The Use of Didactic Material in Competence Base Approach to Overcome Students Attitude and Teacher's Perception in Teaching of Physical Geography

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Abstract: ***Educationists and curriculum designers are constantly looking for*** **ways to ameliorate his living condition on earth. This explains why in the educational field, pedagogic methods and techniques always undergo modifications. In Cameroon, pedagogic methods of teaching have revolved from teaching using dogmatic method‖ to teaching using objective method‖ and recently to teaching using the competency-based approach (CBA). Competency based education was introduced in French speaking African countries in 1996, during the Conference of Ministers of Education in Yaounde and in Cameroon in July 2012. Teaching Geography otherwise: which approach for which context? This write up focuses on the second axis from passive to active pedagogy. This approach (CBA) was introduced in Cameroon partly because of the failure to meet the educational expectations using teaching by objective. Competency based approach was acclaimed as a more effective approach to teaching and learning due to its envisaged benefits in enhancing the acquisition of knowledge and competences. Overcoming learners 'attitude on the difficulty in the teaching and learning of Physical Geography (plate tectonics) is a necessity especially with the implementation of the new innovative approach (CBA), which is a learner centered approach. Students sometimes develop misconceptions about a topic because they did not understand the lesson that was taught. Plate tectonics is a technical aspect of physical geography and since most students have little knowledge about this topic, they feel that the topic is a difficult one. This research study is interested in assessing how CBA can be used in overcoming learners 'attitude on the difficulties faced in the teaching and learning of plate tectonics in Form three. This research work is therefore of significance to students, teachers and to the educational world.**

This study will focus on the cognitive and socio constructivist theories of learning. Socio constructivist theory of learning is a product of socio cognitive activities linked to the didactic exchanges between teacher-students and students-students. Cognitive theory stipulates that learning takes place using memory, motivation, and reasoning. The methods which will be used in collecting data are qualitative and quantitative methods, classroom observations, sampling with the use of questionnaires, key informant interviews and focus group discussions. Data shall be analyzed via Microsoft excel and SPSS. At the end of this research work, the researcher will propose strategies and methods which can be used in overcoming learners 'attitude on the difficulties in the teaching and learning of plate tectonics using CBA in Form three.

Key words: **didactic material, perception, attitude on competence-based approach**

I. INTRODUCTION

Education in Cameroon is supervised by the state through legislation. Improving the quality of education for all Cameroonian children through the development of competence, creativity and innovation has been a priority for policy makers in Cameroon since independence. In 1995, this effort culminated into the National Forum on Education whose recommendations were later formulated into the Cameroon education policy statement (law no. 98/004 of 14 April 1998) to lay down guidelines for education in Cameroon. These guidelines prescribed that:

"The general purpose of education shall be to train children for their intellectual, physical, civic and moral development and their smooth integration into society bearing in mind the prevailing economic, socio-cultural, political and moral factors".

Section 5 of the 1998 Law laying down guidelines for education in Cameroon, spells out nine different articles of national policy which stipulate the training of versatile citizens in cognitive, affective and psycho-motor domains. The nine articles highlight domains including national and international cultures, universal ethical values, family life, national languages, democratic culture, practice and other concerns, the cultivation of an ethos of work, creativity and related aspects, sports-cum-physical education and artistic-cultural concerns, hygiene and health education. Furthermore, in Section 25, the Law asserts: "The Education provided in school shall consider scientific and technological advancements and shall be tailored in terms of content and method to national and international economic, scientific, technological, social and cultural trends." The application instruments of the education policy framework of 1998 include amongst others:

Ministerial decision N° 49/06 of 08 February 2006 creating a commission charged with preparing texts of application of the 1998 orientation law of education.

It is based on these legal instruments that in 2006 work effectively started on the conception of the new curriculum.

The idea of changing the education system from a colonial objective driven, cognitive focused approach to a more competency-oriented system was introduced to the Cameroonian public by education stakeholders, on the 17th September 2012. This approach, which was to be progressively introduced into the education system was tailored to address urgent socio-economic realities. While content remains essentially the same with slight modifications to reduce bulk and irrelevance, the teaching approach is a total paradigm shift from earlier practices. Students were sometimes treated like empty vessels which should be filled with knowledge to obtained better examination results. Some teachers thought that the aim of learning is that students should be able to pass examinations. Memorization was very common amongst students who easily forgot what they learnt after writing the examination. When this happens; students often believe that they have forgotten what was taught in class because the lesson was difficult to assimilate. According to the CBA, students are supposed to develop skills, and to use the knowledge they acquire in class to solve real life problems. The approach demands that students need to be actively involved in the process of knowledge construction. Since this innovative approach is not a teacher-centered approach, it is envisaged that CBA can easily be used to solve learners 'attitudes in the teaching and learning of some technical concepts in physical geography which are apparently difficult for learners and even for some teachers. Plate tectonics like other geomorphological phenomenon are aspects which can easily be assimilated if appropriate time is dedicated to studying them and once mastered; the knowledge is easily retained and easily applies it in real life situation, since it is a natural phenomenon not liable to evolutions as in human geography which is always changing. The misconceptions students nurse is partly due to the challenges faced in teaching and learning of some apparently difficult topics in physical geography. Often, students easily understand concepts such as agriculture but find difficulties in grasping some technical geomorphologic phenomena such as plate tectonics. Despite many efforts to facilitate learners understanding in physical geography under teaching by objectives‖, some students still believe that some of the concepts such as plate tectonics are too complex to fully understand. This has provided a base to investigate the reasons for these misconceptions and to find ways of overcoming them to facilitate learners understanding it is in this regard that this work explores the possibility of using the CBA to overcome the believes.

Statement of the Problem

This paradigm shifts calls for continuous teacher professional development and retraining to meet up with the new challenges especially the enhancement of learner centeredness. New syllabuses for the competency-based approach were introduced in secondary general schools in the 2013 / 2014 academic year (MINESEC, 2014). The syllabuses contained expected competences which learners are to acquire at the end of the learning process.

Many people around the world look to schools to equip youth with new sets of skills to meet up with the challenges of a rapidly changing world economy. For these reasons, some scholars posit that rote memorization of facts and hierarchical school and classroom patterns are no longer suitable for the competitive global market, where the skills of inquiry and problem solving to address rapidly-changing environments are needed outcomes-based education movement in South Africa, for example, is rooted in the belief that international trade and production have changed along with the global economy; the government believes students' skills and competencies should also change (Weber, 2007). As Cameroon looks forward to achieving her goal of becoming an emergent nation by 2035, it is imperative that she uses her educational system in training students with skills to meet up with this goal. The skills associated with CBA pedagogy, such as 'learning how to learn' and communication to co-construct knowledge, are those sought by an increasing number of employers around the world. Therefore, the government of Cameroon wants to see schooling align more closely with the needs of industry. There is enough evidence that schools are not meeting the economic needs of the country. Report from Sector Wide Approach to Education (2006) talks of high levels of wastage because of low internal efficiency (for example, failure of students in examinations and dropout), coupled with low external efficiency (inadequate relevance of programs of instruction to the priority development needs of the country). From this point of view, human capital development must expand beyond the acquisition of basic skills and content knowledge to include strategies for becoming 'lifelong learners' and creative entrepreneurs in ever-changing economic environments. Educational reform according to World Bank (2007) must extend beyond increasing access and enrollment to include the introduction of approaches to teaching and learning that parallel changes in the global economy. Developing the skills necessary for this new economy places new demand on teachers to learn ways of teaching consistent with CBA.

