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EDITORIAL

STEM Journal of Anambra STAN (STEMJAS) is a publication of **Science Teachers Association of Nigeria, Anambra State Chapter.** STEMJAS is developed to disseminate information on Science, Technology, Engineering and Mathematics (STEM) to teachers, teacher-trainers, researchers and other interested persons. Articles that are of relevance to STEM education are published in this journal.

We are grateful to the contributors and hope that our readers will enjoy reading these contributions.

Prof. Rita N. Nnorom

Editor-in-Chief

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EFFECT OF CURRICULUM CHANGES IN TEACHING AND LEARNING OF BIOLOGY IN SENIOR SECONDARY SCHOOL IN ANAMBRA STATE.

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Abstract

This study examines the Effect of Curriculum Changes in Teaching and Learning of Biology in Anambra State.A descriptive research approach was employed whereby semi-structured interviews, focus group discussions were used to collect the data.Literature review was carried out according to the variables under study. A Sample of one hundred and twenty respondents (120) was randomly selected through purposive sampling method. Questionnaire was the main instrument used for data collection. The instrument was validatedby two biology educators and two experts in measurement and evaluation. The reliability estimate of the instrument was established through the split-half reliability method and its associated spearman-brown prophecy formula.The data generated from the study were analyzed using mean and standard deviation statistical analysis.The findings of the study revealed that curriculum changes should also involve changes in teaching and learning methods in order to measure up with the newly introduced content. Again those changes in school curriculum particularly in biology do not consider the teachers mastery of subject matter and availability of teaching and learning materials. Amongst the recommendation were that educational stakeholders should investigate the types of teaching and learning methods to be used before making a change in the curriculum. Also, Schools should have science subjects' facilities like laboratories filled with all needed equipment and other related teaching and learning materials to enable STEM education very effective.

Keywords: Curriculum changes, Teaching and learning

Introduction

In a competitive world of integrated economy, rapid scientific and technological innovation will continue to have a profound impact on our educational system. In order to overcome these challenges, our school curriculum would always be reviewed. The Biology Curriculum, like other science subjects, provides a platform for developing and contributing to scientific literacy, knowledge and skills for life-long learning in Science, Technology, Engineering and Mathematics (STEM).Curriculum being considered the heart of any learning institution implies that no academic institution can exist without curriculum. The word "curriculum" comes from the Latin word "currere", which means "to run or to run a course". That is, a course of study, which contains a body of subject matter approved for teaching by society in schools (Ibrahim and Ajayi, 2006). However, researchers view "curriculum" from different perspectives; According to Onwuka (2015),Curriculum is the combination of instructional practices, learning experience, and students' performance assessment that are designed to bring out and evaluate the target learning of a particular course. Development of curriculum is a dynamic process that arises due to the changes that occur in our society and it comprises of total learning experiences of individual not only in school but the society at large (Bilbao, Lucido, Iringan. & Janer, 2008).According to Alazi, (2016) Curriculum is a "structured series of learning outcomes", that is to say that it is an"input" which results in a certain "output"). Another definition from Bishop, (2009) added that Curriculum is "an organized set of formal educational or training intentions". Educational curriculum planners are highly concerned with daily learners' and schools' academic performance as this is the strongest pillar of education development. Academic achievement in developing countries is measured according to the goals established in educational policies and national vision, this involves

