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EFFECT OF TECHNOLOGY AND MUSICAL SOUND ON CONCENTRATION IN INDIVIDUALIZED LEARNING: A STUDY OF COVENANT UNIVERSITY STUDENTS

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Abstract:

This study assessed technological advancement and identified the effect of musical sound on concentration in individual learning in the library among Covenant University students. This was with a view to providing valuable data for Government, University management and policy makers, instructors and teachers of the use of library and compartment and parents to guide in developing Educational programs, in order to arrest the current problem of educational decadence. The Descriptive survey method was adopted for the study. The simple random and purposive sampling techniques were used in choosing the study population. Three hundred and sixty copies of questionnaire were administered to respondents. Also data were collected through the focus group discussion, oral interview, experiment on comprehension test and existing comparative literature. It was revealed that majority of students who come to the library wearing mini earpieces actually listen to music. Also findings from the study showed that it is extremely difficult to listen to music and concentrate on a learning material simultaneously. Finally, the study revealed that the result of listening to music and learning at same time is a loss of concentration on one of the activities and poor academic performance. Therefore, the study recommends among others that students should learn to engage in one activity per time, in order to maximize the time and effort they put into individual learning which is part of the reason for which they are in school and that government, University management and policy makers should promulgate a law against the use of earpieces in the library and other learning environments while instructors, teachers, librarians and Para-librarians ensure the effective implementation of same thereby, creating veritable learning environments for the world's future leaders and great minds.

Keywords: Concentration, Comprehension, Learning, Library, Musical Sound, Technology

Introduction:

1. Background

The university is a citadel of Higher education where continuous knowledge creation and transfer are predominant. Students and scholars engage in rigorous learning to become crème de la crème in their chosen fields of study. Thus knowledge is the most common commodity in the environment and the library is the pivot on which all learning activities revolve. Learning according to the Chambers Dictionary (1998), means to be informed, a process of gaining knowledge or getting to know. Argyris, (2011) says learning is "detection and correction of error" where an error means "any mismatch between our intentions and what actually happens."

Wikipedia(2011) defines learning as the acquisition and development of memories and behaviors, including skills, knowledge, understanding, values and wisdom. Klein (2002) sees learning as an experiential process resulting in a relatively permanent change in behaviour that cannot be explained by temporary states, maturation, or innate response tendencies.

There are different levels at which learning can occur. The degree of assimilation or understanding in a learning process is a function of the level at which the learning encounter took place. However, the level is determined by the purpose for learning the subject. The levels of learning are categorized into two, passive and active levels of learning. For consideration in this study is the active level of learning. The purpose of learning is enhanced academic performance and the Library provides a most conducive learning platform.

Learning in the library, is tantamount to serious engagement with learning objects in a serene environment, especially the individualized learning. It is believed that serenity in the place of learning enhances concentration which invariably enhances assimilation. In order to concentrate, the learner must avoid any form of distraction whether it is internal (due to thinking), or external (due to sensory input) for example sound. Consequently, the ideal library is characterized by quiet, clean, beautiful and well organized environment. Staiger, (2004) asserts that the university library is a place to enjoy study bliss due to the fact that it is "quiet, open, with wonderful decor, with rows and rows of desks and outlets" in essence, no deliberate sound (noise) is expected in the library. Nevertheless, the 21st century library is beginning to have sound creep into it.

Sound (noise) of any kind is an anathema in the library. Sound is defined as vibrations that travel through the air, water, or some other mediums, especially those within the range of frequencies that can be perceived by the human ear (Microsoft Encarta, 2007). Sekuler and Blake, (2002) see sound as a perceptual experience, depending on the perceiver. Sound differ

in loudness (texture), ranging from the soft rustle of the leaves on a tree to the piecing wail of a scream and in complexity.