II. REVIEW OF RELATED LITERATURE

There is empirical evidence showing that the way teachers teach and not only the content of their classes may contribute to students' political socialization and engagement in democratic processes. The relationship between students and teachers, especially opportunities for students to express their views in the classroom, is considered especially influential in developing students' views on democracy and their degree of civic engagement. Dewey, believed that education systems should prepare citizens for active involvement in democratic forms of governance. Merely gaining knowledge about

equitable social policies or democratic processes, he argued, is not adequate to effect political change) (Dewey, 1916. Advocates of CBA usually share Dewey's faith in democracy and believe students need to experience democracy in action in the classroom and in the school to become democratic citizens. Engendering democratic civic values, they contend, requires practice and experience with negotiation, cooperation, and critical thinking. Participatory teaching methods such as the CBA, that allow students to practice democratic behavior by experiencing negotiation, collaboration, and active civic engagement in the classroom seem to have the greatest influence on students' views on democratic values. In contrast, programs that rely on teacher centered pedagogical approaches in teaching reinforce authoritarian and non-democratic forms of interaction in the classroom (Antal and Easter, 2009).

Today's teachers are increasing requires abandoning the use of a banking system in education wherein information is simply deposited into the minds of their students and withdrawn when needed. This type of positivist approach to education limits the possibilities for students' development and ultimately liberation of oppressed people. However, the development of critical thinking skills in students and the greater democratization of schools may also be threatening to parents, teachers, school heads, and political leaders.

Education strengthens the political development of nations by promoting the civic engagement of their populations. People with more education consistently participate more in political activities than those with less education. Education increases awareness and understanding of political issues, fosters the socialization needed for effective political activity, and increases civic skills (Campante and Chor, 2012 cited in WDR, 2018.). As Cameroon has embraced democracy as a form of governance, it is logical that CBA would serve as a complement to this political change by modelling some of the same practices in the classroom. Cameroonian youth spend large portions of their young lives at school, particularly for those who attend boarding schools, it is therefore reasonable to assume that the unspoken lessons they learn are internalized and applied as adults. Apart from the other reasons mentioned above, the primary reasons for teachers, schools, and ministries of education to adopt the use of CBA, is due to its Cognitive and psychological benefits on learners. The term cognitive refers to mental processes, such as remembering or solving problems, while psychological encompasses cognition but also includes the study of emotions, motivation, and interpersonal relationships. CBA, it is believed has the potential to develop in students, higher-order thinking and critical engagement with the world around them, skills deemed necessary for success in a complex global society. Higher-order thinking skills, such as the abilities to analyze, evaluate, and create knowledge (Anderson and Krathwohl, 2001), enable students to examine and process the wealth of information that is available in the modern era. Secondly, specific competencies help students as well as other stakeholders such as employers and policymakers, to have a common understanding about the specific skills and knowledge that students should master because of their learning experiences. Some other academic benefits that are believed to result from CBA may include;

- Development of critical thinking and problem-solving skills.
- Students having the ability to link new information with existing knowledge in meaningful ways.
- Leads to creativity as students can start thinking out of the box to solve the challenges of a rapidly changing world.

III. CONCEPTUAL REVIEW

Competency Based Approach

According to Rychen and Tiana (2004), ―A Competence is an ability to meet demands successful or to carry out an activity or task‖. Approach referred to a set of ideas or actions intended to deal with a problem or situation.

Richards and Rodgers (2002) defined competency-based approach as "an educational movement that focuses on the outcomes or outputs of learning in the student after school. Also, it is a form of educational strategy that exposes a learner to real life experiences which help her/him to solve a problem in hand (Rychen *et al*, 2004). The U. S. office of education (1978) defines competency-based education as a functional approach that focuses on life skills and evaluates those skills according to learners 'performances (Savage, 1993; cited by Kathleen, 2006). Competence is the ―capacity to answer complex demands and to work in an appropriate way involving the ability to meet complex demands, by drawing on and mobilizing psychosocial resources (including skill and altitude skill and attitudes) in a context‖ (OECD, 2002, pp. 4). This new approach is based on developing learners' competencies to help them face some problems in their daily life. It aims at enabling learners to put what they have learned to other life settings. CBA comes to relates school life and real-life setting, to help learners become competent in the society. The first apparent characteristic of the CBA is the focus on learning and students' activities (learner- centered) rather than on the teacher's role. The CBA is also a socio constructivist approach based on training students to construct their own knowledge to be able to use it in their daily life. According to Auerbach (1986) cited by Richards and Rodgers (2002 p.146), the essential features included in implementing the CBA syllabus is a focus on successful functioning in society. Competency based education adapts to the evolving needs of students, teachers and needs of society; competency which implies the ability to use a skill. It requires a close focus on potential possibilities of future activities of graduates. Given this, we must mention that the competency-based approach implies that the teacher and students are competent which in turn requires determination of the specific competences that must be typical for a teacher according to the new educational approach.

The introduction of competence-based approach in secondary schools calls for comprehensive change in instructional

approach in terms of teaching, learning and as well as resources used (Paulo and Tilya, 2014). The revision process involves shift in paradigm from content-based to competence-based. The emphasis on Competence-Based Approach is due to the growing recognition of the need for development of capabilities and not just certification. This means that teaching and learning process must change its orientation from rote memorization of content knowledge to acquisition of skills and competencies useful for solving real life problems (Woods, 2008; World Bank, 2011). CBA defenses the application of knowledge in real life context as opposed to the content-based emphasizing students to memorize their lesson notes which was deemed crucial for passing examination, which often tests ability to recall memorized facts, knowledge and principles (Osaki, 2004).

Competency-based learning or competency-based education and training is an approach to teaching and learning more often used in learning concrete skills than abstract learning. Competency-based learning is learner-focused and works naturally with independent study and with the instructor acting as a facilitator. Learners often find different individual skills more difficult than others. This learning method allows a student to learn those individual skills they find challenging at their own pace, practicing and refining as much as they like. Then move rapidly to other skills to which they are more adept. It differs from other non-related approaches in that the unit of learning is extremely fine-grained. Rather than a course or a module, every individual skill or learning outcome (known as a competency) is one single unit. Learners work on one competency at a time, which is likely a small component of a larger learning goal. The student is evaluated on the individual competency and can only move on to other competencies after they have mastered the current skill being learned. After that, higher or more complex competencies are learned to a degree of mastery and are isolated from other topics. Another common component of competency-based learning is the ability to skip learning modules entirely if the learner can demonstrate mastery. This can be determined through prior learning assessment or formative testing (Gervais 2016) as cited in (Ambei ,2017).

While most other learning methods use summative testing, competency-based learning requires mastery of every individual learning outcome, making it very well suited to learning credentials in which safety is an issue. With summative testing, a student who got 80% in the evaluation may have an 80% mastery of all learning outcomes or may have no mastery what-so-ever of 20% of the learning outcomes. Further, this student may be permitted to move on to higher learning and still be missing some abilities that are crucial to that higher learning. For example, a student who knows most traffic laws and has mostly mastered controlling a vehicle could be treated equally with a student who has mastered vehicle control but no understanding of traffic laws, but only one of these students will be permitted to drive.