outstanding performance on teacher-made tests and examinations, national examinations and other benchmarks for quality assurance based on the formal curriculum (Mosha, 2006).The history of curriculum was dated back during the pre-colonial era, when appropriate curricula development depended largely on theneeds of the different communities and nation-states that make up what is now called Nigeria. There were no uniform educational objectives, and so no uniform curriculum to meet the varying needs of each community (Fafunwa, 1974; cited in Bishop, 2009). Bishop continued that, during the colonial era, following the period of the Missionaries; who came in with the approaches to educate the citizenry, but with different objectives. Their main objective was aimed at fulfilling their own political colonization goals. By 1888, they produced an educational policy document tagged "The First Education Ordinance". By 1920, the Phelps Stoke's Commission was set upprecisely to critically examine the process of education in Africa. The Commission came out with a blueprint stressing the need to make education relevant to the needs of the society. Formal schools were established, though the curriculum was meant to produce teachers, clerical officers, and middle level administrative officers that would serve the British Colonial master. Thus, the curriculum during the colonial period was narrow and could not be very useful in the rapid transformation of the country in an age of science and technology. In the Post colonial period, Nigeria as a nation had taken up the challenge of nationhood by trying to determine what was best for her citizens. Curriculum planners found the answer in education, and knew that an appropriate curriculum that would meet the needs and aspirations of her citizens should be designed and implemented. A team from USA was invited a sexternal experts who could make appropriate recommendations. Thus, a change of the curriculum in Nigerian schools

was imminent. The curriculum experts made very useful recommendations which, resulted in the new curriculum in which, for example, subject such as Geography and African history were introduced as part of the curriculum. French Language replaced Latin, and British history, which was a majorsubject, gave way to African/Nigerian history. Then, Nigerian Educational Research Council (NERC) (now known as Nigerian Educational Research and Development Council (NERDC), as well as Comparative and Scientific Adaptation Centre (CESAC), were assigned the responsibility of implementing the recommendations of the US experts from Harvard University. Inspite of these changes, and because of the upsurge of interest and global growth and development in Technology, Nigerian's educational planners did not rest as there was yet another call to revise the curriculum. The response to this call resulted in the National curriculum Conference held in 1969, out of which has grown a more acceptable National Policy on Education first published in 1977. It was this document that brought about the educational system now referred to as the 6-3-3-4 system (FRN, 2004).Through this curriculum, science subjects which include Biology, Chemistry and physics are being taught as individual subjects in senior secondary school and as integrated science in junior secondary school.

Biology is concern with the study of plants and animals in relation to their environment. As an integral science subject, biology provides contents in the training of students who have interest in studying medicine, nursing, pharmacy, forestry and so on. Biology curriculum was first introduced in 1977, with duration of five years for secondary school education as at that time.As one of the demands on science education, there was need to broaden the curriculum, hence there have been constant changes in the biology curriculum to meet up with the contemporal innovation in Science education (Bishop,

2009). Biology is also one of the elective subjects in the Key Learning Area (KLA) of Science Education. Biology Curriculum serves as a part of the Science Curriculum that provides a range of balanced learning experiences through which students develop the necessary scientific knowledge and understanding, skills and processes, values and attitudes embedded in the 'Life and Living' strand and other strands of science education for personal development and for contributing towards a scientific and technological world. The curriculum will prepare students for entering tertiary courses, vocation-related courses or the workforce in various fields of life science as stated above. In keeping with the dynamics of social change and Curriculum change according to Hancock et al (2012), there is need to adhere to transformation of the curriculum schemes, design, goals and content that provides all children with the skills and knowledge they need in a global and diverse society. Dziwa et al (2013), opined that curriculum change is not a matter of supply of appropriate technical information rather it involves changing attitudes, values, skills and relationship. It has far reaching implications in changing some of the fundamental elements of the curriculum which are aims, content (what to be taught), methodology (how it is going to be taught) and evaluation. Changes done on curriculum are centered on learners' improvement, applying the learnt knowledge in their daily life, use and maintain domestic appliances, use sustainable energy conversion system for environmental conservation and use of I.C.T tools in accessing information. Furthermore, Jackson (2006) maintains that, curriculum changes should involve society, teachers, students and other educational institutes, organizations and stake holders in the whole process of reformation. The effect of curriculum change has negatively interrupted the efficacy of the education objectives because there is no linkage or close working relationship between