Sounds possess emotional overtones for example, a screeching sound such as fingernail scraped across a chalkboard, can elicit a strong and immediate revulsion in almost any listener, while the soothing sound of flowing water is a form of tranquilizer (Sekuler & Blake, 2002). Thus sound will be considered in this study, as the musical sound. Microsoft Encarta, (2009) defines music as sounds, usually produced by instruments or voices, which are arranged or played in order to create desired effect. They are pleasing sounds that creates a desired effect. Music has been said to have a variety of effect on its hearers and music in this context is basically transmitted through the use of some technology. Wikipedia (2011) defines technology as the making, usage, and knowledge of tools, machines techniques, crafts, systems or methods of organization in order to solve a problem or perform a specific function. To this extent, musical technology can be referred to as the making, usage, and knowledge of tools, machines techniques, crafts, systems or methods of organization in order to solve a musical problem or perform some specific music functions (recording, production, playing etc). Musical technology is one aspect of Information Communication Technology that has experienced rapid evolution over the years. Random History, (2012) quoting the Routledge Guide to music technology traced the evolution of music players, from Phonograph to Gramophone to Cylinder Phonography to Record Player, to Hand-cranked Gramophone to 78 RPM Disc to 33-1/3 RPM Long Playing (LP) to Audio Cassette tape Player to Walkman Portable Audio Cassette Player (Soundabout) to Compact Disc Personal Audio Player to MP3 and presently iPods.

1.1 A Brief History of Covenant University

Covenant University is a private Christian institution in canaanland, Ota in Ogun state of Nigeria. It was founded on the 22nd day of October 2002, by the Winners' Chapel (Living Faith Church Worldwide) and the chancellor, Dr. David Oyedepo is the founding bishop of the Winners Chapel. The University is rapidly growing into an educational oak. Covenant University has two colleges, housing over 20 departments. The colleges are the College of Development Studies and College of Science and Technology Covenant University is a dynamic vision-birther, vision-driven University, founded on a Christian mission ethos and committed to pioneering excellence at the cutting edge of learning. The University is driven by the compelling vision of raising a new generation of leaders for the African continent on the platform of a holistic, human development and integrated learning curriculum in other to

raise men who will go out to develop their world. Covenant University's core-values of Spirituality, Positive mentality, Capacity Building, Integrity, Responsibility, Diligence and Sacrifice are what define its commitment to excellence. The University is staffed with a crop of faculty that is not only dedicated but distinguished erudite scholars.

1.2 Statement of the Problem

From history, the Library has been known to be a serene and organized place void of distraction and conducive for individualized learning. However, technological advancement has made it possible for some infiltration and distraction to creep into the library. Before the advent of mini technological gadgets (iPods, iTouch, Mp3/4, Zoom etc) and the use of mini earpieces, a student will not come to the library to study while listening to music on a handy tape or CD/DVD player but now they can come to library with their earpieces on and music playing while studying. This is highly prevalent among some students of Covenant University and seems to be trend in institutions of higher learning. The issue is that effective learning which is supposed to take place in library requires undivided attention. Attention is a single thing, like a spotlight, that cannot be divided. It can only be flipped back and forth between multiple things quickly, giving the illusion of multitasking, approach and our brains are not like computers with multiple processors that can process different data simultaneously, regardless of our learning style. Thus the researcher wonders how it is possible for students of this age to listen to music and do quality academic learning simultaneously. If it is not possible, the implication will be a decline in academic performance. Could this be one of the reasons for the generally acclaimed fallen standard of education and the attendant problem of having many half baked graduates of our time? Is technological advancement which is supposed to be a blessing, now a problem? Is it not possible that many of our students are being distracted by some of these new technological developments? It is against this backdrop that the study examined the effect of musical sound on students' concentration while learning.

1.3 Objectives of the study

The specific objectives of this study are to:

1. Investigate the effect of music on student's concentration and attention while engaging in individualized learning in the library.
2. Examine the extent of comprehension that takes place while music and learning are done "simultaneously".

3. Determine the stage of the student's academic life at which they imbibed this culture of listening to music while learning.
4. Determine the effect of music on their academic performance.

1.4 Research Questions

1. How is it possible to learn effectively with attention divided between music and the learning object?
2. To what extent do students comprehend information from learning materials while music is on?
3. From what stage of their academic life did they imbibe this culture?
4. What is the effect of music on their academic performance?

1.5 Relevance of the Study

Findings from a study such as this will help students to set their priorities right when they want to engage in individual learning.

The result of this study will be relevant to instructors and teachers on the use of library, study skills and compartment in the Library.

University management and policy makers will benefit from the result of this study as it will help them in making appropriate policies that concerns the library.

Lastly parents will find the result of this study beneficial because it will help them in making necessary provision for their children and wards.

