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Educational Psychology: Focus on Psychology of Learning and Learning Styles to Enhance Academic Performance of Learners

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Abstract

This paper highlighted the concept of educational psychology. It also explained implications of the knowledge of educational psychology in the teaching and learning process. Some of these implications among others include, knowing the personality of the learners, their potentials, abilities and weaknesses. It is meant to expose educators, teachers and educational administrators to be more skillful in the planning of curriculum, syllabuses, and stages of development of learners and how various new knowledge can be implemented. It explained how teachers should take cognizance of respective instructional materials to be used and when to use them. Furthermore, this paper elucidated the psychology of learning. The research literature embarked upon by various psychologists have been analysed and how each of them propounded their theories in the psychology of learning. Examples of psychologists such as Pavlov, Thorndike, and Skinner, their work on Classical Conditioning and Operant Conditioning were thoroughly highlighted. The paper particularly addressed how cognitive styles of individual learner can make impact on academic performance, most especially, their dispositions of perceiving, remembering, organizing, processing, thinking and problem-solving. Conclusion and recommendations such as the use of various methodologies and instructional materials in the teaching and learning processes were drawn so as to impact on academic performance.

Keywords: Psychology, Psychologists, Psychology of learning, Academic performance.

Introduction

Nigerian children in primary, secondary and tertiary institutions are performing poorly in their academic results. This perhaps is as a result of poor approach to teaching, lack of adequate instructional materials and teachers who do not have the knowledge of cognitive styles of the learners and the use of appropriate instructional materials for different learners. (Oyekan, 1984 and Oludipe, 2014) These are likely to doom the learners into poor performance and failure. Therefore, the knowledge of cognitive styles highlighted in this paper becomes very paramount. The cognitive styles is an individual's relatively permanent and characteristic predisposition of perceiving, remembering, organizing, processing, thinking, and problem-solving that will affect what the individual has learnt over a period. Worth noting among cognitive styles is convergers, divertgers, accommodator, concrete and assimilators.

Olubusayo (2019) noted that the poor performance experienced by most students is as a result of inadequate preparation as many of them have poor reading culture, involve in

exams malpractices, manipulation of results, parents attitude toward learning, and through misplace of priority prefer watching films and engaging in online chatting, instead of studying assiduously for improved academic performance. Although, Nigerian educators and policy makers have attempted to restructure public education with new curriculum framework, new content standards and changes in educational policies, few of these efforts focus on learner-centre approach to learning, as they emphasize more of programmes and services in terms of the performance of potential students rather than cognitive styles. Furthermore, it have been noticed that educational managers are progressively realizing the importance of learning and that understanding the way individuals learn is the key to improving the education system. Singh (2017) confirms this observation by saying that: the intellectual capacity of citizens affects the nation's progress and as such, identifying learners' talents and providing them with relevant opportunities will enhance their capacities as well as higher academic achievements. Thus, the understanding of the impact of educational psychology and psychology of learning become very paramount, as they significantly impact on the learners' academic performance in various dimensions.

Theoretical and Conceptual framework

Psychology is a science which studies human and animal behaviour. It studies different characteristics an organism can exhibit at a particular time or situation. It attempts to study the people in such areas as social, educational, physiological, genetically, environmental and industrial setting. Since psychology as a branch of knowledge is devoted to the study of humans, the relevance of psychology cannot be doubted, more importantly that the well trained teachers will need it to understand the behaviour of his or her students in relation to the learning process. Ability to understand various techniques of carrying out investigation in the field of psychology will equally assist the teacher in resolving emergent educational problems. (Schunik, 2012, Bhatti, 2013, Oludipe, 2014 and Eggen, 2019).

The psychology of learning is a theoretical science that covers the various psychological theories that relate with learning. Throughout history, there have been many various psychological learning theories. Some take on a more behaviourist approach, which focuses on inputs and reinforcements (Coon, 2012). There are other approaches such as theories related to neuroscience and social cognition, which focus more on the brain's organization and structure to define learning. The social constructivism focuses one's interaction with environment and with others.