curriculum developers, assessors, implementers, consumers and evaluators. Curriculum changes should be done in such that it does not affect teaching and learning development so as to maintain the status of education. Changing the way teachers and students learn requires specific approaches, as such emphasis on more sophisticated implementation and in-service trainings for teachers should be made available. Today, in some areas, new discoveries are made on a daily basis, hence in other to equip our students; we must give them the recent information and theories that match with the new discoveries. This means that curriculums must change to reflect the most current thoughts and innovations in education. Jonas, (2002), pointed Technology as a factor that drives about change in science subjects' curriculum. Furthermore, Killen (2000) stated that science subjects' curriculum reforms are designed to encourage all the people to be lifelong learners who will be responsible and productive members of society; and allowing learners to continually evaluate the dynamic interaction between the goal, actions, and feedback mechanisms. Killen further added that without this interaction, learners cannot identify ways to take action, evaluate the impact of their actions, or even recognize their responsibility as learners.

McGraner and Saertz (2009), opined that learners' achievement depends to a great extent on teachers' abilities to foster rich conceptual understanding of curriculum content. However, many teachers are faced by the requisite content and pedagogical knowledge to teach for conceptual understanding. Teaching and learning of science subjects has been negatively affected by different factors that lead to some difficulties in effective implementation of a developed curriculum, this includes inadequate or lack of teaching and learning aids, teaching and learning methodologies, teachers' mastery of knowledge to teach the subjects, students' congestion in classes and inadequate or

lack of laboratory facilities. According to Brown, (2007), teaching methodology was distorted greatly by the changes in the curriculum which was not commiserated with the new innovation in the education system. That was the reason why he suggested that any curriculum change must be connected to the use of learner-centered method,
as this seems to be the best way of teaching and learning the science subjects. This methodology is viewed as a free acquisition of knowledge by the learner through cognitive, effective and psychomotor domains. Lee (2005) also added that science subjects' teachers must recognize the types and forms of curricular resources that facilitate learners learning content as well as appropriate assessment that serve as instructional, learning and assessment tools. Another study done by Ajuwape and Olatoye (2014) examined the impact of planning on teaching and curriculum development of teaching and they found out that lack of qualified teachers, lack of equipment's and facilities for teaching, insufficient allotment of time for Biology on the school time table and poor methods of teaching are the major factors militating against the successive implementation of the changed curriculum in Biology. Again, According to Silla (2009), in order to make biology lessons easy and enjoyable there should be a full procurement of instructional materials and teaching aids because the poor performances seen in biology students in most schools are the fact that the teaching and learning is verbally dominated.

The performances of the students in sciences especially Biology has been poor for some years. In Anambra State particularly, theWest Africa Examination Council (WAEC) result analysis revealed that only 36.42%, 33.40%, 45.67%, 31.20%, 37.20%, 30.76%,, 34.70%, 32.80%, 46.20%, 36.40%, 40.20% of the candidates have credit pass in Biology for the years 2008-2018 respectively (Anambra State Post Primary School Service Commission Awka, 2018). Again National Examination Council

(NECO)result analysis show that only 51.23%,30.34.2%, 48.25%, 49.43%, 48.93%, 45.65%, 44.86%, 44.56%, 40.41%, 41.52%, 47.51% of the candidates have credit pass in Biology for the years 2008-2018 respectively.(Anambra State Post Primary School Service Commission Awka, 2018). These evidences have shown that students don't really do well in their external examinations. Efforts have been made by educational stakeholders to rescue this situation of Biology failure by students; which was the reason why they embarked on curriculum changes, improvement and development to help students pass the subject through effective implementation of the curriculum by the teachers. Unfortunately, the changes done to the curriculum do not go hand in hand with changes in teachers' teaching and learning methodologies, mastery of the subject matter and availability of the teaching and learning materials, hence the curriculum crises therein. This study seeks to examine the impact of the curriculum changes in the teaching and learning of biology in Anambra state and possibly recommend the way forward.