1.6 Hypotheses

1. Respondents/participants exposed to no music will not concentrate better than those exposed to music in individual learning thereby, performing better.
2. Respondents/participants exposed to no music will not concentrate better than those exposed to their favorite music in individual learning thereby, performing better.
3. There will be no significant difference between the concentration of Respondents/participants exposed to no music and those exposed to their favorite music.

2.1 Learning Styles

According to Etim and Nssien, (2007) learning can be gratifying however, studying (process of learning) usually involves hard work. Criag, (2011) affirms this when he said activity makes studying more fun and more efficient. He noted further, that effective learning

skills involves metacognition which is born out of active reading, requiring an “active memory” that gives you quick, reliable access to essential thinking tools. A good memory is not sufficient to make you an expert problem solver, you also need an effective blending of creativity with logic, thus to improve your memory, there is need to take advantage of original awareness with intention to remember, organize and review what is being learnt. He went further to posit that, if you want to remember something, it must be stored in your memory.

The level of learning achieved by a learner is determined by the success of the learning encounter. In literature, there exist various learning styles and models. A learning style is a way of learning. Your preferred learning style is the way in which you learn best. Three learning styles that are often identified in students are the auditory learning style, the visual learning style, and the tactile/kinesthetic learning style. Auditory learners learn best when information is presented in an auditory language format. Visual learners learn best when information is presented in a written language format or in another visual format such as pictures or diagrams. Tactile/kinesthetic learners learn best in hands-on learning settings in which they can physically manipulate something in order to learn about it (LearningRx, 2012).

According to Yilmaz-soylu and Akkoyunlu (2004) learning is achieved at different dimensions. Shuel (1986) in Yilmaz-soylu and Akkoyunlu (2004) postulates that “different ways used by individuals to process and organize information or to respond to environmental stimuli refer to their learning style” while Jesen (1998) defines learning style as a way of thinking, comprehending and processing information. To Kolb (1984) learning style is a method of personal choice to perceive and process information. In essence, irrespective of a person’s learning style, if priorities are not rightly placed and intention clearly defined for learning the subject, comprehension will be limited. This is evident in the various theories propounded by scholars in this field. The Limited Capacity Theory states that Human beings are able to process limited information in each channel simultaneously (Baddeley, 1992; Chandler & Sweller, 1991). Two tasks that use the same code interfere strongly with one another because they call upon the same representational and processing resources, (Thomas, 2012). The Active Processing Theory says that Human beings are active learners who perceive external information, and select relevant data and organize them into meaningful information, and then integrate this information with their prior knowledge (Mayer & Wittrock, 1996).

Even Mayer (2001), in Yilmaz-soylu & Akkoyunlu (2004) whose theory on the design of effective multimedia learning environments is based on Dual Coding, Limited Capacity and Active Processing theories, define individuals who enter into a process of learning as active

learners who use two channels to process visual and auditory information, as being only able to process limited information in each channel simultaneously. Mayer distinguishes between auditory/verbal and visual/pictorial channels used by learners to process information.

He opines that, in a presentation, verbal or nonverbal auditory elements for example, narration (uttered words), background music, etc. are processed in the auditory/verbal channel and verbal or nonverbal visual elements (for instance, animation, written text, etc.) are processed in the visual/pictorial channel; and that these channels process limited amount of data in one go.

2.2 Concentration, Attention and Learning

Concentration is thinking. It requires active involvement in the task at hand whether it is reading a textbook, listening to lecture or writing a paper. According to the Random House Dictionary, concentration is “exclusive attention to one object” and to concentrate is “to bring all efforts, faculties, etc., to bear on one thing or activity.” Good concentration is an extremely valuable thinking tool. Concentration is a “master skill” that affects everything we do. If we have good concentration, we will learn more during study and perform better in examination (Craig, 2011). Good concentration is not gotten by “trying to concentrate”, but by focusing on what you are doing, as you search for insight and use problem solving tools effectively and study actively with the goal of increasing our knowledge and or skill. Marshall & Rowland, (1998) assert that full concentration involves actively questioning and critically evaluating your material and integrating some of it into what you already know. They stressed that this act will help the reader understand what is being read and organize what to write and share with others.

The human mind responds to sensory input (sight, sound,...) and also constantly generates its own ideas. When these mental activities interfere with what you are trying to think about, it causes external distraction (due to sensory input) or internal distraction (due to your thinking), respectively. By using metacognition (being aware of your thinking, and thinking about it) you can more accurately understand why you're being distracted, and how you can maximize your concentration where you want to focus (Craig, 2011).