There are some important psychologists whose findings and theories are important to the development of the psychology of learning. The contributions of these psychologists improve our knowledge of theoretical science. For instance, Hergenhalin (2009) and Barrouillet (2015) revealed that Socrates (469-399 B.C.) introduced a strategy of learning known as piloting, through which one arrives at a solution through power of reasoning. Socrates influenced this idea that knowledge is innate. Jean Piaget's theory is known as theory of cognitive development. The theory describes how children's developmental

model of the world in their own environment. This theory sees cognitive development as something happens because of biological maturation and one's interaction with their environment. Piaget's theory has four stages. The sensory motor stage which is birth to 18-24 months. The preoperational stage is toddler ages (18-24 months) to early childhood, age 7. The concrete operational stage, age 7-12. Then, the formal operational stage which is adolescence to adulthood. This knowledge of stage by stage development has helped to show that children significantly think differently from the way adults think or perceive things. Lev Vygotstkey developed or propounded social development theory, in cognitive development. He was developing this theory simultaneously with Jean Piaget, when he was also developing his own independently. Lev Vygostsky believed that culture and adults are contributing factors of learning of children and that learning occurs via skillful intention in which the child is with someone who models behaviours. (Hergenhalin, 2009, Barrouillet, 2015, Maier, and Seligman, 2016). Hermann Ebbinghaus (1850-1909) studied learning rote memory and forgetting, which many later theorists used to improve on the subsequent theories of learning. Edward Thorndike (1874-1949) in his own theory presented the "Law of effect" in 1898. According to Thorndike, humans and animals learn behaviours through trial-and error methods and once an effect solution is found, the action is likely to be repeated during the process of the former phenomenon, which may be similar or the same task. This, Thorndike, referred to it as operant conditioning, within behaviorism. That is learning from the consequences or results of attempts to obtain solution to a problem.

The theory of Ivan Pavlov Petrovich (1849-1936) who was a Russian physiologist, also contributed to research on psychology of learning. He performed series of experiments using dogs and food. He paired natural stimuli such as food with a stimulus, like metronome, to provoke the desired responses in dog. He therefore made the dogs to salivate by just the presentation of the sound of a bell. This method is known as classical conditioning while his approach is behaviouristic in nature. Burrhus F. Skinner (1904 – 1990) developed operant conditioning, in which specific action resulted from stimuli, which caused them to appear more or less frequently. Skinner believed that in order to understand behaviour, we need to look at the causes of an action and its consequences. The name he gave to this process is operant conditioning.

Instrumental conditioning theory of learning revealed that behaviour is an outcome of response that follows the action. The teacher should know that the environment or conditions in which the students learn are very significant, meaning that conducive learning environment has great impact on the learners. The relevance of reinforcement or motivation also has great impact on the learner. On the negative side, punishment should be administered in areas of need, to make students address the weak points and for necessary adjustment in academic performance (Coon, 2012 and Barrouillet, 2015).

The psychology of learning is a concept that engulf the various psychological theories that have direct relationship or bearing with learning. Psychology affects every facet of our lives. Human beings have different learning abilities and interact differently. We exhibit moods

of anxiety, and happiness in different ways at different times (Illeris, 2018). Psychology therefore tries to find out the cause of such moods or actions, circumstances that surround these actions, and provides solutions or clues to these phenomena in a more scientific manner. Psychology is premised on logical ways for knowing, explaining, controlling and improving the behaviour of man. To this end, the relevance of psychology cannot be doubted, as trained teachers need this knowledge to understand the behaviour of his or her students in relation to the learning process. (Brewer, 2004 and Eggen, 2019). Furthermore, the ability to understand various techniques, strategies and skills of carrying out investigation in the field of psychology will as well aid the teachers in resolving emergent educational problems and in various courses of study (Schunk 2012; Coon, 2012). There has been exclusive research in recent years that looks closely at how students are learning both inside and outside the classroom (Barrouillet, 2015).

Statement of Research Problem

Learners irrespective of their levels of education, need counselling on how to be effective in their learning. This implies that, students need to be taught effective methods of teaching and adequate knowledge of appropriate teaching method on the parts of the teachers and blended with the right learning behavior would enable the learners to learn more effectively and perform efficiently. The dwindling rate of academic performance in both primary, secondary and tertiary institutions calls for urgent attention of the stake holds on the psychological measures that would check the underachievement situation and proffer educationally and friendly solutions that would not only improve the learner's performance alone but would increase the efforts of the teachers as well. Educational psychology, a science of education and human behaviour is endowed with desirous solutions to these cancerous worms that eaten deep into the fabric of our education. The trust of this paper is to correlate between psychology of learning and learning styles as propounded by educational psychologists to enhance academic performance across all strata of educational institutions in Nigeria.