What it means to have mastered a competency depends on the learning domain (subject matter). In a subject matter that could affect safety, it would be usual to expect complete learning that can be repeated every time. In abstract learning, such as algebra, the learner may only have to demonstrate that they can identify an appropriate formula, for example, 4 of 5 times since when using that skill in the next competency, resolving a formula, will usually allow an opportunity for the learner to discover and correct his/her mistakes. (John 1989)

It is important to understand that this learning methodology is common in many kinetic and/or skills-based learning and is also sometimes applied to abstract and/or academic learning for students who find themselves out-of-step with their grade, course or program of study. Increasingly, educational institutions are evaluating ways to include competency-based learning methodologies in many different types of programs to make learning success a constant while students' pace can vary.

De Ketele (1996) defines competence as a set of organized capacities (activities), which act on contents in each category of situations to solve a problem. In this definition a competence is described as an ability to carry out a specified task or activity to predetermined standards of attainment. According to De Bueger-Vander (1996), competence refers to a state of being well-qualified to perform an activity, task or job function. Competency may be defined as the ability to do an activity to a prescribed standard, emphasizing what people can do rather than what they know (Cohen, 2005). When a person is competent to do something, he or she has achieved a state of competence that is recognizable and verifiable to a community of practitioners.

Pellerey (2001) holds that competency is not only the mastery of knowledge and methods, or the ability to manage them, but also the ability to integrate different kinds of knowledge, and to use them synergic ally. To be competent in an area implies the ability to mobilize one's own knowledge and to transform it into concrete doing. Competency is an individual characteristic and is built (through self-experience and formation) in each field and in each area. It includes the content of the learning process as well as the context where it happens and the ability to apply the grasped content. Organization for Economic Cooperation and Development (OECD) hold a similar view as the latter authors. It defines competency to be more than just knowledge and skills. It involves the ability to meet complex demands, by drawing upon and mobilizing psychosocial resources (including skills and attitudes) in a context.

Rychen & Salganik state that the concept of competence has features which include: implicit(Knowledge gained without knowing not written in any book) and explicit knowledge, cognitive and practical skills, it enables teachers to meet complex demands by mobilizing psycho-social resources in context, deploying them in a coherent way, it empowers the teacher to act professionally and appropriately in a situation, it helps ensure teachers' undertaking of tasks effectively and

efficiently, and it can be demonstrated to a certain level of achievement along a continuum.

Pedagogical competence defined as "the ability of an individual to use a coordinated, synergistic combination of tangible resources (e.g. instruction materials such as books, articles, and cases and technology such as software and hardware) and intangible resources (e.g. knowledge, skills, experience) to achieve efficiency and/ or effectiveness in pedagogy" (Madhavaram, Laverie, 2010).

A competency has been defined by its pioneers as: The generic knowledge, motive, trait, social role or a skill of a person linked to superior performance on the job (Hayes '79). A capacity that exists in a person that leads to behavior that meets the job demands within parameters of organizational environment, and that, in turn brings about desired results (Boyatzis '82).

A competency is a set (a combination) of applied knowledge, manifested skills, relevant personal attributes and underlying observable behaviors (values, judgments, attitude, motives, beliefs, ethics) that describes acceptable (or excellent) performance in a work or job context. Competencies can be described in a competency profile, which can be included in a competency catalogue or competency database.

According to Lucy (2019), Competency based approach is a sequence of learning experiences that seek to ensure that students attain specific skills, knowledge, and abilities considered important with respect to whatever they are studying or the transitions for which they are preparing. The responsibility for learning is entrusted to students who must build their own knowledge through means made available by the teacher (Boutin, 2009). The teacher assumes the role of a facilitator. S(he) has the task of advising, motivating and encouraging students to be creative, ensuring the planning and organization of activities, and suggesting ideas without imposing them. In a competency-based learning system, students are not allowed to continue until they have demonstrated mastery of the identified competencies (Savage, 1993; Rutayuga, 2010; and Mosha, 2012). What it means to have mastered a competency depends on the learning domain (subject matter) or the employer. The competency-based approach is believed can help teachers not only to identify the academic strengths and weakness of students but also to track specific concepts and skills students have not yet mastered. The transition to a competency-based system, may require significant changes in how a school operates and how it teaches students. This may be in how report cards are structured, the grading system, methods of instruction and assessment and even the school culture (Lucy, 2019).

Goals Competency Based Approach in Cameroon

- At the beginning of this millennium, as Cameroon strives to become an emerging nation by the year 2035, its secondary education sub sector faces many challenges including:
- Offering quality training and education to most young Cameroonians within the context marked by large classes in primary education; Preparing them for smooth insertion into a more demanding job market worldwide, through a pertinent teaching/learning process. According to (MINSEC, 2014), competency-based approach was introduced with the goal of helping the secondary education sub sector to:
- Shift from a knowledge-based approach of teaching and learning to a competency-based approach through situations in real life. It is expected that the CBA will emphasize the active role of students in the learning processes, encouraging appropriate learning activities to foster a deep rather than a surface approach to learning. While the knowledge-based approach can be effective in transmitting information, it may be ineffective in promoting independent thought because students are not actively engaged, and their enthusiasm is not adequately stimulated.
- Offer a shift from a school cut off from society to one that prepares citizens for a smooth integration into the socio-cultural and economic activities of their respective communities
- Offer a shift from an evaluation of knowledge to that of competencies necessary for sustainable development, and
- Increase the relevance of secondary education in response to growing concerns.

Aim of the CBA Program

Lucy, (2019) CBA has as main aim to inculcate in the learner responsible behavior, knowledge and competencies, necessary for meeting with the challenges of the rapidly changing technological world. It is also expected to help the learner to focus on what she or He can do after leaving school, that is developing a career (Bipoupout, Matip & Nanga, 2011).

Specific Objectives of CBA

After being taught using the CBA, the learner is expected to:

- Understand and explain natural phenomena;
- Solve real life problems, through the use of the scientific approach in problem-solving
- Acquire skills that will enable him/her to work in a group, respect others, and their opinions;
- Manage his/her environment in a sustainable manner;
- Have value for his/her health and that of all others in his/her surrounding;
- Use process skills to acquire and apply knowledge;
- Acquire life skills such as reading information and applying safety and security rules;
- Communicate results obtained and ideals developed with others;

- Do simple scientific diagnosis and repairs of scientific and technological equipment and appliances;
- Acquire personal attributes and seek ways of enhancing them

To achieve these objectives, the learner should be able to mobilize, all the pertinent resources in terms of knowledge, knowhow and attitudes. The resources to be mobilized by the learner are found in many disciplines and areas of learning. Therefore, syllabuses that are developed to teach using CBA should not be implemented in isolation but as interrelated subjects

