



Impact of Emotions on Students in Teaching and Learning

A thesis submitted for the degree of Doctor of Philosophy

By

Shakirat Abimbola Adesola

Department of Computer Science,

Brunel University

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ABSTRACT

Researches have shown that students experience a wide range of emotions in class and while doing test. The type of emotions students experiences in classroom environment and during learning has impact of their academic performance. If educationists can understand this, it will lead to better education planning. A lot of researches had investigated the effects of emotions on academic performance, learning strategies and motivation of students separately; however, none of them had studied these factors together in a single research. In terms of data collection, none of these researches had captured students' emotions by ethnography as data were mainly collected through questionnaire in these studies. This research addresses these two shortcomings by investigating the types of emotions students experienced during class, while taking tests and after taking tests in relation to academic performance, learning strategies and motivation. The research when a step further from the usual data collection of distributing questionnaire by recording the class sessions and analysing the video clips with the participants to identify the emotions experienced by them while teaching was on-going. The aim of experiment relating to academic performance and test anxiety was to investigate the effect of achievement pressure and expectation of failure as contributors to students' thought and action; to know if there is correlation between test anxiety and academic performance; and finally, to find out if there is correlation between class-related emotions and test-related emotions. Experiment relating to motivational beliefs was aimed at investigating the relationship between the components of motivational beliefs and test anxiety; effect of academic performance on motivational beliefs and test anxiety; and finally, relationship between students' self-regulation, self-determination and academic performance. Experiment relating to boredom was aimed at finding the impact of boredom on students' interest in the course and learning; impact of boredom on students understanding of the course and learning; and finally, how boredom affect students learning, attention during class and engagement in learning. This research used both qualitative and quantitative methods to gather data used in answering the research hypotheses raised from the research questions. The participants for the study were twenty-four (24) students of the Department of Computer Science, Federal College of Education (Special), Oyo, Nigeria. This research was conducted through teaching of two topics from Computer Science courses and a test for each of the class taught, distribution of questionnaire, and analysing the video clips from the class sessions. Learners' academic performances were obtained through the tests conducted, while achievement pressure, expectation of failure, students' thought, and action were obtained from Achievement Emotions Questionnaire (AEQ). Motivational beliefs components were obtained from the Motivated Strategies for Learning Questionnaire (MSLQ). Findings from this study revealed that students' motivation and action are settings to consider when investigating the different types of emotions students experience while in class and during test. The results also show that class-related emotions and test-related emotions have different emotional effect on students which support hypotheses for patterns within and between domains. Results from the research revealed that motivational beliefs are not correlated to test anxiety. The result of the study also revealed that there is high correlation between test anxiety and academic outcomes. This shows that students who have

high test anxiety are likely to performance poorly in their examinations. Boredom was found to have significant impact on student's interest and understanding of the course taught in class, and likewise on attention and engagement during lectures. The results of analysis of interview revealed that emotions experienced during teaching are related to individuals and learning styles and students' personal affairs which are not related to happening in classroom environment.

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DECLARATION

This is to declare that the following papers listed below have been published and accepted to appear in conference proceeding from analyses of data collected for this research:

1. Adesola, Shakirat Abimbola and Li, Yongmin, "Investigating the Impact of Learners Emotions on Academic Performance and Motivation Using Ethnography," International Journal of Information and Education Technology vol. 8, no. 10, ISSN: 2010-3689, pp. 730-735, 2018 9.
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DEDICATION

This PhD thesis is dedicated with love to my two wonderful and adorable children:

Abdullahi Adegoke Adesola and Nimotallahi Oyinade Adesola

ABBREVIATIONS

AEQ	Academic Emotions Questionnaire
MSLQ	Motivation Strategy for Learning Questionnaire
CNS	Central Nervous System
ANS	Autonomic Nervous System
LTM	Long-Term Memory

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Chapter 1: Introduction

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1.1 Overview

Emotion is a feeling that is attached to how one reacts to situations which could be mental. Emotions can be defined as, “states elicited by rewards and punishments, including changes in rewards and punishments (Rolls, 2000). People work to get reward, while people try to avoid punishment. Emotion is then an on/off switch for learning, emotional brain, limbic system, that has the power to open or close access to learning, memory, and ability to make connections. (Bowlby, 1969) stated that, emotions are phases of an individual’s intuitive appraisal either of his own organism states and urges to act or of the succession of environmental situations in which he finds himself.

People react to circumstances in different ways. Emotions can be shown through the speech, facial expression and body language. Some common emotions include anger, pride, joy, boredom, anxiety, and hopelessness. Emotions in speech can be deduced through the pitch or the loudness of the speech and through body language. Thus, a person listening to the speech can give meaning to the speech based on the emotions attached to it.

In educational setting however, students experience a wide range of emotions during teaching and learning. These emotions might be related to the subject or the teacher teaching the course, or it might even be due to external situations like illness, finances or any other personal problems. All these can affect a student during class sessions and may hinder concentration during learning. Emotions are an important aspects of learning that cannot be overlooked. It is therefore imperative to include emotion in educational planning because it is crucial to teaching and learning in classroom environment. For instance, if a student is bored

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and thinking about something outside the classroom, such a student is not concentrating, and learning is not taking place at that time. Also, if a student is experiencing anxiety during class session or during test, this might have negative impact on such student. Furthermore, a student could be happy during studying; confidence for success; feel pride in achievement; and be amazed at discovering a new solution; experiences nervousness about failing examinations; and, feels embarrassed over low scores or bored during teachings. Some may even bring personal emotions that has to do with events outside the school, but which also have effects on their learning. Therefore, understanding the emotions students experience while learning is fundamental to helping the teachers and the educational planners put in place good strategies that will help in meeting curriculum goals. From the foregoing, it can be observed that the classroom is an emotional place in which students often experience various emotions in classroom settings.

Emotionality is the individual's subjective awareness of the heightened autonomic arousal rather than the arousal itself (Schwarzer, 1984). Researches have shown that high emotionality is associated with declining performance only when the individual is also experiencing high levels of worry (Morris, Larry W. Davis, Mark A. Hutchings, 1981), (Schwarzer, 1984). It was also revealed that high levels of emotionality negatively stimulus test performance only under circumstances where the individual also experienced high level of worry, signifying that worry is the primary performance predictor (Deffenbacher, 1980). However, it is not only emotions that have effect on learning and academic performance of students, factors like motivation and learning strategies could also have significant impact on learning and academic performance. In view of this, (Finn, J.D. and Zimmer, 2012) observed that students that show academic engagement perform better than their peers who show less engagement in their academic work. It was revealed that 59% of the high-achieving students reported frequently to achieve goals to behave responsibly and to achieve academically, while just 38% and 34% of average achievers and low-achieving students respectively reported the same levels of efforts to achieve their targets (Wentzel, 1999). It was therefore believed that

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students who have more of the achievement trait or drive will be more motivated towards success (Schunk, D. H., Pintrich, P. R. & Meece, 2008).

In the earlier literature, (Ramalingam, V.; Wiedenbeck, 1998) suggested that self-efficacy is one of the successful components of programming learning. While in their later study, (Ramalingam, LaBelle, & Wiedenbeck, 2004) found that student self-efficacy in computer programming positively predicted their performance and also affects emotional episodes and affective tendencies. (Linnenbrink-Garcia et al., 2010a) observed that there are few researches investigating the impact of learners' interest in the course been taught relative to classroom environment and mode of instruction. In education sector, interest is said to be content-specific variables, multidimensional construct with impact on studying and motivational components and induced by external stimulus (Krapp, 2007a).

1.2 Research Aim and Objectives

The main aim of this research is:

To find out how learner's emotions influence their attitudes, behaviour and cognition, as well as the role played by emotions in learning. In fulfilling this aim, the following objectives are considered important to be achieved:

Objectives:

- i. Data will be collected using the Academic Emotions Questionnaire (AEQ) and Motivated Strategies for Learning Questionnaire (MSLQ).
- ii. Data will also be collected from the interview of participants by playing the video clips of the class sessions and ask the participants to recall their emotions when lectures was going on.
- iii. The data gathered will be analysed to get the correlations between the emotions experience by the participants when the lectures was going on and when taking tests.

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- iv. The data shall also be analysed to determine the effect of anxiety on participants when taking tests.
- v. The data extracted shall be analysed to determine the effect of learning strategies on participants and test anxiety.

1.3 Research Approach

Data for this research was collected through Ethnography research method. The video recording for this research was collected at Federal College of Education (Special), Oyo, Nigeria. Twenty-four students of the department of Computer Science in their third year took part as participants for the study. The study involved development of two topics in Computer Science courses at the 300 level. One topic each from Introduction to Networking, and System Analysis and Design was developed and taught the students. Video recording of the two teaching sessions were taken and analysed after the lectures to identify emotions experienced by the students during teaching. A test was conducted for each of the topic taught to obtain students' performance. Lastly, two questionnaires namely; the Academic Emotions Questionnaire (AEQ) and the Motivated Strategies for Learning Questionnaire (MSLQ) were distributed to the participants to seek their opinions about the emotions they experienced.

1.4 Research Questions

Lots of research has been done on teaching and learning in higher institutions with emphasis on the impact on institutions and students. Many of the researches were teacher-oriented and not students-oriented. This research therefore intends to fill the gap in the experience of learners while trying to answer the following research questions:

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1. How does achievement pressure and expectation of failure act as contributors to students' thought and action when receiving lectures in classroom, when taking a test and after a test?
2. Do Test anxiety correlate significantly with academic performance?
3. Are there significance differences between class-related emotions and test-related emotions?
4. Are there correlations between the components of motivational beliefs?
5. Do components of motivational beliefs have significant impact on academic performance?
6. Is there significant relationship between students' self-regulation, self-determination, test anxiety and academic engagement.?
7. Does boredom have significant impact on students' interest in the course and learning?
8. Does boredom have impact on students understanding of the course and learning.
9. Does boredom have impact on students' learning, attention during class and engagement in learning.

1.5 Research Hypotheses

As noted in section 1.1, quite several studies have investigated effect of emotions on teaching and learning with significant number of them focussing on academic performance. Some of them were in relation to academic performance, self-regulation, self-efficacy and strategies used. This research therefore investigated the types of emotions students experience during learning in classroom environment in real time as well as strategies used to study were also investigated relating it to academic performance.

The research questions identified in section 1.4 were tested using the hypotheses listed in *Tables 1.1-1.3* below:

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Table 1.1: Research hypotheses relating to academic performance and test anxiety (chapter four)

Research Hypothesis 1 (a) Test anxiety do not act as contributors to students' thought and action.
Research Hypothesis 1(b) Test anxiety does not correlate significantly with academic performance
Research Hypothesis 1 (c) There are no significant differences between class-related emotions and test-related emotions

Details of the findings for these hypotheses are presented in Chapter Four.

Table 1.2: Research hypotheses relating to motivational beliefs

Research Hypothesis 2 (a) There is no correlation between the components of motivational beliefs.
Research Hypothesis 2 (b) The components of motivational beliefs do not have significant impact on academic performance.
Research Hypothesis 2(c) There is no significant relationship between students' self-regulation, self-determination, test anxiety and academic engagement.

Details of the findings for these hypotheses are presented in Chapter Five.

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Table 1.3: Research hypotheses relating to boredom (boredom)

<p>Research Hypothesis 3 (a)</p> <p>Boredom does not have significant impact on students' interest in the course and learning</p>
<p>Research Hypothesis 3 (b)</p> <p>Boredom does not have significant impact on students understanding of the course and learning.</p>
<p>Research Hypothesis 3 (c)</p> <p>Boredom do not significantly shape students' learning, attention during class and engagement in learning</p>

Details of the findings for these hypotheses are presented in Chapter Six.

1.6 Research Methodology

This research was conducted through two teaching sessions, distribution of questionnaires, and analyses of video clips with the aims of finding the impact of emotions on students' academic performance; relationships between components of motivation and learning strategy. The research therefore used both qualitative and quantitative methods of data gathering. Details of these are presented in Chapter Three.

The quantitative data gathered were analysed using the IBM Statistical Package for the Social Sciences (SPSS 20) which was used for some statistical test such as, ANOVA, descriptive statistics, regression, reliability and correlations tests. Opinions were measured using a 5-point Likert scale rating of 1 for Strongly

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Disagreed and 5 for Strongly Agreed. Details of the methodology are presented in Chapter Three.

1.7 Research Motivations

Human beings experience different types of emotions in their daily activities, and these has impact on their social relations, academic learning and work-related activities. The types of emotions people experience thus has consequence on their work output in places of work or academic performances in academic setting. In academic environment for instance where the primary outcome is getting good results from the tests and examinations sat for, it therefore become imperative to identify the emotions students experience when teaching is taking place. Also, of importance are the emotions such students experience when studying on their own, and when taking test.

1.8 Definition of Terms

Student: A 300 level student of department of Computer Science, Federal College of Education (Special), Oyo, Nigeria.

Emotions: Anger, pride, boredom, relief, hopelessness, joy, and anxiety.

Motivation components: self-regulation, self-efficacy, cognitive strategy use and test anxiety.

Learning Strategies: Academic engagement, Self-determination.

Learning: Two Computer Science courses designed and taught the students and conduct test at the end of the class.

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Ethnography: Take video clips of the class sessions; analysis the recorded video after the class to identify emotions experienced.

Academic performance: marks obtained from the two tests conducted

1.9 Thesis Structure

The rest of this thesis is structured as follows:

Chapter 2 outlined the literature review in relation to concept of learning, learning strategies and learning styles. Also discussed were the elements of motivation which consists of self-efficacy and self-determination. The chapter gave a general description of ethnography and importance in research and its application areas. Social cognitive theory was discussed as well as learning processes.

Chapter 3 gave details of the research methodology. In this chapter, details of the participants used in the research was given as well as the experimental procedures. The chapter also outlined the instruments of data collection and explain how the data collected were analysed using the Several statistical tests in the Statistical Package for the Social Sciences (SPSS). Some of the tests conducted includes descriptive statistics, ANOVA, regression, reliability and correlations tests.

Chapter 4 was based on the first experiment using the Academic Emotions Questionnaire. Details of the research questions and hypotheses were outlined. The chapter gave details of the experiment carried out in answering the following research questions: How does achievement pressure and expectation of failure act as contributors to students' thought and action when receiving lectures in classroom, when taking a test and after a test; do test anxiety correlate significantly with academic performance; and are there significance differences between class-related emotions and test-related emotions?

Various experimental analyses were carried out including descriptive analysis, Pearson's correlation, one-way ANOVA, correlation of bivariate and stepwise

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regression. Details of the results obtained were also given in this chapter. Finally, the chapter gave a general discussion on the findings obtained.

Chapter 5 gave details of experiment 2 using the Motivated Strategies for Learning Questionnaire (MSLQ). The chapter discussed outlined the method for data collections and analyses. The following research questions were answered in the chapter: Are there relationships between the components of motivational beliefs and test anxiety? Do components of motivational beliefs have significant impact on academic performance? Is there significant correlation between students' self-regulation, self-determination and academic performance? Some of the test conducted were descriptive analysis, one-way ANOVA, correlation of bivariate and stepwise regression analysis. The results obtained were discussed.

Chapter 6 gave details of the third experiment relating to interview analyses. Pearson's correlation and ANOVA tests were conducted. The chapter further outlined the interview analyses conducted. Finally, the chapter gave a general discussion on the findings.

Chapter 7 is the conclusion chapter. Details of the research findings were summarised and highlighted. The contributions identified both in terms of the methodology used and from the results obtained were identified. Finally, the chapter highlighted some of the limitations encountered during the research and future work to be carried out were stated.

Chapter 2: Literature Review

Chapter 2: Literature Review

2.1 Overview: Concept of Learning

Learning is a process and method through which human being and animals survive in their environment. Human beings acclimatize to their environment to cope with issues relating to changing conditions of life. Organisms learn through various activities that bring about permanent change in their behaviour. Thus, many of human being behaviours are outcomes of previous experiences which arose from flexibility and adaptability (Hammed, 1999). Human beings can learn to construct means of transportations, communications, develop machines to ease difficulties, and adapt to various weather conditions. (Hammed, 1999) observed that nature's most important gift to human being and animals are capacity to learn new behaviours which will enable them cope with the ever-changing circumstances.

Learning therefore involves the acquisition of manipulative, intellectual as well as social skills and habits. There are various methods of learning which can be from simple (conditioning) to complex learning (insight learning observational learning). In both cases, learning involves relatively permanent changes in behavioural patterns, even though the processes which bring about the changes are profoundly different.

2.1.1 Definitions of Learning

Learning is one term that researchers find very difficult to give a single definition. Thus, some of the definitions given by authors shall be discussed.

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Learning is a process through which activity emanate or is changed through attaining an encountered situation, provided that the characteristics of the changes in activity, cannot be explained based on negative response tendencies, maturation, or temporary state of the organism (Hilgard, Ernest R; Bower, 1966). This definition shows that there is discrepancy between changes in behaviour that arose from phylogenetic and maturational features. This also shows that there are differences between learned and un-learned behaviour.

(Chauhan, 1987) stated that learning is any change in the general activity of an organism, the effects of which persist and recur over a period and which are strengthened by repetition or practice. This definition differentiates changes produced by learning from changes which result from other causes such as maturational process – the natural development of the organism. (Marshal, 1984) observed that learning may be described as the inference from some performance of an organism manifesting a change of behaviour. This implies that there is a reward to the organism for his existence principles. (Okoye, 1981) defined learning as a process which involves the learner and what he sets to learn. Learning thus conveys a modification in behaviour in solving a problem arising within his situational environment.

From these definitions, it can be deduced that learner is actively involved in the learning process and not passive having been motivated by setting goals and needs. Such learning may be incidental, direct, or both and results from experience, peculiar to the individual and occur as part of a larger whole in the process of learning. Although it is difficult to define learning, however, it can be deduced that learning takes place when the existing repertory of responses should be modified in order that a successful adaptation is made in a new situation. The success or failure in such circumstances depends largely on the motivational state of the organism at the time.

Learning involves three main aspects, namely cognitive, motivational and affective. Although, there is relationship between learning and emotion, researchers for a long time were studying the cognitive and motivational aspects of learning, not considering the affective aspects of learning (Hagenauer &

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Hascher, 2014). (Kleinginna, P.R and Kleinginna, 1981) observed that another problem facing researches in emotions is the issues of having a specific definition for the term ‘emotion’. This is reflected in the over 100 definitions for the term alone.

2.1.2 Learning in Classroom setting

Nowadays, traditional teaching and classroom settings are now being replaced with computer-based multimedia technologies. Students are thus faced with different emotional experiences in this mode of teaching and learning. It is therefore important to incorporate impact of emotions of learning in curriculum design to actively engage the learner and to develop learning and long-term retention (Shen, 2018). Researches had shown that components of cognitive processes, like attention, learning and memory, reasoning, and problem solving are influenced by emotions. These components are very crucial in education because of the various challenges faced by students that may affect the purpose of learning. Likewise, human emotions consist of complicated relations of subjective feelings with physiological and behavioural responses generated by external stimulus tagged personally significant (Tyng, Amin, Saad, & Malik, 2017) as illustrated in Figure 2.1. Consequently, three methods are employed in evaluating emotional states and these are:

1. Subjective approaches for examining the subjective things and experiences;
2. Behavioural investigation of facial expression, vocal expressions and gestural changes;
3. Objective approaches through physiological responses (Tyng et al., 2017)

Academic outcomes are important to both students and teachers determining the success rate of learning. It is therefore essential to identify the factors which affect academic outcomes such as the emotions students experience while in class or studying or during examinations. Achievement emotions are defined as emotions that arise in relation to achievement activities (for example, learning

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behaviour, effort investment or task persistence) or subsequent outcomes (for example, evaluations according to quality standards) (Lichtenfeld, Pekrun, Stupnisky, Reiss, & Murayama, 2012) (Reinhard Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010).

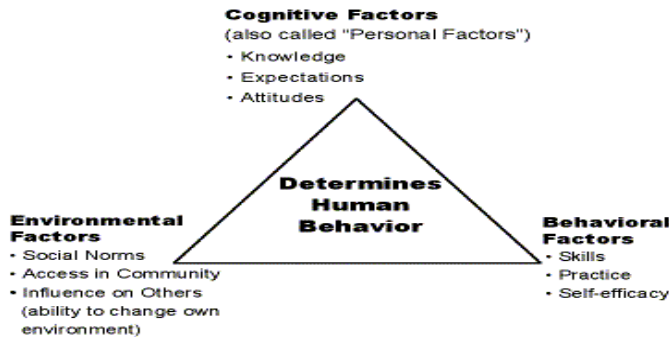


Figure 2.1: Diagram Determinant of Human behaviour (Stock Photo © Vaaenma: depositphotos)

The main emotions associated with academic performances are enjoyment, anger, boredom, anxiety, hopelessness, and pride. However, anxiety seems to be the most studied among the academic performance emotions. This might be since many researchers consider test anxiety to be a multidimensional concept comprising of cognitive (worrying about one's own performance and consequence of failure), bodily-affective (for example, fast heartbeat associated with intense arousal), and behaviour manifestations (for example, task-irrelevant behaviour like avoidance) (Lowe, P.A. Lee, S.W., Wittenborg, K.M, 2008); (Zeidner, 1998); (Zeidner, 2007).

2.2 Learning Strategies and Learning Styles

Learning is defined as individual engagement in learning, behavioural and neurological development. Individual engagement entails the process of learning where the teacher encourages students in personal development or self-actualization as a means of improving learning. Behavioural on the other hand, deals with observatory learner's reactions to stimulus situations. Students are therefore expected to react to such situation. Neurological view of learning involves the

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nervous system reacting to activities. In view of this, the primary concern of any education system is the development of the whole person.

A learning strategy is therefore a step by step procedures for accomplishing learning, and the specific procedures within this sequence are called learning tactics (Snowman, 1986). Learning strategy comprises of self-regulation and academic engagement.

2.2.1 Self-Regulation

Self-regulation is defined as processes such as effortful control and orientation that function to modulate reactivity, while reactivity is responsiveness to change in the external and internal environment. Many definitions had been given to the term self-regulation which is also called self-discipline and self-control. Self-regulation is a conscious effort to suppress overpowering responses to reach a higher goal (Duckworth, A.L. & Seligman, 2005). It is therefore the ability carry on a task to completion even if boring and difficult, to listen to the teacher rather than daydreaming, the ability to organise work and plan actively, and choosing homework over computer games and TV (Duckworth, A.L. & Seligman, 2005). This is also the degree to which learners are motivationally, behaviourally and meta-cognitively regulating their learning process (Zimmerman, 1990).

Self-regulated learners use three significant features: different self-regulated strategies (active learning process that involve agency and purpose); have confidence in performing efficaciously; and set many and wide-range of targets for themselves (Zimmerman B.J., 2000). Self-regulated learners also take part in three important process namely, self-observation (monitoring one's activities); self-judgement (evaluation of self-achievement compared with others or to a standard); and self-reactions (reactions to performance results). Self-regulated students set challenging targets for themselves by directing their learning process and achievements; through relevant approaches and by enlisting self-regulative impacts that encourage and direct their ability. Researches had shown that learners with a

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high sense of academic efficacy display greater persistence, effort, and intrinsic interest in their academic learning and achievement (Schunk, 1989)

Self-regulation are the activities a learner engaged in with to control, assess and observe learning outcome. These are the conscious effort and strategies a learner is taking by engagement in learning in order to succeed in academic work. There are three main activities a learner engaged with in self-regulation. These are individual's self-monitoring of behaviour, self-judgement and affective self-reaction (Albert Bandura, 1991). Self-regulation are strategies employed by a learner for "self-evaluating, organizing and transforming, goal-setting and planning, seeking information, keeping records and monitoring, environmental structuring, self-consequating, rehearsing and memorizing, seeking social assistance, and review records (Zimmerman· B.J., 1989).

Self-regulation comprises of three components namely; personal, behavioural, and environmental self-regulation (Zimmerman· B.J., 1989). Personal self- regulation is individual's self-confidence, interests, and effort to organise tasks. Environmental self-regulation is personal attempt to evaluate the environment and modify some activities to get to the set target. Lastly, behavioural self-regulation are activities undertaken to achieve success like organising activities, setting target using chart and working to actualize the target; recognise the most importance task and work according to activities ranking; employing different study approaches and recognising the one which works better.