Methodology

This study is qualitative research (descriptive or non-parametric research) that seeks understanding of a phenomenon by focusing on the whole event rather than parts breaking down as variables. The goal is holistic understanding rather than numerical analysis of the data. The study on educational psychology focusing on psychology of learning and learning styles to enhance academic performance of learners. Is an example of qualitative study, the researcher might focus on some students' underperforming and study them in great detail though observation and in-depth interview? In other words, this study merely seeks information as they exist.

Branches of Psychology and Psychology of Learning

Psychology has several branches of which, each focus on different areas of discipline. These include: educational, counseling, social, clinical, industrial, developmental, sports, physiology, experimental, comparative, environmental, abnormal, genetics, engineering. This paper focuses on educational psychology as time and space cannot permit the explanation of all the branches of psychology as listed above. Psychology of learning is the knowledge contained in the attitude, behaviour and action of learner in the learning process. It provides necessary theoretical and empirical data regarding the learning process. It describes the principles and strategies of learning. It explains how individual can learn and at what stages learning can take place regarding some specific topics, concepts, observations or actions.

Learning can be described as a relatively permanent change in behaviour that is the result of experience. It is realistically an ongoing process taking place throughout all of one's life. (Malone, 2019 and Kendra, 2020). It is the acquisition of knowledge or skills through study, experience, being taught. It is the process of acquiring new understanding, knowledge, behaviours, skills, values, attitudes, and preferences. Learning can generally be categorized into three domains of cognitive, affective and psychomotor. Within each domain, are multiple levels of learning that progress from more basic, surface-level learning to more complexes, deeper–level learning (Houwer, et al. 2013, Yazici, 2017 and Olubusayo, 2019).

In the history of education, there are various theories of learning, of which explains a more behaviorist approach, focusing on stimulus-response and reinforcement. Theories which are related to neuroscience and social cognition focus more on the brain's organization and structure to define learning. For example, social constructivism, explains more on one's interaction with his environment and with others in the environment while theories of motivation, which is the growth mindset focus more on the internal trait of motivation of the individual. Today, Psychology of learning is of great concern and also very pertinent because researchers in recent years look closely at how learners learn inside and outside the classroom. The information gathered is then used to present new and more integrated approaches to homework, tests, and the learner's ability to acquire knowledge in or outside the classroom. Theories related to the psychology of learning can as well improve the learner's academic performances, serves as motivating factors and enhance individual's efforts in the learning process (Malone, 2019)

Educational psychology is an applied psychology which seeks to find clues or solutions to problems associated with the teaching and learning in the classroom. It attempts to find the fundamental laws of human behaviour and their applications to learning. It is concerned with the curriculum planning, teacher – training and instruction design. It helps the learners and the teachers to optimally benefit in teaching-learning activities. Educational psychology is an integral part of psychology which seeks to find how positive relationship and interaction can be established between the teacher, students and the learning process. It is an applied psychology which studies the ways in which the learner can be most

effectively brought into contact with the learning process. It is geared towards investigating and exploring the factors that can stimulate, enhance or obstruct the learning process. The knowledge, strategies and skill acquired from educational psychology can guide and direct in resolving the enormous problems confronting both the learners and the teachers in the teaching learning process.

Implications of Educational Psychology to Classroom Teaching and Learning

The submission of Oladele (1998), Nilson (2010), Yazici (2017) and Singh (2017) can be summarized thus:

1. Educational psychology allows teachers to understand the mood of learners, their interest in learning and this provides a guide in planning curriculum and learning contents.
2. It enables the teacher to understand and to tackle irrational behaviours of student and forestall future manifestation of such behaviours in such a way that it will not have negative impact on classroom teaching and learning.
3. It enables the teacher to understand and to rate the tone of the classroom, teacher-student rapport, and student – student relationships in the teaching and learning process.
4. Problems and solutions emanating from students are at the fingertips of teachers and therefore, knowledge of educational psychology equips teachers in managing the classroom effectively and efficiently.
5. It affords teachers opportunity to know the psychological elements that can enhance or impede teaching and learning in the process of inter relationships.
6. The teacher can comprehend the personality of individual learners, their developmental stages, their needs and how these needs could be satisfied without rancor.
7. Through the knowledge of educational psychology, teachers are exposed to various instructional materials, instructional skills and strategies, depending on the level of students and the curriculum content.
8. Education psychology provides the knowledge to the teacher on the grading, assignment, evaluation and placement of learners. This therefore, is a yardstick by which measuring the abilities and weaknesses of learners are known, thus making the teacher to adjust where and when necessary.
9. It guides the teacher on how to approach students' problems relating to parents, family, peers or community and how to obtain feedback on the measures taken to solve problems.

Synthesis of Cognitive Styles and Academic Performance

Explanations given regarding cognitive styles, according to educational psychologist include characteristics, strengths and preferences in the way people receive and process

information. It refers to a fairly fixed characteristic of an individual which are static and relatively in – built features of the individual, ways of perceiving and processing information (Bhatti and Bart, 2013, Oludipe, 2014 and Olubusayo, 2019)

A Cognitive style is one among theories that emerged in classroom and psychology on the strategies used by learners to process information in their learning experiences. In 1980, Mc Carthy divided cognitive styles into four types which include convergers, accommodators, concrete and assimilators. According to her, *convergers* are often solid abstract thinkers, who process information actively. They are self-reliant and tolerant of difficulties, having abilities to deal with stress and are typically near the top of their arousal curves. They easily see alternatives to problems and emotionally do not have difficulty with taking responses in the way convergers apply ideas practically and their physical sciences and technology. These types of learners often engage in the field of computer science and engineering.

On the other hand, the major characteristics of Assimilators are abstract conceptualization and reflective observation. They have capacity to create theoretical models by reasoning inductively, which is their greatest strength. They adopt trial and error approach and get the best result. They also have natural interest in sciences such as chemistry, biology, physics, astronomy and mathematics as their educational background. According to Mc Carthy (1980), Accommodators use concrete experience and active experimentations. They actively engage with the world and perform and do things by themselves, rather than only reading or studying about them. The kind of educational backgrounds they engage in is practical fields including business, marketing, sales, finance, accounting, education and communication.

Divergers students or learners tend to concrete experience and reflective observation. They are found to be seeing or perceiving things in a different way, very well at innovative ideas creating things by themselves, because of their imaginative trait inherent in them. The educational backgrounds of these divergers are often in social sciences. They are interested in philosophy, sociology, economics, language, political science, history, law, and liberal arts. They are also interested to profess in educational administration, counselling, theology or public administration.

Four major learning styles have been developed by Bernice Mc Carthy. According to the observation of Mc Carthy (1980), each of the four plays different strengths during the learning process. While individuals must engage in all modes of learning, most people like to favour a particular type of learning style. The model is constructed along with two continuums: perceiving and processing. Perceiving is explained as the manner people take in new information. Processing is what people do with the new information taken in or gathered. It is a person's preference along these continuums that will determine the individual's approach to learning. The types are innovative learners, analytic learners, common sense learners and dynamic learners.

Innovative or Imaginative learners: The type of learners perceive with thinking and process reflectively. Their concern is to get the information or facts and to answer the question that

follow, such as what? This type of learner enjoys creative and innovative approaches to learning. They perceive information concretely and process it reflectively. They prefer talking about their experiences and feelings, asking questions, and working in groups. They like to have learning connected to real life problems and to be given the answer to "Why do I need to learn so so and so? They are interested in personal meaning and making connections. They prefer to reason for any type of learning. Ideally, their reasons are connected with new information and with personal experience. Thus, they establish that information's usefulness in daily life.