Attitude toward Physical Geography

Attitude refers to the tendency to behave in a certain way in relation to specific stimuli, external or internal situations. For example, acquiring an attitude of valuing others, dialogue, participation and cooperation. This refers to believe that once attaches to something which could either be positive or negative. attitude according to this study refers to a positive or negative evaluation of students in physical geography objects, events, activities, and ideas. As well as in line of this study attitude refers to value students assigns to something or someone. Attitudes are born out of what we know (cognitive), feel (emotions) and do (behaviour) about someone or something. It is a view that is incorrect because it is based on faulty thinking or understanding. The conception is an idea that is not correct. Recent attitudinal experience on students' conceptual misunderstandings of natural phenomena indicates that new concepts cannot be learned if alternative models or belief that explains a phenomenon already exist in the learners'mind. Teachers can be astonished to learn that despite their best efforts, students do not grasp fundamental ideas covered in class. Even some of the best students give the right answers but are only using correctly memorized words. When questioned more closely, these students reveal their failure to understand fully the underlying concepts. Attitude could be defined as a consistent tendency to react in a way often positively or negatively toward a given matter or social object as measured by the first section of the instrument for data collection in this investigation. Everyone has an attitude towards learning, but not everyone has the same attitude towards it. Some individuals 'attitudes propel them along, helping them to deal with challenges, overcoming obstacles, and accomplishing their learning objectives. Others have attitudes that are anchors, slowing them down or stopping them altogether from learning (Harrell, 2005). Loftus (1982) viewed attitude as a relatively, enduring organization of feelings, beliefs, behaviors and tendencies towards persons, groups, ideas or objects. It implies that individuals are not born with attitudes but learn them. From early childhood, the individual begins forming his attitudes through direct experience and indirect observation. Through social contacts, a person could acquire an attitude by watching and imitating one 's parents, siblings, friends and teachers or peers. A person could also develop attitudes through operant conditioning, that is, adult rewarding an individual for expressing the correct views with appropriate responses. It is based on such operant conditioning that the relationship between students 'attitude to statistics and academic achievement could be explained (Lassen, Steele and Sailor, 2006). If students with positive attitude towards statistics make significantly better academic achievement than their counterparts with negative attitude towards statistics, then good attitude towards statistics is reinforced in line with specifications in operant conditioning theory of learning (Shah, 2009). According to Candeias, Rebelo and Oliveira (2013), attitude towards statistics is a psychological construct that depicts an individual 's behaviors, feelings, expression of favorable or unfavorable affection and judgments for school and school experiences. The environment in which students learn the nature and character their teachers can cause students to develop misconception in learning a phenomenon or a subject. In addition, learners can develop misconception from interacting with persons who may either encourage or discourage them from concentrating in studying subjects (because the concept is too technical or complex) such as Schoolmate, friends, parents, and teachers. Senior Students sometime discourage junior students from reading certain concepts and subjects because they believe that since it was difficult for them, any other person cannot also understand, or it will also be difficult for the new students.

Learners Attitude toward Teachers

A teacher is somebody who is called to transmit knowledge to learners. A teacher is someone who helps others to acquire knowledge, competence and value. In the domain of competency-based approach, a teacher is a facilitator, organizers, as a facilitator, he helps learners to learn by discovering things for themselves, as an organizer, the teacher must initiate students to collaborate through pair, as a resource person, the teacher provides learners with material be young the text book (Hammer 2001).

Teachers 'role is to facilitate the process of knowledge acquisition through the development of appropriate learning like hypothesis making or hypothesis testing. We can also say that the teacher in a classroom is a researcher; an important aspect of his job is watching, listening and asking questions to learn more about how they learn so that teachers may be more helpful to students.

In addition, a teacher has great influence as far as the construction of knowledge by the learner is concern. In the domain where the teacher fails to perform his role as expected, it will negatively affect learner.

According to Dellit (1993), teachers in general are responsive to Mayer's list of competencies and recognize the value of competency-based education. Teachers are, however, still uncertain of the origin of competencies, are skeptical about assessment and reporting procedures and are concerned about the impact on their workloads. They have trouble adapting their teaching style to a learner's learning style and are confused by the terminology of competency-based education

(Schwarz & Cavener 1994). From Burrow, (1993) highlights some of the dominant area that exist in Australian schools: "The control of the learning process is still placed with the teacher and not the student. Fragmentation of the learning process occurs socially through streaming and technically through compartmentalization of school subjects. Extrinsic rewards for work and achievement in the form of marks, grades, certificates, position in class, prizes and teacher approval remain predominant. An uneven reward structure based on competition rather than co-operation in which success for some means failure for others prevails. Rule conformity is still highly valued as the normative basis of learning and school work. Hierarchical school organization characterized by superordinate/subordinate relations between students, administrators and teachers, and between high and low status subjects continues to dominate school management". It appears that much more teacher training on competency-based education is needed for it to be implemented successfully.

Didactic Materials

According to Tambo (2003), educational Media classified into basic media advanced Media and community resources. Basic Media are those instructional materials which are within the rich of the teacher. They include Visual Display Devices such chalkboard, magnetic chalkboard, cloth board. Graphic material: such as graphs, charts, globes, Maps, Flash Cards. Print materials include textbooks, workbooks, pamphlets newspapers, magazines, teacher's guides, dictionaries, encyclopedias. Real things include non/living things, perishable/non-perishable things, specimens, animals, plants, coins and more. Advanced media can be radio, TVs, Projected Media and computers. Educational Media are means which assist educational delivery and are made up of instructional material and the teacher. While instructional materials are the physical means or media through which instruction is delivered to students. It aids both teaching and learning and can take the place of the teacher.

Moreover, as Berardo (2006) thinks the sources of didactic materials are infinite. Print and visual publications like magazines, newspapers, TV programs, movies and especially the Internet are the useful for instructors not leaving out things from the environment. These are the things that facilitate the teaching of a lesson in a classroom. These include; the chalk board, the chalk, the textbooks, the notebook, video tapes, records, fruits, drawings, pictures, songs, short stories. In addition, Didactic materials are vital in the teaching learning process as "…one „created to fulfil some social purpose in the language community in which it was produced‟ With the onset of communicative movement a greater awareness of the need to develop students‟ skills for the real world has meant that teachers endeavor to simulate this world in the classroom." (Guariento & Morley 2001).

Furthermore, both academics claim that the purpose of using authentic materials is to prepare students for their social lives. In other words, the authentic materials are used to close the language gap between classroom knowledge and real life. Spelleri (2002) supports this analysis, as she thinks that the language used in text books are only valid in a classroom environment where as the requirement of real life English is different, and this difference has not yet been closed using text books because, as we all know, learners have to deal with the language of brochures, office work, application forms and so on. The author also thinks that the role of the teacher is crucial; it is the teacher's responsibility to filter materials through selection of the learning objectives. It is the teacher's responsibility to identify the items and their adaptability as well. Spelleri, further looks for two criteria while selecting authentic materials. Especially one of these criteria is important. The materials need to give new information to help the student. A small booklet about poisonous animals in the place where the student lives might be a good example or a video of these animals and their names.

Again, at the same time, the material needs to reflect an economic reality. The second criterion is how those materials, like the textbook are adaptable so they should not contain complicated words that does not tally with the age and maturation of learners. The materials need to have either some pictures Provide a complete immersion experience reflecting on the concept. Have many resources (print and none print) related to the current topic at hand for students such as real things, models, diagrams, blue-prints, sketches, and art objects. This leads to the use of authentic didactic material in the classroom and its importance to learning.