2.2.2 Academic Engagement

(Csikszentmihalyi Mihaly, 1988) stated that the peak of engagement is a state of flow where a person is engaged in the activities that he completely forgets about time and environment. Engagement in school is students' involvement in learning and taking part in other related academic activities in school. The study of academic engagement had grown over the years as a result of increase in students losing interest in academic work and dropout rates (Villavicencio & Bernardo, 2013) (NRCIM, 2004).

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Academic engagement comprises of three components namely affective, cognitive and behaviour (Christenson, Wylie, & Reschly, 2012). On the other hand, (Skinner & Belmont, 1993) stated that academic engagement comprises of both behaviour and emotion. However, attending school is not sufficient as a student may attend school regular and take part in all activities, yet record low performance (NRCIM, 2004). This can be by just memorising or using learning strategies such as self-regulation to really understand a concept (Fredricks, Blumenfeld, & Paris, 2004).

2.3 Motivation

Motivation is a concept of using rewards to induce performance. A learner who scored high mark in an examination is motivated to get better mark in subsequent one, while a learner that scored low mark in an examination might not be really motivated to work harder. Motivation is defined as a set of inter-related beliefs and emotions that influence and direct behaviour (Wentzel, 1999). It was revealed that 59% of the high-achieving students reported frequently to achieve goals to behave responsibly and to achieve academically, while just 38% and 34% of average achievers and low-achieving students respectively reported the same levels of efforts to achieve their targets (Wentzel, 1999). Motivation is a process where goal directed activities begin and then eventually are sustained. Achievement motivation is commonly focused on studies in educational setting. Achievement motivation is enacted when an individual strives to be competent (Elliot, Andrew J.. & Church, 1997). A related construct is Brophy's "motivation to learn," which is describes as more than doing the bare minimum to meet the requirements, but deliberately engaging in academic tasks with the intention to acquire new knowledge or skills (Denzine, G. & Brown, 2015).

Early theorists suggested that achievement motivation is caused by instincts, traits, needs, or drives (Schunk, D. H., Pintrich, P. R. & Meece, 2008). It was noted that distinctive characteristics of a person determines achievement motivation need or trait (Figure 2.3). It was believed that students who have more of the achievement trait or drive will be more motivated towards success. Students that are adapted to their emotional and cognitive request and conflicts as well as social settings and

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environmental cues are more motivated (Järvelä, Volet, & Järvenoja, 2010). This implies that students need to adjust their cognitive, motivational and emotional learning process (Boekaerts, 1996); (Zeidner, Mo. & Boekaerts, M. & Pintrich, 2000)(Zeidner, Mo. & Boekaerts, M. & Pintrich, 2000); (Winne, 2001); (Zimmerman B.J., 2000)

Motivation is thus an identified goal that needs to be attained by explicit adaptive behaviour. These goals are highlighted in Figure 2.2. For example, a child should be able to do something that will evoke praise from other people in form of approval and acceptance. Success is attainment of a goal through suitable actions. Learning therefore is usually a change in performance initiated by motive and requiring some new organisation among established habits, skills and tendencies.

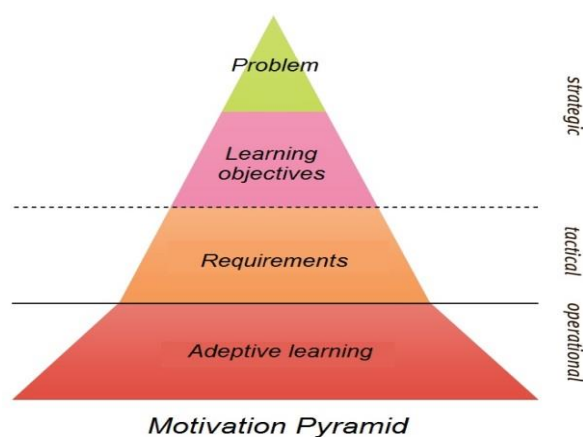


Figure 2.2: Motivation Pyramid (Kaspro Spiro)

According to (Ryan, Williams, Patrick, & Deci, 2009), there are two basic types of motivation, namely intrinsic motivation and extrinsic motivation. Intrinsic motivation derives enjoyment and fulfilment while taking part in activities, while activities are defined to get results in extrinsic motivation.

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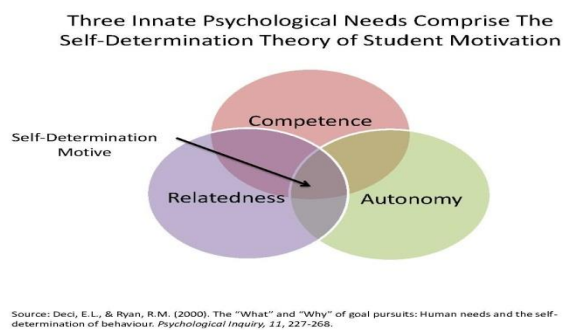


Figure 2.3: Links between Motivation and Self-Determination

2.3.1 Self-Efficacy

Self-efficacy is defined as individuals' confidence in their ability to organise and execute a given course of action to solve a problem or accomplish a task (A. Bandura, 1994). He proposed a social cognitive model of motivation, that was based on human agency and perceptions of efficacy. The construct comprises of generality, strength and difficulty in the multidimensional model. Moreover, self-efficacy influences students' activity choice, including how much effort or time they will invest in solving particular tasks and situations (A. Bandura, 1994).

Self-efficacy is an individual's belief in his or her ability to accomplish a task or accomplish a specific goal, such as doing well in a class or completing a degree. Depending on the strength and direction of self-efficacy beliefs, students either persist or quit. Eloquently posited by (Pajares, 2002), 'Self-efficacy beliefs help determine how much effort students will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations' (Concannon, Serota, Fitzpatrick, & Brown, 2018).

(Moos & Azevedo, 2009) indicated that students' computer self-efficacy is related to their learning performance in computer-based learning environments. In the earlier literature, (Ramalingam, V.; Wiedenbeck, 1998) suggested that self-efficacy is one of the successful components of programming learning. While in their later study, (Ramalingam et al., 2004) found that student computer programming self-efficacy positively predicted their performance. Given that a strong relationship

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exists between self-efficacy and learning performance, developing a computer programming self-efficacy scale to assess and predict computational thinking competencies of students with different grade levels is therefore important and useful for future computer education (Tsai, Wang, & Hsu, 2018).

Self-efficacy is determined by confidence beliefs of the student's approach to demands and learning activities at school (A. Bandura, 1994). Self-efficacy is defined as individuals' beliefs in their own ability to complete desired actions or to appropriately perform in specific situations which in educational settings designate the conviction of being able to successfully cope with performance-related tasks, and reach academic goal (Putwain, Sander, & Larkin, 2013). This definition is illustrated in Figure 2.4.

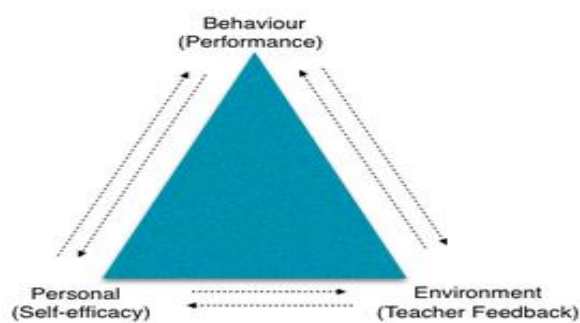


Figure 2.4: *Self-Efficacy* (en.wikibooks.org)

2.3.2 Self-Determination

Theories of motivation in education examine affective, social, cognitive, behavioural and self-regulation options; and self-determination theory (E. L. & R. Deci, 2012). Expectancy-value theories and self-determination theory are appropriate for evaluating motivation in learning. Self-determination theory assumes that students' intrinsic motivation is derived from fulfilments from basic emotional desires. Considerations in expectancy-value theory in education are engagement and academic outcomes (Figure 2.5). These are thus affected by the type of activities engaged in academic achievement, and self-determination to excel

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(Eccles & Wigfield, 2002). Academic motivation is an aspiration to perform well in learning and other related activities (Newmann, Wehlage, & Lamborn, 1992).

When positive performance-contingent feedback is missing in evaluation, then the learner's intrinsic motivation is not correctly assessed (Katz, Assor, Kanat-Maymon, & Bereby-Meyer, 2006). According to Self-Determination theory, a close association and relationship between specific actions can augment such action, while those that do not influence person's want can undermine intrinsic motivation (E. L. Deci & Ryan, 1985a); (Ryan & Deci, 2000). Because of this, a positive outcome will be reinforcement do try more, while a negative feedback will be demoralising. This is supported by (E. L. Deci & Ryan, 1985b).



Figure 2.5: Self-Determination (Christina Donnelly, 2010: Jtneill. Wikimedia Commons)

2.4 Test Anxiety

Test Anxiety is the emotion student experience before, during, and after test. This is caused by panic or stress in students because of tension in preparing for the test. A learner may experience test anxiety because of inadequate preparation for the test, having complex or social issues like shame and pride, or it might be due to situations or events outside the classroom. Test anxiety has been found to impact negatively on learners' outcome or performance. Learners with high level of test anxiety have low academic performance, while learners with low test anxiety have

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high academic performance. Thus, test anxiety is negatively correlated to academic performance.

Emotionality is the individual's subjective awareness of the heightened autonomic arousal rather than the arousal itself (Schwarzer, 1984). Researches have shown that high emotionality is associated with declining performance only when the individual is also experiencing high levels of worry (Morris, Larry W. Davis, Mark A. Hutchings, 1981); (Schwarzer, 1984). It was also revealed that high levels of emotionality negatively stimulus test performance only under circumstances where the individual also experienced high level of worry, signifying that worry is the primary performance predictor (Morris, Larry W. Davis, Mark A. Hutchings, 1981). Therefore, high level self-confidence regarding test performance is attributed to high level of emotionality. However, test anxiety has been attributed to behavioural phenomenon, because this can modify and reduce test anxiety when emotionality component is targeted. This implies that student experience test anxiety when there is rise in levels of physiological arousal.

Cognitive test anxiety consists of individuals' cognitive reactions to evaluate situations, or internal dialogue regarding evaluative situations, before, during and after assessing the tasks (Cassady & Johnson, 2002). Individuals with high levels of test anxiety usually have issues of extreme worry over assessment; comparing others performance with themselves; low levels of confidence in performance; consequences of failures; unprepared for assessment and loss of self-esteem (Morris, Larry W. Davis, Mark A. Hutchings, 1981). Path analyses have also confirmed that cognitive test anxiety have strong connection with performance.

2.5 Interest

Researchers and educationists have always been working on ways to improve academic performance which is the main focus of education. (Linnenbrink-Garcia et al., 2010a) observed that there are few researches investigating the impact of learners' interest in the course been taught relative to classroom environment and

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mode of instruction. In education sector, interest is said to be content-specific variables, multidimensional construct with impact on studying and motivational components, and induced by external stimulus (Krapp, 2007b). It is therefore a lasting human growth, consisting of motivational components, and not individual traits.

To this end, researches has shown that interest affect learning as a result of motivation to learn based on students' behaviours and changes due to classroom and learning factors (Krapp, 2007b). In the same vein, learner's choice of a particular course of topic is based on interest as a result of motivation. Academic outcome should therefore be examined according to learner's specific factors, benefits of a learning, and mind-set for personal and professional development.

2.5.1 Theory of Interest

Theory of interest is made up of two units called the bipolar unit consisting of the individual as a source of action, and the environment as the object of action (Krapp, 2007b). The interest set is made up of inter-connection of the individual and the person's experience and needs. The result is development of interest over a period of time on the object. An object of interest can be any concept of learning objects such as facts, concepts, theories, and principles taught and learned in specific academic setting. This can be subdivided into two views; learner's understanding of the object and evaluations involved; and what the object really means. Thus, the object of interest can exist as the individual imagination or illusion, or as a person's subjective consciousness of the real world.

There are two types of interests in classroom setting, namely, individual interest and situational interest (Mitchell, 1993). Individual interest is the one relating to evaluative orientation of person's across situations. On the other hand, situational interest is an emotional state aroused by specific features of an activity or a task with physiological, subjective, goal, and behavioural components. Learners' interest in subject induces high performance (Hidi, S, Renninger, K. A. and Krapp, 2004), and increases ability to recall and analyse texts (Hidi, 1990); (Alexander,

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P.A., Murphy, P.K., Woods, B.S., Duhon, K.E. & Parker, 1997); (Alexander & Murphy, 1998); (Ulrich Schiefele & Schiefele, 2009); (Renninger, Ewen, & Lasher, 2002); (Renninger, K.A. & Hidi, 2002).

Interest is also reported to contribute to relentless and time spent studying (Prenzel, 1992); (Renninger, K.A. & Hidi, 2002), self-efficacy (Hannover, 1998), and motivation to learning (U. Schiefele, 2001). However, the influence of coping resource as a means of enduring unpleasant situation is not usually examined. Interest is said to be an individual trait (Savickas, M.L. & Spokane, 1999) which develop from infant to adulthood and becomes way of life (Holland, 1997).

2.6 What is Emotion?

Emotion is a feeling experienced because of reaction to certain situation. A person can experience joy, sadness, boredom, hopelessness, anger, enjoyment and pride. In classroom setting however, students experience different emotions associated with learning and some not relating to classroom or even school environment. There are four basic types of emotions in academic that has influence on performance namely positive activating, positive deactivating, negative activating and lastly, negative deactivating (Pekrun, Reinhard, Goetz, Thomas, Titz, Wolfram, & P. Perry., Raymond, 2002).

There are three main types of discreet emotions; namely, valence (positive/negative), arousal (high/low), and motivational direction (approach/avoid) (Harmon-Jones, Bastian, & Harmon-Jones, 2016). Other attributes of discreet emotions are individual feelings, inducing circumstances, explicit deed tendencies and reasoning evaluations.

Some of the negative emotions that have motivational inclinations and high stimulation are anger, disgust, fear, anxiety:

Anger is usually associated with inward and downward movement of the muscles of the brow with rigid gaze and expansion of the nostrils and wings of the nose.

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Other words for describing anger are rage, irritation and exasperation (Shaver, Schwartz, Kirson, & O'Connor, 1987).

Disgust is another negative emotion that involves motivational extraction and high stimulation. The facial expression of disgust is associated with furrowed nose, squeezing of the brows with slight parting of upper and lower lips and twisting the tongue outward (Izard, 1992).

Fear is another negative emotion associated with lifting and squeezing of the brows, eyes wide opened and side of mouth withdrawn back and partially opens (Izard, 1992). Other words used to describe fear are horror, alarm, and terror (Shaver et al., 1987).

Anxiety: Although anxiety is a negative emotion, it is not considered a basic emotion (Harmon-Jones et al., 2016). This is because anxiety is considered a branch of fear cluster (Shaver et al., 1987). Although, there is inter-section between the brain system that support anxiety and fear, however event that show likely undefined threats usually induce anxiety, while fear is induced by severe threat. Anxiety is expressed facially with eye hooks and head spins thus intensifying the spatial area observed by the eyes (Perkins, Adam M. Inchley-Mort, Sophie L. Pickering, Alan D. Corr, Philip J. Burgess, 2012). Other words used to describe anxiety are nervous and tense (Shaver et al., 1987).

Sadness is a negative emotion with low arousal and typically connected with the approach motivational system (Harmon-Jones et al., 2016). Sadness is expressed by tighten the inner corners of the brows upwards, narrowing the eyes slightly, and with the pulling of the corners of the mouth downward and the chin been trembled and pushed up. Other names for sadness are suffering, depression and disappointment (Shaver et al., 1987).

Boredom is defined “as an unpleasant and transient event experienced as a pervasive lack of interest and difficulty in concentrating on the current activity” (Fisher, 1993) in (Sharp, Hemmings, Kay, & Atkin, 2018a). It is the ability of having interest or intention to perform a task, but unable to finish it (Eastwood,

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Frischen, Fenske, & Smilek, 2012). It is said to relate to conditions such as loneliness and withdrawal, anxiety, depression and aggressive behaviour (Sharp, Hemmings, Kay, & Atkin, 2018b). To this end, boredom in classroom setting while learning and taking test is one of the important factors to consider for effective analysis of assessment. Boredom is also defined as a motivational prompting effect on a person in relation to environmental factors (Todman, 2013). Boredom can occur due to several factors such as academic anxiety and interest in studying, truancy and uninteresting (Robinson, 1975), anxious and distraught students (FOGELMAN, 1976), and low external stimulation (O'Hanlon, 1981). People that experience boredom considered their work as dull and requiring high cognitive workload, forced to perform tasks which they are not comfortable with or under duress to do certain task.

Some studies however suggest that boredom is as result of subjective factors. These include perception of monotony resulting in frustration, dissatisfaction, and loss of interest and focus (Hill, A.B. & Perkins, 1985); (Watt, J.D. & Blanchard, 1994), the perceived level of skill and challenge in relation to the task (Csikszentmihalyi, M. & Csikszentmihalyi, 1992), and, the self-perception of attention (Damrad-Frye & Laird, 1989), (MacDonald & Holland, 2002). Others perceived if as cognitive processes, such as inattention (Hamilton, J.A., Haier, R.J., & Buchsbaum, 1984), homogenous construing ((POLLY, LM; VODANOVICH, SJ; WATT, JD; BLANCHARD, 1993) and self-awareness (Seib & Vodanovich, 1998). In academic environment, the term academic boredom is usually used. It is reported to contribute significantly to students' learning strategies and academic performance (Linnenbrink-Garcia & Pekrun, 2011); (Schutz, P.A. & DeCuir, 2002); (Pekrun, R. & Schutz, 2007).

2.6.1 Types of Academic Emotions

Lots of emotions are experienced by students in classroom settings that are associated with learning and assessments which can be either positive or negative (R. Pekrun, 2014). While some of the emotions might be related to classroom issues, other has to do with events that occur outside the school environment. There

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are four main types of emotions related to classroom and students' learning as related by (R. Pekrun, 2014):

1. **Achievement emotions** are those has to do with assessment of academic learning. Some of these are joy of learning, been anxious about academic performance; and hope and pride about achievement.
2. **Epistemic emotions** are cognitive issues related to astonishment in performing new task, like curiosity, confusion and frustration when issues arise; and happy on finding solution to the problem. It is most related when performing new tasks.
3. **Topic emotions** are emotions relating to topics when lessons are being delivered. Both positive and negative emotions are experienced in topic emotions, some of them are sympathy, anxiety, disgust and enjoyment.
4. **Social emotions** are emotions experienced by both the teacher and the students in the class. Some of these are love, sympathy, compassion, admiration, contempt, envy, anger or social anxiety. These are emotions experienced during classroom interaction and learning.

2.6.2 Impact of Emotions in Learning

The impact of emotions in learning is being studied by many researchers nowadays. (Um, Plass, Hayward, & Homer, 2012) in (Tyng et al., 2017) observed that positive emotions induce learning and led to improve academic achievement, as augmented by self-motivation and satisfaction of learning resources. However, (D'Mello, Lehman, Pekrun, & Graesser, 2014) stated that confusion increased learning as the learner is more engrossed in studying which eventually led to improve academic performance in tests. Although, confusion is not an emotional state but rather a cognitive state caused by difference facts, however, confusion is correlated to both seeking and rage. Thus, confused students tend to explore new knowledge by taking extra work which thus improves learning. Stress which is also a negative emotional state also induces both learning and memory, as per strength and interval with which

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it occurs (Vogel, S. & Schwabe, 2016) in (Tyng et al., 2017). However, it is the minor stress that induces learning and reasoning performance, while it may deter learning and mental performance if it is extreme. The impact of emotions on learning and memory is better understood through attention and motivation components. (Vuilleumier, 2005) in (Tyng et al., 2017) explained that attentional components of processing information are performed through a “bottom-up” approach of classification of relevant to brain function and awareness. Curiosity is another state that is triggered by motivational components. It is a psychological mindfulness in new remarkable concepts, which inspires investigation and enables the brain to learn and remind what is learnt in both adult and children (Oudeyer, P.Y., Gottlieb, J. & Lopes, 2016) in (Tyng et al., 2017).

Emotions is a complex set of interactions between subjective and objective variables that are mediated by neural and hormonal systems, which can (a) give rise to affective experiences of emotional valence (pleasure-displeasure) and emotional arousal (high-low activation/ calming-arousing); (b) generate cognitive processes such as emotionally relevant perceptual affect, appraisals, labelling processes; (c) activate widespread psychological and physiological changes to the arousing conditions; and (d) motivate behaviour that is often but not always expressive, goal-directed and adaptive (Kleinginna, P.R and Kleinginna, 1981). This definition failed to include the effect and reaction aspect of emotion.

Emotions are the psycho-neural processes that are influential in controlling the vigour and patterning of actions in the dynamic flow of intense behavioural interchanges between animals, as well as, with certain objects that are important for survival. Hence, each emotion has a characteristic “feeling tone” that is especially important in encoding the intrinsic values of these interactions, depending on their likelihood of either promoting or hindering survival (both in the immediate “personal” and long-term “reproductive” sense). Subjective experiential-feeling arise from the interactions of various emotional systems with the fundamental brain substrates of “the self”, that is important in encoding new information as well as retrieving information on subsequent events and allowing individuals efficiently to generalize new events and make decisions (Panksepp, 1998).

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Seven main emotional states were identified by him, namely seeking, rage, fear, lust, care, panic/grief, and play representing basic foundations for living and learning.

According to (Eynde, P.O. & Turner, 2006), emotions have three main characteristics namely, affective reaction, emotion experience and centre of awareness. Affective reaction illustrates the emotions experience and the reasons for it, for example, a student experiencing anxiety due to exams. Experience of emotions deals with importance or level of acceptance of the emotion by the person. The third aspects of characteristics of emotions deal with recognising the emotions and its impacts. Consequently, emotions can be seen to be interwoven comprises of cognitive, motivational and feelings. Thus, there are five components of emotions as identified by (Scherer, 1997), which includes: affective, cognitive, expressive, motivational and physiological components. These emotions, clarify the different forms of emotions. (Schutz, P.A., Aultman, 2009) on the other hand clarified emotions into three forms, namely; core cognitive, motivational and affective. Researches had shown that learners with a high sense of academic efficacy display greater persistence, effort, and intrinsic interest in their academic learning and achievement.

Also, emotionally related inducement based on selective attention is associated with memory functionality of emotion. The Central Nervous System (CNS) consists of three major parts, namely; the primary-process emotions, the secondary-process learning and memory; and the tertiary-process higher cognitive components (Panksepp, J. & Solms, 2012). Basically, primary emotional processes control the secondary process through associative learning strategies by regulating complete emotional activities of survival needs. The tertiary process is used through the higher brain regions which receive appropriate information on learning process to permit scheduling of forecast of data as per previous information stored in LTM activities (Vytal & Hamann, 2010) in addition to Autonomic Nervous System (ANS) (Schmeck, 1988).

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2.7 Social Cognitive Theory

Theory is an ordering process that is usually associated with science. Both physical and behavioural scientist assumes that there is some order in nature which explains why there is need for searching for uniformities in achievement. Any scientific theory is therefore a proposed general ordering that agrees with observed specifics theory (Hammed, 1999).

A combined set of ideologies that organises and predicts observable behaviours is explained by a theory. Theory thus simplifies things by organizing isolated facts and offers useful summary by linking observations and bridging them to deeper principles. Theory can therefore be defined according to (Hammed, 1999), as an explanation using integrated set of principles that organizes and predicts observations. A theory should give room for testing, no matter how good it is. A good theory implies testable prediction called hypotheses. By allowing test and rejection or revision of the theory, such predictions give direction to research. This specifies in advance what results would support the theory and what results would disconfirm it.

Thus, the theory of learning is expected to achieve the following objectives (Hammed, 1999):

- It must assist in identifying all processes of learning.
- It must extend our knowledge of the conditions or forces that stimulate, inhibit, or affect learning in any way.
- It must allow us to make reasonable precise predictions relating to the results of learning activity.
- It must be a source of hypothesis, clues and concepts, usable in becoming good teachers.

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- It must be a source of hypothesis or informed testable inferences about learning in classroom and through experiments and research that expand our knowledge of teaching-learning processes.

People's behaviours are manifestations of their interactions with others and circumstance, and not either of this alone (Bowers, 1973); (Endler, N. S., & Magnusson, 1976).

The first law theory of social cognitive is the unidirectional notion of interaction.

1st Law: Unidirectional notion of interaction

Formular, $B = f(P,E)$ 1

where B is the behaviour, P is the person, and E is the environment; interaction, person and situations are independent (Figure 2.6). However, P and E depend and determine each other, and person depend on their behaviour.