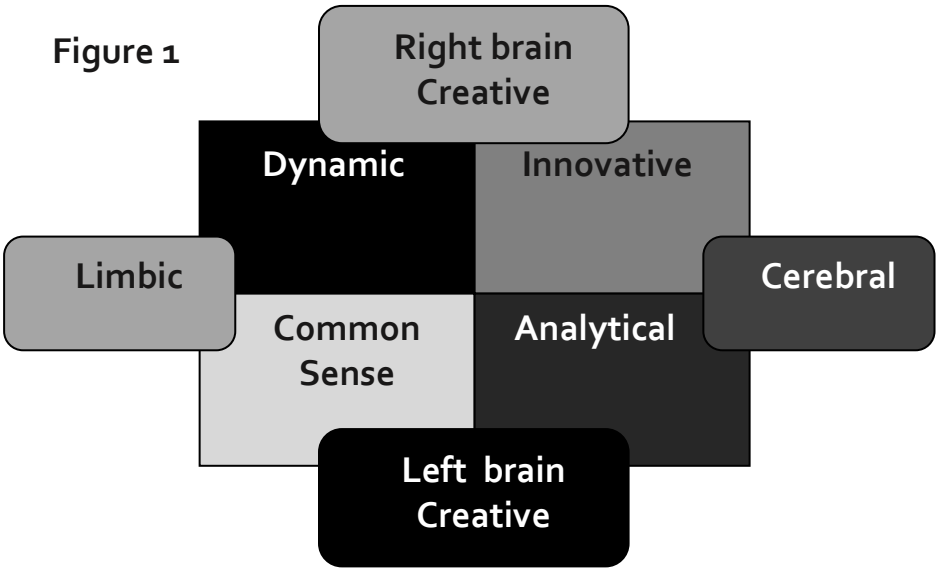
Analytic Learners: They are found to be conceptualizing, reflecting and thinking. They perceive with thinking and process reflective in nature. They need the facts and interested to answer the question such as, "what?" These learners are knowledge oriented, conceptual, and organized. These individuals perceive information abstract and process it reflectively. These logical, abstract thinkers want to work with facts, ideas, and details. They prefer to learn by thinking through ideas. They would ask the question such as "what do I need to learn?". They are interested in acquiring facts in order to deepen their understanding of concepts and process. They prefer to listen to and to think about information, seek facts, and think about things and get through.

Common Sense learners: These individuals perceive with thinking and process things actively. They want to see the real-world relevance and answer the questions such as "how?". These learners like active problem-solving, learning through discovery, touching, manipulating, constructing, and process it actively. They like hands-on experience when learning something new and really want to use what they learn to apply to new situations. The question they ask is: "How do I use the information to improve?" They are interested in how things work. They want to get in to tasks and try it.

Dynamic learners: This group perceive with senses and feelings and process things actively. They need to answer the question such as, "if?" They are creating and acting and somehow practical. They prefer to learn through self-discovery and working independently. They enjoy open-ended tasks that involve risk taking. They perceive information correctly and process it actively. They are interested in taking action and want to see, hear, touch and feel, what they are working on or working about. They are challenged of "what if?" wanting improvement or change for better. They are in self-discovery, preferring to seek hidden possibilities, explore, and learn by trial and error.

The Diagram Below Shows the Learning Styles of McCarthy

Figure 1



Source: Mc Carthy, 1980

The above diagram shows that the Innovative and Dynamic Learners are creative and share the Right brain. Also, the Innovative and Analytical Learners are using their cerebral part of the brain for reasoning and acting. The analytical and common sense learners use their left brain and are creative in nature. On the other side, the Dynamic and Common sense use limbic in sorting things out when faced with tasks.

Learning Styles of Individual Students

Students' learning styles fall into three categories of Visual learners, auditory learners, Read and write and Kinesthetic learners. (VARK) These learning styles are found within educational theorist Neil Fleming's VARK model of student learning. VARK is an acronym that refers to the four types of learning styles. (Fleming & Baurne, 2006). They postulated that:

- Students' preferred learning models that have significant influence on their behaviour and learning.
- Students' preferred learning models should be matched with appropriate learning strategies.
- Information that is accessed through student's use of their modality preferences shows an increase in their levels of comprehension, motivation and met cognition.

The VARK model is thus explained below in sequential order:

Visual: Visual learners are interested in using images, maps and graphic organizers to access and comprehend new information or knowledge.