Crawford (1995) explains the importance of effective teaching materials, that, language is functional and must be contextualized. The author believes that it is impossible to understand the real meaning of any interaction without knowing who the participants are or their social distance from the event referred to. For instance, a video drama needs to assist language in a meaningful way. Hence, the teacher is responsible for the balance achieved between input and reapplication. Little and Singleton (1988) argue that the chief concern is to provide input materials from literary culture. It is also taught by the same authors that learners find such materials more interesting than course books prepared by the teachers. There are broad varieties of materials such as a computer, video, DVD player and even different materials from all around the world in public libraries for writing, speaking, listening and reading tasks.

Several factors influence the selection and use of didactic material. The most important is learner characteristics. So, the learner's entry behavior, learning style, motivation and anxiety, should be considered not leaving out the number of learners in class, their ages, socio-economic status, previous experience, special needs, specific skills/ knowledge, their learning styles and preferences and the political environment. Kozam (1994) shows that no teaching material is better than the other. What is important is the choice of that material to align with the tasks as teachers should carefully choose. Teachers can be guided by Dale‟s cone, which portrays a

continuum of activities with "direct purposeful experiences" at the base and "Verbal symbols" at the top of the cone.

Concept of Perception

According to Tanyi (2016), a lay man will take perception to mean "to see things in our environment" while the Oxford Advanced dictionary defines perception as "the process by which one becomes aware of changes through the senses of sight, hearing and many others; the act of perceiving". Thus Tanyi (2016), defines perception as the identification, organization and interpretation, that is given to a sensation whereby a person may experience a sensation such as seeing a tall object and interpret it as a tree, a friend or an enemy. In the case of CBA, some teachers may experience the sensation of seeing CBA as a challenge while others will see CBA as an opportunity. It should be noted that the word perception comes from the verb "perceive" which means to „understand" or „think" about something in a way. Therefore, the word perception is defined as a way of understanding or thinking about something. According to Rogers (2003), perception is considered by many researchers as a critical factor in influencing attitude and adaptation to any new change or innovation. If perception and interpretation of an innovation varies on individual basis, they may be considered as contributing factors to an individual's attitudes towards any programmed being implemented.

Perception according Schacter, Daniel (2011) is the organization, identification, and interpretation of sensory information to represent and understand the presented information, or the environment. All perception involves signals that go through the nervous system, which in turn result from physical or chemical stimulation of the sensory system (Goldstein 2009). For example, vision involves light striking the retina of the eye, smell is mediated by odor molecules, and hearing involves pressure waves. Perception is not only the passive receipt of these signals, but it's also shaped by the recipient's learning, memory, expectation, and attention. According to Bernstein, Douglas (2010) Perception can be split into two processes; Processing the sensory input, which transforms this low-level information to higher-level information (e.g., extracts shapes for object recognition); Processing which relates to a person's concepts and expectations (or knowledge), restorative and selective mechanisms (such as attention) that influence perception.

Perception depends on complex functions of the nervous system, but subjectively seems mostly effortless because this processing happens outside conscious awareness. Since the rise of experimental psychology in the 19th century, psychology's understanding of perception has progressed by combining a variety of techniques. Psychophysics quantitatively describes the relationships between the physical qualities of the sensory input and perception. Sensory neuroscience studies the neural mechanisms underlying perception. Perceptual systems can also be studied computationally, in terms of the information they process. Perceptual issues in philosophy include the extent to which sensory qualities such as sound, smell or color exist in objective reality rather than in the mind of the perceiver. Although the senses were traditionally viewed as passive receptors, the study of illusions and ambiguous images has demonstrated that the brain's perceptual systems actively and pre-consciously attempt to make sense of their input. There is still active debate about the extent to which perception is an active process of hypothesis testing, analogous to science, or whether realistic sensory information is rich enough to make this process unnecessary (Gregory, Richard 1987)

The perceptual systems of the brain enable individuals to see the world around them as stable, even though the sensory information is typically incomplete and rapidly varying. Human and animal brains are structured in a modular way, with different areas processing different kinds of sensory information. Some of these modules take the form of sensory maps, mapping some aspect of the world across part of the brain's surface. These different modules are interconnected and influence each other. For instance, taste is strongly influenced by smell (DeVere, Ronald; Calvert, Marjorie 2010).

Perception is a response or opinion that is a process of the individual to receive or know about something through the senses. Several factors may play a role in shaping teachers perceptions. One of the most influential factors is the teachers 'orientation. The process of receiving stimulus between an individual with other individuals is different according to internal factor and external factor of everyone. Differences in understanding resulted in differences in perceptions between individuals with one another.

Teacher's perception is the response of a professional educator about what is experienced in educating, teaching, guiding, directing, training, assessing and evaluating students in the educational pathway that is influenced by the beliefs and feelings of the educator. This difference in understanding will cause different judgments of each teacher. The different of the teachers' understanding influence the way of the curriculum implementation. Different perceptions may affect the teacher's behavior on the judgments they made. Teacher' perceptions can be divided into two categories namely positive perceptions and negative perceptions. Positive or good teacher perception will become a good foundation in responding to all matters relating to the curriculum, including on the readiness of teachers to implementation of the curriculum. Meanwhile, a negative perception of teacher will become a barrier of the conduction of rules relating to the curriculum implementation.

Perception and Behavior

Perception may influence the way a person behaves. When a teacher interprets sensation CBA to be a difficult tendency, he or she will see it as an opportunity or a challenge and will know how to resolve it. It should be noted that learning or experience influence our perception and perception in turn influences one's behavior (Tanyi 2016). Thus, a teacher behaves towards the implementation of CBA.

Factors Affecting Perception

- The strength and quality of a stimulus: For perception to occur, strength and quality of a stimulus must be influential enough. For instance, if a teacher is very bold on when he or she is writing on the board, this will be a strong stimulus for a learner.
- The experience of the teacher/ learner: When a teacher or learner brings a relevant experience to a new situation, he/ she will be able to perceive more easily.
- Needs and Values: This has to do with what a person perceives which may be determine y what the person needs and personal values.
- Anticipation of result: It greatly determines what a person perceives. People often perceive what they think is probable. For instance, teachers should alert his/ her leaners of certain expectation in the subject being taught and let them arrive at the outcome.

Importance of perception

According to Tanyi (2016), perception is very important in the educational process. As we must perceive if we are to learn. It should be noted that what we learn and how we learn is a function of our perception, thus the following are importance of perception in the educational process

- Perception furnishes a person with experiences that can enhance thinking and understanding
- Perception equally helps in problem solving
- Perception also helps in building a person's emotions
- Perception also helps in the development of memory and imagination

The cognitive theory of learning by Jean Piaget

Cognitive theory was developed by a Switzerland biologist called Piaget. He studied how children adapt to their environment using observation. Adaptation occurs in three stages via assimilation, adaptation and accommodation. This theory has made us to understand that learners can construct their knowledge by interacting with their environment thus we need to make learning environment conducive for the learning process. Example; geography class should be organized with geographic didactic materials such as globe, maps and rock type past on the walls. Also, this theory made us to understand that we need to prepare our lesson note in function of age and class differences since at certain age students are not able to do certain things. Cognitive theory focuses on the thought processes behind the behavior. This process is psychological in nature and attempts to explain human behavior by understanding thought processes.

The attitude students have in some technical topics in geomorphology is as a result of what they have conceived in themselves and it is manifesting via not concentrating in reading particular topics in physical geography, Poor marks registered in these topics, poor class attendance, and not interested furthering education in this part of geography. There is therefore the need to establish tight relationships between acquiring knowledge and developing thinking processes.