From the foregoing, people's behaviour or actions are results of environmental factors that influence their behaviour. Consequently, the person behaviour is shaped by the experiences and what he has learnt from his past actions and these thus determines how the person will behave or react when faced with similar situation.

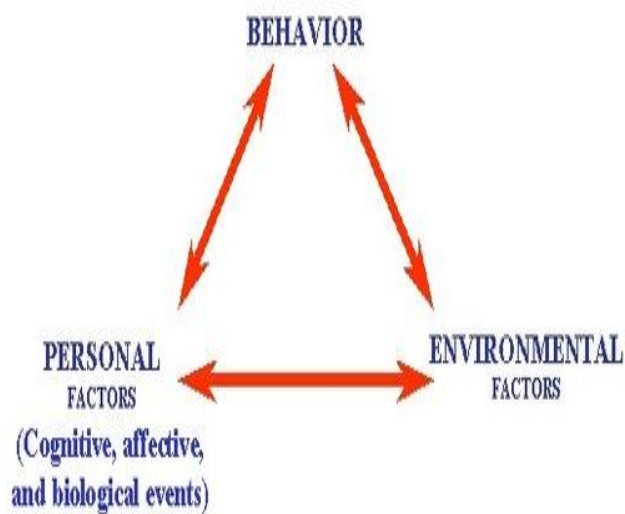
2nd Law – Bidirectional

[$B = f(P \leftrightarrow E)$] 2

This observed that personal behaviour is dependent on the person and the environment, and these are vice versa. Person depends on environment, and environment depends on person.

From the social learning views, the relationship between person, behaviour and the environment can be predicted as shown in the Figure 2.6.

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*Fig 2.6: Relationship between person, behaviour and environment
(www.uky.edu)*

This shows an inter-related relationship between the components of behaviour, personal factors and environment factors, where they all depends on each other's. People's experiences are dependent on their knowledge of their environment. Thus, a previous painful experience will signal a stimulus to a person when come into contact with similar experience and thus prompt a procedure to avert similar experience. People's behaviour can then be said to be consequential – behaviour is controlled by its immediate consequences.

(Baum, 1973) proposed that behaviour is control by instantaneous reactions by experiences and results from previous actions. As a result, people deduce their way of life and behaviour based on past experiences and how well they react to situation at that time.

Therefore, observing people's actions and their outcomes result in learning process. The person observing gather similar behaviour and their consequences overtime and learn from past experiences of others. Consequently, some tasks are better learnt through observation from experienced person than novice learners to perform them because of the danger associated. Some tasks can be learnt and performed through observation, modelling, and symbolic representation.

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2.7.1 Learning Process in Social Cognitive Theory

There are some fundamental processes that learning in social cognitive theory involves, and these are;

1. Self-Regulatory Capabilities

The ability of individual to organise environmental factors, produce thinking or their reflective aids and generate results for their actions enable them to exercise control over their behaviour. This self-regulation is however made and influenced by foreign actions.

2. Learning by Reinforcement

This is a process in which instantaneous reactions are model unaware by the outcomes. Responses consequences comprise of impart information motivation for record, and capacity for strengthen instantaneous responses. It was noted by (A. Bandura, 1977) that reinforcing consequences is enabling people be aware of the outcome of their actions and the reward or punishment associated with it. This enable individual to be mindful of their actions.

2.7.2 Functions of Social Cognitive Theory

There are two basic functions of social cognitive theory, namely:

a. Motivational functions

Human beings are motivated when there is expectation or incentives. When previous actions are rewarded, then people will be highly motivated to perform the act. But, if performing the action led to punishment, then people will refrain to avert punishment. Anticipatory control is therefore the reason for taking many actions. Anticipatory control induces foresight actions by reminding the performance of consequences attached to behaviour. This provides inducement for right behaviour and the reward or otherwise attached.

b. Reinforcing function

Learning can take place unconsciously by learner though not at fast rate and not really correct. This also suggest that learning can take place when there is action-

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outcome relationship which is been observed. It is however not acceptable if the right action-outcome situation is unobserved, or the right results are observed but the actions are rewarded. Behaviour learnt can be adjusted by reinforcement but cannot be created by it.

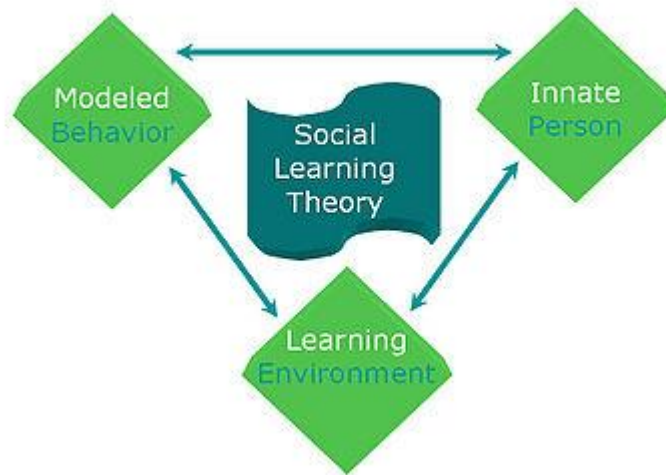


Figure 2.7: Social Learning Theory (researchgate.net)

Chapter 3: Research Methodology

3.1 Overview: Descriptions of Participants

Participants for this research were twenty-four (24) 300 Level students of Computer Science department, Federal College of Education (Special), Oyo, Nigeria. Participants were randomly selected for the experiments.

Table 3.1 show the demographic representation of the sample comprising of 10 females representing 41.7% and 14 males representing 58.3% and aged between 16 and 27. Participants consent was sought before the class and they all agreed to take part in the research. They were also told that their responses in the questionnaires will be anonymous and used purposely for research.

Table 3.1: Gender Analysis

S/N	NO. OF RESPONDENTS	% OF RESPONDENTS
MALE	14	58
FEMALE	10	42
TOTAL	24	100

Table 3.2: Age Analysis

S/N	NO. OF RESPONDENTS	% OF RESPONDENTS
16-18	2	8
19-21	9	38
22-24	12	50
25-27	1	4
TOTAL	24	100

Analyses of the age of the sample revealed that major of the participants were 23 years old with total mean age of 23.5.

Table 3.3: Disability Analysis

S/N	NO OF RESPONDENTS	% OF RESPONDENTS
NO DISABILITY	21	87.5
DISABILITY	3	12.5
TOTAL	24	100

Three participants have Hearing impairment representing 12.5%, while the rest representing 87.5% have not disability.

3.2 Experimental Procedures

The first thing that was done before the field work was done was to obtain the Ethical Approval from Federal College of Education (Special), Oyo, Nigeria by following due process.

Procedures for the experiment involved the researcher developing two topics from 300 level courses of the Computer Science in the Nigeria Certificate in Education syllabus. A topic in Introduction to Networking and one topic from System Analysis and Design were chosen. The researcher then developed the course module and the tests questions to be conducted for each of the courses. This was followed by consultations with the samples used for the research by giving details of the research aims and procedure, and distribution of consent form to all to seek their approval.

The researcher then strategized the lesson plans with the research team including two staff from the department of the Computer Science. Video recording of the class session was taken. At the end of the class session, the research team analysed the video clips by playing it to each of the sample. The video is paused whenever an emotion is detected, and the team will ask the participants reason(s) for the emotion experienced. The results of these analyses were transcripts. A test was also conducted to obtain academic performance of the samples.

Finally, two questionnaires namely, the Achievement Emotions Questionnaire (AEQ) and the Motivated Strategies for Learning Questionnaire (MSLQ) were distributed to the participants.

3.3 Data Collection

Data for this research were collected using the Achievement Emotions Questionnaire (AEQ) using a scale of 1 for strongly disagree to 5 for strongly agree. This agrees with (Reinhard Pekrun, Elliot, & Maier, 2006). Also, Motivated Strategies for Learning Questionnaire (MSLQ) was used to collect data for the second research. The question items for the questionnaire were extracted from

(Pintrich, Paul R., et al; 1991) - A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ) (see Appendix) with reference to Computer Science. Scores obtained from the two tests conducted and the transcripts of the analyses of the video clips of the class sessions were also used for the analyses.

The table below provides a summary of some researches and the instruments used to collect data in the research.(Tsai et al., 2018)

Table 3.4: Summary of some researches and the instruments used

S/No	Author	Research instrument and scale	Measures and analysis
1.	(Tsai et al., 2018)	Computer Programming Self-Efficacy Scale (CPSES) Uses 6-point “not like me at all to very much like me”. 24 items	Logical thinking, algorithm, debugging, control and cooperation
2.	(Ramalingam, V.; Wiedenbeck, 1998)	Students’ Self-Efficacy of Learning the C++ Programming Language Questionnaire. 32 items	Independence and persistence, complex programming tasks, self-regulation and simple programming tasks
3.	(Askar, 2009)	Students’ Self-Efficacy of Learning the C++ Programming Language Questionnaire. 32 items	Independence and persistence, complex programming tasks, self-regulation and simple programming tasks
4.	(Govender & Basak (2015),	Students’ Self-Efficacy of Learning the C++ Programming Language Questionnaire. 32 items	Independence and persistence, complex programming tasks, self-regulation and simple programming tasks
5.	(Berland & Lee, 2011)	Computational Thinking Framework to Examine Students’ Computer Programming Self-Efficacy	Conditional logic, algorithm building, debugging, simulation and distributed computation
6.	(Su-Fen, Cheng, 2010)	Self-Directed Learning Instrument	Learning motivation, planning and implementation, self-monitoring, and interpersonal communication

		20 items	
7.	(Pekrun, R., A.J. Elliot, & M.A., 2006)	Achievement Goals Questionnaire (AGQ). Uses 5-point Likert of 1 for “Not at all true of me” to 5 for “Very true of me”	Enjoyment, hope, pride, boredom, anger, anxiety, hopelessness and shame.
8.	(Pekrun, R., Goetz, T., Daniels, LM. & R.P., 2010)	Achievement Emotions Questionnaire (AEQ). Uses 1 for strongly disagree to 5 for strongly agree	Only Boredom emotions was considered
9.	(Pintrich & Groot, 1990)	Motivated Strategies for Learning Questionnaire 1 for “Not at all true of me” to 7 for “very true of me”	Motivation, cognitive strategy use, metacognitive strategy use, and management of effort, self-regulation, self-efficacy, intrinsic value, test anxiety, learning strategy

3.3.1 Measures for Academic Emotions Questionnaire

Three types of measures were used for evaluating the class session in Experiment 1: (a) AEQ questionnaire, (b) interview after class session, and (c) grade of test. Students’ achievement was measure through the grade obtained in the test administered after the class session.

Research hypotheses stated in Table 4.1 was aimed at investigating the impact of anxiety on achievement pressure and expectation of failure has on the participants. Achievement pressure and expectation of failure was measured with anxiety questions items (N=4) for class-related and (N=4) for test-related. All the achievement pressure and expectation of failure items were extracted from the AEQ questionnaire items used for the research. Cronbach’s alphas for this study’s samples yielded .82 for standardized items of 53.

3.3.2 Measures for Evaluation using Motivated Strategies for Learning Questionnaire (MSLQ)

Evaluation for this experiment was based on Motivated Strategies for Learning Questionnaire (MSLQ) distributed to the participants and the scores obtained from the test conducted. This questionnaire was used to answer the research hypotheses in Table 5.1 of Chapter Four.

A total of 26 question items were used to measure the self-regulation, academic engagement, motivation, self-determination and test anxiety. Opinions were measured using a 5-point Likert scale rating of 1 for Strongly Disagreed and 5 for Strongly Agreed. Cronbach's Alpha: .754 was achieved; Cronbach's Alpha based on standardized items: .881 using standardized 42 items.

Self-regulation was measured using 7 question items of meta-cognitive self-regulation from MSLQ; Cronbach Alpha for standardized items is .79; Cronbach alpha obtained for this research was .93 for 7 items.

Academic Engagement was measured using 4 question items of extrinsic goal orientation from the MSLQ; Cronbach Alpha for standardized items is .62; Cronbach alpha obtained for this research was .78 for 4 items.

Motivational beliefs were measured through self-efficacy, self-regulation, test anxiety, intrinsic value, and cognitive strategy use. Items were made specific to Computer Science.

Cronbach Alpha for standardized items is .90; Cronbach alpha obtained for this research was .78 for 6 items.

Self-determination was measured with 4 question items using effort regulation items from MSLQ Cronbach Alpha for standardized items is .69; Cronbach alpha obtained for this research was .92 for 4 items.

Test anxiety using 5 question items from test anxiety of the MSLQ; Cronbach Alpha of standardized items is .80 Cronbach alpha obtained for this research was .68 for 5 items.

3.4 Sample Size

Determining the sample size in qualitative and quantitative research is the first step towards planning a successful research. It is important to evaluate the sample size during the research as adequate for analysis ((Guest, Bunce and Johnson 2006) in (Kirst Malterund, et al, 2015). Although power calculations are used in determining the sample size in quantitative research, there is no standard sample size in qualitative study (Kirst Malterund, et al, 2015). (Patton, 2015) observed that the sample size in qualitative study should be proportional to the aims of the study. (Mason, 2016) also noted that some researchers based their sample size on previous numbers of units to select sample size.

Based on the above submissions, (Kirst Malterund, et al, 2015) proposed the concept of Information Power, that stated, “the larger the information power the sample holds, the lower sample size needed, and vice versa. The information power consists of five items, namely, study aim, sample specificity, use of established theory, quality of dialogue and finally, analysis strategy. A study with broad aim will need considerable larger sample size than one with narrow aim. In the case of specificity, sample size is narrow down when there is specific characteristic the samples should possess. In terms of quality of dialogue, fewer sample size is required if the interview is going to be intensive. In case of established theory, a study with few theories to back it up will need large sample size to establish if findings, while a study with already established theory need fewer sample size.

Finally, analysis strategy involves using large number of participants in cross-case analysis, and fewer participants is required for in-depth analysis.

Qualitative Analysis – Sample Size

There are three criteria used in determining sample size in quantitative study, and these are level of precision / sampling error, level of confidence or risk, and degree of variability (Michener, 1976). The level of precision is the range in which the true value of the population is estimated to be (Glenn, 1992). It is usually expressed in percentage. The confidence level is based on the Central Limit Theorem in which the average sample is equal to the true population value in a repeated sample and the sample is assumed to be normally distributed. The approximate sample size in normal distribution is 95% (Glenn, 1992). This means that 95 out of 100 samples will have the true value within the range of precision. Degree of variability measures the distribution of the attributes in the population. The more the population varied, the larger the sample size needed to obtain a required level of precision, and the more the population are related, the smaller the sample size required (Glenn, 1992).

3.5 Sample Frame

There are six department in the School of Secondary Education (Science Programmes), Federal College of Education (Special), Oyo namely, Biology, Chemistry, Computer Science, Integrated Science, Mathematics, Physical and Health Education, Mathematics and Physics departments. The participants used for this research were students of the department of Computer Science in their third year. The sample fell within the required sample frame as the two selected courses

taught in the research were part of their courses and modules picked from the Nigeria College of Education syllabus.

3.6 Data Analyses

Several statistical tests in the Statistical Package for the Social Sciences (SPSS) were run for the study including the ANOVA, descriptive statistics, regression, reliability and correlations tests. IBM SPSS statistics version 20 was used to conduct the analyses. Opinions were measured using a 5-point Likert scale rating of 1 for Strongly Disagreed and 5 for Strongly Agreed. The prediction of directional relationship within settings was tested using the Pearson's two-tailed correlations for each of the emotions within each academic domain. One-way ANOVA was performed to compare the means; descriptive analysis was also performed on the items. Correlation of the bivariate was also conducted to obtain the Pearson's two-tailed test of significance. The transcripts of the interview section conducted to analyse the emotions experienced from the video clips were also done.

3.7 Ethnography

Ethnography is a technique that depends on up-close, personal experience and possible participation, not just observation, by researchers trained in the art of ethnography (Michelle, B., Owain, J. Niamh, M. & Emma, 2016). Ethnography features include thorough language and culture learning, intensive study of a single field or domain, and a blend of historical, observational, and interview methods. It is thus a combination of three research methods namely, interview, observation and documents. The output from data collected is in form of citations, explanations, and extracts of documents resulting in report description of the real situation. The report is mostly graphic representation and explanations of the observations. During ethnography, new adjustable or flexible patterns can be observed during study to

incorporate new testing of the hypothesis making it appropriate even for ideals that were not thought of before.

Although ethnography originated from anthropology and sociology, it is now applied in factually all research areas nowadays. The method is used in conducting researches in teaching and learning, public health, rural and urban development, consumers and consumer goods. It relies on both qualitative and quantitative process of learning to testing while research problems, perspectives, and theories emerge and shift (Michelle, B., Owain, J. Niamh, M. & Emma, 2016). Ethnography includes not but limited to the following: observation of people's actions, data collections and analysing the data by deducing and then applying statistical method to test the variables.

Ethnography is a set of methods, and not a theory (Hammersley, M. & Atkinson, 1995) that involves observation, interviews, materials gathering and desk research. Other definitions are:

- Ethnography is a kind of “story-telling” enterprise, and ethnographers a kind of super tourist, the authority of whose holiday stories rests in their direct personal contact with the others they visited (John, 1995).
- Ethnography is an attempt to understand what everyday life is like for those being studied (Macaulay, Benyon, & Crerar, 2000).
- Ethnography is the gathering and reporting of observations for the purposes of cultural analysis, which is “(or should be) guessing at meaning, assessing the guesses and drawing explanatory conclusions from the better guesses, not discovering the continent out its bodiless landscape” (Macaulay et al., 2000).
- Ethnography literally means 'a portrait of a people.' An ethnography is a written description of a particular culture - the customs, beliefs, and behaviour - based on information collected through fieldwork" - (Harris, M. and Johnson, 2011) Ethnography is the art and science of describing a group or culture. The description may be of a small tribal group in an exotic land or a classroom in middle-class suburbia" - (Fetterman, 1998).

- Ethnography is a research method of gathering and analysing field work information obtained through direct observation by the researcher (Anderson, 1997).

3.7.1 Descriptions of Ethnography

Ethnography encompass the researcher taking part in events, observing activities, taking notes and gathering unformed data to generate an interpretation of the circumstances being studied (perhaps in a school or university rather than a little-known (Cotton, D.R.E., Stokes, A. & Cotton, 2010). A wide range of options such as, audio or video recording can be used to record events using ethnography in academic environment that can be useful to the pedagogic researchers. This is because recordings improve correctness, in that it is likely to have a more or less record of what was said, but may increase the investigator's load, particularly if an expert typist is not present to write (Cotton, D.R.E., Stokes, A. & Cotton, 2010). (Tao, Xiaomei, Niu, Q. & Jackson, 2013) used a "Quick and Dirty" ethnography to collect emotional data in a cognition and emotion support e-learning research but stated that there is a trade-off between the efficiency and completeness in the method.

Some of the features of ethnography are:

- a. The researcher created a study environment and investigates people's way of life.
- b. Information is obtained through direct and unstructured discussion.
- c. Data are typically collected in a raw and unstructured format which can include data that were not anticipated.
- d. The study group are usually small number of participants.
- e. The data obtained for ethnography are usually interpreted in form of verbal description and statistical analysis.

3.7.2 Rapid Ethnography

This is a type of ethnography that is conducted when the researcher has very short time to carry out the research mostly in a commercial business environment. However, the researcher thus interacts with the focus group but is mindful of time constraint and the busy nature of the study environment. The researcher interaction with the participants enables him to gain useful information and help to design a good products and services that has customer as focus. The main advantage of rapid ethnography is that the users of the systems are actively involved and thus give their input which subsequently produces a good design.

3.7.3 Important of Ethnography to Design

Ethnography is a research method involving a direct observation of the participants by the researcher in the study environment (Ball & Ormerod, 2000). The main advantage of this method over the traditional intellectual methods is that the researcher has a detailed insight in to the participants' activities; including behaviours through interactions with others in the natural environment which other systematic methods usually omit.

The following are some of the reasons why ethnography is important to design:

- a. Understanding the research environment: the researcher needs to gain understanding of the research environment to fully understand how it works.
- b. To remove bias: by getting the users actively involved and seeking their opinion, the designer can get a good insight in to the requirements of the system and work with the information obtained without working based on personal experience and view.
- c. Augmenting technology: it can be used to test a new design through observing participants using the design, thereby making necessary adjustment for improvement.
- d. Good usability knowledge: users' needs and is better understood in testing environment when studying the participants in their working environment.

- e. Making a detailed prototype/model for user: designer can get full information of what the users' requirements is when studying the working environment because the users might not be able to give a clear explanation of their needs. But by watching them trying the prototype, he can adjust the design to users' need.
- f. Creating a detailed design
- g. Situatedness: a researcher that is observing the participant collected the data for the study over the period of the study.
- h. Richness: various methods of data collections are usually employed in collection of data; including observation, interview and discussion. All these gives more detailed information.
- i. Participant autonomy: the participants are not under any forced or duress situation by participating as their consent were sought before commencement of the study.
- j. Openness: new or surprising discoveries can happen during the study which the researcher should be at alert of.
- k. Personalization: researcher's opinions are noted or jotted down about specific circumstances that occur during data gathering and analysis.

3.7.4 Applying Ethnography

There are three issues raised in using ethnography research method. These are: attitude, validity and practicality.

Attitude: (Mantovani, 1996) observed that those working in design environment always take qualitative research methods to be mild. To overcome the issue of attitude, the research has to be taken in a rigorous manner, and the fieldworker need to maintain a regular procedure of expression about their actions, results and prejudices (Wolcott, 1995). The level of rigour and procedure needs to be stated in the write-up of the study (Harper, 1998).

Validity: Although the field of experimental protocols and statistical analysis seems suspicious because the findings are unrepeatable and therefore establishing the validity of the work questionable. However, (Pickering & Chater, 1995)

suggested that, if we acknowledge that data collection is a complex, socially, culturally and historically embedded, knowledge rich behaviour, and then obviously the cognitive technique to studying it is not, by itself at any rate, the right method. Furthermore, sincerity in theoretical decisions made in the study, the practical choices made, is also a way of validating the work (Sanjek, 1990).

Practicality: the issue of practicality deals with the length of time the researcher needs to spend in the field during data collection. However, because ethnographies research is nearly frequently performed in restricted field situations and it is hard to guarantee any generalizable conclusions, hence it quite different from the traditional systems that is based on design decisions. Some researchers had advocated a “quick and dirty” approach (Hughes, J., King, V., Rodden, T., and Andersen, 1994) to reduce the length of time spent in conducting research; and also reducing the length of word by summarising the statements to be used in the design (Lewis, S., Mateas, M. Palmiter, S. and Lynch, 1996)

3.8 Developmental Stages of the Research

The developmental stages of the research involve choosing the topics to teach from the Minimum Standard of the National Certificate of Education in Nigeria after obtaining the Ethical Approval from Federal College of Education (Special), Oyo, Nigeria by following due process.

The diagram below showed the various stages involved from data collection to the final stage of data analysis.

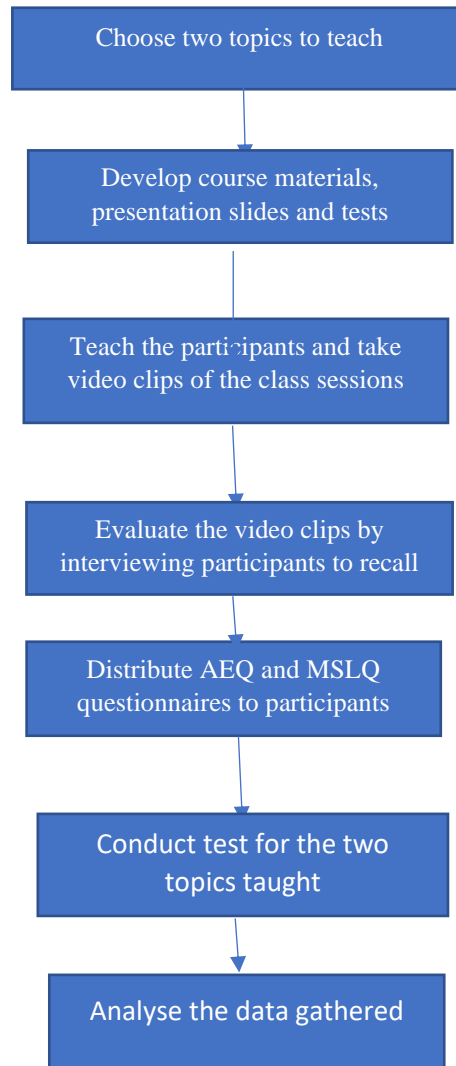


Figure 3.5: Developmental stages of the research

Chapter 4: Experiment 1

4.1 Overview: Introduction

This chapter report the findings obtained from the first teaching section. The aim of the experiment was to find answers to the research questions raised as shown in *Table 4.1*. The chapter is outline as follows: *Table 4.2-4.4* presents the question items from the Academic Emotions Questionnaire (AEQ) used to answer the research hypotheses as presented in *Table 4.1*; while *Tables 4.5-4.11* presents the results of the findings from the quantitative data gathered.

