
6	**MON**	1	1	0	1	2	0	1	2	16		

	WED	1	1	0	1	2	0	1	2	16	7	Ruler + cleaner
7	**MON**	1	1	0	1	2	0	1	2	16	8	Biro
	WED	1	1	0	1	2	0	1	2	16		
8	**MON**	1	1	0	1	2	0	1	2	16	9	Biro + cleaner
	WED	1	1	0	1	2	0	1	2	16	10	Colour pencil
9	**MON**	1	1	0	1	2	0	1	2	16		
	WED	1	1	0	1	2	0	1	2	16	11	Colour pencil + cleaner
10	**MON**	1	1	0	1	2	0	1	2	16	12	20leaves exercise book
	WED	1	1	0	1	2	0	1	2	16	13	20leaves exercise book +cleaner
11	**MON**	1	1	0	1	2	0	1	2	16		
	WED	1	1	0	1	2	0	1	2	16	14	40leaves exercise book
12	**MON**	Wrap up of the session, post test									15	40leaves exercise book +cleaner
	WED										16	Mathematical set

From the chart above, week 1 were used by researcher to introduce and run pre-treatment assessment to identify the target groups (i.e moderate and high anxious pupils). Mathematics anxiety rating scale will be periodically administered and records taken and analyzed to observe if there is reduction or changes in the level of pupils anxiety for Mathematics as a result of the reinforcement technique used.

The week twelve was used to wrap up the session and pupils will be posted to compare the results of pretest, retest and post

APPENDIX 2TREATMENT PACKAGE (PRAISE TECHNIQUE)

Pre – Treatment Assessments

The objective of the treatment package was to reduced Mathematics anxiety of the subjects and to improve in the performance of Mathematics in the class room instruction.

Before twelve weeks Mathematics training commences on subjects using "Praise techniques", all the subjects will be Pre- tested with Mathematics Anxiety scale (MAS) to identify the subjects that meet the criteria for inclusion in the treatment group of praise i.e moderate and high anxious pupils. Treatment will be administered for twelve weeks at the rate of two sessions per week. The chart below illustrates to apply praise in the treatment period.

SCHEDULE CHART FOR APPLYING PRAISE TECHNIQUE

WEEK/DAY ↓ **CONDITIONS** →		**CLASS ATTENDANCE**	**CORRECT RESPONSES TO QUESTIONS**	**CLASS WORK PERFORMANCE IN GRADES (0 - 5 MRKS)**			**ASSIGNMENT PERFORMANCE IN GRADES (0 - 5 MRKS)**		
				0-1	**2-3**	**4-5**	**0-1**	**2-3**	**4-5**
1	**TUE**	Introduction, pretest exercise and explanations on how and when to earn a token collect tangible							
	THUR								
2	**TUE**	Commend the subject for the attendance such as thank very much for your regular attendance	Statements such as very correct, very good of you, clap for him/her will be use to praise the pupil that answers a question correctly	Statement such as Very poor, work hard you can do better will be written on pupil's exercise book	Statement such as Very Fair attempt, work hard you can do better will be written on pupil's exercise book	Statement such as Very good work, excellent work, will be written on pupil's exercise book	Statement such as Very poor, work hard you can do better will be written on pupil's exercise book	Statement such as Very Fair attempt, work hard you can do better will be written on pupil's exercise book	Statement such as Very good work, excellent work, will be written on pupil's exercise book
	THUR								
3	**TUE**								
	THUR								
4	**TUE**								
	THUR								
5	**TUE**								
	THUR								
6	**TUE**								
	THUR								
7	**TUE**								
	THUR								
8	**TUE**								
	THUR								
9	**TUE**								
	THUR								
10	**TUE**								
	THUR								

11	**TUE** **THUR**								
12	**TUE**	Wrap up and subject's post test							

From the chart above, week was used by researcher to introduce and run pre-treatment assessment to identify the target groups. Between weeks 2-11, subjects will be exposed to Mathematics teaching using praise technique. At weeks 4, 7 10 and 12, Mathematics anxiety scale was administered and records were taken and analyzed to see if there is reduction or changes in the level of pupils anxiety for Mathematics as a result of the reinforcement technique used.

The week twelve was used to wrap up the session and pupils will be posted to compare the results of pretest and post and also effect of the two techniques.