Purpose of study

The study was to examine the effects of the curriculum changes in teaching and learning of biology in secondary schools in Anambra state.

Specifically, the study

1. examined if curriculum changes require changes in teaching methodology.
2. examined if teachers have the mastery of the subject matter required by change in the school curriculum
3. assessed ifcurriculum changes goes with the availability of teaching and learning materials.

Research questions

The following research questions guide the study:

1. To what extent do curriculum changes require changes in teaching methodology?
2. To what extent is teachers' mastery of subject matter required by change in the school curriculum?
3. To what extent do curriculum changes goes with the availability of teaching and practical materials?

Method

The study was carried out in Awka Education zone of Anambra state, which is one of the six education zones in Anambra state. The zone comprises of five LocalGovernment Areas namely; Awka south, Awka north, Anaocha, Dunukofia, and Njikoka. Awka education zone has up to eighty (80) government owned primary schools, sixty (60) secondary schools and two (2) tertiary institutions with many teachers and lecturers. A descriptive survey research was employed for the study. Using purposive sampling method, five (5) heads of school, twenty five (25) teachers and one hundred and twenty (120) students, making up a total of 150 respondents drawn from the population size of the selected public schools in the study area. Questionnaire was the main instrument used for data collection and was administered to the selected teachers used for the study. The instrument was validated by two biology educators and two experts in measurement and evaluation, all from science education department, Nnamdi Azikiwe University, Awka. The reliability estimate of the instrument was established through the split-half reliability method and its associated spearman-brown prophecy formula. Focused group discussion was conducted in group of twenty students selected from public secondary schools and was conducted after

normal class hours in order to avoid interruption in classroom instructional hours. Documented interviews were conducted without prior knowledge with the selected heads of schools used for the study. The data generated from the study were analyzed using mean and standard deviation statistical analysis. A table of rating scale was used in the interpretation of the result gotten from the teachers is shown in Table 1

Table1: Interpretation of rating scores

Scale	Responses	mean interval
1	Strongly Agree	4.51-5.00
2	Agree	3.51-4.50
3	Disagree	2.51-3.50
4	Strongly Disagree	1.51-2.50

Table 3.1: Composition of Respondents in the Study

Respondents	Expected (N= 124)	Studied (N=0)	Percent
Heads of Schools	5	5	100
Biology Teachers	25	20	80
Students	120	100	85
Total	150	125	85

Results

Research question one: To what extent do curriculum changes require changes in teaching methodology?

Interviews and group discussions were conducted for both heads of schools and students. They were asked to give views on whether there is a need to have changes in teaching methods after having the curriculum changes. Amongst other statements, one of the heads of schools has this to say: ‘’*Basically, curriculum changes particularly in*

the science subjects are important and inevitable; however, these changes would have better academic achievements to students enrolled if issues of teaching and learning methods and technological innovations had been considered. It is really difficult to change our curriculum without a commiserate change in the innovations of the teachers of the subjects involved''

Another head of school has this to say during the interview

"These curriculum changes particularly in science subjects are astonishing the ways are done. As I said before that changes are important especially in relation to the change of time and environment, but problem is how these changes occur.

Group discussions with students suggests that changes in teaching methodology is inevitable, this is because in science things change day after day, thus it is necessary that when changes are done to incorporate the new concepts in the curriculum, teaching and learning methods should also change to facilitate the learning of the concepts. Further discussion with the students Again show 80 out of 100 students (80%) supported the idea of having changes in science subjects' curriculum but frowned at having changes in the curriculum without changing teaching and learning methods.

It was revealed generally from the discussions and interviews from the students and heads of schools respectively; curriculum changes should go hand in hand with changes in teaching methods so as to cope with the new inventions introduced in a new curriculum.