Furthermore, section 4.2 gives a brief introduction to the research hypotheses; while sections 4.3 present the questions items, used for the research as well as the reliability. Sections 4.4-4.5.4 presented the analyses of the results of the data.

4.2 Research Questions for Experiment 1

Much researches have been done on impact of emotions on teaching and learning in higher institutions, however, many of these researches were teacher-oriented and not students-oriented. This research therefore intends to fill that gap by focusing on students-oriented emotions in classroom and when doing test. This study thus seeks to find out if learners can be grouped according to the emotions experienced during class and test; the relationship between emotions groups and performance; correlation between class-related emotions and test-related emotions. This experiment therefore intends to find the emotions experienced by learners while trying to answer the following research questions.

Table 4.1a: Research Questions

<p>Research Question 1(a)</p> <p>Test anxiety do act as contributors to students’ thought and action when receiving lectures in classroom, when taking a test and after a test?</p>
<p>Research Question 1(b)</p> <p>Do Test anxiety correlate significantly with academic performance?</p>
<p>Research Question 1(c)</p> <p>Are there significance differences between class-related emotions and test-related emotions?</p>

Table 4.1b: Research hypotheses relating to academic performance and test anxiety

<p>Research Hypothesis 1 (a)</p> <p>Test anxiety do not act as contributors to students’ thought and action.</p>
<p>Research Hypothesis 1(b)</p> <p>Test anxiety does not correlate significantly with academic performance</p>
<p>Research Hypothesis 1 (c)</p> <p>There are no significant differences between class-related emotions and test-related emotions</p>

4.3 Data Collection

Three types of measures were used for evaluating the class session: (a) AEQ questionnaire, (b) interview after class session, and (c) grade of test. Students' achievement was measured through the scores obtained in the test administered after the class session.

The Achievement Emotions Questionnaire was used to measure the emotions learners experienced during class, before and after test. A total of 52 items measure boredom, hopelessness, angry, anxiety, enjoyment and pride for class-related emotions, while relief, hopelessness, angry, anxiety enjoyment and pride were considered for test-related emotions. Boredom was replaced with relief in test-related emotions. Opinions were measured using a 5-point Likert scale rating of 1 for Strongly Disagreed and 5 for Strongly Agreed. Cronbach's Alpha: .80 was achieved; Cronbach's Alpha based on standardized items: .77 using standardized items 53.

Research hypothesis 1(a) stated in *Table 4.1* aimed at investigating the impact anxiety as an emotion on achievement pressure and expectation of failure has on the participants. Achievement pressure and expectation of failure was measured with anxiety questions items (N=4) for class-related and (N=4) for test-related. All the achievement pressure and expectation of failure items were extracted from the AEQ questionnaire items used for the research. Cronbach's alphas for this study's samples yielded .82 for standardized items of 53.

Table 4.2: Question items for anxiety

Emotions	S/N	Items
Anxiety Class related	1.	I worry about the things I have to do in my Computer Science classes might be too difficult (b)
	2.	I feel nervous in my Computer Science classes (d)
	3.	I get scared that I might say something wrong in my Computer Science class, so I'd rather not say anything (d)
	4.	When I don't understand something important in my Computer Science class, my heart races (d)
Anxiety Test-related	1.	Before my Computer Science test, I feel so anxious that I'd rather be anywhere else (b)
	2.	I am very nervous during a Computer Science test (d)
	3.	I get so nervous I can't wait for the test to be over (d)
	4.	I feel panicky when writing a Computer Science test (d)

Notes: b/d/a stand for before/during/after the situation of attending class or taking tests respectively.

Research question 2 stated in **Table 4.1** was used to find the students' thought and action. Student's thought and action for class-related emotions were measured by hopelessness (N=4), boredom (N=4), anger (N=4); and hopelessness (N=4), relief (N=4), anger (N=4) for test-related.

Table 4.3: Students' thought and action – Class related

Emotions	S/N	Items
Hopelessness	1.	It's pointless to prepare for my Computer Science class since I don't understand the material anyway (b)
	2.	Even before my Computer Science class even started, I'm resigned to the fact that I won't understand the material (b)
	3.	I'd rather not go to my Computer Science class since there is no hope of understanding the material anyway (b)
	4.	I have lost all hope in understanding my Computer Science class (a)
Boredom	1.	I feel like leaving because my Computer Science class is so boring (d)
	2.	I get bored during Computer Science classes (d)
	3.	Computer Science classes bore me (d)
	4.	I find my Computer Science classes fairly dull (d)
Anger	1.	I feel anger welling up in me during my Computer Science class (d)

	2.	Because I'm angry I get restless in my Computer Science class (d)
	3.	Thinking about all the useless things I have to learn in Computer Science makes me irritated (d)
	4.	Thinking about all the useless things I have to learn in Computer Science makes me irritated (d)
Enjoyment	1.	I am motivated to go to my Computer Science class because it's exciting (b)
	2.	I enjoy being in my Computer Science class (d)
	3.	I feel excited about being in my Computer Science class listening to the teacher (d)
	4.	I'm glad that it paid off to go to my Computer Science class (a)
Pride	1.	I take pride in being able to keep up with the material in my Computer Science class (d)
	2.	I am proud of the contributions I have made in my Computer Science class (d)
	3.	I think that I can be proud of what I know about Computer Science (a)
	4.	Because I take pride in my accomplishments in Computer Science, I am motivated to continue (a)

Notes: b/d/a stand for before/during/after the situation of attending class or taking tests respectively.

Table 4.4: Students' thought and action – Test related

Emotions	S/N	Items
Hopelessness	1.	Before a Computer Science test, I feel sad/upset because I feel I don't have much hope for the test (b)
	2.	During a Computer Science test, I feel like giving up (d)
	3.	During my Computer Science test, I feel so resigned that I have no energy (d)
	4.	During my Computer Science test, I have given up believing that I can answer the questions correctly (d)
Relief	1.	When I finish my Computer Science test, I finally can breathe easy again (a)
	2.	After a Computer Science test, I feel very relieved (a)
	3.	After my Computer Science test, I feel like a weight has been lifted from my shoulders (a)
	4.	After my Computer Science test, I feel like a weight has been lifted from my shoulders (a)
Anger	1.	After my Computer Science test, I get angry about the teacher's grading standards (a)
	2.	After a Computer Science test, I am fairly annoyed (a)
	3.	After my Computer Science test, I wish I could tell the teacher off (a)

	4.	After a Computer Science test, I feel very angry (a)
Enjoyment	1.	Before a Computer Science test, I look forward to showing my knowledge (b)
	2.	I enjoy taking Computer Science tests (d)
	3.	I am happy that I can cope with my Computer Science tests (d)
	4.	For me a Computer Science test is a challenge that is enjoyable (d)
Pride	1	During Computer Science tests, I feel proud of my knowledge (d)
	2.	After my Computer Science tests, I feel ten feet taller because I'm so proud (a)
	3.	After my Computer Science tests, I am very satisfied with myself (a)
	4.	After my Computer Science tests, I am proud of myself (a)

Notes: b/d/a stand for before/during/after the situation of attending class or taking tests respectively.

4.4 Data Analyses and Results

This section gives the analyses obtained from the data collected. Several statistical tests in the Statistical Package for the Social Sciences (SPSS) were run for the study including the ANOVA, descriptive statistics, regression, reliability and correlations tests. IBM SPSS statistics 20 was used to conduct the analysis. *Tables 4.5-4.7* were used to present the findings for research hypotheses 1(a) and 1(b), while *Tables 4.8-4.11* presented the results for research hypothesis 1(c).

The prediction of directional relationship within settings was tested using the Pearson's two-tailed correlations for each of the emotions within each academic domain. Positive emotions were found to be mostly correlated with one another, while the negative emotions were generally positively correlated with one another.

Table 4.5: Descriptive Analysis of Class-Related Emotions

Emotions	M	SD	Min	Max	Skewness	Kurtosis
Boredom	7.59	4.00	1.00	4.50	4.87	5.27
Hopelessness	7.75	4.74	1.00	4.25	3.96	-0.95
Anger	6.96	3.83	1.00	4.25	5.47	6.89
Anxiety	10.50	5.19	1.00	5.00	1.33	-3.85
Enjoyment	16.17	5.08	1.00	5.00	-5.48	4.67
Pride	16.04	4.29	1.50	5.00	-4.83	4.24

4.4.1 Descriptive Analyses of Class-related Emotions

Descriptive analyses were performed on the items of the questionnaires on the emotions. There was high mean intensity in positive emotions of pride with $M = 16.04$ and enjoyment with $M = 16.17$. Negative emotions were relatively low with boredom having $M = 7.59$, hopelessness with $M = 7.75$, anger with $M = 6.96$. However, anxiety was on the high side with $M = 10.50$ as shown in *Table 4.5*.

To determine the critical value, the values were converted to Z scores.

Boredom z statistic was 3.53; hopelessness = 3.36; Anxiety = 4.21; Anger = 0.37; Enjoyment = -5.79 and Pride = -5.65.

To locate the critical values for rejection, $z = \pm 1.96$ (two-tailed) was used for 0.05 significant level. This value was used for the decision rule to test the hypothesis for rejection and retainment. Z value ± 1.96 (two-tailed) is sufficient to establish normality of the data (Ghaseni, A., Zahediasl, 2012). Also, either an absolute skewness value ≤ 2 or an absolute kurtosis (excess) ≤ 4 may be used as reference values for determining considerable normality (Kim, 2013). The values obtained were not too far off.

Table 4.6: Class-related emotions within domains

Emotions	1	2	3	4	5	6
Boredom	-	.31*	.18	-.07	-.34*	-0.21
Hopelessness	-	-	.42*	.24	-.39*	-0.34*
Anger	-	-	-	-.27	-.22	-0.07
Anxiety	-	-	-	-	-.13	-0.07
Enjoyment	-	-	-	-	-	0.63*

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

**Boredom=1; Hopelessness=2; Anger=3; Anxiety=4; Enjoyment=5; Pride=6

4.4.2 Pearson's Correlation

One-way ANOVA was performed to compare the means. Correlation of the bivariate was conducted to obtain the Pearson's two-tailed test of significance. Positive emotions were positively correlated with one another while negative emotions were negatively correlated with each other as shown in *Table 4.6*. Enjoyment and pride scale correlation recorded the highest at Pearson's $r = .63$, followed by hopelessness and angry with $r = .42$. Boredom and hopelessness were also positively correlated at $r = .31$.

Table 4.7: ANOVA: Class-related

Emotions	Sum of squares	df	Mean square	df error	F	Sig.
Boredom	6.337	1	1.00	22	7.063	0.024
Hopelessness	21.980	1	1.24	22	32.166	0.235
Anger	16.602	1	0.80	22	25.804	0.329
Anxiety	5.654	1	1.70	22	4.307	0.531
Enjoyment	75.856	1	0.86	22	88.184	0.742
Pride	51.997	1	0.65	22	76.690	0.567

4.4.3 ANOVA Class-related

A one-way ANOVA was also performed to find out whether achievement pressure and expectations of failure could act as contributors to students' thought and action for class-related emotions. Levene's test measured by anxiety questions items revealed $F(1,22) = 3.566$, $p = .616$ showed that achievement pressure and expectations of failure contribute to students' thought and action as revealed in *Table 4.7*. This was collaborated with class-related anxiety with $F(1,22) = 5.654$, $p = .531$ lower than test-related anxiety at $F(1,22) = 3.566$, $p = 0.616$ as revealed in *Table 4.10*. Students' thought and action which was measured by hopelessness, boredom, angry and relief were both found to be significant.

4.5: Results from Academic Performances

Research hypothesis 1(c) stated in *Table 4.1* was used in finding correlation between test anxiety and academic performance. One test was conducted for each of the topics taught. Academic performance was measured by the marks obtained in the two tests conducted.

4.5.1 Descriptive Analysis of Test-Related Emotions

Descriptive analysis performed on the items of the questionnaires on test-related emotions revealed there were also high mean intensity in positive emotions but slightly lower than that of class-related emotions. Test-related pride with $M = 15.45$ and enjoyment with $M = 14.88$. This might be because of low levels of confidence in performance. However, Boredom was replaced with Relief in test-related emotions and recorded high intensity with $M = 14.08$ as revealed in *Table 4.8*.

Table 4.8: Descriptive Analysis of Test-Related Emotions

Emotions	M	SD	Min	Max	Skewness	Kurtosis
Relief	14.08	9.27	1.00	5.00	-2.34	2.10
Hopelessness	7.66	4.57	1.00	4.50	4.09	0.49
Anger	9.16	4.68	1.00	4.50	2.32	0.49
Anxiety	11.34	5.36	1.00	5.00	0.41	-2.89
Enjoyment	14.88	4.69	1.00	5.00	-3.68	0.78
Pride	15.45	4.53	1.00	5.00	-4.28	3.36

Negative emotions have low mean intensity, hopelessness having $M = 7.66$, almost the same as class-related of $M = 7.75$. Angry was higher for test-related with $M = 9.16$ compared with class-related of $M = 6.96$. This might be because of consequence of failures. Anxiety also increased in intensity from 10.50 for class-related emotions to 11.34 for test-related emotions. This could be because of extreme worry over assessment, unprepared for the test or loss of self-esteem.

Table 4.9: Test-related Emotions within domains

Emotions	1	2	3	4	5	6
Relief	-	.15	-.04	.23	.17	0.17
Hopelessness	-	-	.37*	.11	-.23	-0.35*
Anger	-	-	-	.13	-.22	-0.35*
Anxiety	-	-	-	-	-.05	-0.09

Enjoyment	-	-	-	-	-	0.72*
Pride	-	-	-	-	-	-

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

*** Relief=1; Hopelessness=2; Anger=3; Anxiety=4; Enjoyment=5; Pride=6*

The critical values for the emotions in Table 4.8 are:

Relief 1.76; hopelessness = -3.94; Anxiety = -2.61; Anger = -0.67; Enjoyment = 2.47 and Pride = 2.97. $z = \pm 1.96$ (two-tailed) was used for 0.05 significant level. This value was used for the decision rule to test the hypothesis for rejection and retainment.

4.5.2 Test-related Emotions within domains

This result revealed that achievement pressure and expectation of failure act as contributors to students' thought and action. Boredom and enjoyment were negatively correlated having $r = -.34$; hopelessness and enjoyment $r = -.39$ as shown in earlier **Table 4.6**. However, within domains correlations in test-related emotions were higher for positive emotions and significantly low for negative emotions. Enjoyment scale with pride was higher with $r = .72$ as indicated in **Table 4.9**; hopelessness with angry has $r = .37$; hopelessness was negatively correlated with pride at $r = -.35$, having the same correlation with angry also at $r = -.35$. This might be due to issues of worry. Enjoyment and pride recorded the highest correlation with .72.

The results of the study show that learners with positive emotions have higher significant performance achievement than learners with negative emotions. This was revealed through enjoyment and pride correlating positively and having high intensity. Hopelessness has almost the same intensity at class and during test. This

might be because thinking about how to answer questions in the test alone can cause anxiety. This implies that emotions do affect students' thought and action.

4.5.3 ANOVA: Test-related

A one-way ANOVA was also performed to find out whether achievement pressure and expectations of failure could act as contributors to students' thought and action as presented in *Table 4.10*. Levene's test measured by anxiety questions items revealed $F(1,22) = 3.566$, $p = .616$ showed that achievement pressure and expectations of failure act as contributors to students' thought and action. This was collaborated with class-related anxiety with $F(1,22) = 5.654$, $p = .531$ in *Table 4.7* lower than test-related anxiety. Students' thought and action that was measured by hopelessness, boredom, anger and relief were both also significant. Relief from test was high with $F(1,22) = 10.523$, $p = .338$, while hopelessness and angry had $F(1,22) = 13.061$, $p = .253$ and 13.464 , $p = .218$ respectively. This might be because of uncertainty over the test results. It might also be because of fact that test anxiety consists of personal cognitive reactions to evaluate situations, or internal interchange regarding measuring situations, before, during and after assessment.

Table 4.10: ANOVA: Test-related

Emotions	Sum of squares	Df	Mean square	df	F	Sig.
Relief	10.523	1	1.515	22	8.629	0.338
Hopelessness	13.061	1	1.258	22	12.435	0.253
Angry	13.464	1	1.276	22	11.028	0.218
Anxiety	3.566	1	1.843	22	2.012	0.616
Enjoyment	56.350	1	0.806	22	91.366	0.511

Pride	62.979	1	0.631	22	109.309	0.486
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**Correlation is significant at the 0.05 level (2-tailed)*

Table 4.11a: Standard Multiple Regression Analysis Predicting Test Performance with Test Anxiety

Test/ Anxiety	B	SE B	B	T	Sig.	Shapiro-Wilk	
						df	Sig.
Test 1	-0.499	2.702	-0.113	-0.295	0.523	22	.656
Test 2	-0.224	2.557	-0.018	-0.091	0.610	22	.876

**Correlation is significant at the 0.05 level*

Table 4.11b: Model Summary

Model	R	R square	Adjusted R square	Std. Error of the Estimate
Test 1	.41	.17	.06	14.132
Test 2	.34	.12	.13	13.037

4.5.4 Standard Multiple Regression Analysis Predicting Test Performance with Test Anxiety

A regression analysis was performed to predict test performance with anxiety emotions. The results as presented in *Table 4.11* revealed academic performance with predictor Test 1, Beta = 0.523 and 0.610 for Test 2, both at $p < .05$. A within-setting repeated ANOVA was performed to assess the hypothesis that test anxiety correlates positively with academic performance. Pairwise comparisons with a Bonferroni adjustment for Equal Variance Assumed were done to find where the

precise mean differences occurred. Bonferroni's Equal Variance Assumed was used because it controls the overall type I error rate and assumed that overall rate does not exceed 0.05. It is also more powerful when the number of comparisons is few as in this study.

Test 1 was regressed to anxiety and the variables accounted for 17% of the variance. In the same vein, Test 2 was regressed to anxiety and the variable accounted for 12% of the variance. The significant levels for the ANOVA were also high at 0.606 for Test 1 and 0.738 for Test 2. This clearly showed that test anxiety does not correlates significantly with academic performance.

Although, there is no significant relationship between the two tests and anxiety, this does not indicate that the moderating effect is not established. According to (Frazier et al, 2004), moderators may or may not indicate the measure, and, predictors may or may not relate to criterion. Moderator in this case is the test anxiety, while test scores is the predictor.

Shapiro-Wilk test was also performed to normality of the data. Shapiro-Wilk test was used because it's most appropriate for small sample size of < 50, while Kolmogorov-Smirnov test is most suitable for sample 50 or greater.

4.5.5 Comparisons of Class-related and Test-related Emotions

To answer the research hypothesis 1(d); comparisons were made between the class-related emotions and test-related emotions. Descriptive analysis of the class-related emotions and test-related emotions as revealed in *Table 4.5 and Table 4.8* shows the mean values for boredom and relief recorded 7.59 and 14.08; hopelessness recorded 7.75 and 7.66; anger had 6.96 and 9.16; anxiety at 10.50 and 11.34; enjoyment 16.17 and 14.88; and lastly pride at 16.04 and 15.45 respectively. These results show that the positive emotions of enjoyment and pride with negative emotion hopelessness had almost the same values for both class-related and test-

related emotions. But there was high disparity between the negative emotions of boredom for class-related and relief for test-related emotions as the relief mean was almost doubled the mean for boredom. The mean value for anger was also significantly different for class-related and test-related emotions with value recording almost double the value for class anger. This shows that there is correlation between enjoyment, pride and hopelessness in both during class and test. But there is no correlation between boredom and relief in class and test emotions. Furthermore, correlation between the class-related emotions and test-related emotions as presented in *Tables 4.7 and 4.10* revealed boredom significant at 0.024 and relief at 0.338; hopelessness for class and test emotions were 0.235 and 0.253; anger recorded 0.329 for class-related emotion while 0.218; anxiety revealed 0.532 for class-related and 0.616 for test-related; enjoyment had 0.742 and 0.511 for class-related and test related respectively; and finally, pride had 0.567 and 0.486 also for class-related and test related respectively.

This result in line with the one in the previous paragraph with pride and hopelessness recording near equal values; but significant different values for enjoyment, boredom, relief and anger. This result revealed that there is significant different between class-related emotions and test-related emotions; also, there is no significant different between the positive emotions of pride students experience in class and those they experience when taking test.

Furthermore, emotion of hopelessness recorded near equal critical values with class-based emotion at 3.36 and test-based one at -3.94. but there were disparities between the critical values for the other emotions in both class-based and test based emotions.

4.6 General Discussion on the Findings in Relation to Experiment 1

This section presents the detailed findings of the research hypotheses 1(a-c) in relation to research questions addressed in Experiment 1.

Research question 1(a):

How does anxiety act as contributors to students' thought and action during class sessions and when studying for a test?

Findings from this study revealed that students' motivation and action are settings to consider when investigating the different types of emotions students experience while in class and while doing test. The overall outline for the domain-specific emotions revealed that students experienced positive emotions more often than negative emotions across domains. The findings for class-related emotions for anxiety on students' thought and actions using the analysis of the Academic Emotions Questionnaire (AEQ) revealed a negative correlation between anxiety, hopelessness, boredom and anger.

Findings for correlation between the components used to measure anxiety and motivation and action revealed that anxiety recorded low correlation with boredom, but high with hopelessness and anger. The results also show these negative emotions were negatively correlated forming negative feedback, and this is in line with [Morris, L.W., M.A., Davis, & C.H., Hutchings; 1981].

The result of the z statistic of anxiety in both cases shows low values of 4.21 for the class-based emotion and -2.61 which are in the region of rejection in the critical values. Although, the p-values did not reach the statistically significant level, this might be due to the fact that p-value depends on both magnitude of association and the precision of the estimate, which is the sample size. Results can be statistically significant with small p-values, though the effect is small and not accurate. Small size samples may or not produce the needed level due to the afore mentioned

reasons. (Sullivan, 2017) observed that there are cases of getting both clinical and statistically significant right, and instances when these are not. It is therefore important to note that p-value only summarises significance and do not address clinical significance.

In the same vein, the results of the test-related emotions of anxiety recorded a high correlation with relief (from test), but low with hopelessness and anger forming negative feedback. This shows that anxiety do have impact on students thought and actions. Analysis of the questionnaire revealed that the students however experience feelings of hopelessness and anger more often than boredom. This means that students might feel frustrated and angry in attempt to understand lectures or while answering questions during test but might not necessarily be bored with the lecture or test.

It can therefore be concluded that students' motivation and action are settings to consider when investigating the different types of emotions students experience while in class and while doing test. The results showed that anxiety do act as contributors to students' thought and action. The null hypothesis which stated that, "Anxiety do not act as contributors to students' thought and action" is therefore retained.

Research Question 1(b)

Is there correlation between test anxiety and academic performance?

With regards to findings of relationship between test anxiety and academic performance, Academic Emotions Questionnaire (AEQ) was used to measure test anxiety while the two tests conducted were used to measure the academic performance. The results of the findings suggest that test anxiety have significant effects on the academic performance of the students. It was also discovered that test anxiety correlates significantly with academic performance suggesting that students with high level of anxiety arousal for test perform poorly in academic performance. This might be due to such students not preparing well for the test and thus

experiencing increasing levels of worry. This agreed with Schwarzer (1984), that too much worry leads to low academic performance.

The effects of the significant were revealed through the two significant values of regressions recording a very high value for test anxiety against the two tests values. This suggests that there is correlation between test anxiety and academic performance.

In conclusion, the null hypotheses which stated that, “test anxiety does not correlate significantly with academic performance” is rejected. Therefore, test anxiety does correlate significantly with academic performance.

Research Question 1(c)

Are there significances differences between class-related emotions and test-related emotions?