Auditory: Auditory learners are inclined to listening and speaking in situations that involve group such as discussion, lecture-like programme. Aural learners adopt repetition as a study

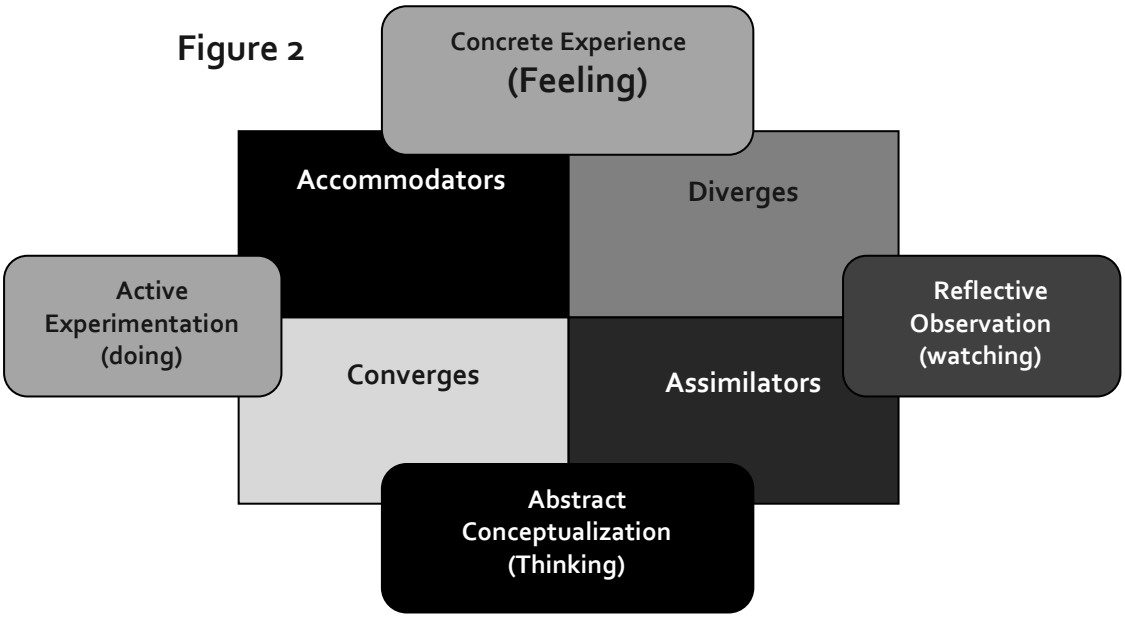
technique and often use mnemonic devices to remember gained knowledge.

Read and Write: Group of these students has strong reading and writing potentials, by learning through words and wordings. They are copious note takers, readers and writing of essays.

Kinesthetic: Kinesthetic students or learners understand teaching through tactile representation of information. They are hands-on learners, through figuring things out by hand. They need physical experience such as touching, doing, practical, hands-on experience.

The Diagram Below Shows Kolb's Learning Styles

Figure 2

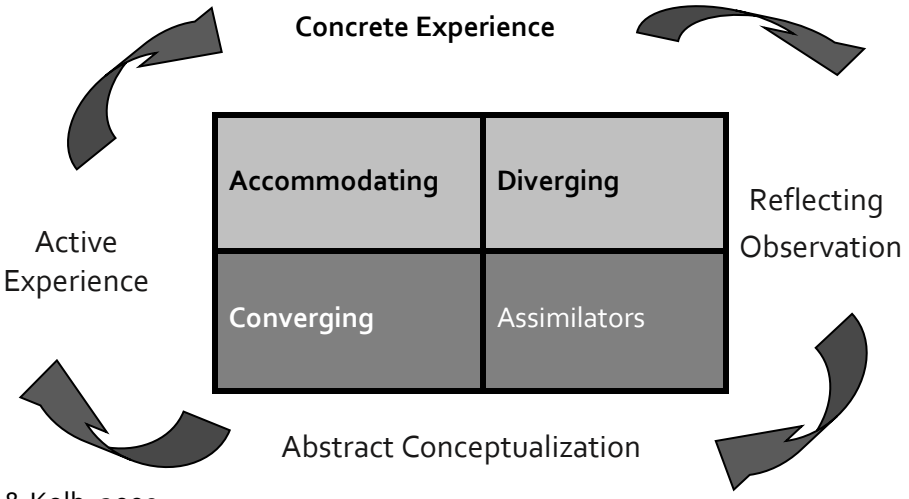


Source: Kolb & Kolb, 2009

The above diagram of Kolb's learning theory sets out four distinct learning styles which are based on four stayed learning cycle. Learning styles can be viewed on a continuum across two dimensions based on how people perceive information (concrete vs. abstract) and proceeds information (active vs. reflective) Kolb believed that as we team something, we go through learning cycle. That cycle befits with a concrete situation which we experience. He believed we then reflect on this experience and what it actually means. After we reflect on experience, we then begin to understand what to be learned from the experience. He also suggests that we then attend to apply what we learned by creating an experiment.