Table 3.2: The responses of Biology teachers on if curriculum changes require changes in teaching methodology

S/N	ITEMS	Ẋ	SD
1	Introduction of a change in curriculum does not have any effect on my teaching methodology	2.96	14.50
2	I can confidently change my methodology when there is a change in the curriculum	3.51	16.46
3	The poor performances of my students lately is as a result of constant change in the curriculum	3.50	16.38
4	I am always notified by the education stakeholders before changes are made in the curriculum	2.62	13.13
5	My contributions as a teacher is considered when curriculum changes are made	1.68	8.23
6	For the fact that my teaching methodology is child centered, change in curriculum have no effect on my teaching methodology	3.29	15.20
7	There are so many enlightments by the government on the need for the me to change my teaching methods to meet the demands of the new curriculum	2.00	9.79
8	Changes in the curricular should be made only when there is a new innovation in the teaching methodology	3.41	14.91
9	Most times invention of new innovation in teaching should demand for a change in the curriculum	4.50	17.20
10	I do not have a best teaching methods whether there is a change in the curriculum or not	3.51	16.40

Table 3.2: reveals the responses of Biology teachers if curriculum changes require changes in teaching methodology. From the table, Biology teachers' responses recorded on items 2,3,6,9 and 10 with Standard deviation scores of 16.46, 16.38, 15.20, 17.20 and 16.40 respectively show a strong evidence that there is a satisfied argument that change in the curriculum require change in their teaching methodology. More so, the response on the items 1,5,7 with standard deviation of 4.50, 8.23 and 9.79 show a fair satisfaction on the argument. This implies that all the responses from the teachers point towards the agreement that change in the curriculum require a change in the teaching methodology.

Research Question Two: To what extent is teachers' mastery of subject matter required by change in the school curriculum?

In an interview with the heads of the teachers, it was revealed that, generally many teachers have little mastery of subject matter required by changes in school curriculum particularly to those who start to implement the changes for the first time. One of the heads of schools has this to say:*''We seriously need to organize trainings soon after the changes in the curriculum in order to have full mastery of the subject matter required by the changes in school curriculum. When a teacher teaches something that he is not competent with, it poses a big problem because it reduces your confidence and eventually despised by the learners."*

Another head of school have this to say:

Due to lack of mastery of the subject matter required by the changes in school curriculum, some teachers tend to skip some topics or concepts that should be taught to a certain level of classes as teachers have nothing to present or share with students.

The students during the discussion said that curriculum changes does not give enough opportunity for teachers to learn and familiarize to the required subject matter ultimately

makes teachers to implement the changes aimlessly. They also added that many teachers who are to implement the changes particularly for the first time seem to face many difficulties because they always lack mastery of the required subject matter and teaching and learning skills.

From the findings, it is justified that many teachers do not have mastery of subject matter required in the changes of school curriculum this is because the changes made do not consider them as part of those changes as far as implementation of the changes is concerned.

Table 3.2: The responses from Biology teachers on if mastery of subject matter required by change in the school curriculum

S/N	ITEMS	Ẋ	SD
1	I have taught biology for many years, I do not need mastery of a new introduced concept in the curriculum	2.00	9.79
2	I need a mastery of the subject matter when a new concept is introduced in the curriculum	3.30	16.30
3	I skip topics while teaching due to non-masteryof the subject matter when there is a change in the curriculum	3.20	15.20
4	My students performed poorly in the external examination due to non-mastery of some topics introduced in the new curriculum	3.36	16.46
5	To be abreast with the concepts of the topics is not a prerequisite for a change in a curriculum	1.40	6.86
6	I have a mastery of my subject matter due to the efforts of the government in organizing workshops and seminars for teachers	2.76	13.33

7	The outcome of the curriculum change is seen in the performances of my students due to my subject matter competency.	3.21	15.28
8	I have some difficulties in the mastery of my subject matter when too many subjects are added to the curriculum	2.66	10.58
9	I performed more efficiently when I teach the subjects of my specialization than when given a different subject to teach	3.40	16.50
10	A change in the curriculum should not be made in relation to the concepts of the subjects offered by the students	1.45	6.89