APPENDIX 3PRIMARY SCHOOL MATHEMATICS ANXIETY LEVELSRATING SCALE

Introduction:

Dear Respondent,

I am a post graduate student of the Department of Educational Psychology and Counselling at Ahmadu Bello University, Zaria. I am pursuing M Ed in Guidance Counselling and my area of research is "Effect of Positive Reinforcement on Mathematics Anxiety among Primary School Pupils in Edu Local Government Area of Kwara State.

Instruction: You are requested to please, give your frank and honest response to each of the statement that correspond with your true behaviuor.

Note that: SD = Strongly Disagree, DA= Disagree, UD = undecided, AG = Agree and SA Strongly Agree

Name of School……Class…….

Name of pupil……Sex : male [ ] female [ ]

S/N	Item questions	SD (1)	DA (2)	UD (3)	AG (4)	SA (5)
1	I get emotionally upset when doing or thinking about Mathematics (anger, crying, extreme frustration, e.t.c).					
2	I get sweaty or clammy hands when doing or thinking about Mathematics.					
3	I feel un confortable in my stomach when doing or thinking about Mathematics.					
4	My stomach gets physically upset (diarrhea, vomiting, constipation, nausea, e.t.c.). When doing or thinking about Mathematics.					
5	My muscles feel tensed and I feel stiffed when doing or thinking about Mathematics.					
6	I have trouble sleeping after working on Mathematics or the night before Mathematics class or a Mathematics test.					
7	I feel like I have to urinate more frequently when in Mathematics class or working on a Mathematics assignment or test.					
8	I feel like I have no control over my grades in Mathematics.					
9	I get headaches or neck stiffness when doing or thinking about Mathematics					
10	I feel my heart race when doing or thinking about Mathematics					

11	I feel like I have never really understood Mathematics and am faking my way through it					
12	I rely on people to help me with day to day Mathematics situations (dividing figures, multiplying numbers etc)					
13	I feel my heart race when doing or thinking about math.					
14	I tend to do very poor in Mathematics tests					
15	I feel like I need to prepare much more for Mathematics test than for other subjects.					
16	Mathematics test are much more stressful to me than other test.					
17	I feel that I understand certain Mathematics concepts in class but do poorly on test.					
18	I have trouble concentrating during Mathematics tests (racing thoughts, can't focus, "blanking out", e.t.c.).					
19	I do not feel confident when taking Mathematics tests no matter how much I study.					
20	I feel that I can't trust my ability and often second guess myself during Mathematics tests.					
21	I generally feel that tests in any subject are a reflection of my worth as a person.					
22	When studying for a Mathematics test, I find myself showing fear behaviuor (fidgeting, pacing, making excuses, avoiding the situation, e.t.c.).					
23	I have been punished or embarrassed in Mathematics class for not understanding something.					
24	I feel that I will never be able to learn Mathematics no matter how hard I try.					
25	I feel that others have a more "mathematical" or" logical' mind than I do.					
26	My parents and /or friends tell me about their own struggles and frustration with Mathematics.					
27	I feel that in Mathematics, answers are either right or wrong and there is little room for anything in between.					
28	I have had math teachers that I really disliked for one reason or another.					
29	I find myself wronging about other people's math abilities and comparing them to my own.					
30	I feel that although, I am quit talented at some things, none of them help me with Mathematics.					

APPENDIX 4SCORES OF THE MODERATE MATHEMATICS ANXIETY LEVEL EXPOSED TO TOKEN ECONOMY.

Pretest (wk one)	wk 4 `	wk 8	posttest (wk 12)
87	66	59	47
79	61	56	4 3
76	56	53	46
67	54	52	48
74	55	52	49
84	62	58	42
64	54	52	48
81	63	57	43
63	55	51	48
72	53	50	47

APPENDIX 5SCORES OF THE HIGH MATHEMATICS ANXIETY LEVEL EXPOSED TO TOKEN ECONOMY

Pretest (wk 1)	wk 4	wk 8	posttest wk 12
118	112	100	98
115	80	79	78
103	79	75	75
98	77	77	76
117	106	98	96
107	79	76	75
93	78	76	76
116	89	82	80
110	79	78	77
95	78	75	75

APPENDIX 6SCORES OF MODERATE MATHEMATICS ANXIETY LEVEL EXPOSED TO PRAISE

Pretest (wk 1)	wk 4	wk8	posttest wk12
80	68	57	50
68	56	52	51
65	56	50	49
88	62	53	46
88	63	57	48
66	58	51	48
73	61	54	50
77	63	56	47
87	69	58	49
76	62	53	49