Similarly, attention, is a single thing, like a spotlight, that cannot be divided. It can be flipped back and forth between multiple things quickly, giving the illusion of multitasking; however, our brains are not like computers with multiple processors (Jwoshbor, 2011). We simply cannot process multiple things simultaneously. So how do we do things like learning

to march while playing a musical instrument? Some theories propounded by erudite scholars, explain further the issue of attention and concentration.

2.3 Concentration Theories:

2.3.1 Theory of Selective Attention

Broadbent (1958) cited in Phill-Ayo (2008) proposed the first version of filter theory. According to him, individuals filter information as soon as it is registered at the sensory level, thus when sensory information from multiple channels come in, they reach an attention filter where only one channel is allowed to proceed through the filter to perceptual processes. Consequently, only the selected input will be fully analyzed for meaning and made available to consciousness automatically, every other channel is completely blocked or filtered from meaningful processing and consciousness.

2.3.2 Attenuation Theory

Treisman, (1964) cited in Hunt & Ellis, (2004) purported that attention works in an all-or-none fashion. He opined that attention operates like an attenuator and that different attenuator controls each input channel thereby making it possible for varied amount of information to come in through multiple channels. Therefore, the attenuator model, allows for a processing of more than one input at a time. For this model, attention becomes a matter of the effectiveness of the attenuator, which determines the accuracy of signals received, the processing and the eventual result of the processes.

2.3.3 Capacity Theory of Attention

According to Kahneman, (1973) cited in Hunt & Ellis, (2004) this theory sees attention from the viewpoint of the fact that our ability to deal with multiple inputs is limited, due to the finite nature of psychological resources. In essence, we have a certain amount of cognitive capacity to devote to the various tasks we are confronted with. This means that even though there are inputs from different channels, we must choose which to concentrate on because our capacity to concentrate on more than one stimulus at same time is limited.

2.3.4 Habituation Theory

This theory according to Young A.M. & Goudie A.J. (2000) states that as we become familiar with a stimulus, we gradually pay less attention to it. This process of getting used to a particular stimulus is known as habituation. The opposite is dis-habituation, this occurs when there is a change of stimulus. The individual in this case is prompted to begin to notice the new stimulus until he gets used to it. Thus a student, who is studying and listening to his/her favorite music, is not actually paying attention to the music.

From the theories considered above, it is obvious that attention cannot be divided between two tasks simultaneously. Craig, (2011) rightly opined that performance diminishes when attention is divided between two or more activities and can be quite dangerous, while Krusche, (2000) concluded that attention is a widespread phenomenon and should not be ignored by those who wish to model natural learning.

2.3 Review of some related studies

Igbinoba, (1980) carried out a study on the effect of three physical environmental conditions (quiet, music and noise) on academic performance among college students. He found out that students under quiet and music conditions did well while those under noise condition did not perform as well as their counterpart. The result confirmed that music does not hinder the concentration of individuals. However, the study carried out by King, (1946) in Phil-Ayo, (2008) on effect of music on intelligence quotient revealed that a particular kind of music (somber) had an adverse effect on participants' concentration while the rhythmic music group did better. This suggested that different type of music has different effect on concentration. Also, Salame & Baddeley, (1989) found out in their study on the effect of noise, particularly music, on short term memory that participants who were exposed to instrumental music recalled better than those exposed to vocal music. They concluded that the wordings of the music distracted the participants.

Turker & Busham, (1991) hypothesized that rock and roll music would have adverse effect on mathematical, verbal and reading comprehension. They found out that rock and roll music worsened mathematical and verbal abilities but had no effect on reading comprehension. Roy, (2001) studied the effects of different types of music on cognitive processes and discovered that music does have an effect on memory. The no-noise group performed better on the memory test, followed by the group that listened to mild music then the group that listened to classical music. Finally, Phill-Ayo, (2008) in his study on the Interactional and Differential Effects of sounds (noise and music) on Students' Concentration, found out that music void of noise can produce the same effect (good performance) as in a quiet environment.

4. Methodology

The study was conducted using the Descriptive survey method. The instruments for collecting data for the study include questionnaire, interview, focus group discussion and experiment on comprehension test under the following conditions.