Table 3.2 revealed the responses of biology teachers on if a change in the curriculum should require mastery of the subject matter. From the data we have it was shown that items 2,3,4,7 and 9 with standard deviation scores of 16.30, 15.20, 16.46, 15.28 and 16.50 respectively show a convincingly that curriculum change should go in hand with mastery of the subject matter by the teacher. On the other hand, items 1, 8 and 6 with standard deviation of 9.79, 10.66 and 13.33 respectively show a fair satisfaction to the argument, meanwhile there was a low satisfaction seen on the items 5 and 10 with standard deviation scores of 6.86 and 6.89. This implies that the data gotten from the teachers supports that a change in the curriculum should require mastery of the subject matter by the teachers.

Research Question three: To what extent do curriculum changes goes with the availability of teaching and practical materials?

The views of heads of schools on if curriculum changes go with the availability of teaching and learning materials were recorded and evaluated. Interviews with head of schools pointed out that in many occasions changes in curriculum do not consider the

availability of teaching and learning materials. They further stated that Changes are introduced and implemented while materials are not available for teachers due to lack of funds. That is the reason why students end up in studying practical sessions in a theoretical manner.

One of the Heads of school stated that:

"The only method of teaching Science subjects is through theory perpendicularly with practical sessions and not teaching science as if you are delivery an inaugural lecture. A student who learns science is prepared to be more practical oriented therefore he/she needs to spend much time in practical works when the practical materials are available.''

Group discussions from the students reviewed that in most cases due to lack of teaching and learning materials our biology lessons are taught through lecture method while we experience very few practical sessions. One of the students stated categorically that.

"Learning of biology as a life science needs more student participation during classroom delivery. Furthermore, studying biology involves practical works instead of relying much on lecture method like learning languages. However, big problems my school presently is lack of teaching and learning materials including scientific facilities like laboratories equipments''

The findings suggest clearly that changes that are done in the curriculum do not consider the availability of teaching and practical materials, hence affects the whole teaching and learning process of biology lessons are done in the classroom instead of using the laboratory.

Table 3.3: The responses from Biology teachers on if curriculum changes goes with the availability of teaching and practical materials.

S/N	ITEMS	$\dot{X}$	SD
1	I am funded to procure new equipment for my practical activities for external examination, not because of a change in the curriculum	3.30	16.40
2	Curriculum change has helped in the procurement of new technological and laboratory equipment in my school	1.84	9.01
3	I have a well equipped laboratory, whether there is an introduction of new curriculum or not	2.90	14.44
4	I always improvise during my practical classes due to lack of laboratory materials	3.20	16.20
5.	Introduction of any change in the curriculum without the teachers knowledge always distorts the mode of practicals activities	4.50	17.70
6.	My school management have little or no regard in the procurement of practical apparatus use for practical lessons	2.66	13.11
7	There has been a review in the teaching and practical materials availability whenever there is a change in the curriculum	1.52	7.45

8	I record poor performances on my students due to inadequate practical materials, even after a change in the curriculum	3.34	16.44
9	I have an equipped laboratory in my school, though the time allocated for the practical activities are not sufficient	3.50	16.70
10	The government pays more attention in the procurement of teaching and learning materials before introducing a change in the curriculum	1.40	5.10

Table 3.3 shows the responses of biology teachers on if curriculum changes go with the availability of teaching and practical materials. From the data, it was revealed that items 1,4,5,8 and 9 with standard deviation of 16.50, 16.20, 17.70,16.44 and 16.70 respectively suggests that there is a satisfied agreement that curriculum changes should go with the availability of teaching and practical materials. Nevertheless, items 3 and 6 with standard deviation of 14.44 and 13.11 respectively show a fair satisfaction to the argument, while items 2,7 and 10 with standard deviation of 9.01, 7.45 and 5.10 show a low satisfaction on the argument. This implies that there is a huge agreement from the findings that curriculum change should go in hand with making available teaching and practical materials for efficient learning process to take place.