Teachers need to take into consideration students varying ages and class levels when teaching especially some technical phenomena such as plate tectonics. Also, the minds of the students need to be influenced at a younger age physically, practical, spiritually and verbally in an optimistic way despite the challenges they normally encounter in the learning process

Practical Use of Didactic Material for Easy Understanding

Structure of the Earth

The Earth is made up of 4 different layers. They each have unique characteristics as described below

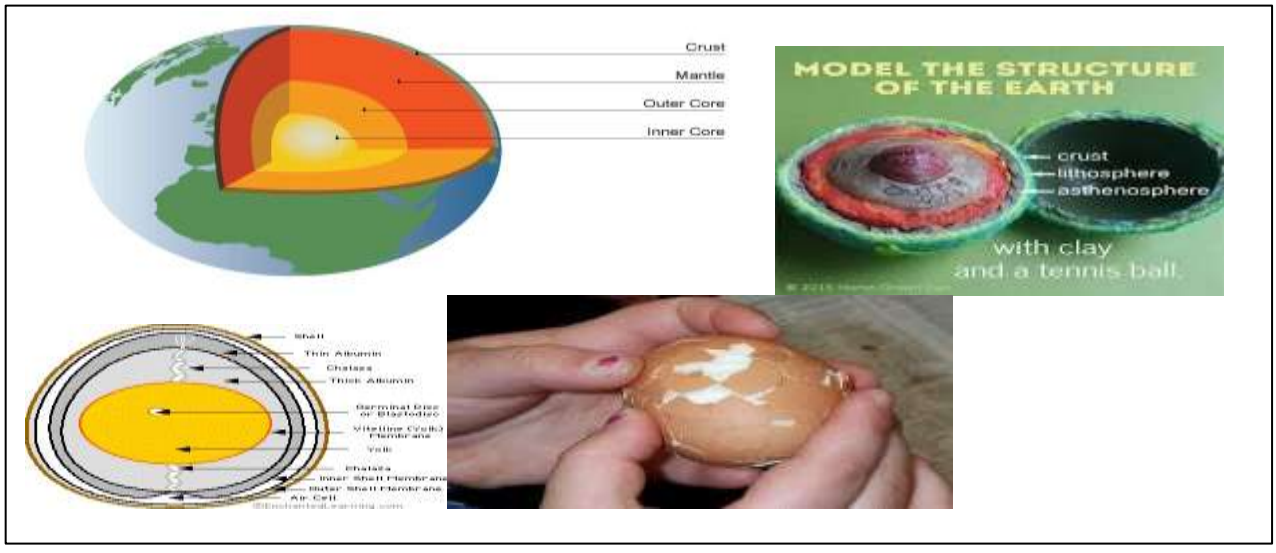

Figure 1: The internal structure of the earth. Source Encarta 2007

Figure 1 show the structure of the earth and its four layers. if a hardboiled egg is dropped, its shell will split in to several pieces. Egg can be use when teaching plate tectonics. The crust is the *thinnest* layer of the Earth and is the layer we live on. It is made up of a variety of rocks and can reach up to 70km thick in places. The crust itself is divided into large chunks called *tectonic plates.* There are around 7 large and 12 small plates, which float'on top of the mantle beneath them. The plates themselves are made up of 2 different types of crust, *continental crust* under the land and *oceanic crust* under the sea. Continental crust is *thick* (25-70km) and light because it is made of rocks with a *low density*. Oceanic crust is *thin* (6-11km) and heavy because it is made of rocks (mostly volcanic rocks) that have a high density. The oceanic crust covers 2/3 of the Earth 's surface.

Mantle

The mantle is the *thickest* layer of the Earth at 2,900km thick. It makes up nearly 80% of the volume of the Earth. The mantle itself is divided into 2 layers, the upper and lower mantles and the heat within these layers drives **convection currents**. The upper mantle is semisolid rock called *magma* that flows slowly due to convection currents. It is less than 1,000°C in temperature. The lower mantle is kept solid due to pressure and is between 1,000-3,500°C. If you had to describe the mantle, it is classed as a *liquid*.

Outer Core

The outer core is made of *liquid iron* and *nickel* and is between 3,500-4,000°C. As the liquid metal swirls around, it induces a current that generates the Earth 's magnetic field. Heat from the core powers the convection currents in the mantle. It is 2,900km thick.

Inner Core

The inner core is the *hottest* part of the Earth reaching temperatures between 4, 0004, 700°C, which are as hot as the surface of the sun. It is made of *solid iron* and *nickel t*hat are under so much pressure they cannot melt. It is 1,200km thick and heavy radioactive elements within the core generate the intense heat as they decay.

Teachers further explain that they sometimes use of breakable plate to explain how continent were once joint together before drifting in different directions this will facilitate the explanation of evidence Pangea splitting. This is shown on figure below. Projection of video programs to show tectonic process on the Pangea. the use eferagance to explain the internal activities occurring in the earth crust, the use of boiled egg to show the internal structure of the earth as shown on the figure below

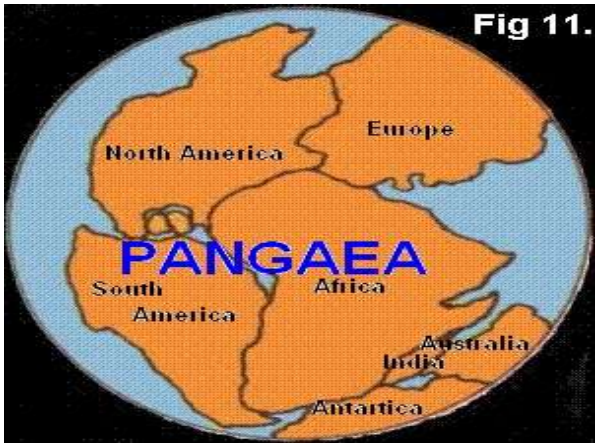

Figure 2: The use of breakable plates to explain Pangaea

As seen on this figure how Pangaea is joint together. Teacher often use breakable plate to show especially the evidence of plate movement. Furthermore, some teacher said they always refer learners to examine a breakable plate to understand how the continent was once joined together in one large supper continent which was name Pangaea. Later, this landmass somehow split up and this various continent drifted apart. This will facilitate learners understanding on the evidence of how continent or how plate was once joined together.

The use of maps

During the field study to assess how CBA can be used in overcoming learner's misconceptions on the difficulty in the teaching and learning of plate tectonics. Teacher revealed that they often use map to show the different plate, their movement and plate margins. As shown on the world map.