Quiet without Music condition

Condition with respondents/participants favorite music at the background

Condition with researcher's chosen music at the background

The random and purposive sampling techniques were used in choosing the study population. The respondents for the questionnaire were randomly chosen while participants for the experiment, the focus group discussion and interview were purposely chosen from the Arts/Social Sciences and the Pure/ Applied Sciences in order to accommodate students from the six schools of the university. 360 respondents were chosen for the questionnaire, 30 from the six schools for the experiment, each school represented by 5 students. 18 participants chosen for the focus group discussion while another set of 18, 3 from each school were chosen for the interview.

Nature of Test

4.1 Participants were made to read a comprehension passage in 10 minutes, answer a 10 item quiz from the passage in 5 minutes and scored over 10 (100%). The test material was adapted from a study by Phil-Ayo (2008).

4.2 Procedure for Experiment

Before the commencement of the experiment, participants who participated under the music condition were tested for their hearing level in order to adequately control for hearing impairments as this can have an adverse effect on the result of the study.

Participants were divided into two major groups (15 each) for each of the tests. At each point in time, one group of 15 (control group) took the tests under the quiet no music condition while another group comprising 15 took the tests under the researcher's choice of music and favorite music conditions respectively.

5. Presentation of Data

5.1 Table 1: Respondent's Preferred Environment for individual learning

| S/N | Statements | SA | A | U | D | SD |
|-----|--|---------------|---------------|-------------|----------------|----------------|
| 1 | I prefer a study environment that is quiet with no music or sound of voices. | 205 (57%) | 96 (26.6%) | 3 (0.8%) | 49 (13.6%) | 7 (2%) |
| 2 | I enjoy reading in an environment where there is any kind of music. | 67 (18.6%) | 42 (11.6%) | 5 (1.3%) | 152 (42.2%) | 92 (25.5%) |
| 3 | When I am studying, I'm ignorant of my environment and never get startled by music or any sound. | 54 (15%) | 23 (6.3%) | 1 (0.2%) | 70 (19.4%) | 212 (58.8%) |

| | | | | | | |
|----|--|----------------|---------------|---------------|----------------|----------------|
| 4 | I like to study in an environment where there are some distractions. | 36 (10%) | 11 (3%) | 0 | 99 (27.5%) | 214 (59.4%) |
| 5* | I prefer an environment with only instrumental music at the background. | 74 (20.5%) | 39 (10.8%) | 1 (0.2%) | 149 (41.3%) | 98 (27.2%) |
| 6 | I prefer an environment with country music at the background for studying. | 8 (2.2%) | 4 (1.1%) | 0 | 49 (13.6%) | 299 (83%) |
| 7 | I prefer an environment with classical music for studying. | 37 (10.2%) | 15 (4.1%) | 0 | 205 (56.9%) | 103 (28.6%) |
| 8 | I prefer an environment with gospel music for studying. | 87 (24.1%) | 54 (15%) | 3 (0.8%) | 47 (13%) | 196 (54.4%) |
| 9 | I prefer an environment with rock and roll music for studying.. | 12 (3.3%) | 7 (1.9%) | 0 | 210 (58.3%) | 131 (36.3%) |
| 10 | I prefer an environment with hip hop music for studying. | 46 (12.7%) | 34 (9.4%) | 4 (1.1%) | 50 (13.8%) | 226 (62.7%) |
| 11 | I prefer an environment with opera music for studying | 7 (1.9%) | 3 (0.8%) | 0 | 117 (32.5%) | 233 (64.7%) |
| 12 | I prefer an environment with blues music for studying. | 11 (3%) | 7 (2%) | 2 (0.5%) | 153 (42.5%) | 187 (51.9%) |
| 13 | I prefer an environment with Folk music for studying. | 6 (1.6%) | 2 (0.5%) | 0 | 48 (13.3%) | 304 (84.4%) |
| 14 | I prefer an environment with chamber music for studying. | 1 (0.2%) | 3 (0.8%) | 80 (22.2%) | 34 (9.4%) | 242 (67.2%) |
| 15 | I take a break when ever I feel like during my individual learning. | 267 (74.1%) | 52 (14.4%) | 0 | 23 (6.3%) | 18 (5%) |
| 16 | I started studying with music since my secondary school days. | 7 (1.9%) | 21 (5.8%) | 0 | 104 (28.8%) | 222 (61.6%) |
| 17 | I started studying with music since I became a University undergraduate. | 44 (12.2%) | 85 (23.6%) | 8 (2.2%) | 97 (27%) | 126 (35%) |