Discussion

The findings from interviews with the heads of schools, group discussion with the students, questionnaire responses from the teachers show clearly with respect to research question one, that changes in the curriculum should consider the teachers teaching methodology in other to enable them teach confidently with the new

introduced concepts in the curriculum. The findings are in agreement with Brown, (2007) who found out that teaching methodology was distorted greatly by the changes in the curriculum because of non conformity with the new innovation in the education system. Dzina et al (2013) in their study also agreed to the findings where they stated that change in the curriculum do not only establish content attitude, values, skills and relationship as the technical information, but the key aim of a change in the curriculum is how to relate the new content to the students. Thus, implies that teaching methodology and evaluation shows the practicality of the curriculum. The findings from table 3.1 reviewed the responses of biology teachers on if curriculum changes require change in the teaching methodology. It was found that there was a high satisfaction on the agreement that the need for curriculum change to go in hand with the teachers teaching methodology cannot be over emphasized. Killen (2000) agrees with the report gotten from the teachers when he suggested that it is only through teaching methodology that teachers would instill in the students ways to take actions, evaluate the impacts of their action and be able to recognize their responsibilities as learners.

With reference to research question two, the findings of the study revealed that most teachers have little or no knowledge of the subject matter required by the change in the school curriculum, as a result affects their ability to teach in their various classes confidently; this has led to the poor performance of the students in science subjects particularly biology. Mchraner and Saenz (2009) agrees with this findings in their study where they stated that learners achievement depends to a great extent on teachers ability to foster rich conceptual understanding of the curriculum content. Their statements supports the findings shown in table 3.2 which revealed that biology teachers were in

support that the change in the curriculum require mastery of the subject matter with high satisfying mean and standard deviation as shown in the table.

Finally, with reference from research question three, findings of this study show that in many occasions, changes in the curriculum do not consider the availability of teaching and practical materials, also that changes are made in the curriculum but the teaching and practical materials are not available. The findings of Ajuwape and Olatoye, (2004) agrees with the above findings, where they stated that lack of equipment and facilities for teaching biology in secondary schools has been a factor militating against the successive implementation of the changed curriculum. From the response of biology teachers in table 3.3, the high satisfying remarks from mean and standard deviation revealed that curriculum change should go in hand with the availability of teaching and practical materials for efficient learning process. This agrees with Silla, (2009), who stated that to make biology lessons easy and enjoyable, there should be a full procurement of instructional materials and teaching aids to improve on the poor performances seen in the students due to conditioned verbal teaching by teachers.

Above all, the study validated that reformation of the curriculum must go in hand with corresponding teachers teaching methodology, mastery of subject matter and availability of teaching and practical materials.

Conclusion

On the basics of the findings from the study, it was revealed that school curriculum change should involve change in teaching and learning methodology in other to enable the teachers to cope with the new concepts in the curriculum and also foster a better understanding of the concepts by the students. Secondly, teachers should have a full

mastery of the subject matter required by the changes in the curriculum especially the first teachers that are used for the implementation of the curriculum. Finally, the teaching and practical materials should be made available whenever there is a change in the curriculum, to enable an efficient implementation of the new introduced concepts of the curriculum.

Recommendation

Findings arising from this study have made possible the following recommendations:

1. Educational stakeholders and practitioners should not think of any change in the curriculum without investigating the type of teaching methodology to be used, level of mastery of the subject matter by teachers and availability of the teaching and practical material
2. Curriculum developers should seek the teachers knowledge on the extent of availability of the teaching materials and feasibility of the newly introduced innovation because the teacher are the main curriculum evaluators and validators
3. Curriculum evaluation forum should be established at the state zonal levels. This forum would assist in unveiling necessary information and directives on the direct effect of the change of curriculum on the teaching and learning process in other to foster feedback and curriculum output mechanism.

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