With regards to findings relationship between class-related emotions and test-related emotions, the analyses of the Academic Emotions Questionnaire (AEQ) suggested that there is correlation between class-related emotions and test-related emotions. The overall outline for the domain-specific emotions revealed that students experienced positive emotions more often than negative emotions across domains. They however experience feelings of hopelessness more often than boredom and anger. Result of within and across domains settings supported that positive emotions were positively correlated with each other thereby forming a positive feedback. Also, negative emotions were negatively correlated forming negative feedback. The results also show that class-related emotions and test-related emotions have different emotional effect on students which support hypotheses for patterns within and between domains.

With respect to the descriptions of the class-related and test-related emotions, there were differences between the emotions recorded in both scenarios. Relief in test-related emotion recorded almost double the value of boredom in class-related emotion, suggesting students were relieved at the end of the test. Hopelessness in the two related cases recorded near equal values suggesting that the level of

hopelessness felt by students during lectures while trying to understand the concepts taught is the same, they feel while doing test and trying to remember what they had studied. Anger in class-related emotion recorded a lower value to the anger in test-related. These suggest that students might be angry at not understanding the concept taught in class, but angrier when doing test when effort to remember somethings read proved abortive.

Furthermore, anxiety in test-related recorded a slightly higher value than for class-related revealing that students are more anxious when doing test than when receiving lectures in classroom. Enjoyment for class-related emotion recorded a high value than when doing test suggesting that students enjoy lectures better than doing test. Finally, the value recorded for pride in class-related emotion is higher than the one for the test-related emotion signifying uncertainty about the results of the test.

With respect to correlation of pride with other emotions, it was found to be highly correlated with enjoyment suggesting that students that enjoy lecture feel pride with themselves. Pride was also found to have average correlation with boredom and hopelessness. Pride however recorded very low values for both anger and anxiety suggesting that students that are proud of their work and understanding of the concept taught in class are not angry or anxious.

About correlations of the emotions in class-related emotions, enjoyment was found to be highly correlated to pride; averagely correlated to boredom and hopelessness and slightly correlated to anger. It was however recorded a low correlation with anxiety suggesting that students that enjoy lectures do not feel anxious or angry. Furthermore, there was high correlation between hopelessness and anger suggesting that students that feel hopeless might be angry; and but low correlation between boredom and anger. Boredom and hopelessness recorded high correlation suggesting frustration in an attempt to understand a concept.

With respect to Analysis of Variance, relief from test was found to be more significant than boredom as related to class. Hopelessness recorded near equal

values for both class-related and test-related. In case of anger, the class-related anger was found to be slightly higher in terms of level of significance than for test-related emotions suggesting students are angrier in classroom in attempt to understand a concept than when taking test. In the same vein, anxiety in test-related emotions was found to be more significant than in class-related emotions suggesting that students are more anxious when taking test than when receiving lectures in classroom. Enjoyment in class-related emotions was found to be high than in test-related emotions suggesting that students enjoy receiving lectures more than they do when they take test. Finally, prides for both class-related and test-related emotions were found to have the same level of significance.

In conclusion, it can be said that students experience different types of emotions while receiving lectures and while taking tests. The null hypotheses which stated that, "There are no significant differences between class-related emotions and test-related emotions" is hereby rejected.

Chapter 5: Experiment 2

5.1 Overview: Introduction

In this chapter, details of the findings obtained from the second classroom session were presented.

The purpose of the experiment was to answer the research questions presented in *Table 5.1a* and research hypotheses in *Table 5.1b*. Data gathered from the Motivated Strategies for Learning Questionnaire (MSLQ) distributed to the participants were analysed and the results presented. Also, results of scores obtained from the test conducted were used in analysing the academic performance of the participants.

The framework for the chapter is as follows: section 5.2 gives a brief introduction to the chapter; sections 5.3-5.4.5 presents the results of the findings from the quantitative data obtained; *Tables 5.2-5.8* presented the questionnaire items from the Motivated Strategies for Learning Questionnaire (MSLQ) used; while *Tables 5.6-5.12* presented the results obtained from the analyses.

5.2 Research Questions for Experiment 2

Many researches had been conducted investigating the effect of negative emotions on students' academic performances. Researchers have found out that student's

negative emotions seem to cause problems in adjusting to school procedures. It was also revealed that anxiety result in poor academic performance because of low cognitive self-control exhibited by such students (Normandeau, S., & Guay, 1998). In the same vein, students who have negative emotions about their work and learning receive lower GPA in the 9th Grade, and graduate to a lesser extent compared to students who have fewer negative emotions about their school work and learning (Klapp, 2016, 2016). The result showed that students with negative emotions about their work and learning have predictive power for possible failure in school.

It was also found that performance and mastery achievement goals, with an avoidance valence, correlate negatively with task and achievement outcome (Putwain et al., 2013). They stated further that achievement emotions predict academic performance, as emotions with positive valence, such as hope, emotions correlate positively with academic performance while those with negative valence, such as anxiety correlate negatively with academic performance. (Pekrun, R., Goetz, T., Perry, R. P., Kramer, K., Hochstadt, M., & Molfenter, 2004) noted that achievement emotions influence motivation, effort and learning strategies during tasks preparation and engagement. This experiment therefore seeks to find answers to the following research questions:

Table 5.1a: Research Questions

<p>Research Questions 2 (a)</p> <p>Are there correlations between the components of motivational beliefs?</p>
<p>Research Questions 2 (b)</p> <p>Do components of motivational beliefs have significant impact on academic performance?</p>
<p>Research Questions 2(c)</p>

Is there significant correlation between students' self-regulation, self-determination, test anxiety and academic engagement?

Table 5.1b: Research Hypotheses

Research Hypothesis 2 (a) There is no correlation between the components of motivational beliefs
Research Hypothesis 2 (b) The components of motivational beliefs do not have significant impact on academic performance.
Research Hypothesis 2(c) There is no significant relationship between students' self-regulation, self-determination, test anxiety and academic engagement.

5.3 Measures for Evaluation

Evaluation for this experiment was based on Motivated Strategies for Learning Questionnaire (MSLQ) distributed to the participants and on the scores obtained from the test conducted.

A total of 45 question items were used to measure the self-efficacy, intrinsic value, test anxiety, self-regulation and cognitive-strategy use by students for learning. Opinions were measured using a 5-point Likert scale rating of 1 for Strongly Disagreed and 5 for Strongly Agreed. Cronbach's Alpha: .754 was achieved; Cronbach's Alpha based on standardized items: .881 using standardized 42 items.

Motivational beliefs were measured through self-efficacy, self-regulation, intrinsic value, and cognitive-strategy use. Items were made specific to Computer Science.

Self-efficacy was measured by nine (8) question items from the Motivational Strategies for Learning Questionnaire (MSLQ). Students' responses were measured using a 5-point Likert scale rating of 1 for Strongly Disagree and 5 for Strongly Agree.

Intrinsic Value was measured using nine (8) question items from the MSLQ based on a Likert scale rating of 1 for Strongly Disagree and 5 for Strongly Agree.

Test anxiety was measured by five (5) question items from the MSLQ. Learners' opinions were measured on a Likert scale rating of 1 for Strongly Disagree and 5 for Strongly Agree.

Self-Regulation was measured with eight (8) question items from the MSLQ were used to measure students. This was based on a Likert scale rating of 1 for Strongly Disagree and 5 for Strongly Agree.

Cognitive Strategy use was measured with twelve (9) question items from the MSLQ for obtain students responses. It was based on a Likert scale rating of 1 for Strongly Disagree and 5 for Strongly Agree.

Self-determination was measured with four (4) question items using effort regulation items from MSLQ Cronbach Alpha for standardized items is .69; Cronbach alpha obtained for this research was .92 for 4 items.

Academic Engagement was measured using four (4) question items of Control of Learning Beliefs from the MSLQ; Cronbach Alpha for standardized items is .62; Cronbach alpha obtained for this research was .78 for 4 items.

Table 5.2: Question items for Self-Efficacy

Learning strategy	S/N	Items
Self-efficacy	1.	I believe I will receive an excellent grade in this class.
	2.	I'm certain I can understand the most difficult material presented in the readings for this course.
	3.	I'm confident I can understand the basic concepts taught in this course.
	4.	I'm confident I can understand the most complex material presented by the instructor in this course.
	5.	I'm confident I can do an excellent job on the assignments and tests in this course.
	6.	I expect to do well in this class.
	7.	I'm certain I can master the skills being taught in this class.
	8.	Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.

Table 5.3: Question items for Intrinsic value

Learning strategy	S/N	Items
Intrinsic Value	1.	In a class like this, I prefer course material that really challenges me, so I can learn new things.
	2.	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.
	3.	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.
	4.	When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.
	5.	Getting a good grade in this class is the most satisfying thing for me right now.
	6.	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.
	7.	If I can, I want to get better grades in this class than most of the other students.
	8.	I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.

Table 5.4: Question items for Self-Regulation

Learning strategy	S/N	Items
Self-Regulation	1.	When reading for this course, I make up questions to help focus my reading.
	2.	When I become confused about something I'm reading for this class, I go back and try to figure it out.
	3.	If course materials are difficult to understand, I change the way I read the material.
	4.	Before I study new course material thoroughly, I often skim it to see how it is organized.
	5.	I ask myself questions to make sure I understand the material I have been studying in this class.
	6.	I try to change the way I study in order to fit the course requirements and instructor's teaching style.
	7.	I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying.
	8.	When I study for this class, I set goals for myself in order to direct my activities in each study period.

Table 5.5: Question items for Cognitive Strategy use

Learning strategy	S/N	Items
Cognitive Strategy use	1.	When I study for this class, I practice saying the material to myself over and over.
	2.	When studying for this class, I read my class notes and the course readings over and over again.
	3.	I memorize key words to remind me of important concepts in this class.
	4.	I make lists of important terms for this course and memorize the lists.
	5.	I try to relate ideas in this subject to those in other courses whenever possible.
	6.	When reading for this class, I try to relate the material to what I already know.
	7.	When I study for this course, I write brief summaries of the main ideas from the readings and the concepts from the lectures.
	8.	I try to understand the material in this class by making connections between the readings and the concepts from the lectures.
	9.	I try to apply ideas from course readings in other class activities such as lecture and discussion.

Table 5.6: Question items for Self-Determination

Learning strategy	S/N	Items
Self-Determination	1.	I often determined when I study for this class that I continue even when I am tried
	2.	I work hard to do well in this class even if I don't like what we are doing.
	3.	When course work is difficult, I don't give up or only study the easy parts.
	4	Even when course materials are dull and uninteresting, I manage to keep working until I finish.

Table 5.7: Question items for Academic Regulation

Learning strategy	S/N	Items
Academic regulation	1.	If I study in appropriate ways, then I will be able to learn the material in this course.
	2.	It is my own fault if I don't learn the material in this course.
	3.	If I try hard enough, then I will understand the course material.
	4.	If I don't understand the course material, it is because I didn't try hard enough.

Table 5.8: Question items for Test Anxiety

Learning strategy	S/N	Items
Test Anxiety	1.	When I take a test, I think about how poorly I am doing compared with other students
	2.	When I take a test, I think about items on other parts of the test I can't answer.
	3.	When I take tests, I think of the consequences of failing
	4.	I have an uneasy, upset feeling when I take an exam.
	5	I feel my heart beating fast when I take an exam.

5.4 Data Analyses and Results

This section gives the analyses of data obtained from Motivation Strategy earning Questionnaire. IBM SPSS statistics 20 was used to do the analysis for this study using many statistical tests. Some of the tests conducted were ANOVA, descriptive statistics, regression, reliability and correlations tests. Pearson's two-tailed correlations were used to find out the directional relationship within setting for each of the motivational beliefs and test anxiety.

Table 5.9: Descriptive Analysis1 of Motivation Components

Variable	Min	Max	Mean	Std. Dev.
Self-Regulation	1	5	3.83	1.191
Self-Determination	1	5	3.75	1.189
Academic Engagement	1	5	4.29	1.160
Motivation	1	5	4.21	1.511
Test Anxiety	1	5	3.25	1.373

Table 5.10: Descriptive Analysis2 of Motivational Components

Emotions	Mean	Std. Deviation	Std. Error	95% conf. Interval for Mean	
				Lower	Upper
Self-Efficacy	4.29	1.210	.247	3.48	4.51
Intrinsic value	3.70	1.195	.244	2.20	3.21
Cognitive strategy use	4.00	1.153	.236	2.56	3.53
Self-Regulation	3.99	1.175	.240	3.50	4.49
Test Anxiety	2.63	1.296	.265	2.08	3.15

5.4.1 Descriptive Analysis of Motivation Components

Descriptive analysis was performed on the items of the questionnaire. Results from the descriptive analysis revealed that academic engagement and motivation had the highest mean intensity at 4.29 and 4.21 respectively; while self-regulation, self-determination and test anxiety had mean intensity of 3.83, 3.75 and 3.25 respectively. There was high mean intensity in the motivational beliefs of Self-Efficacy with $M = 4.29$ and Cognitive Strategy use with $M = 4.00$. Test anxiety and intrinsic value however recorded low intensity with $M = 2.63$ and 3.70 respectively as shown in *Tables 5.9 and 5.10*.

Table 5.11: One-Way ANOVA of Motivational Components

Emotions	Sum of square	df	Mean square	F	Sig.
1.	28.114	1	1.219	.954	.339
2.	26.457	1	1.203	.036	.852
3.	12.883	1	1.357	0.764	.563
4.	15.897	1	1.402	1.213	.602
5.	12.193	1	1.739	0.329	.660

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

Self-Efficacy=1; Intrinsic value=2; Cognitive-strategy use=3; Self-Regulation=4; Test anxiety=5

5.4.2 One-way ANOVA of Motivational Components

To test research hypothesis 2(a) as presented in *Table 5.1b*, a One-way ANOVA was performed to find out whether there is relationship between motivation beliefs and test anxiety. Levene's test measured by intrinsic value and self-regulation question items revealed a $F(1,23) = 26.457$, $p = .852$; and self-

regulation at $F(1,23) = 15.897, p = .602$; Test anxiety was also high at $F(1,23) = 12.193, p = .660$ as shown in **Table 5.11- 5.12**.

Because the significant level obtained in Table is not in line with the expected result, further test for effect size was conducted. Cohen's d is an effect size used to indicate the standardized differences between two means (Sagepub, 2018). It can be used in t-test and ANOVA results. Reporting the effect size facilitates the interpretation of the substantive significance of a result. Small sample size studies like this one produces large effect sizes than large sample size studies. It is also of importance when reporting when the decision is to reject the null hypothesis.

Table 11b: Cohen's effect size conventions

Description of Effect	Effect size (d)
Small	$d < 0.2$
Medium	$0.2 < d < 0.8$
Large	$d > 0.8$

Source : <http://www.sagepub.com/files>

Using a benchmark effect size of 1 for a perfect effect; 0 for no effect; 0.5 for large effect. The adjusted effect size Omega squared, ' ω ' obtained were:

1. Self-efficacy = 0.92;
2. Intrinsic value = 0.97;
3. Cognitive strategy used = 0.94;
4. Self-regulation = 0.93

Table 5.12: ANOVA of Motivational Components/Academic Performance

Model	Sum of squares	Df	Mean square	F	Sig
Regression/1	242.433	1	242.433	134.144	.000
Residual	41.567	23	1.807		
Total	284.000	24			
Regression/2	385.563	1	385.563	395.241	.000
Residual	22.437	23	.976		
Total	408.000	24			
Regression/3	74986.083	1	74986.083	182.739	.000
Residual	9437.917	23	410.344		
Total	84424.000	24			
Regression/4	73672.543	1	73672.543	157.604	.000
Residual	10751.457	23	467.455		
Total	84424.000	24			

** Test Anxiety = 1; Motivation = 2; Self-Regulation = 3; Self-Determination = 4

Table 5.13: Correlation1 of Motivational Components

Emotions	1	2	3	4	5
Self-Efficacy	-	.50**	.48**	.83**	.78**
Intrinsic value	-	-	.49**	.69**	.50**
Test anxiety	-	-	-	.54**	.39*
Cognitive strategy use	-	-	-	-	.81**
Self-Regulation	-	-	-	-	-

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

**Correlation is significant at the 0.01 level (2-tailed)

Self-Efficacy=1; Intrinsic value=2; Test Anxiety=3; Cognitive strategy use=4; Self-Regulation =5

5.4.3 Correlation1 of Bivariate

To test research hypotheses 2(a) and 2(b), ANOVA analysis was performed on motivational value, self-regulation and self-determination as presented in **Tables 5.11 – 5.12**.

Correlation of the bivariate was conducted to obtain the Pearson’s two-tailed test of significance. Self-efficacy was found to be highly correlated to cognitive strategy use at .83 and self-regulation at .78 as shown in **Table 5.13**. Cognitive strategy use was also highly correlated to self-regulation at .81, while intrinsic value correlation with cognitive strategy use was high at .69; and with self-regulation at .50.

This suggest that students who have self-efficacy and self-regulation use cognitive strategy, and students’ high in self-efficacy were more likely to report use of

cognitive strategy use and self-regulation. However, test anxiety recorded the lowest correlation with self-regulation at .39, correlated to self-efficacy at .48 and correlated with intrinsic value at .49 as shown in **Table 5.14**. This revealed that students low in self-regulation were more likely to report test anxiety.

Furthermore, it was revealed that test anxiety is correlated to cognitive strategy use at .54 which implies that students who reported medium level of cognitive strategy use are likely to have test anxiety.

Table 5.14: Correlation2 of Motivational Components

Variables	1	2	3	4	5
Self-Regulation	-	.86	.79	.78	.43
Self-Determination	-	-	.72	.67	.50
Academic Engagement	-	-	-	.64	.48
Motivation	-	-	-	-	.49
Test Anxiety	-	-	-	-	-

Self-Regulation=1; Self-Determination=2; Academic engagement=3; Motivation=4;

Test anxiety= 5.

5.4.4 Correlations2 of Bivariate

Pearson’s two-tailed bivariate was performed to obtain the correlations within settings. Self-regulation was found to be highly correlated to self-determination at .86; with academic engagement at .79; and with motivation at .78. Self-determination recorded high correlation with both academic engagement and

motivation at .72 and .67 respectively, but low with test anxiety at .50. On the other hand, academic engagement recorded a moderate correlation with motivation .64, but low correlation with test anxiety at .48. Lastly, there was low correlation between motivation and test anxiety at .49.

Table 5.15a: Standard Multiple Regression Analysis

Variables/ Academic Performance	B	SE B	B	t	Sig.
Test Anxiety	.053	.005	.917	11.007	.000
Motivation	.925	.047	.972	19.881	.000
Self-Regulation	14.637	1.083	.942	13.518	.000
Self-Determination	14.111	1.124	.934	12.554	.000

Table 5.15b: Standard Multiple Regression Analysis Model Summary

Model	R	R square	Adjusted R Square	Std. Error of the Estimate
Test Anxiety	.36	.13	-.11	13.374
Motivation	.47	.22	.06	12.317
Self-Regulation	.38	.15	-.03	13.939
Self-Determination	.44	.19	.15	12.633

5.4.5 Standard Multiple Regression Analyses

After detecting presence of association between the variables through correlation, regression analysis was performed to predict the outcome of academic performance on dependent variable from explanatory or independent variables. This method was chosen because there are many question items for each of the learning strategies. Standard Multiple regression analysis revealed a significant impact of test anxiety on self-regulation, academic performance and self-determination as shown in **Table 5.15a and Table 5.15b**.

Regression of the components of the motivations revealed that test anxiety accounted for 13% of the variance, while motivation accounted for 22%. Self-Regulation regressed to academic performance accounted for 15% and Self-Determination accounted for 19% of the variance.

5.5 General Discussion on the Findings in Relation to Experiments 2

This section presents the detailed findings of the research hypotheses 2(a-d) in relation to research questions addressed in Experiment 2.

Research question 2(a):

Are there correlations between the components of motivational beliefs?

Findings from this study revealed that there are relationships between components of motivational belief. Results of the descriptive analysis revealed that cognitive-strategy use, and self-regulation recorded near equal values of mean, while self-efficacy was higher than both, but intrinsic value was lower than both. Test anxiety recorded the lowest value of all. Results of the analysis of variance showed that intrinsic value recorded the highest value for level of significance, while self-efficacy recorded that lowest. There are however slight differences between test anxiety and self-regulation, and self-regulation and cognitive-strategy use.

To detect the relationship between the components, effect correlations revealed that cognitive-strategy use against self-efficacy and self-regulation recorded the highest correlations followed by self-efficacy against self-regulation. This suggest that students who employ cognitive-strategy also use self-efficacy and self-regulation.

Results of correlations of self-regulation against other components of motivation revealed that self-regulation is highly correlated to cognitive-strategy use and self-efficacy; moderately correlated to intrinsic value and less correlated to test anxiety. This suggests that students who employ self-regulation use cognitive strategy and self-efficacy more than they use intrinsic value. Such students are more likely to experience test anxiety. Cognitive-strategy use was found to be highly correlated to self-efficacy and intrinsic value, but moderately correlated to test anxiety. Furthermore, the results revealed that test anxiety had low correlation with both

self-efficacy and intrinsic value. Finally, there was moderate correlation between intrinsic value and self-efficacy.

The results for the adjusted omega obtained to know the effect size also shows a high level of effect size.

From the findings as discussed above, there were correlations between the components of motivational beliefs.

Research question 2 (b)

Do components of motivational belief have effect on academic performance?

With regards to impact of motivational belief on academic performance, the results from stepwise regression analysis revealed that there were significant impacts of motivational components on academic performance. This was revealed with result of academic performance against test anxiety recording significant impact; academic performance against motivation recorded high significant value; academic performance against self-regulation recorded high significant value; and lastly, academic performance against self-determination also recorded high significant value.

The null hypothesis that stated that, “The components of motivational beliefs do not have significant impact on academic performance” is hereby rejected. It can therefore be concluded that components of motivational beliefs have significant impact on academic performance.

Research question 2(c)

Does emotion significantly shape students’ motivation and engagement in learning?

Findings from this study revealed that emotion does have significant impact on student motivation and engagement in learning. This was revealed through

correlation of bivariate of test anxiety that was used to measure emotion for this case, having recorded low correlation with both motivation and academic engagement. The values of level of correlation for the two items were found to be near equal and were both low. This suggests that students that experience test anxiety are less motivated and engage less in their academic work.

The null hypothesis that stated that, “Emotion does not significantly shape students’ motivation and engagement in learning”, is hereby rejected. It can therefore be concluded that emotion does significantly shape students’ motivation and engagement in learning.

Chapter 6: Experiment 3

6.1 Overview: Introduction

Data from the Academic Emotions Questionnaire (AEQ) distributed to the samples along with the transcripts from the analysis of the video clips were used to provide answers to the research questions. This chapter reports the findings of the analysis of the video recordings and the interviews conducted to detect the types of emotions experienced by the samples while the teaching was going on. The aim of the experiment was to find answers to the research questions as shown in *Table 6.1a* and the research hypotheses in *Table 6.1b*.

This chapter is outlined as follows: section 6.2 presents a brief introduction to the chapter; *Table 6.2* presents the question items used from the Academic Emotions Questionnaire (AEQ); while *Tables 6.3* presents the measures for evaluation; sections 6.4-6.4.2 presents the analyses of quantitative data gathered; sections 6.5 gives the presentations of the findings from the qualitative data gathered; while section 6.6 gives the discussion on the interview conducted.

6.2 Research Hypotheses for Experiment 3

Researchers and educationists have always been working on ways to improve academic performance, which is the focus of education. (Linnenbrink-Garcia et al., 2010b) observed that few researches are investigating the impact of learners' interest in the course being taught relative to classroom environment and mode of instruction. In the education sector, interest is said to be made up of content-specific variables, multidimensional construct with impact on studying and motivational components and induced by external stimulus (Krapp, 2007b).

To this end, researches have shown that interest affect learning because of motivation to learn based on students' behaviours and changes due to classroom and learning factors (Krapp, 2007b). In the same vein, a learner's choice of a course or topic is based on interest because of motivation. Academic outcome should therefore be examined according to learner-specific factors, and the benefits of a learning mind-set for personal and professional development.