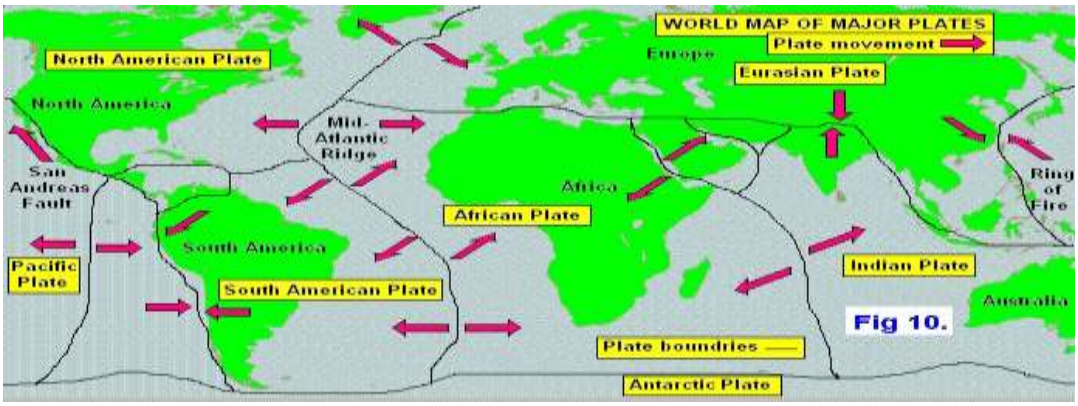

Figure 3: World map showing major plate: source https://www.gns.GNS science/Earthquakes/Earthquakes-at-a-Plate-Boundary/Tectonic-Plates-and Plate Boundaries 2020

World map on figure 3 shows the major plate and their movement**.** The Earth‘s plates are always moving**,** but their movement is very slow. In one year, most plates move less than the length of one of your fingers! Even though we cannot see their movement, scientists have evidence that the plates move. There are three different kinds of movement at plate boundaries!

As concerns, didactic material, the researcher asked which didactic material teachers using when teaching plate tectonics under the CBA to facilitate learners understanding. Although field study has proven that most teachers do not use CBA regularly. The researcher provided a list of suggested answers which is use under CBA and teachers were asked to specify others if their choice was not found in the list suggested by the researcher.

IV. ANALYSIS OF THE FINDINGS

In addition, the opinions of teachers in relation to didactic material when teaching plate tectonics are represented in Figure 4 below.

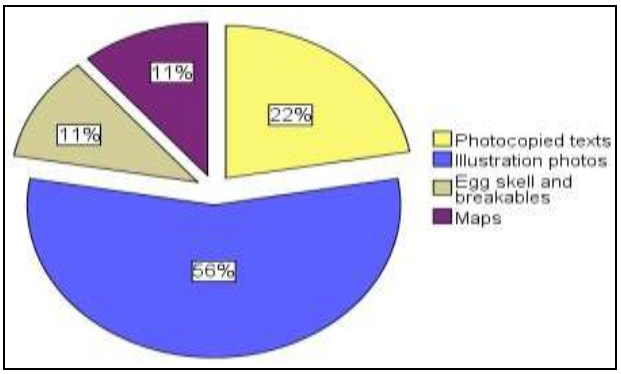

Figure 4: Some didactic materials teachers used when teaching plate tectonics, source field work

According to the figure 6 above, 56% of the teachers interviewed responded that they often illustrate using photos when teaching plate tectonics to show how plate are moving away from each other, moving toward and slide pass each other. 22% use photocopied text, here, learners read the text about plate tectonics and explain how they have understand in their own words. 11% use maps to demonstrate plate movement example, American plate moving away from Eurasian.

Another 11% use egg shell to illustrate internal structure of the earth. To show the inner core which is solid and consist of iron and nekel, with a density of about 13. 6g/cm3. The outer core which is liquid comprising of mostly iron, with a density of 10-12g/cm3. The mantle which is solid, with a thickness of about 2900 km thick. The crust which is solid and divided into two main types, oceanic and continental crust, the depth varies between 6km and 70km, with average density of3g/cm3.

According to some respondent, the internal structure of the egg can be used to aid learners to understand the internal structure of the earth.

During the field study, teachers were asked what they think are the causes of learner’s misconceptions on the difficulty in the teaching and learning of plate tectonics. Teachers were asked to identify the causes of learners’ misconception on the teaching and learning of plate tectonics. They were to choose from the list proposed by the researcher. Their responses are illustrated in Figure 5 below.

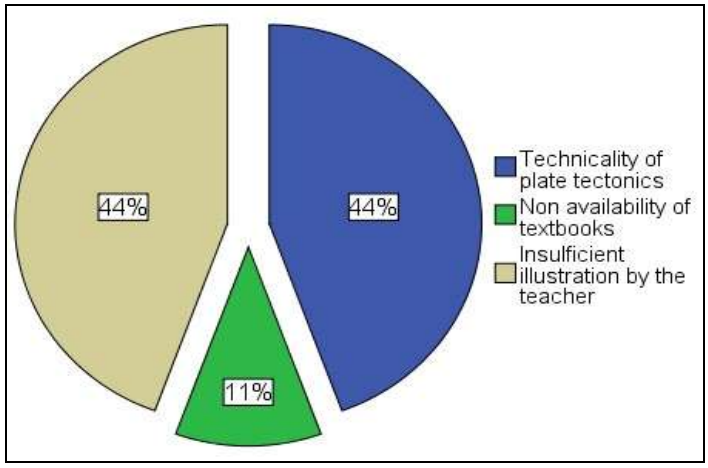

Figure 5: Teachers ‘response about the causes of learners ‘attitude on the difficulty in the teaching and learning of plate tectonics, Source: field data 2020.

According to figure 5 above, 44% of the teachers revealed that technicality of the topic and the none availability of textbook have also contributed to learners misconception on the difficulty in the teaching and learning of plate tectonics. Also, 11% said the teacher does not give sufficient illustration which can aid in understanding the lesson.

Proposed Practical Competence-Based Approach Steps

Rationale

The surface of the earth is made up of gigantic plates.

In this activity students look at how plate tectonic theory developed and why it was not accepted when it was first introduced.

What you need

A historical overview of the work of Wegener.

Plate tectonics - Birth of a theory (Wegener cartoon pictures)

This activity is the first in a sequence of two activities. The second activity is Plate tectonics: evolution of a theory

Focus

- As the surface of the Earth always looked as it does today? What evidence is there to support the idea that the appearance of the Earth has changed over time?

- What other views are there for how the surface of the Earth has changed?
- What evidence is there against plate tectonics?
- We take plate tectonics for granted today. Why was it so controversial when it was introduced?

Exploration

- Give students a copy of the information about Wegener (and encourage them to undertake their own research).
- In groups, give each group a copy of the cartoon pictures.
- Get them to use the information provided, and their own investigations, to create appropriate speech bubbles for what the cartoon people might be saying, which reflect their attitudes to the scientific approach and/or methodology of their time.
- Additionally, they could develop, and present to the class:
- A role-play or drama depicting Wegener ‘s role in the development of plate tectonic theory; or
- An investigation into another scientific theory that has developed over time through diverse methods and approaches.

Reflection

Why the shape of the coastlines of Africa and South America was not enough to show the continents had been joined?

- What is the significance of the rock and fossil evidence?
- Why would only one investigation have been insufficient to support plate tectonics?
- Why is the theory of plate tectonics so acceptable today?
- Which evidence supporting plate tectonics that has been around for a long time, is now looked at in a different light based on new discoveries? (For example, the shape of the continents is old evidence; discoveries about Earth ‘s magnetic field are new.)
- How have advances in technology clinched Wegener ‘s theory?
- What effect do plate movements have on the environment? Is this a rapid change or a slow change?