The Diagram below Shows Kolb's Learning Styles

Figure 3



Source: Kolb, & Kolb, 2009.

The Kolb learning styles inventory plots the degree to which the subject engages in concrete experience, active experimentation, abstract conceptualization and reflective observation. The four-resultant learning-style types from the Kolb instrument are diverging, assimilating, Converging and accommodating.

The Use of the School Counsellor and the Study Habits

The school counsellor assists students with their educational career, and social needs-often developing a thorough understanding of an individual through interactions between the counselee and the counsellor. The counselor works in collaboration with teachers, parents, and school administrators to ensure a student's academic success.

The Top Study Habits Include:

- Individual learner should get himself or herself organized by having relevant textbooks, up-to date notes of all subjects.
- Have adequate sleep and create convenient time for study.
- Know the expectations from the topics you have covered, the tests, assignments and group work can guide you.
- Designate a study area where it will be conducive for studies.
- Develop a study plan by approving the difficult area first.
- Think positively by aiming at success, which can activate you to study.
- Create a study group, which is the forum for brainstorming and interaction.
- Listen attentively to lessons taught in the class and in the group study.
- Review test- taking strategies to help you familiarize with expectations.
- Possess personal time-table for self- guide and self – abiding.

Sample Relationships Between Studies of Cognitive Style of Learners and Academic Performance

There are series of research studies on students' cognitive style that indicate relationship with the academic performance of students. (Zhang and Sternberg, 2006, Kolb and Kolb, 2009, Bhatt and Bart, 2013, Singh, 2017 Yazici , 2017 and Olubusayo, 2019). In a study conducted by Nilson (2010), the results showed a preference for many types of experiences, practical sessions, investigations, and problem-solving by convergers. This is in line with the findings of Malcom (2009), who showed that the greatest strength of converges is in the practical application of ideas. In the analytic study of cognitive style and chemistry achievement, analytic Individuals performed better than non-analytic individuals in chemistry achievement tests. In addition, was a positive relationship between analytic style and performance in Mathematics and science subjects' matter. Similarly, when computer-based instruction in office systems was used, analytic students performed better non-analytic students.

Dunn, Beaundry and Klavas (1989) reviewed different studies and in them positive correlations between cognitive styles and students' academic performance were found. In terms of gender, Oyekam (1984) found out that female and field independent groups are academically superior to their field dependent counterparts. This agreed with Busari (1987) and Fritz (1992) as they found that females rely more on acculturated values to interpret situations, desire peer input to organize experience and shape decisions than males. According to them, male students love situations that involved numbers and logic, computing and solving mathematical problems and course work that was logically and clearly organized than females. Thus, there is relationship between learning styles and academic performance as discovered in various researchers.

Conclusion

The discussion so far has shown that cognitive style of individual learning is related to academic performance. It therefore implies that teachers, counsellors, educational administrators and parents can help promote academic performance in learners if they make effort to identify students' area of weaknesses and strengths in relation to their learning styles. Thus, identifying the learners' preferred cognitive style will stimulate their academic performance and also help to explain, particularly, to counselors, psychologists and teachers why some learners achieved and why some of them fail, as they do. The essence of the counsellors, psychologists and teachers possessing knowledge of learner's cognitive styles will help them in making correct choice about their subjects' combination, teaching methodology, curriculum content, teaching strategies, skills, and techniques, and instructional resources. Hence, they constitute compendium for academic achievement and success of students and success in teaching profession.

Recommendations

Based on the discussions so far, the following recommendations are proffered:

- Teachers should relate student's cognitive styles to their method of teaching.

- Students should be guided by, psychologists and guidance counsellors in areas of subject choice and decisions on career choice.
- Teachers should continue to monitor and enhance students varying leaning needs, particularly, the instructional and learning materials.
- Teaching and counsellors should continue to participate in workshops and conferences and in-service training so as to improve in teaching and learning techniques.
- Teachers should be innovative and teach conventional topics in line with contemporary syllabus and curriculum.

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