This experiment investigated the role of emotions on students' interest and understanding of the course taught in class and aimed to find answers to the following research questions:

Table 6.1a: Research Questions

<p>Research Questions 3(a)</p> <p>Does boredom have significant impact on students' interest in the course and learning?</p>
<p>Research Questions 3(b)</p> <p>Does boredom have impact on students understanding of the course and learning.</p>
<p>Research Questions 3(c)</p> <p>Does boredom have impact on students' learning, attention during class and engagement in learning.</p>

Table 6.1b: Research Hypotheses

<p>Research Hypothesis 3(a)</p> <p>Boredom does not have significant impact on students' interest in the course and learning</p>
<p>Research Hypothesis 3(b)</p> <p>Boredom does not have significant impact on students understanding of the course and learning.</p>
<p>Research Hypothesis 3(c)</p> <p>Emotions do not significantly shape students' learning, attention during class and engagement in learning</p>

6.3 Measures of Evaluation

Evaluation for this study was based on Academic Emotions Questionnaire, the grade obtained by the participants from the test conducted and the data obtained from the interview and analysis of the video clips.

Emotions experienced by the participants were classified as class-related and test-related. Class-related emotions were emotions of boredom, anger, anxiety, hopelessness, pride, enjoyment and pride; while the test-related emotions are relief, hopelessness, anxiety, anger, enjoyment and pride. The opinions of the participants were measured using a Likert scale of 5 with 1 for Strongly Disagreed and 5 for Strongly Agreed. The Cronbach's Alpha achieved for this research was .80, while .77 was achieved for standardized items.

The research questions 3(a) and 3(b) stated in *Table 6.1a* was aimed at investigating the impact of the student's interest and understanding of the lesson while teaching take place in the classroom.

Table 6.2: Question items for Boredom in Class-related

Emotions	S/N	Items
Boredom Class-related	1.	I feel like leaving because my Computer Science class is so boring (d)
	2.	I get bored during Computer Science classes (d)
	3.	Computer Science classes bore me (d)
	4.	I find my Computer Science classes fairly dull (d)
Relief Test-related	1.	When I finish my Computer Science test, I finally can breathe easy again (a)
	2.	After a Computer Science test, I feel very relieved (a)
	3.	After my Computer Science test, I feel like a weight has been lifted from my shoulders (a)
	4.	After a Computer Science test, I feel freed (a)

Notes: b/d/a stand for before/during/after the situation of attending class or taking tests respectively.

Boredom was measured by (N=4) in class-related emotions and replaced with relief (N=4) for test-related emotions

Research question 3(c) that investigated students' attention and engagement was obtained from the analysis of the video clips.

6.4 Measures and Analyses of Results

Data collected were analysed using the Statistical Package for Social Science (SPSS) version 20. Opinions were measured using a 5-point Likert scale rating of 1 for Strongly Disagreed and 5 for Strongly Agreed. Cronbach's Alpha: .754 was achieved; Cronbach's Alpha based on standardized items: .881 using standardized 42 items. Many statistical tests including ANOVA, descriptive statistics, regression, reliability and correlations tests were performed. Pearson's two-tailed correlation was used to find out the directional relationship within the setting for each of the boredom and other emotions. Qualitative analysis of the interview was done with NVivo software package.

Table 6.3: ANOVA: Class-related

Emotions	Sum of squares	df	Mean square	df error	F	Sig.
Boredom	6.337	1	1.00	22	7.063	0.024
Hopelessness	21.980	1	1.24	22	32.166	0.235
Anger	16.602	1	0.80	22	25.804	0.329
Anxiety	5.654	1	1.70	22	4.307	0.531
Enjoyment	75.856	1	0.86	22	88.184	0.742
Pride	51.997	1	0.65	22	76.690	0.567

6.4.1 Pearson's Correlation

A one-way ANOVA was also performed to find out the effect of boredom on students' interest in the course and in learning as revealed in *Table 6.3*. Levene's test measured by boredom questions revealed $F(1,22) = 6.337, p = 0.024$. This showed that boredom does have impact on students' interest and learning. This was collaborated with hopelessness $F(1,22) = 21.980, p = 0.235$.

Table 6.4: Class-related emotions within domains

Emotions	1	2	3	4	5	6
1	-	.31*	.18	-.07	-.34*	-.21
2	-	-	.42*	.24	-.39*	-.34*
3	-	-	-	-.27	-.22	-.07
4	-	-	-	-	-.13	-.07
5	-	-	-	-	-	.63*
6	-	-	-	-	-	-

*Correlation is significant at the 0.01 level (2-tailed);

Boredom=1; hopelessness=2; anger=3; anxiety=4; enjoyment=5; pride=6

6.4.2 ANOVA Class-related

One-way ANOVA was performed to compare the means and correlation of the bivariate, and to obtain the Pearson's two-tailed test of significance.

Positive emotions were positively correlated with one another while negative emotions were negatively correlated with each other as shown in *Table 6.4*. Enjoyment was highly correlated to pride at .63. Also, hopelessness and anger correlated with $r = .42$, while boredom and hopelessness were also positively correlated at $r = .31$. However, anger and pride; anxiety and pride; and boredom and anxiety recorded the lowest correlations at $-.07$.

6.5 Interview Analyses

The result of the data gathered for the two class sessions were presented in Tables 6.5 and 6.6.

6.5.1 First Class Session Interview

Experiment three was performed through two class teaching sessions. In the first experiment, the participants were taught a topic in Introduction to Networking. The class session lasted forty minutes and the video clips of the class session were taken. The participants' faces were captured in the recording to get their facial expressions.

Details of the data gathered were presented in Tables 6.5.

Table 6.5: First Class Session Interview Summary

S/NO	EMOTIONS	TOTAL	PERCENTAGE
1.	Boredom	3	8.82
2.	Hopelessness	3	8.82
3.	Anger	1	2.94
4.	Anxiety	4	11.77
5.	Enjoyment	14	41.18
6.	Pride	3	8.82
7.	Neutral	6	17.65
8.	TOTAL	34	100.00

Enjoyment emotion was the most experienced at 41.18% by the participants as revealed in Table 6.5. Neutral was experienced at 17.647%. Boredom, enjoyment and pride recorded the same emotions at 8.82 each. However, anger recorded the least emotion experienced by the participants.

6.5.2 Second Class Session Interview

The class session was recorded, and the learners was interviewed to recur the emotions they experienced while teaching was on-going. The research team interviewed each of the participants by playing the video recording of the class session for thirty minutes. The video was paused whenever emotions expressions were discovered on the face of the participants. The students were required to recur the emotions they felt during that period. The research team then tick emotion identified and continue playing the video. This continues until the whole video clips have been played.

Table 6.6: Second Class Session Interview Summary

S/NO	EMOTIONS	TOTAL	PERCENTAGE
1.	Boredom	3	10.71
2.	Hopelessness	3	10.71
3.	Anger	0	0.000
4.	Anxiety	3	10.71
5.	Enjoyment	10	35.72
6.	Pride	6	21.44
7.	Neutral	3	10.71
8.	TOTAL	28	100.00

In the second experiment, a topic in System Analysis and Design was taught. The video clips of the class session were taken by the research team in order to get the

facial expression of the participants. Details of the data obtained are presented in Table 6.6.

Emotions of boredom, hopelessness, anxiety and neutral recorded that same value at 10.71%. enjoyment recorded the highest value as 35.72% followed by pride at 21.44%.

Enjoyment emotion was the most experienced by the participants in the two class sessions recording the values of 41.17% and 35.72% in the first- and second-class sessions respectively. This revealed that majority of the participants do enjoy the lectures. However, they enjoyed that first class session more than the second-class session. However, anger recorded the lowest with 2.94% and 0.00% in the first- and second-class session respectively. Boredom and hopelessness recorded in the first-class session at 8.82% and 10.71% for the second-class session. Anxiety experienced in the first-class session was 11.77% and was slightly higher than those felt in the second-class session at 10.71%. Neutral recorded 17.65% and 10.71% for the first – and second-class session respectively. However, there was a wide margin between the emotion of pride experienced in the first-class session at 8.82% and the one felt in the second-class session at 21.43%.

During the recorded video analysis, six students out of the twenty-four students that participated in the study were found to be bored during the lecture representing 25% of the total population of the sample. The identified students were:

Student 1, Student 2, Student 3, Student 4, Student 5 and Student 6.

Four components were found to have effect on these identified students; motivation, teaching-learning environment, approaches to learning and personal issues. The analyses below were obtained from the transcripts of the interviews conducted when the video clips of the class session were played.

a. Motivation:

I was not interested in the course because I found it boring and the class was dull to me. (Student 1).

During the lecture, I was not focusing on what the teacher was teaching because I did not understand the concept taught. (Student 2).

b. Teaching-learning environment:

I like working at my pace with computer, but I don't like it when lectures are delivered with Power Point. I think the information presented in the slides was too little for me, so I was not really concentrating during lectures. My mind wanders about. (Student 3).

c. Approaches:

I like to learn at my own pace. During the lecture, I was not concentrating in the lecture as I was not interested. My mind roams about and I was thinking of some other events outside the classroom. (Student 4).

d. Personal issues:

I was feeling sick during the lecture, so I lost interest in the teaching. At the same time, I don't want to leave the class. I was just not concentrating any more. (Student 5).

I had financial problem at the time. My mind was wandering around on how to raise money to solve my financial difficulties, so I was really bored and did not understand what the teacher was teaching. (Student 6).

6.6 Discussion

Results from the analyses of the data revealed low correlation between negative emotions, consisting of boredom, hopelessness, anger and anxiety, against other emotions. The positive emotions recorded high correlations. This agrees with the control-value theory of achievement emotions of positive emotions creating positive loops for the environment-appraisal-emotions-achievement outcome cycle (R. Pekrun, 2006). The results of within and across domain settings form a positive loop, with positive emotions correlating with each other forming a positive

feedback, while negative emotions correlate with one another resulting in negative feedback.

The results of the analysis of emotions show that students experience hopelessness more often than boredom, indicating frustration in attempts to understand a concept. Boredom was found to have significant impact on students' interest and understanding of the course taught in class, and likewise on attention and engagement during lectures. The results of the analyses of the interviews revealed that emotions experienced during teaching is related to individuals and learning styles. This is in agreement with (Russell, 2003) who argue that "individual differences in learning styles dictate that technology will facilitate learning for some but will probably inhibit learning for others". The results are also in line with (MacDonald & Holland, 2002) and (Russell, 2003) who observed that students experienced bewilderment and confusion as they attempted to navigate their way through a learning site.

It can therefore be concluded that boredom does have significant impact on students' interest and understanding in the course. Furthermore, boredom can shape students' attention and engagement during lectures. In conclusion, understanding the emotions students experience while learning is fundamental to helping teachers and educational planners put good strategies in place that will help in meeting curriculum goals.

6.7 General Discussion on the Findings in relation to Interview

Research Hypothesis 3 (a)

Boredom does not have significant impact on students' interest in the course and learning

Results of the findings revealed that boredom does have significant impact on students' interest in learning. This was revealed through boredom having a high negative correlation against enjoyment. This suggests that students who are bored do not show interest in learning. This was also in agreement with the result of the interview which shows students that are bored do not show interest in the course.

Research Hypothesis 3 (b)

Boredom does not have significant impact on students understanding of the course and learning.

Findings from the results revealed that boredom significantly impact understanding of the course and learning. This was also revealed through the interview conducted, which shows that students who were bored lost interest in learning and did not focus on what was being taught. The result revealed that very few participants experienced boredom while that lectures were on-going and the reasons for that are related to individuals and learning styles.

Although some of the participants experienced boredom during the lectures, it cannot be substantiating that boredom does have impact on the students understanding and learning when lectures was going on because major of the participants do not feel that way. However, boredom do have impact on understanding and learning of the course on the few participants that experienced boredom during the lectures. The null hypothesis that stated that, "Boredom does

not have significant impact on students understanding of the course and learning”, is partially supported. It can therefore be concluded that boredom does have significant impact on students’ understanding of the course and learning.

Research Hypothesis 3 (c)

Boredom does not significantly shape students’ learning, attention during class and engagement in learning

Findings from the results revealed that boredom significantly shaped students’ learning, attention during class and engagement in learning. This was revealed through the result of the interviews that identified motivation, teaching-learning environment, approaches and personal issues as factors that contribute to boredom. The findings showed that students that experienced boredom during the lecture were not paying attention and were not engaged in learning.

The null hypothesis that stated that, “Boredom does not significantly shape students’ learning, attention during class and engagement in learning” is hereby rejected. It can therefore be concluded that boredom do significantly shape students’ learning, attention during class and engagement in learning.

Chapter 7: Conclusion

7.1 Overview

This thesis has presented the impact of students' emotions on learning when receiving lectures and when taking tests. It was observed that students experience different types of emotions during study and this was found to have a significant effect on their academic performance. Furthermore, this thesis has collaborated other studies that suggested that factors such as individual learning strategies, motivation and cognitive strategy used contribute to learners' academic performances. However, the thesis has pointed out that there is a gap in the knowledge in relation to individual differences, the types of emotions experienced, and the reasons for experiencing such while receiving lectures in classroom and when taking tests.

This chapter concludes this thesis with a short introduction as a summary of each of the chapters. The findings of each of the chapters are then reported in relation to the research questions and the research hypotheses formulated. The contributions to knowledge by this research are then presented, followed by the limitations of study and recommendations for future research.

7.2 Thesis Overview and Findings

The section below provides the summary of the three experiments in relation to the eleven research questions and eleven research hypotheses.

Chapter 1 gave a brief introduction to previous research related to emotions and learning. The thesis aims, and objectives as related to emotions were stated. These were followed by the research questions and the research hypotheses formulated.

Chapter 7: Conclusion

Finally, the methodology used, and definitions of the terms used in the research were highlighted.

Chapter 2 reviewed the literature of previous studies and examined the gaps in the research in relation to emotions, learning strategy, motivation and academic performance.

Chapter 3 gave a detailed description of the methodology used for data gathering and collection for this thesis. The sample used for the experiments, the data collection tools, and data analysis techniques were presented.

Chapter 4 reported experiments the findings of 1 in relation to the research questions of 1(a-d) and research hypotheses 1(a-d). The results gathered were then summarised.

Chapter 5 reported the findings gathered from experiment 2 as related to the research question 2(a-c) and the research hypotheses 2(a-c). Discussions on the outcomes of the findings and a summary were given.

Chapter 6 gave the findings gathered from experiments 3 as related to research question 3(a-d) and research hypotheses (a-d). A summary of the outcomes of the findings were then provided.

The section below provides the summary of the three experiments in relation to the eleven research questions and eleven research hypotheses.

7.3 Research Questions, Research Hypotheses and Findings

Experiment 1 was conducted to investigate the research questions in relation to achievement pressure, test anxiety and academic performance and test the hypotheses formulated from them. The aim of experiment 2 was to examine the research questions as related to components of motivational beliefs, test anxiety and

academic performance. Finally, experiment 3 aimed at investigating the research questions as related to boredom, student interest and engagement in learning.

7.3.1 Research Questions, Research Hypotheses and Findings

This section presents the findings of research questions 1(a), and the research hypothesis 1(a). The summary of the findings is presented in Table 7.1.

Findings from research question 1(a) and research hypothesis 1(a) suggest that anxiety, which was used to measure achievement pressure and expectation of failure, act as the main contributor to students' thought and action when receiving lectures. The findings revealed that a significant number of students worry that the things they need to do in their Computer Science class might be difficult. Additionally, anxiety is another emotion that students experience that influences their thoughts. The findings suggest that a relatively high number of students were anxious when lectures were going on. Furthermore, some of these students were scared because they thought they might say something wrong, so they preferred to keep quiet. This finding is surprising and suggests that students' lack of confidence may prevent them from speaking or asking questions in the classroom. Finally, findings from the analysis suggest that a significant number of the student's experience increase in heart beat when they do not understand the concept being taught in the class.

Because of the above, findings suggest that students experience boredom, hopelessness and anger when they get anxious. Findings of students' thoughts suggest that students experience boredom and some of them find their Computer Science class boring and dull. Findings of hopelessness suggest that a relatively low number of students experience this emotion and the thoughts identified centred on understanding the concept taught in the class. The findings suggest that some students felt that it is meaningless to attend the Computer Science class as they do

not understand the material anyway; some have accepted that Computer Science is difficult; some of the students would rather not go to Computer Science class as they believe there is no hope of understanding the concept. Furthermore, findings suggest that anger was experienced by students at a minimum significant level. A small number of students felt anger welling up in them during a lecture and this caused them to be restless in the class. A surprising finding also suggests that some students were irritated because they think that what they learn in Computer Science class is useless. This shows that some students are angry after attending a Computer Science class.

As for the test-related part of the research hypothesis 1(a) relating to anxiety, was found to have significant effect on students' thought and actions were identified. Findings suggest that students experience more anxiety when studying for a test than when receiving lectures in classroom. Before test findings suggest that a significant number of the students felt so anxious that they wished they could be somewhere else. However, several of them were looking forward to showing their knowledge. Findings of during test results suggest that, a significant number of students are anxious during the test, to the extent that they can't wait for the test to be over. Findings also suggest that students feel panicky when writing Computer Science test. Findings further revealed that students experienced emotions of hopelessness and boredom during tests. These findings suggest that during tests, some students feel like giving up; some feel resigned with no energy left in them; and some give up because they thought their answers were wrong.

Findings of fall out of the test-related anxiety from above suggest that students then experience emotions of relief and anger after taking Computer Science test. Findings suggest that significant number of the students felt relieved after the test. The findings suggest feels of relief after taking Computer Science test; been able to breathe easy after the test; feeling as if a weight has been removed from their shoulder, and finally feels of been freed at last. Findings of the anger however show some feelings of been annoyed and angry while some got angry because of the teacher's grading and thus felt like telling the teacher off.

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From the findings summarised above, it can be concluded that issues of worries about learning difficult concepts, anxiety about not understanding what is been taught, lack of confidence and increase heart beat are some of the feeling's students' think about when receiving lectures. These feelings thus contribute to students' thought and actions in form of hopelessness and anger. This is in line with (Morris, Larry W. Davis, Mark A. Hutchings, 1981), (Schwarzer, 1984) that observed that "high emotionality is associated with declining performance only when the individual is also experiencing high levels of worry"; worrying is the primary performance predictor (Deffenbacher, 1980); individuals with high levels of test anxiety usually have issues of extreme worry over assessment; comparing others performance with themselves; low levels of confidence in performance; consequences of failures; unprepared for assessment and loss of self-esteem (Morris, Larry W. Davis, Mark A. Hutchings, 1981). Findings of the students' experience were expressed through some of them thinking it pointless going to Computer Science class, accepting that the course is difficult and feeling losing hope in understanding the course. Findings of emotion of anger experienced by some of the students suggest that when students feel anxious and hopeless, then anger set in by way of getting restless in the class; getting irritated and feel what is been taught in Computer Science is useless; and feel anger building up inside during the class.

Regarding test-related emotions, findings suggest that emotions that were experienced during test are anxiety and hopelessness. Findings of the after test suggest that students experience emotions of relief and anger. The findings thus show that when students are experience achievement pressure and expectation of failure, this contribute to students thought and action in form of feel sad or upset because of the feeling that there is no much hope to pass the test; feeling like giving up; losing energy during test; and finally given up in answering the questions correctly. Such students then feel anger and annoyed. But a surprising finding revealed that such students then blame the teacher for their feelings and performance by feeling they could tell the teacher off and or get angry with the

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teacher's marking standards. Findings suggest that achievement pressure and expectation of failure act as contributors to students' thought and action.

From the findings above, the research hypothesis 1(a) which stated that, *Achievement pressure and expectation of failure do not act as contributors to students' thought and action is hereby rejected. It is therefore concluded that achievement pressure and expectation of failure do act as contributors to students' thought and action.*

This section presents the findings of research questions 1(b), and the research hypothesis 1(b). The summary of the findings is presented in Table 7.1.

About research question 1(b), findings suggest that test anxiety have significant effect on academic performance in both tests conducted. There was a slight difference in the level of significant however as the level of significant for the first test is lower than for the second test. But the differences are very low. The findings suggest that students that experience test anxiety performance low in academic performance. The findings revealed those students that experienced high level of test anxiety perform poorly in the tests.

From the above, the research hypothesis 1(b) which stated that, *Test anxiety does not correlate significantly with academic performance* is hereby rejected.

This section presents the findings of research questions 1(c), and the research hypothesis 1(c). The summary of the findings is presented in Table 7.1.

Findings relating to research question 1(c) suggest there were significant differences between class-related emotions and test-related emotions. Findings of boredom in class-related emotion and relief in test-related emotions were significantly different, suggesting students are more relieved after taking test than they feel bored during class. Findings of hopelessness in both cases were near equal suggesting no significant difference between hopelessness in class-related emotion and test-related emotion. Findings of anger emotions in both scenarios suggest

significant different in both. Test-related anger recorded high value than class-related anger suggesting there was a significant different between class-related anger and test-related anger. Findings of anxiety suggest a slightly higher value for test-related emotion against class-related emotion. Findings of enjoyment emotions suggest that there is difference between class-related enjoyment and test-related one with class-related enjoyment higher than test-related. Finally, findings of pride emotions revealed slightly different values with class-related slightly higher than test-related.

With regards to the above summary, findings indicate that enjoyment and pride are experienced more in class-related emotions, while in test related-emotions relief, anxiety, and anger were experienced more often. However, a surprising finding suggests that there was no significant difference between the levels of hopelessness experience in both cases.

Table 7.1: Summary of Research Question, Research Hypotheses and Findings from Experiment 1

Research Questions	Results	Research Hypotheses	Results
<p>Research Question 1(a)</p> <p>How does achievement pressure and expectation of failure act as contributors to students' thought and action when receiving lectures in classroom, when taking a test and after a test?</p>	<p>Issues of worries about learning difficult concepts, anxiety about not understanding what is been taught, lack of confidence and increase heart beat are some of the feeling's students think about when receiving lectures. These feelings thus contribute to students' thought and actions in form of hopelessness and anger.</p>	<p>Anxiety do not act as contributors to students' thought and action.</p>	<p>Anxiety do have impact on students thought and actions. However, students experience feelings of hopelessness and anger more often than boredom.</p>

<p>Research Question 1(b)</p> <p>Do Test anxiety correlate significantly with academic performance?</p>	<p>Findings suggest that test anxiety have significant effect on academic performance in both tests conducted. There was a slight difference in the level of significant however as the level of significant for the first test is lower than for the second test. But the differences are very low. The findings revealed those students that experienced high level of test anxiety perform poorly in the tests.</p>	<p>Test anxiety does not correlate significantly with academic performance</p>	<p>Test anxiety correlates significantly with academic performance suggesting that students with high level of anxiety arousal for test perform poorly in academic performance.</p>
<p>Research Question 1(c)</p> <p>Are there significance differences between class-related emotions and test-related emotions?</p>	<p>Findings suggest there were significant differences between class-related emotions and test-related emotions. However, a surprising finding suggests that there was no significant difference between the levels of hopelessness experience in both cases.</p>	<p>There are no significant differences between class-related emotions and test-related emotions</p>	<p>There were significant differences between class-related and test-related emotions of boredom/relief, anger, anxiety, enjoyment and pride. However, there was no significant difference between hopelessness in both cases.</p>

7.3.2 Research Questions, Research Hypotheses and Findings

This section presents the findings of research questions 2(a), and the research hypothesis 2(a). The summary of the findings is presented in Table 7.2.

Research hypothesis 2(a):

There is no correlation between the components of motivational beliefs.

Findings from research question 2(a) and research hypothesis 2(a) suggest relationship between the components of the motivational belief. There was high correlation between self-regulation and cognitive strategy use; self-regulation and self-efficacy; self-efficacy and cognitive strategy use; and self-efficacy and intrinsic value. However, there was moderate correlation between self-efficacy and intrinsic value; intrinsic value against self-regulation; test anxiety against cognitive strategy use; test anxiety and self-efficacy, and finally, test anxiety and intrinsic value. Finally, there was low correlation between test anxiety and self-regulation.

The summaries above suggest there are correlations between the components of the motivational values.

Research hypothesis 2(b):

The components of motivational beliefs do not have significant impact on academic performance.

Findings from research question 2(b) and research hypothesis 2(b) revealed that components of motivational beliefs comprising Self-Efficacy, Intrinsic value, Test Anxiety, Cognitive-Strategy use, and Self-Regulation were found to have significant impact of the academic performance of the students. This is supported by (Finn, J.D. and Zimmer, 2012) that observed that students that show academic engagement perform better than their peers who show less engagement in their academic work; and (Schunk, 1989) that stated that learners with a high sense of

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academic efficacy display greater persistence, effort, and intrinsic interest in their academic learning and achievement.

Research hypothesis 2(c):

There is no significant correlation between students’ self-regulation, self-determination, test anxiety and academic engagement.