APPENDIX 7SCORES OF HIGH MATHEMATICS ANXIETY LEVEL SUBJECTS EXPOSED TO PRAISE

Pretest (wk 1)	wk 4	wk 8	posttest wk 12
113	89	76	76
105	82	78	77
92	80	77	77
120	100	100	99
116	90	90	90
117	93	93	92
119	96	96	95
109	84	76	76
94	81	78	78
99	82	76	76

APPENDIX 8NUMBER OF TOKEN ECONOMY EARN DURING THE SESSION FOR MODERATE ANXIETY LEVEL

	1	2	3	4	5	6	7	8	9	10	11	12
1	6	6	7	9	6	6	8	8	8	6	8	6
2	6	5	8	5	8	6	6	4	6	4	6	6
3	6	8	8	8	10	4	4	4	8	6	6	5
4	7	5	7	8	9	11	4	5	2	3	4	7
5	4	5	7	7	8	9	9	9	10	11	12	13
6	9	8	9	10	8	8	9	10	12	11	12	11
7	4	5	5	6	6	7	7	7	8	8	7	10
8	8	8	8	9	9	10	9	9	8	9	10	12
9	4	5	7	9	10	12	12	10	10	11	11	10
10	4	8	8	6	6	7	7	7	7	8	7	9

APPENDIX 9NUMBER OF TOKEN ECONOMY EARN DURING THE SESSION FOR HIGH ANXIETY LEVEL

	1	2	3	4	5	6	7	8	9	10	11	12
1	5	5	6	7	4	4	4	5	4	4	4	5
2	4	4	6	6	4	5	4	4	6	6	5	6
3	5	7	7	7	9	6	7	3	3	4	5	6
4	8	9	9	9	4	5	5	3	4	5	6	4
5	5	5	6	6	5	6	6	7	6	6	7	8
6	6	8	8	6	10	10	9	10	10	9	10	10
7	6	7	7	9	9	7	8	9	11	12	10	10
8	5	6	4	6	6	5	6	7	8	10	9	11
9	7	8	8	6	8	7	9	10	9	10	11	10
10	4	5	4	6	5	6	7	5	6	8	9	10

T-Test for Hypothesis One

Independent Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pre test	74.7000	10	8.27379	2.61640
Post test on token economy	46.1000	10	2.51440	.79512

Independent Samples Test

	Independent Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pre test - Post test on token economy	2.86000E1	10.09070	3.19096	21.38155	35.81845	8.963	9	.000

T-Test for hypothesis two

Independent Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pre test	1.0720E2	10	9.49620	3.00296
Post test exposed to token economy	80.6000	10	8.79646	2.78169

Independent Samples Test

	Independent Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pre test - Post test exposed to token economy	2.66000E1	7.45654	2.35797	21.26591	31.93409	11.281	9	.000

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pre test	76.8000	10	8.90443	2.81583
Post test exposed to praise	48.7000	10	1.49443	.47258

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pre test - Post test exposed to praise	2.81000E1	9.65459	3.05305	21.19352	35.00648	9.204	9	.000

T-Test for hypothesis three

T-Test for Hypothesis Four

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pre test	1.0840E2	10	10.41580	3.29377
Post test exposed to praise	83.6000	10	9.25203	2.92575

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pre test - Post test exposed to praise	2.48000E1	6.82805	2.15922	19.91551	29.68449	11.486	9	.000

T-Test for hypothesis 5

Independent Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
TOKEN ECONOMY ON MODERATE MATHS	46.1000	10	2.51440	.79512
PRASE TECHNIQUES ON MODERATE MATHS	48.7000	10	1.49443	.47258

Independent Samples Test

	Independent Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
TOKEN ECONOMY ON MODERATE MATHS - PRASE TECHNIQUES ON MODERATE MATHS	-2.60000	2.98887	.94516	-4.73811	-.46189	2.751	9	.022

T-Test for hypothesis 6

Independent Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
TOKEN ECONOMY ON HIGH MATHS	80.6000	10	8.79646	2.78169
PRAISE TECHNIQUES ON HIGH MATHS	83.6000	10	9.25203	2.92575

Independent Samples Test

	Independent Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
TOKEN ECONOMY ON HIGH MATHS - PRAISE TECHNIQUES ON HIGH MATHS	-3.00000	15.07021	4.76562	-13.78058	7.78058	5.630	9	.005