From table 1, 301(83.6%) of total respondents prefer a study environment that is quiet with no music or sound of voices while 56 (15.6%) of the respondents do not. Also, 244 (67.7%) of the respondents disagreed to enjoying study in an environment where there is any kind of music while 109 (30.2%) agreed and 5(1.3%) were not sure of the environment that will be best for them when studying. More so, 282 (78.3%) respondents affirmed that when studying they cannot be ignorant of their environment to the extent of not being startled by

music or any sound and 77 (21.4%) of respondents agreed to the contrary. Majority of the respondents, 313(86.9%) do not like to study in an environment where there are some distractions while 47(13%) respondents like it.

In response to statements aimed at eliciting information about the kind of music respondents would prefer to be played at the background while they study, 247 (68.6%) respondents disagreed to having Instrumentals and 113 (31.3%) agreed. 348 (96.6%) respondents disagreed to Country music while 12 agreed. 308 (85.5%) disagreed to Classical music while 52 (14.4%) agreed. Also 243 (67.5%) disagreed to Gospel music while 141 (39.1%) agreed, 341 (94.7%) disagreed to Rock and Roll music while 19 (5.2%) agreed, and 276 (76.6%) disagreed to hip hop music while 80 (22.2%) agreed. Furthermore, 350 respondents disagreed Opera music while 10 (2.7%) agreed, 340 (94.4%) disagreed to Blues music while 20 (5.5%) agreed, 352 (97.7%) disagreed to Folk music while 8 (2.2%) agreed, 276 (76.6%) disagreed to Chamber music while 80 were not certain and 4 agreed, 326 (90.5%) did not start listening to music while studying in their secondary school rather only 28 (7.7%) of the respondents started it in their secondary schools.129 (35.8%) respondents agreed that they started listening to music while studying in the university and 223 (61.9%) disagreed.

5.2 Table 2: Respondent's Reaction to Music in the Learning Environment

| S/N | Statements | SA | A | U | D | SD |
|-----|---|---------------|---------------|---------------|----------------|----------------|
| 1 | I do not enjoy studying with music, not even my favorite music | 82 (22.7%) | 215 (68%) | 0 | 45 (4.1%) | 18 (5%) |
| 2 | I can concentrate when I'm studying with my favorite music being played loudly. | 4 (1.1%) | 18 (5%) | 3 (0.8%) | 212 (58.8%) | 103 (28.6%) |
| 3 | I can concentrate when I'm studying with my favorite music being played softly at the background. | 93 (25.8%) | 54 (15%) | 24 (6.6%) | 102 (28.3%) | 87 (24.1%) |
| 4 | I can concentrate when I'm studying with any kind of music being played loudly. | 0 | 2 (0.5%) | 0 | 96 (26.6%) | 262 (72.7%) |
| 5 | I can concentrate when I'm studying with any kind of music being played softly at the background. | 51 (14.1%) | 81 (22.5%) | 5 (1.5%) | 98 (26.6%) | 125 (34.7%) |
| 6 | When I am studying and the music is on, I have the ability to concentrate on both simultaneously. | 31 (8.6%) | 35 (9.7%) | 68 (18.8%) | 109 (30.2%) | 117 (34.5%) |

| | | | | | | |
|----|---|---------------|---------------|---------------|----------------|----------------|
| 7 | When I am studying and the music is on, I only concentrate on one per time and ignore the other | 180 (50%) | 89 (24.7%) | 29 (8.0%) | 37 (10.2%) | 25 (6.9%) |
| 8 | I find it hard to regain concentration when I'm startled by music they do not like. | 23 (6.3%) | 94 (26.1%) | 95 (26.3%) | 93 (25.8%) | 55 (15.2%) |
| 9 | I find it easy to get used to any kind of music or sound when I'm studying. | 23 (6.3%) | 21 (5.8%) | 9 (2.5%) | 53 (14.7%) | 254 (70.5%) |
| 10 | Music helps me to comprehend better when I'm studying than when there is no music. | 73 (20.2%) | 51 (14.1%) | 8 (2.2%) | 170 (47.2%) | 58 (16.1%) |
| 11 | I find it easier to remember what I studied when music was plying than when there was no music. | 67 (18.6%) | 52 (14.4%) | 12 (3.3%) | 95 (26.3%) | 134 (37.2%) |