Findings from research question 2(c) and research hypothesis 2(c) indicate significant correlation between self-regulation, self- determination and academic engagement. However, there was mild correlation between test anxiety and the other three.

Table 7.2: Summary of Research Question, Research Hypotheses and Findings from Experiment 2

Research Questions	Results	Research Hypotheses	Results
<p>Research Question 2(a)</p> <p>Are there correlations between the components of motivational beliefs?</p>	<p>High correlation between self-regulation and cognitive strategy use; self-regulation and self-efficacy; self-efficacy and cognitive strategy use; and self-efficacy and intrinsic value. There was moderate correlation between self-efficacy and</p>	<p>There is no correlation between the components of motivational beliefs.</p>	<p>Results revealed that there were correlations between the component of motivational belief</p>

	intrinsic value; intrinsic value against self-regulation; moderate correlation between test anxiety, cognitive strategy use; self-efficacy; intrinsic value. Findings however suggest low correlation between test anxiety and self-regulation.		
Research Question 2(b) Do components of motivational belief have effect on academic performance?	Findings of the components of motivational beliefs comprising Self-Efficacy, Intrinsic value, Test Anxiety, Cognitive strategy use, and Self-Regulation were found to have significant impact of the academic performance of the students.	The components of motivational beliefs do not have significant impact on academic performance.	Results revealed that components of motivational beliefs do have significant on academic performances
Research Question 2(c) Are there significant correlations between students' self-regulation, self-determination, test anxiety	Results showed significant correlations between self-regulation, self-determination and academic engagement. However, there was mild correlation between test	There is no significant correlation between students' self-regulation, self-determination, test anxiety and academic engagement	There were significant correlations between students' self-regulation, self-determination and academic engagement. But mild correlations of

and academic engagement?	anxiety and the other three.		test anxiety and the other three.
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7.3.3 Research Question, Research Hypotheses and Findings from Experiment 3

This section presents the findings of the findings of research questions 3(a), and the research hypothesis 3(a). The summary of the findings is presented in *Table 7.3*.

Research Hypothesis 3(a):

Boredom does not have significant impact on students’ interest in the course and learning.

Findings from research question 3(a) and research hypothesis 3(a) formulated suggest that boredom have significant impact on student’s interest and understanding of the course taught in class. Few students that were bored loose interest in learning and do not focus on what was been taught. The findings showed students that experienced boredom during the lecture were not paying attention and were not engaged in learning. There was correlation between academic engagement and boredom and between boredom and motivation.

Research Hypothesis 3(b):

Boredom does not have significant impact on students understanding of the course and learning.

Findings from research question 3(b) and research hypothesis 3(b) revealed that boredom significant impact understanding of course and learning. It was discovered that students who were bored during lectures loose interest in learning and do not

focus on what was been taught. It was also revealed that emotions experienced during teaching is related to individuals and learning styles.

Research Hypothesis 3(c):

Emotions do not significantly shape students' learning, attention during class and engagement in learning.

Findings from research question 3(c) and research hypothesis 3(c) formulated suggest that boredom significantly shape students' learning, attention during class and engagement in learning. Motivation, teaching-learning environment, approaches and personal issues were identified as issues that contributed to boredom experienced by the students. Findings showed that students that experienced boredom during the lecture were not paying attention and were not engaged in learning. This is line with the findings of other researchers that observed that environmental factors (Todman, 2013); academic anxiety and interest in studying, truancy and uninteresting (Robinson, 1975), anxious and distraught students (FOGELMAN, 1976), and low external stimulation (O'Hanlon, 1981) are some of the factors that do affect students during class. The result also revealed a high correlation between boredom and hopelessness; moderate correlation between boredom and anger; moderate correlation between academic engagement and boredom; and finally, moderate correlation between boredom and motivation. This suggests that students that experience boredom are likely to be averagely engaged in their study and motivated.

Table 7.3: Summary of Research Question, Research Hypotheses and Findings from Experiment 3

Research Questions	Results	Research Hypotheses	Results
<p>Research Question 3(a)</p> <p>Does boredom have impact on students' interest in the course and learning?</p>	<p>Boredom was found to have significant impact on student's interest and understanding of the course taught in class.</p>	<p>Boredom does not have significant impact on students' interest in the course and learning</p>	<p>Result shows that boredom significantly impact on students' interest in the course and learning</p>
<p>Research Question 3(b)</p> <p>Does boredom have impact on students understanding of the course and learning?</p>	<p>Few students that were bored loose interest in learning and do not focus on what was been taught.</p>	<p>Boredom does not have significant impact on students understanding of the course and learning.</p>	<p>Boredom have significant impact on students' understanding of the course and learning.</p>
<p>Research Question 3(c)</p> <p>Does boredom have impact on students' learning, attention during class and engagement in learning?</p>	<p>Result of the interview analyses revealed that motivation, teaching-learning environment, approaches and personal issues as issues that contribute to boredom. The findings showed that students that experienced boredom during the lecture were not paying attention and were not engaged in learning.</p>	<p>Boredom does not significantly shape students' learning, attention during class and engagement in learning</p>	<p>Boredom do significantly shape students' learning, attention during class and engagement in learning</p>

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7.4 Research Contributions

These sections present the summaries of the contributions to knowledge in terms of methodology used and the findings from data analyses.

7.4.1 Contribution 1

Contributions to Knowledge on Data Collection

Many researches in emotions have always based data collection on the use of questionnaires in obtaining opinions of students. This research however went a step further from the usual use of questionnaires by capturing students' emotions in real life while teaching take place. The students further express the type of emotions they experienced in classroom through analysis of the recorded video of the class sessions. The study also identifies the types and the reason for the emotion's students experienced in class. This is significant in education as it will enable teachers to fashion their mode of teaching and instructions better by taking into cognisance the emotions students experience, the types and reason for emotions students experienced.

This study will also help educationist and administrators in better curriculum development because good knowledge and analysis of emotions in learning and assessment will help in improving teaching when teachers take individual students' emotions into consideration. This will significantly improve students' interest in

learning, improve quality of instruction, increased students' assessment outcome and reduced the negative emotions students experience in classroom, while studying and taking tests.

Another contribution to knowledge is in the mode of data collection. Data for this study were collected through distribution of two different types of questionnaires, two class tests and analyses of video clips. This is significant as none of researches in emotions had collected data in these four ways in a single research.

7.4.2 Contributions 2

Contributions Knowledge on Findings

Firstly, no researches have studied the correlation between the types of emotions experienced by students when receiving lectures and when taking tests. Secondly, no researches have examined the effect of personal and individual problems as factors that might trigger students to experience emotions while a lecture is going on. Also, no previous studies have examined the effects of learners' emotions on academic performances and motivation using ethnography. Finally, no previous studies have examined the links between self-regulation, self-efficacy, test anxiety and motivation.

The following underlisted were the identified contributions to knowledge on findings:

1. Issues of worries about learning difficult concepts, anxiety about not understanding what is been taught, lack of confidence and increase heart beat are some of the feeling's students think about when receiving lectures. These feelings thus contribute to students' thought and actions in form of hopelessness and anger.
2. Test anxiety has significant effect on academic performance.
3. There were significant differences between class-related emotions and test-related emotions. However, a surprising finding suggests that there was no

significant difference between the levels of hopelessness experience in both cases.

4. Boredom was found to have significant impact on student's interest and understanding of the course taught in class.
5. Boredom has impact on students' learning, attention during class and engagement in learning.
6. Motivation, teaching-learning environment, approaches and personal issues were identified as some of the issues that contributed to boredom experienced by some the students.
7. There was high correlation between self-regulation and cognitive strategy use; self-regulation and self-efficacy; self-efficacy and cognitive-strategy use; and self-efficacy and intrinsic value. Self-efficacy and intrinsic value; intrinsic value against self-regulation however recorded moderate correlations. There was also moderate correlation between test anxiety, cognitive-strategy use; self-efficacy; and intrinsic value. Findings however suggest low correlation between test anxiety and self-regulation.
8. The components of motivational beliefs do have significant impact on academic performance.
9. There is relationship between the components of motivational beliefs.
10. There was significant correlation between self-regulation, self- determination and academic engagement. However, there was mild correlation between test anxiety and the other three.

7.5 Research Limitations and Future Work

The first limitation of this study is in the sample size. The sample size is relatively small compared with other quantitative research, but the results of analyses of the data supported earlier large size researches suggesting that significant relationship could be established. The level of reliability of Cronbach alpha for Academic Emotions Questionnaire (AEQ) and Motivation Strategy Learning Questionnaire (MSLQ) were found to be significantly high as in larger size sample. This buttressed the fact that relative relationship could be established with the sample size used for the study. The research method used in this study, that is, ethnography could not be apply to larger sample size as it would be an enormous task to interview and analyse the recorded class session video with larger sample. Besides, the participants that gratefully offered to take part in this study were from my home institution were all full-time students who had very limited time to offer to take part in this study. Another limitation to this study is how emotions were measured. Students were asked to ruminate on the emotions experienced during lecture when the video clips were played. It is likely that there might be biased answers in this case, as student might not remember precisely the emotions or feelings they experienced. In like manner, there might be some bias opinions by the students when filling the questionnaires, especially in the case of after the test emotions after they had received feedback of their performance.

Finally, there was limitation on time and money on the part of the researcher as she had to travel to her country for data collection. Limitation of time as all the data were collected within a space of only two months at the research home institution. The limitation of money was related to the cost incur and spent on the research. There was limitation of fund needed to carry out the research with larger number of participants as the participants were given some small amount of money as token for their time during each session of the experiments. There were also costs incurred on fuelling of generator used throughout the period of data collection as electricity was not stable, so all experiments were conducted with the aid of generator so as not to disrupt the experimental procedure.

Future work shall investigate effect of emotions students in e-learning environment, and investigating how stress can motivate learners to learn. Larger sample shall be considered in carrying-out the research. In terms of questionnaire, the same questionnaires used for this research shall be use, but participants will include students from six department in School of Science, namely, Computer Science, Integrated Science, Biology, Chemistry, Physics and Mathematics. The experiments shall be carry-out at Federal College of Education (Special.), Oyo.

References

- Alexander, P.A., Murphy, P.K., Woods, B.S., Duhon, K.E. & Parker, D. (1997). College Instruction and Concomitant Changes in Students' Knowledge, Interest, and Strategy Use: A Study of Domain Learning. *Contemporary Educational Psychology*, 22(2), 125–146. <https://doi.org/https://doi.org/10.1006/ceps.1997.0927>
- Alexander, P.A., Murphy, P.K., Woods, B.S., Duhon, K.E. & Parker, D. (1997). College Instruction and Concomitant Changes in Students' Knowledge, Interest, and Strategy Use: A Study of Domain Learning. *Contemporary Educational Psychology*, 22(2), 125–146. <https://doi.org/https://doi.org/10.1006/ceps.1997.0927>
- Alexander, P. A., & Murphy, P. K. (1998). Profiling the Differences in Students' Knowledge, Interest, and Strategic Processing. *Journal of Educational Psychology*, 90(3), 435–447. <https://doi.org/10.1037/0022-0663.90.3.435>
- Anderson, B. (1997). Work, Ethnography and System Design [Technical Report EPC-1996-103] . *The Encyclopaedia of Microcomputers, Vol. 20*, 159–183.
- Askar, i. & O. D. (2009). *Students' Self-Efficacy of Learning the C++ Programming Language Questionnaire. 32 items.*
- Ball, L. J., & Ormerod, T. C. (2000). Putting ethnography to work: the case for a cognitive ethnography of design. *International Journal of Human Computer Studies*, 53(1), 147–168. <https://doi.org/10.1006/ijhc.2000.0372>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. <https://doi.org/http://dx.doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1991). Social Cognitive Theory of Self-Regulation. *Organizational Behavior and Human Decision Processes*, 50, 248–287.

- Bandura, A. (1994). Self-Efficacy. *Encyclopedia of Human Behavior*, 4, 71–81.
- Baum, W. M. (1973). THE CORRELATION-BASED LAW OF EFFECT. *Journal of the Experimental Analysis of Behavior*, 20(1), 137–153.
<https://doi.org/https://doi.org/10.1901/jeab.1973.20-137> |
- Berland & Lee. (2011). *Computational Thinking Framework to Examine Students' Computer Programming Self-Efficacy*.
- Boekaerts, M. (1996). Self-regulated Learning at the Junction of Cognition and Motivation. *European Psychologist*, 1(2), 100–112.
<https://doi.org/10.1027/1016-9040.1.2.100>
- Bowers, K. S. (1973). Situationism in psychology: An analysis and a critique. *Psychological Review*, 80(5), 307–336.
<https://doi.org/http://dx.doi.org/10.1037/h0035592>
- Bowlby, J. (1969). Attachment and loss. *International Journal of Behavioral Development*, 1(33), 470478.
- Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology*, 27(2), 270–295.
<https://doi.org/10.1006/ceps.2001.1094>
- Chauhan, C. P. S. (1987). Educational Challeges of 2001 a.D. In *Education quarterly*.
- Christenson, S. L., Wylie, C., & Reschly, A. L. (2012). Handbook of Research on Student Engagement. In *Handbook of Research on Student Engagement*.
<https://doi.org/10.1007/978-1-4614-2018-7>
- Concannon, J. P., Serota, S. B., Fitzpatrick, M. R., & Brown, P. L. (2018). How Interests, self-efficacy, and self-regulation impacted six undergraduate pre-engineering students' persistence. *European Journal of Engineering Education*, 0(0), 1–20. <https://doi.org/10.1080/03043797.2017.1422695>

Cotton, D.R.E., Stokes, A. & Cotton, P. A. (2010). Using Observational Methods to Research the Student Experience. *Journal of Geography in Higher Education*, 34(3), 463–473.

<https://doi.org/10.1080/03098265.2010.501541>

Csikszentmihalyi, M. & Csikszentmihalyi, I. S. (1992). Optimal experience: Psychological studies of flow in consciousness. In *Google*. Cambridge University Press.

Csikszentmihalyi Mihaly. (1988). Motivation and creativity: Toward a synthesis of structural and energistic approaches to cognition☆. *New Ideas in Psychology*, 6(2), 159–176. [https://doi.org/Mihaly Csikszentmihalyi](https://doi.org/Mihaly%20Csikszentmihalyi)

D’Mello, S., Lehman, B., Pekrun, R., & Graesser, A. (2014). Confusion can be beneficial for learning. *Learning and Instruction*, 29, 153–170.

<https://doi.org/10.1016/j.learninstruc.2012.05.003>

Damrad-Frye, R., & Laird, J. D. (1989). The Experience of Boredom: The Role of the Self-Perception of Attention. *Journal of Personality and Social Psychology*, 57(2), 315–320. <https://doi.org/10.1037/0022-3514.57.2.315>

Deci, E. L. & R. (2012). Motivation, personality, and development within embedded social contexts: An overview of self-determination theory. In *The Oxford handbook of human motivation*.

Deci, E. L., & Ryan, R. M. (1985a). The General Causality Orientations Scale (GCOS). *Journal of Research in Personality*, 134(19), 109–134.

[https://doi.org/10.1016/0092-6566\(85\)90023-6](https://doi.org/10.1016/0092-6566(85)90023-6)

Deci, E. L., & Ryan, R. M. (1985b). The General Causality Orientations Scale (GCOS). *Journal of Research in Personality*, 134(19), 109–134.

[https://doi.org/10.1016/0092-6566\(85\)90023-6](https://doi.org/10.1016/0092-6566(85)90023-6)

Deffenbacher, J. L. (1980). Test anxiety: Theory, research, and applications. *Test Anxiety: Theory, Research, and Applications*, 111–128.

Denzine, G. & Brown, R. (2015). *Motivation to Learn and Achievement*. Springer.

Duckworth, A.L. & Seligman, M. E. p. (2005). Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents. *Psychological Science*, 16(12), 939–944. <https://doi.org/10.1111/j.1467-9280.2005.01641.x>

Eastwood, J. D., Frischen, A., Fenske, M. J., & Smilek, D. (2012). *The Unengaged Mind : Defining Boredom in Terms of Attention*. <https://doi.org/10.1177/1745691612456044>

Eccles, J. S., & Wigfield, A. (2002). *MOTIVATIONAL BELIEFS, VALUES, AND GOALS*.

Elliot, Andrew J.. & Church, M. A. . (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72(1), 218–232.

Endler, N. S., & Magnusson, D. (1976). Toward an interactional psychology of personality. *Psychological Bulletin*, 83(5), 956–974. <https://doi.org/http://dx.doi.org/10.1037/0033-2909.83.5.956>

Eynde, P.O. & Turner, J. E. (2006). Focusing on the complexity of emotion issues in academic learning: A dynamical component systems approach. *Educational Psychology Review*, 18, 361–376.

Fetterman, D. M. (1998). Research News And Comment: Webs of Meaning: Computer and Internet Resources for Educational Research and Instruction. *Educational Researcher*, 27(3).

Finn, J.D. and Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In *Handbook of research on student engagement* (pp. 97–131). Springer.

Fisher, R. J. (1993). Social Desirability Bias and the Validity of Indirect

- Questioning. *Journal of Consumer Research*, 20(2), 303.
<https://doi.org/10.1086/209351>
- FOGELMAN, K. (1976). Bored Eleven-year-olds. *The British Journal of Social Work*, 2(1), 201–211.
<https://doi.org/https://doi.org/10.1093/oxfordjournals.bjsw.a056703>
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research*, 74(1), 59–109. <https://doi.org/10.3102/00346543074001059>
- Ghaseni, A., Zahediasl, S. (2012). Normality test for statistical analysis: A guide for non-statisticians. *Int. Journal of Endocrinol Metab*, 10, 486–489.
- Glenn, D. I. (1992). *No Title*.
- Govender & Basak (2015). (2015). *Students' Self-Efficacy of Learning the C++ Programming Language Questionnaire. 32 items*.
- Guest, B. and J. (2006). *No Title*.
- Hagenauer, G., & Hascher, T. (2014). Early Adolescents' Enjoyment Experienced in Learning Situations at School and Its Relation to Student Achievement. *Journal of Education and Training Studies*, 2(2), 20–30.
<https://doi.org/10.11114/jets.v2i2.254>
- Hamilton, J.A., Haier, R.J., & Buchsbaum, M. S. (1984). Intrinsic enjoyment and boredom coping scales: Validation with personality, evoked potential and attention measures. *Personality and Individual*, 5(2).
[https://doi.org/https://doi.org/10.1016/0191-8869\(84\)90050-3](https://doi.org/https://doi.org/10.1016/0191-8869(84)90050-3)
- Hammed, T. . (1999). *Fost ering Interpersonal Skills among Selected Bank Workers through Assertiveness Training and Transational Analysis*. University of Ibadan, Ibadan, Nigeria.
- Hammersley, M. & Atkinson, P. (1995). *Ethnography : principles in practice* (2nd

- ed.). London : Routledge,.
- Hannover, B. (1998). The development of self-concept and interests. *Interest and Learning: Proceeding of the Seon Conference on Interest and Gender*, 105–125.
- Harmon-Jones, C., Bastian, B., & Harmon-Jones, E. (2016). The discrete emotions questionnaire: A new tool for measuring state self-reported emotions. *PLoS ONE*, *11*(8), 1–25.
<https://doi.org/10.1371/journal.pone.0159915>
- Harper, R. H. R. (1998). *Inside the IMF: an ethnography of documents, technology and organisational action*. books.google.com.
- Harris, M. and Johnson, O. (2011). What is Design *What Is Ethnography*.
- Hidi, S, Renninger, K. A. and Krapp, A. (2004). Interest, a Motivational Variable That Combines Affective and Cognitive Functioning. In *Motivation, Emotion, and Cognition Integrative Perspectives on Intellectual Functioning and Development*. <https://doi.org/10.4324/9781410610515>
- Hidi, S. (1990). Interest and Its Contribution as a Mental Resource for Learning. *Review of Educational Research*, *60*(4), 549–571.
<https://doi.org/https://doi.org/10.3102/00346543060004549>
- Hilgard, Ernest R; Bower, G. H. (1966). *Theories of learning* (3rd ed). Century Psychology series.
- Hill, A.B. & Perkins, R. E. (1985). Towards a model of boredom. *British Journal of Psychology*, *76*(2), 235–240.
<https://doi.org/https://doi.org/10.1111/j.2044-8295.1985.tb01947>.
- Hughes, J., King, V., Rodden, T., and Andersen, H. (1994). Moving out from the control room: ethnography in system design. *Proceedings of the 1994 ... , 1994 - DL.Acm.Org*, 429–439. <https://doi.org/10.1145/192844.193065>

- Izard, C. E. (1992). Basic emotions, relations among emotions, and emotion-cognition relations. *Psychological Review*, 99(3), 561–565.
- Järvelä, S., Volet, S., & Järvenoja, H. (2010). Research on motivation in collaborative learning: Moving beyond the cognitive-situative divide and combining individual and social processes. *Educational Psychologist*, 45(1), 15–27. <https://doi.org/10.1080/00461520903433539>
- John, V. M. (1995). *Representation in ethnography*.
- Katz, I., Assor, A., Kanat-Maymon, Y., & Bereby-Meyer, Y. (2006). Interest as a motivational resource: Feedback and gender matter, but interest makes the difference. *Social Psychology of Education*, 9(1), 27–42. <https://doi.org/10.1007/s11218-005-2863-7>
- Kim, H. Y. (2013). *Statistical notes for clinical researchers; Assessing normal distribution (2) using skewness and kurtosis*.
- Kirst Malterund, et al. (2015). *No Title*.
- Klapp, A. (2016). The importance of self-regulation and negative emotions for predicting educational outcomes – Evidence from 13-year olds in Swedish compulsory and upper secondary school. *Learning and Individual Differences*, 52, 29–38. <https://doi.org/10.1016/j.lindif.2016.10.013>
- Kleinginna, P.R and Kleinginna, A. M. (1981). A categorized list of emotion definitions, with suggestions for a consensual definition. *Motivation and Emotion*, 5(4), 345–378.
- Krapp, A. (2007a). An educational-psychological conceptualisation of interest. *International Journal for Educational and Vocational Guidance*, 7(1), 5–21. <https://doi.org/10.1007/s10775-007-9113-9>
- Krapp, A. (2007b). An educational-psychological conceptualisation of interest. *International Journal for Educational and Vocational Guidance*, 7(1), 5–21.

<https://doi.org/10.1007/s10775-007-9113-9>

- Lewis, S., Mateas, M. Palmiter, S. and Lynch, G. (1996). Ethnographic data for product development. *Interactions*, 3(6), 52–69.
- Lichtenfeld, S., Pekrun, R., Stupnisky, R. H., Reiss, K., & Murayama, K. (2012). Measuring students' emotions in the early years: The Achievement Emotions Questionnaire-Elementary School (AEQ-ES). *Learning and Individual Differences*, 22(2), 190–201. <https://doi.org/10.1016/j.lindif.2011.04.009>
- Linnenbrink-Garcia, L., Durik, A. M., Conley, A. M. M., Barron, K. E., Tauer, J. M., Karabenick, S. A., & Harackiewicz, J. M. (2010a). Measuring situational interest in academic domains. *Educational and Psychological Measurement*, 70(4), 647–671. <https://doi.org/10.1177/0013164409355699>
- Linnenbrink-Garcia, L., Durik, A. M., Conley, A. M. M., Barron, K. E., Tauer, J. M., Karabenick, S. A., & Harackiewicz, J. M. (2010b). Measuring situational interest in academic domains. *Educational and Psychological Measurement*, 70(4), 647–671. <https://doi.org/10.1177/0013164409355699>
- Linnenbrink-Garcia, L., & Pekrun, R. (2011). Students' emotions and academic engagement: Introduction to the special issue. *Contemporary Educational Psychology*, 36(1), 1–3. <https://doi.org/10.1016/j.cedpsych.2010.11.004>
- Lowe, P.A. Lee, S.W., Wittenborg, K.M, et al. (2008). The Test Anxiety Inventory for Children and Adolescents (TAICA) Examination of the Psychometric Properties of a New Multidimensional Measure of Test Anxiety Among Elementary and Secondary School Students. *Journal of Pschoeducational Assessment*, 26(3), 215–230.
<https://doi.org/https://doi.org/10.1177/0734282907303760>
- Macaulay, C., Benyon, D., & Crerar, A. (2000). Ethnography, theory and systems design: From intuition to insight. *International Journal of Human Computer Studies*, 53(1), 35–60. <https://doi.org/10.1006/ijhc.2000.0376>

- MacDonald, D. A., & Holland, D. (2002). Spirituality and boredom proneness. *Personality and Individual Differences, 32*(6), 1113–1119.
[https://doi.org/10.1016/S0191-8869\(01\)00114-3](https://doi.org/10.1016/S0191-8869(01)00114-3)
- Mantovani, G. (1996). Social Context in HCI: A New Framework for Mental Models, Cooperation, and Communication. *Cognitive Science, 20*(2), 237–269. https://doi.org/10.1207/s15516709cog2002_3 |
- Marshal, A. (1984). Time, Equality, and Mastery Learning. *Scopus, 54*(1), 65–86.
<https://doi.org/10.3102/00346543054001065>
- Mason. (2016). *No Title*.
- Michelle, B., Owain, J. Niamh, M. & Emma, R. (2016). Participatory research in more-than-human worlds. In *Participatory Research in More-than-Human Worlds*. <https://doi.org/10.4324/9781315661698>
- Michener, M. &. (1976). *N*.
- Mitchell, M. (1993). Situational interest: Its multifaceted structure in the secondary school mathematics classroom. *Journal of Educational Psychology, 85*(3), 424–436.
- Moos, D. C., & Azevedo, R. (2009). Learning With Computer-Based Learning Environments: A Literature Review of Computer Self-Efficacy. *Review of Educational Research, 79*(2), 576–600.
<https://doi.org/10.3102/0034654308326083>
- Morris, Larry W. Davis, Mark A. Hutchings, C. H. (1981). Cognitive and emotional components of anxiety: Literature review and a revised worry–emotionality scale. *Journal of Educational Psychology, 73*(4), 541–555.
<https://doi.org/http://dx.doi.org/10.1037/0022-0663.73.4.541>
- Newmann, F. M., Wehlage, G. G., & Lamborn, S. D. (1992). Student Engagement and Achievement in American Secondary School. In *Student engagement*

and achievement in American secondary schools.