Activity resources

- Timeline detailing major points of Wegener and his work on plate tectonics.
- A historical overview of the work of Wegener
- A series of cartoon pictures

In addition, the use of boiling water: some teachers expressed that CBA which is an active method of learning has its own principle. It demands more of group work and illustrations amongst others. A teacher can ask learners to observe boiling water in a hot pot, this will facilitate their understanding of sub crustal convection current and the interior of the earth which is the origin of many land surface manifestations such as volcanic eruptions. The use of a certain medicine called efferagant to illustrate processes occurring in the interior of the earth. When it is drop into a cup of water, it starts to burble and move toward the surface of the cup.

Teachers perception were asked if the mode and effect of collaboration between mode and effect of collaboration between students-students, students-teacher and students -knowledge and aid in overcoming learners attitude on in the teaching and learning plate tectonics, this were their response.

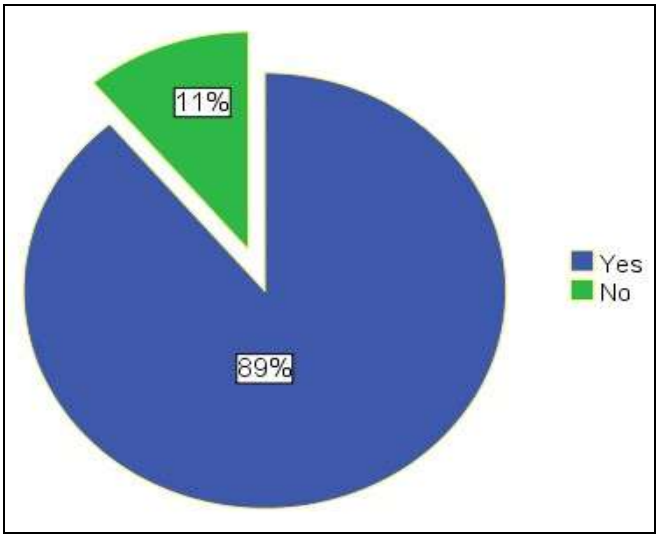

Figure 6: Teachers ‘response on whether the mode and effects of interaction between student, student-teacher and student knowledge can aid in overcoming learners attitude. Source field work data 2020.

As seen on the figure 6 above, 11% of the respondent said no while 89% of the respondent accepted the idea that the mode and effect of collaboration between mode and effect of collaboration between students-students, students-teacher and students -knowledge and aid in overcoming learner’s misconception on the difficult in the teaching and learning plate tectonics.

The interaction between learners, knowledge and teachers is very important as far as learning under CBA is concern. Once more, teachers were asked to give their opinion about the techniques which can facilitate learners understanding of plate tectonics, Teachers were asking to list the didactic material which can be use in teaching plate tectonics, according to the table 5, teachers said video projector, 2 others said motivation while the other said audio-visual lessons should be encourage when teaching in an electrify milieu. This will help learners observe think and can

V. RECOMMENDATION AND CONCLUSION

The proposed recommendation is address to the stakeholders who oversee the promotion of education in Cameroon, school authorities, teachers, parents and learners.

To the stakeholders

To the school administration, schools should be equipped with the entire essential textbook for every subject. Learners who do not have those textbooks will visit the library and carry out their research. A well equip library will encourage learners to do research.

School administration should reduce the number of students in Form five. They should build many Forms five (ABC to decongest). The school administration should not allow more than 100 students in one class. This is because an overcrowded classroom is a hindrance to class management.

The ministry of secondary education

The ministry of secondary education in collaboration with the pedagogic inspectors should make it obligatory for all teachers to attend the yearly pedagogic seminar organized between the month of September and October. This is because it is here that most challenges teachers face in implementing competency-based approach will be discuss and solution propose.

To the teachers

Although teachers are putting in more efforts as guides, advisers and facilitators, they are also encouraged to accept their profession and perform their duties judiciously. Teachers should try to reduce the number of hours taken in other school for extra classes to concentrate in their own school. Teaching students or future leaders should not be taken like business safari in which what matters is the number of hours taught a day in the so many different schools, but what learners were able to retain.

VI. CONCLUSION

Competency based approach is seen as an approach which if properly implemented, it will aid in overcoming many challenges learners encountered in the learning of some abstract topics in geography. According to the objective and teaching strategies use under CBA, this active method of teaching is very necessary for our contemporary society today. CBA emphasis on the transfer of knowledge to real life situation problem solving and competence which is necessary for sustainable development. If this approach can be effectively implemented, it will go a long way to fulfill its objectives and make the country ‘s dream come true by 2035.

The constraint is that teachers are partially using the new innovative approach. This is due to many challenges which can be overcome. The study discovered that they exist many challenges teachers face in the process of teaching plate tectonics such as in overcrowded classes. It is realized that although the CBA is an active method based on learners ‘active participation in the reinforcement of knowledge, teachers has a greater role to play as facilitators of the process. Furthermore, competency-based approach can be effectively use in overcoming learners’ misconception on the difficulty in the teaching and learning of plate tectonics via the strategies of teaching and learning under CBA. The study suggests some recommendation to make sure that CBA is effective use in overcoming the challenges face in the teaching and learning of some abstract phenomenon in physical geography. Thus, how can teachers ‘strategic positions influence the process of knowledge construction by the learner in the learning of plate tectonics in Form three using the CBA?.

Mindful of the challenges teachers face in implementing the CBA, teachers are encouraged to put extra efforts to implement the CBA especially the strategies used in teaching under CBA. Since CBA is action oriented, it requires teachers in action, teachers who will draw on their professional skills in subject matter, methodology, in decision-making and in social skill to enable the learners to be achievers**.**

To the learners

Learner need to understand that CBA is based on socio-constructivism, the learner should go through a process of personal appropriation, questioning his own convictions. This leads the learner to revise his prior knowledge and its scope to compare his own representations with those of his classmates, to search for information and validate it through consulting various sources of documentation and people in possession of information. In doing so, the learner will appeal to cognitive, affective and motivational strategies to set a balance between his previous knowledge and his newly acquired knowledge. The reflection of the learner will operate on his own learning processes, assure the quality of his acquisition and facilitate his retention. It is also essential to note that negotiation is an important aspect of a constructivist classroom. It unites teachers and students in a common purpose.

Learners should do their best to study using all the methods and strategies to understand, develop skills and be able to be resolve real world situation. Education in Cameroon is no longer like formally in which the teacher was accountable for learners’ education, but learners are supposed to reinforce their capacity. Learners are supposed to understand that, CBA requires a close focus on potential possibilities of future activities of graduates. This new approach is based on developing learners' competencies to help them face some problems in their daily life. It aims at enabling learners to put what they have learned to other life settings. CBA comes to relates school life and real-life setting, to help learners become competent in the society. The first apparent characteristic of the CBA is the focus on learning and students' activities (rather than on the teacher's role. The CBA is also a socio constructivist approach based on training students to construct their own knowledge to be able to use it in their daily life. According to Auerbach (1986) cited by Richards and Rodgers (2002 p.146), the essential features included in implementing the CBA syllabus is a focus on successful functioning in society. Competency based education adapts to the evolving needs of students, competency which implies the ability to use a skill. Therefore, learners need to be updated and be aware of their

responsibility and do everything possible to be useful in the society.

To The Parent

Parent should remember that encouragement and support for learning activities at home combined with parental involvement in schooling is critical to children‘s education. A growing body of research shows that building effective partnerships between parents, families and schools to support children‘s learning leads to improved learning outcomes. Parents are the first and continuing educators of their children

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