Table 2 revealed that 297 (77.5%) respondents disagreed to learning with any kind of music not even their favorite while 63 (17.55) agreed. 315 (87.5%) cannot learn effectively with their favorite music being played loudly while 22 (6.1%) respondents can. 147 (40.8%) respondents can study their favorite music being played softly at the background while 189 (52.5%) respondents cannot. Almost all respondents, 358 (99.4%) cannot concentrate with just any kind of music being played loudly. 223 (61.9%) respondents cannot concentrate with any kind of music other than their favorite being played softly at the background while 132 (36.6%) claimed they can. 226 (62.7%) respondents cannot study and listen to music simultaneously while 66 (18.3%) respondents can and 68 (18.8%) were uncertain on the issue. Also, 269 (74.7%) respondents will rather ignore one of the activities in other to concentrate on one while 62 (17.2%) claimed that they are able to concentrate on both. 148 (41.1%) respondents find it easy to regain concentration when startled by music they do not like in the course of studying while 117 (32.5%) respondents it hard to do and 95 (26.3%) respondents were not certain. 307 (85.2%) respondents find it difficult to get used to any strange music when studying while 44 (12.2%) find it easy. 228 (63.3%) of the respondents claimed that music hinders them from comprehending the subject while it helps 124 (34.4%) respondents to comprehend better. Finally 229 (63.6%) respondents of the total respondents find it difficult to remember what they studied while music was on and 119 (33%) finds it easy to do.

5.3 Result of Experiment

5.3.1 Table 3: Test of Participants Concentration while Learning in an Environment where Music is being Played

| Groups | Score (60%&above) | Score (50%&below) | Total |
|--------------------------|-------------------|-------------------|-----------|
| No Music (Control group) | 14 (93.3%) | 1 (6.6%) | 15 (100%) |
| Experiment (Music group) | 6 (40%) | 9 (60%) | 15 (100%) |
| Grand Total | 20 (66.6%) | 10 (33.3%) | 30 (100) |

Findings from table 3 above showed that a higher number of participant in the control group (no music) 14 (93.3%) scored 60% and above while more participants in experiment group 9 (60%) scored less than 50%.

5.3.2 Table 4: Test of participants Concentration while learning in an environment where their favorite music is being played

| Groups | Score (60%&above) | Score (50%&below) | Total |
|-----------------------------------|-------------------|-------------------|--------------|
| No Music (Control group) | 15 (100%) | 0 | 15 (100%) |
| Favorite Music (Experiment group) | 11 (73.3%) | 4 (26.6%) | 15 (100%) |
| Grand total | 26 (86.6%) | 4 (13.3%) | Table 4 100% |

Table 4 revealed that all participants in the control (no music) group 15 (100%) scored 60% and above nevertheless more participants in experiment group who listened to their favorite music 11 (73.3%) scored 60% and above.

5.3.3 Hypothesis 1

Respondents/participants exposed to no music will not concentrate better than those exposed to music in individual learning thereby, performing better.

| | N | df | Mean | SD | t-cal | sig |
|--------------|----|----|---------|---------|-------|-------|
| Experimental | 15 | 28 | 57.4000 | 5.43533 | 1.456 | 0.021 |
| Control | 15 | | 61.4667 | 2.55976 | | |

The results summarized in table 1 suggest a significant difference in performance of participants exposed to no music and those exposed to music during learning with former performing better than latter at t-observed= 1.456, 28 degree of freedom and $p < 0.05$.

5.5 Hypothesis 2

Respondents/participants exposed to no music will not concentrate better than those exposed to their favorite music in individual learning thereby, performing better.

| | N | df | Mean | SD | t-cal | Sig |
|--------------|----|----|---------|---------|-------|-------|
| Experimental | 15 | 28 | 60.3333 | 4.35343 | 2.622 | 0.002 |
| Control | 15 | | 62.1333 | 1.99523 | | |

The results summarized in table 2 suggest a significant difference in performance of participants exposed to no music and those exposed to their favorite music during learning with former performing better than latter at t-observed= 2.622, 28 degree of freedom and $p < 0.05$.