<https://doi.org/10.4236/ojapps.2014.45022>

Normandeau, S., & Guay, F. (1998). Preschool behavior and first-grade school achievement: The mediational role of cognitive self-control. *Journal of Educational Psychology, 90*(1), 111.

NRCIM. (2004). *Engaging schools: Fostering high school students' motivation to learning.*

O'Hanlon, J. F. (1981). Boredom: Practical consequences and a theory. *Acta Psychologica, 49*(1), 53–82. [https://doi.org/https://doi.org/10.1016/0001-6918\(81\)90033-0](https://doi.org/https://doi.org/10.1016/0001-6918(81)90033-0)

Okoye, N. W. (1981). *Principles of Continuous Assessment* (Ezewu, E.E). Ibadan: Evans /brothers Ltd.

Oudeyer, P. Y., Gottlieb, J. & Lopes, M. (2016). Intrinsic motivation, curiosity, and learning: Theory and applications in educational technologies. In S. K. Bettina Studer (Ed.), *Progress in Brain Research* (pp. 257–284). <https://doi.org/https://doi.org/10.1016/bs.pbr.2016.05.005>

Pajares, F. (2002). Becoming a Self-Regulated Learner: An Overview. *Theory into Practice, 41*(2), 64–67. <https://doi.org/10.1207/s15430421tip4102>

Panksepp, J. & Solms, M. (2012). What is neuropsychology? Clinically relevant studies of the minded brain. *Cognition in Neuropsychiatric Disorders, 16*(1), 6–8.

Panksepp, J. (1998). The periconscious substrates of consciousness: affective states and the evolutionary origins of the self. *Journal of Consciousness Studies, 5*(5–6), 566–582.

Patton. (2015). *No Title.*

Pekrun, R., A.J. Elliot, & M.A., M. (2006). *Achievement Goals Questionnaire*

(AGQ).

Pekrun, R., Goetz, T., Daniels, L.M. & Perry, R.P. (2010). *Achievement Emotions Questionnaire (AEQ)*.

Pekrun, R., Goetz, T., Perry, R. P., Kramer, K., Hochstadt, M., & Molfenter, S. (2004). Beyond test anxiety: Development and validation of the Test Emotions Questionnaire (TEQ). *Anxiety, Stress & Coping*, 17(3), 287-316., 17(3), 287–316.

Pekrun, R. & Schutz, P. A. (2007). Where Do We Go from Here? Implications and Future Directions for Inquiry on Emotions in Education. *Educational Psychology*, 313–331.

Pekrun, Reinhard, Goetz, Thomas, Titz, Wolfram, & P. Perry., Raymond. (2002). Academic Emotions in Students' Self-Regulated Learning and Achievement: A Program of Qualitative and Quantitative Research. *Educational Psychologist*, 37(2), 91–105. <https://doi.org/10.1207/S15326985EP3702>

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review*, 18(4), 315–341. <https://doi.org/10.1007/s10648-006-9029-9>

Pekrun, R. (2014). Emotions and learning. In *Educational practices series*. <https://doi.org/http://www.iaaed.org>

Pekrun, R., Elliot, A. J., & Maier, M. A. (2006). Achievement goals and discrete achievement emotions: A theoretical model and prospective test. *Journal of Educational Psychology*, 98(3), 583–597. <https://doi.org/10.1037/0022-0663.98.3.583>

Pekrun, R., Goetz, T., Daniels, L. M., Stupnisky, R. H., & Perry, R. P. (2010). Boredom in Achievement Settings: Exploring Control-Value Antecedents and Performance Outcomes of a Neglected Emotion. *Journal of Educational*

Psychology, 102(3), 531–549. <https://doi.org/10.1037/a0019243>

Perkins, Adam M. Inchley-Mort, Sophie L. Pickering, Alan D. Corr, Philip J. Burgess, A. P. (2012). A facial expression for anxiety. *Journal of Personality and Social Psychology*, 102(5), 910–924.
<https://doi.org/http://dx.doi.org/10.1037/a0026825>

Pickering, M., & Chater, N. (1995). Why cognitive science is not formalized folk psychology. *Minds and Machines*, 5(3), 309–337.

Pintrich, Paul R., et al. (1991). *No Title*.

Pintrich, P. R., & Groot, E. V. De. (1990). *391 Motivational and self-regulated learning components of classroom academic performance.pdf*. 82(1), 33–40.
Retrieved from <https://web-a-ebsochost-com.proxy.lib.ul.ie/ehost/pdfviewer/pdfviewer?vid=2&sid=34d6c258-a335-4daf-8944-36b9bb0480b6%40sessionmgr4007>

POLLY, LM; VODANOVICH, SJ; WATT, JD; BLANCHARD, M. (1993). THE EFFECTS OF ATTRIBUTIONAL PROCESSES ON BOREDOM PRONENESS. *JOURNAL OF SOCIAL BEHAVIOR AND PERSONALITY*, 8(1), 123–132. <https://doi.org/Web of Science Social Sciences Citation Index>

Prenzel, M. (1992). The selective persistiveness of interest. In *The role of interest in learning and development*.

Putwain, D. W., Sander, P., & Larkin, D. (2013). Using the 2×2 framework of achievement goals to predict achievement emotions and academic performance. *Learning and Individual Differences*, 25, 80–84.
<https://doi.org/10.1016/j.lindif.2013.01.006>

Ramalingam, V.; Wiedenbeck, S. (1998). Development and validation of scores on a computer programming self-efficacy scale and group analyses of novice programmer self-efficacy. *Journal of Educational Computing Research*, 19(4), 367–381.

- Ramalingam, V., LaBelle, D., & Wiedenbeck, S. (2004). Self-efficacy and mental models in learning to program. *ACM SIGCSE Bulletin*, *36*(3), 171. <https://doi.org/10.1145/1026487.1008042>
- Renninger, K.A. & Hidi, S. (2002). Student Interest and Achievement: Developmental Issues Raised by a Case Study. In *Development of achievement motivation*.
- Renninger, K. A., Ewen, L., & Lasher, A. K. (2002). Individual interest as context in expository text and mathematical word problems. *Learning and Instruction*, *12*(4), 467–491. [https://doi.org/10.1016/S0959-4752\(01\)00012-3](https://doi.org/10.1016/S0959-4752(01)00012-3)
- Rolls, E. T. (2000). Précis of The brain and emotion. *BEHAVIORAL AND BRAIN SCIENCES*, *23*, 177–234.
- Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review*, *110*(1), 145–172. <https://doi.org/10.1037/0033-295X.110.1.145>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation. *American Psychologist*, *55*(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., Williams, G. C., Patrick, H., & Deci, E. L. (2009). 2009_RyanWilliamsPatrickDeci_HJOP.pdf. *Hellenic Journal of Psychology*, Vol. 6, pp. 107–124.
- Sagepub. (2018). Introduction to Hypothesis Testing.
- Sanjek, R. (1990). On ethnographic validity. In *Fieldnotes: The Makings of Anthropology* (pp. 385–418). Ithica: Cornell University Press.
- Savickas, M.L. & Spokane, A. R. (1999). (1999). Vocational interests: Meaning, measurement, and counseling use. In *psycnet.apa.org*. Palo Alto, CA, US: Davies-Black Publishing.

- Scherer, K. R. (1997). The role of culture in emotion-antecedent appraisal. *Psychology, Journal of Personality and Social*, 37(5), 902–922.
<https://doi.org/http://dx.doi.org/10.1037/0022-3514.73.5.902>
- Schiefele, U. (2001). The role of interest in motivation and learning. In I. J. M. C. & S. M. (Eds.) (Ed.), *Intelligence and personality: Bridging the gap in theory and measurement* (pp. 163–193). Hillsdale, NJ: Erlbaum.
- Schiefele, U., & Schiefele, U. (2009). *Scientific Studies of Reading Interest and Learning From Text Interest and Learning From Text*. 8438(1999).
<https://doi.org/10.1207/s1532799xssr0303>
- Schmeck, R. R. (1988). An Introduction to Strategies and Styles of Learning. In *Learning Strategies and Learning Styles*.
- Schunk, D. H., Pintrich, P. R. & Meece, J. L. (2008). *Motivation in Education: Theory, Research, and Applications*.
- Schunk, D. H. (1989). Social Cognitive Theory and Self-Regulated Learning. In <https://link.springer.com/book/10.1007/978-1-4612-3618-4> (pp. 83–110). Springer, New York, NY.
- Schutz, P.A., Aultman, L. P. & W.-J. (2009). Educational Psychology Perspectives on Teachers' Emotions. In *Advances in Teacher Emotion Research*.
- Schutz, P.A. & DeCuir, J. T. (2002). Inquiry on Emotions in Education. *Journal Educational Psychologist*, 37(2), 125–134.
https://doi.org/https://doi.org/10.1207/S15326985EP3702_7
- Schwarzer, R. (1984). Worry and emotionality as separate components in test anxiety. *Applied Psychology*, 33(2), 205–220. <https://doi.org/10.1111/j.1464-0597.1984.tb01429.x>
- Seib, H. M., & Vodanovich, S. J. (1998). Cognitive correlates of boredom

- proneness: The role of private self-consciousness and absorption. *Journal of Psychology: Interdisciplinary and Applied*, 132(6), 642–652.
<https://doi.org/10.1080/00223989809599295>
- Sharp, J. G., Hemmings, B., Kay, R., & Atkin, C. (2018a). Academic boredom, approaches to learning and the final-year degree outcomes of undergraduate students. *Journal of Further and Higher Education*, 42(8), 1055–1077.
<https://doi.org/10.1080/0309877X.2017.1349883>
- Sharp, J. G., Hemmings, B., Kay, R., & Atkin, C. (2018b). Academic boredom, approaches to learning and the final-year degree outcomes of undergraduate students. *Journal of Further and Higher Education*, 42(8), 1055–1077.
<https://doi.org/10.1080/0309877X.2017.1349883>
- Shaver, P. U. D., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*.
<https://doi.org/http://dx.doi.org/10.1037/0022-3514.52.6.1061>
- Shen, C. X. (2018). Does school-related Internet Information seeking improve academic self-efficacy? The moderating role of internet information seeking styles. *Computers in Human Behavior*, 86, 91–98.
<https://doi.org/10.1016/j.chb.2018.04.035>
- Skinner, E., & Belmont, M. (1993). Motivation in the {Classroom} - {Reciprocal} {Effects} of {Teacher}-{Behavior} and {Student} {Engagement} {Across} the {School} {Year}. *Journal of Educational Psychology*, 85(4), 571–581.
<https://doi.org/10.1037/0022-0663.85.4.571>
- Snowman, J. (1986). Learning tactics and strategies. *Ci.Nii.Ac.Jp*.
- Su-Fen, Cheng, et al. (2010). *Self-Directed Learning Instrument*.
- Sullivan, L. (2017). Hypothesis Testing for Means and Proportions.

- Tao, Xiaomei, Niu, Q. & Jackson, M. (2013). Using an Ethnographic Approach to Collect Emotional Data in Affective Learning Research. *International Journal of Information and Electronics Engineering*, 3(2), 216–220.
<https://doi.org/10.7763/IJIEE.2013.V3.302>
- Todman, M. (2013). The Dimensions of State Boredom: Frequency, Duration, Unpleasantness, Consequences and Causal Attributions. *Educational Research International*, 1(1), 32–40.
- Tsai, M.-J., Wang, C.-Y., & Hsu, P.-F. (2018). Developing the Computer Programming Self-Efficacy Scale for Computer Literacy Education. *Journal of Educational Computing Research*, 073563311774674.
<https://doi.org/10.1177/0735633117746747>
- Tyng, C. M., Amin, H. U., Saad, M. N. M., & Malik, A. S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology*, 8(AUG).
<https://doi.org/10.3389/fpsyg.2017.01454>
- Um, E. R., Plass, J. L., Hayward, E. O., & Homer, B. D. (2012). Emotional Design in Multimedia Learning. *Journal of Educational Psychology*, 104(2), 485–498. <https://doi.org/10.1037/a0026609>
- Villavicencio, F. T., & Bernardo, A. B. I. (2013). Positive academic emotions moderate the relationship between self-regulation and academic achievement. *British Journal of Educational Psychology*, 83(2), 329–340.
<https://doi.org/10.1111/j.2044-8279.2012.02064.x>
- Vogel, S. & Schwabe, L. (2016). Learning and memory under stress: implications for the classroom. *Science of Learning*, 1.
<https://doi.org/doi:10.1038/npjscilearn.2016.11>
- Vuilleumier, P. (2005). How brains beware: Neural mechanisms of emotional attention. *Trends in Cognitive Sciences*, 9(12), 585–594.
<https://doi.org/10.1016/j.tics.2005.10.011>

- Vytal, K., & Hamann, S. (2010). *Neuroimaging support for discrete neural correlates of basic emotions: A vo...: EBSCOhost*. 2864–2885. Retrieved from <http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=4&sid=57194c01-d36d-4d31-b0c8-b1fac5408dc5%40sessionmgr104>
- Watt, J.D. & Blanchard, M. J. (1994). Boredom proneness and the need for cognition. *Journal of Research in Personality*, 28, 44–51.
- Wentzel, K. . (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology*, 91(1), 76–97. <https://doi.org/http://dx.doi.org/10.1037/0022-0663.91.1.76>
- Winne, P. H. (2001). *Self-Regulated Learning viewed form Modcels of Information Processing* (Self-Regul; D. H. S. Barry J. Zimmerman, Ed.). google.
- Wolcott, H. F. (1995). *The Art of Fieldwork*. Walnut Creek: Altamira Press.
- Zeidner, Mo. & Boekaerts, M. & Pintrich, P. R. (2000). *Self-regulation: Directions and challenges for future research*.
- Zeidner, M. (1998). *Test anxiety: The state of the art*. New York, NY, US: Plenum Press.
- Zeidner, M. (2007). *Test Anxiety in Educational Contexts: Concepts, Findings, and Future Directions*. <https://doi.org/https://doi.org/10.1016/B978-012372545-5/50011-3>
- Zimmerman, B.J. (1989). Models of Self-Regulated Learning and Academic Achievement. In S. D. H. (eds) Zimmerman B.J. (Ed.), *Self-Regulated Learning and Academic Achievement*. (pp. 1–25). https://doi.org/https://doi.org/10.1007/978-1-4612-3618-4_1

Zimmerman, B. J. (1990). Self-regulating academic learning and achievement: The emergence of a social cognitive perspective. *Educational Psychology Review*, 2(2), 173–201. <https://doi.org/10.1007/BF01322178>

Zimmerman B.J. (2000). Attaining Self-Regulation: A Social Cognitive Perspective. In *Handbook of Self-Regulation*.
<https://doi.org/https://doi.org/10.1016/B978-012109890-2/50031-7>

SECTION B

This section contains question items which you are expected to answer by ticking in front of the items:

Emotions	Items	SA	A	N	SD	D
Class version Boredom	I feel like leaving because my Computer Science class is so boring (d)					
	I get bored during Computer Science classes (d)					
	Computer Science classes bore me (d)					
	I find my Computer Science classes fairly dull (d)					
Hopelessness	It's pointless to prepare for my Computer Science class since I don't understand the material anyway (b)					
	Even before my Computer Science class even started, I'm resigned to the fact that I won't understand the material (b)					
	I'd rather not go to my Computer Science class since there is no hope of understanding the material anyway (b)					
	I have lost all hope in understanding my Computer Science class (a)					
Anger	I feel anger welling up in me during my Computer Science class (d)					
	Because I'm angry I get restless in my Computer Science class (d)					
	Thinking about all the useless things I have to learn in Computer Science makes me irritated (d)					
	After Computer Science classes I am angry (a)					
Anxiety	I worry about the things I have to do in my Computer Science classes might be too difficult (b)					
	I feel nervous in my Computer Science classes (d)					

	I get scared that I might say something wrong in my Computer Science class, so I'd rather not say anything (d)					
	When I don't understand something important in my Computer Science class, my heart races (d)					
Enjoyment	I am motivated to go to my Computer Science class because it's exciting (b)					
	I enjoy being in my Computer Science class (d)					
	I feel excited about being in my Computer Science class listening to the teacher (d)					
	I'm glad that it paid off to go to my Computer Science class (a)					
Pride	I take pride in being able to keep up with the material in my Computer Science class (d)					
	I am proud of the contributions I have made in my Computer Science class (d)					
	I think that I can be proud of what I know about Computer Science (a)					
	Because I take pride in my accomplishments in Computer Science, I am motivated to continue (a)					
Test version Relief	When I finish my Computer Science test, I finally can breathe easy again (a)					
	After a Computer Science test, I feel very relieved (a)					
	After my Computer Science test I feel like a weight has been lifted from my shoulders (a)					
	After a Computer Science test, I feel freed (a)					
Hopelessness	Before a Computer Science test, I feel sad/upset because I feel I don't have much hope for the test (b)					
	During a Computer Science test, I feel like giving up (d)					

	During my Computer Science test, I feel so resigned that I have no energy (d)					
	During my Computer Science test, I have given up believing that I can answer the questions correctly (d)					
Anger	After my Computer Science test, I get angry about the teacher's grading standards (a)					
	After a Computer Science test, I am fairly annoyed (a)					
	After my Computer Science test, I wish I could tell the teacher off (a)					
	After a Computer Science test, I feel very angry (a)					
Anxiety	Before my Computer Science test, I feel so anxious that I'd rather be anywhere else (b)					
	I am very nervous during a Computer Science test (d)					
	I get so nervous I can't wait for the test to be over (d)					
	I feel panicky when writing a Computer Science test (d)					
	Before a Computer Science test, I look forward to showing my knowledge (b)					
Enjoyment	I enjoy taking Computer Science tests (d)					
	I am happy that I can cope with my Computer Science tests (d)					
	For me a Computer Science test is a challenge that is enjoyable (d)					
Pride	During Computer Science tests, I feel proud of my knowledge (d)					
	After my Computer Science tests, I feel ten feet taller because I'm so proud (a)					
	After my Computer Science tests, I am very satisfied with myself (a)					
	After my Computer Science tests, I am proud of myself (a)					
Boredom	I feel like leaving because my Computer Science test is so boring (d)					
	I get bored during Computer Science test (d)					

Appendix A

	Computer Science test bore me (d)					
	I find my Computer Science test fairly dull (d)					

Notes: b/d/a stand for before/during/after the situation of attending class or taking tests respectively.

**** SA = Strongly Agreed; A = Agreed; N = Neutral; SD = Strongly Disagreed**

Appendix B

MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE (MSLQ)

**DEPARTMENT OF COMPUTER SCIENCE,
BRUNEL UNIVERSITY LONDON, UNITED KINGDOM.**

AND

**DEPARTMENT OF COMPUTER SCIENCE
FEDERAL COLLEGE OF EDUCATION (SPECIAL) OYO,
OYO STATE, NIGERIA.**

DEAR RESPONDENT,

This questionnaire was designed purposefully to find out the Impact of Emotions on Learning on Students of Computer Science department at Federal College of Education (Special), Oyo, Oyo-State, Nigeria.

Please kindly respond to the following questions correctly. All information supplied will be treated strictly with confidential and anonymity. You are implored to ensure sincerity and objectivity in answering the question items.

The question items comprise of two sections. The first section is all about your personal data, while the second is for the purpose of the research work. However, your co-operation will be highly appreciated.

SECTION A

Please fill the space provided and tick the right option.

Gender: Male () Female ()

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Marital status: Single () Married ()

Age: 16 – 18 () 19 – 21 () 22-24 () 25 – 27 ()

Disability: Yes () No ()

Nature of Disability: Hearing Impairment () Visual Impairment ()
Physical Impairment ()

SECTION B

This section contains question items which you are expected to answer by ticking in front of the items:

Learning Strategies	Items	SA	A	N	SD	D
Intrinsic goal orientation	In a class like this, I prefer course material that really challenges me, so I can learn new things.					
	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.					
	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.					
	When I have the opportunity in this class, I choose course assignments that I can learn from					

Appendix B

	even if they don't guarantee a good grade.					
	Getting a good grade in this class is the most satisfying thing for me right now.					
	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.					
	If I can, I want to get better grades in this class than most of the other students.					
Self-Efficacy	I believe I will receive an excellent grade in this class.					
	I'm certain I can understand the most difficult material presented in the readings for this course.					
	I'm confident I can understand the basic concepts taught in this course.					
	I'm confident I can understand the most complex material presented by the instructor in this course					

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	I'm confident I can do an excellent job on the assignments and tests in this course.					
	I expect to do well in this class.					
	I'm certain I can master the skills being taught in this class					
	Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.					
Test Anxiety	When I take a test, I think about how poorly I am doing compared with other students					
	When I take a test, I think about items on other parts of the test I can't answer.					
	When I take tests, I think of the consequences of failing					
	I have an uneasy, upset feeling when I take an exam.					
	I feel my heart beating fast when I take an exam.					
Cognitive strategies	When I study for this class, I practice saying the material to myself over and over.					
	When studying for this class, I read my class notes and the					

Appendix B

	course readings over and over again.					
	I memorize key words to remind me of important concepts in this class.					
	I make lists of important terms for this course and memorize the lists.					
	I try to relate ideas in this subject to those in other courses whenever possible					
	When reading for this class, I try to relate the material to what I already know.					
	When I study for this course, I write brief summaries of the main ideas from the readings and the concepts from the lectures.					
	I try to understand the material in this class by making connections between the readings and the concepts from the lectures.					
	I try to apply ideas from course readings in other class activities such as lecture and discussion					

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Self-Regulation	When reading for this course, I make up questions to help focus my reading.					
	When I become confused about something I'm reading for this class, I go back and try to figure it out					
	If course materials are difficult to understand, I change the way I read the material.					
	Before I study new course material thoroughly, I often skim it to see how it is organized.					
	I ask myself questions to make sure I understand the material I have been studying in this class					
	I try to change the way I study in order to fit the course requirements and instructor's teaching style.					
	I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying					
	When I study for this class, I set goals for myself in order to direct					

Appendix B

	my activities in each study period.					
Self-Determination	I often determined when I study for this class that I continue even when I am tired					
	I work hard to do well in this class even if I don't like what we are doing					
	When course work is difficult, I give up or only study the easy parts.					
	Even when course materials are dull and uninteresting, I manage to keep working until I finish.					
Academic-Regulation	If I study in appropriate ways, then I will be able to learn the material in this course.					
	It is my own fault if I don't learn the material in this course.					
	If I try hard enough, then I will understand the course material.					
	If I don't understand the course material, it is because I didn't try hard enough.					

** SA = Strongly Agreed; A = Agreed; N = Neutral; SD = Strongly Disagreed