5.6 Hypothesis 3

There will be no significant difference in the concentration of respondents/participants exposed to no music and those exposed to their favorite music.

| | N | df | Mean | SD | t-cal | sig |
|--|----|----|---------|---------|-------|-------|
| Participants exposed to their favorite music | 15 | 28 | 60.3333 | 4.35343 | 2.622 | 0.002 |
| Participants exposed to no music | 15 | | 62.1333 | 1.99523 | | |

The results summarized in table 3 revealed a significant difference in concentration of participants exposed to no music and those exposed to their favorite music at t-observed= 2.622, 28 degree of freedom and $p < 0.05$.

6. Discussion of findings

Findings from this study revealed that majority of students prefer to study in a quiet environment void of music or sound of voices. They affirmed that they do not enjoy studying in an environment where any kind of music is being played, not even their favorite whether loudly or softly played. Nevertheless, some of them do not mind studying in such environment. Also a large percentage of the students said they cannot be ignorant of their

environment while studying, to the extent of not being startled by music or any sound. This is corroborated by Craig (2011), when he said the human mind responds to sensory input (sight, sound, etc), which results in external or internal distraction. According to him, active learning requires undivided attention. More so, from findings of the study, majority of the students asserted that they cannot listen to music and study simultaneously but would rather ignore one and give attention to the other. In essence, if they choose to listen to music their academic or assignment for that period will suffer due to lose of concentration. This is highly supported by Broadbent's theory of selective attention and Kahneman's capacity theory of attention.

In addition, considering the fact that greater number of the students finds it difficult to regain concentration when startled in the course of studying; they should be encouraged to do one thing at a time study per time and listen to music at another time. It is easy to select what to focus attention on when the thought flow is one direction but extremely burdensome when it is divergent. Furthermore, majority finds it difficult to get used to strange music while studying. Although the habituation theory, states that as we become familiar with a stimulus (musical sound), we gradually pay less attention to it. This according to the theory will happen in the process of time, the question is, what will be the plight of the learner from the first time of hearing the sound till he or she gets used to the sound? He obviously will lack full concentration. Therefore it is not advisable to have any music in the study environment since it even hinders majority from comprehending their subject and when they do they find it difficult to recall same when they are supposed to.

For those who claimed that they can cope with having music at the background while learning, they claim they can do that if it is their favorite music. When asked during the interview and FGD sections the reason they choose to listen to music while learning, majority said it helps them to overcome distraction (noise) in the environment. However, it is an irony to what obtains in the library context. Others said it helps them to focus on the learning object. Furthermore, some of them do not see anything wrong with the behaviour, affirming that are used to it while others said they can do with or without it. Gospel music happened to be the choice for majority, followed by Instrumentals, Hip-Hop and then classical music. Moreover, it was discovered from the study that most of them started imbibing this culture when they entered the university that is when they became independent.

7. Conclusion and Recommendations:

Some scholars and researchers from the review of previous study in this area of study claim that music helps the learner; they did not specify when the music is played and listened

to. However, Stanford University Medical Center (2007) aptly reported that music engages the areas of the brain involved with paying attention, making prediction and updating the in memory and that peak brain activity occurred during a short period of silence between musical movements – when seemingly nothing was happening (no noise). This clearly corroborates the result of this study which showed that active learning and listening to music cannot take place simultaneously. Also Jwoshbor (2011) rightly asserts that attention, is a single thing, like a spotlight, that cannot be divided. It can only be flipped back and forth between multiple things quickly, giving the illusion of multitasking, and that our brains are not like computers with multiple processors that can process different data simultaneously. The effect of listening to music while engaging in active study is poor comprehension and consequently poor performance as revealed by the study. The only slight difference is that when people are exposed to a familiar (favorite) music, they are likely to successfully ignore it, to some extent because to them it is not much of noise nevertheless, their performance will still be limited as shown by the study.

In the light of the foregoing therefore, irrespective of the reason for imbibing this habit, which is not tenable, the study recommends that government, University management and policy makers promulgate a law against the use of earpieces in the library and other learning environments while instructors, teachers, librarians and Para-librarians ensure the effective implementation of same thereby, creating veritable learning environments for the world's future leaders and great minds. Also students should learn to engage in one activity (learning) per time, in order to maximize the time and effort they put into individual learning which is part of the reason for which they are in school. More so, Instructors and teachers of the Use of Library, study skills and comporment should emphasize the advantages of not listening to music while studying to the students. Finally, Parents and guardians should be careful not to make unnecessary provision for their children and wards, in order not to push them into buying what will not be beneficial to them on the long run.

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