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Needs Assessment of Nigerian Senior Secondary School Science Teachers for Improvement of Science Instruction in Taraba State in Nigeria.

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Abstract
The study was conducted to examine the capacity needs of senior secondary schools of science teachers for acquisition of competencies for science instruction in Taraba State, Nigeria. The study made use of survey research design with a total sample of 360 senior secondary shoo' science teachers that was selected through proportionate stratified random sampling techniques. A ten item multiple choice test of' structured questionnaire were developed for obtaining data on the capacity building needs for planning of science instruction. The instrument was face validated by 3 experts and the reliability coefficient of 0.90 was obtained using Cronbach alpha method. The data collected was analyzed using mean and improvement needed index (INI). The study found out that capacity building needs 10 items are highly needed by the science teachers for planning of science instruction and therefore, ii was suggested that the findings should be utilized to develop capacity building needs programme for a periodic retraining in form of in-service programmes that will call out meaningful workshops or short duration courses for updating and maintenance of lifelong learning which is the heart of science teachers' professionalism development for greater efficiency.
Key words:- Science Teachers, Capacity needs, Planning, Implementation, Evaluation, Instruction.

Introduction

Science is an organized system of explanations of nature through the processes of experimentation that are subjected to modifications in the light of further empirical evidences (Daramola, 2005). Scientific knowledge is a function of the processes by which scientists come to obtain the knowledge that gives same understanding of cause- and -effect relationships with the power to predict and control the universe (Rodger, 2002). In an attempt to make the teaching of science effective, All (2001) observed that the senior secondary school level is the stage at which individual science subjects such as chemistry, physics, biology, mathematics and agriculture are to be thoroughly taught the students in readiness for future science-related occupations in applied sciences such as medicine, engineering etc and even in other fields of learning.

Therefore, Daramola (2005) described an effective science teaching as a process whereby professionally trained teachers are employed to instruct learners through the process of sciencing in well-structured and organized settings available within the school systems. To ensure that effective science teaching is achieved in the senior secondary schools there must be good planning that are adequate for proper assessment of science teaching and learning outcome (ICSU, 2002). As a facilitator of knowledge, skills and values to the society, teachers in Nigeria and in order parts of the world, are always considered as the nations' greatest asset. Hence, teachers must be able to play their roles and fulfill their responsibilities to their utmost capabilities. Therefore, teachers must be well prepared for the profession as well as maintain and improve their skills through life long career learning.

That is, there is need for science teachers to be effectively prepared and equipped in the pedagogical content and approaches of teaching science, since the quality of teaching determines the outcome of the result. This requires that the professional development should be an integral and essential part of the efforts made to raise the standard of teaching and learning and the students achievement. Also teachers should inculcate in their students dispositions towards lifelosng learning and skill required for challenges in the classroom.

In view of this Okunloye (2005) described an effective science teacher as a person who has been trained pedagogically and acquired a systematic body of knowledge in specialized teacher training educational institutions. The training that equip the teachers with the needed capacities to efficiently facilitate science instructions in the science education content subjects (Chemistry, Physics and Biology). The science teachers' qualification in term of academic and proficiency in professional training has an important input in touching their effective deliveries since quality output demands for quality input. In our schools a qualified teacher is very essential in the operation flow of any education system by increasing the students' achievement while the anxiety level coming from poor performance is reduced. In Nigeria, the situation calls for the need to equip teachers with the necessary knowledge and skills which include issues relating to the quality of teaching and

learning sciences. Nigeria, like any other developed and developing countries is confronted with the problem of inadequate trained science teachers especially in the teaching of physics, chemistry biology and Agricultural science. In this case teachers of various educational backgrounds, such as engineering, biology, biochemistry, microbiology are often are required to teach science subjects which are not trained for in our secondary schools. Though these categories of teachers might have used various kinds of strategies in their teaching, they are in serious need for in- service training course in order to teach science meaningfully and effectively whist filling the gaps of constant and pedagogical content knowledge in the subject that they are required to teach (Subahan, Lilid, Khalijah and Rahizan 2001).

Therefore to a great extent, the importance of capacity variables should be taken into cognizance in the process of designing in-service training programmes for the practicing science teachers, now that the current demands of the 21st century in the understanding of science necessitates the possession of well built capacities by science teachers in teaching science (ICSU, 2002). According to Hornsby (2006) capacity is described as the ability, knowledge, skills, fitness, experience and proficiency needed by an individual to get a particular task The intention of building capacity needs of science teachers is to provide the right atmosphere for the understanding of concepts, development of scientific skills and attitudes among teachers. The science teachers might be ill-prepared by exposing them to those activities and skills that will not equip them with the needed capacities for planning senior secondary schools science instructions. This will enable them develop negative attitude towards achieving superior academic gains in their teaching subject (Ali, 1997). According to Hornby (2006) capacity is described as the ability, knowledge, skills, fitness, experience and proficiency needed by an individual to get a particular task done. Triner, Greenberry & Watkins (1996) defined needs as the gap between current and desired (or required) result that is, the results of the gap between what is and what it should be. Thus, the capacity building needs of science teachers is seen as the process of strengthening and equipping science teachers with the content understanding, skills, access to information, functional knowledge and training that will enhance their planning performances in an efficient and effective way (ICSU, 2002). Currently, achieving quality and effective planning of science instruction is the main controversial issues against the effectiveness of teaching science in Nigeria senior secondary schools especially in Taraba state in which studies in science education (Ugbanga and Egbunomu, 2008) have made attempts to unravel the causes of achievement in these three science subjects (physics, chemistry and biology) among students. Robert, Dooley, Harlin and Murphrey (2006) then observed that planning is one of the teaching innovation evolved to improve the quality of instruction by designing the content of a lesson, determining students' needs and interests, and planning the summary of a lesson. Furthermore, Agwagah (2009) observed that planning of science instruction involves planning learning experiences that will foster exploration and investigation. At the planning stages the teacher has to give a well-informed consideration to the content and goals of the curriculum and the needs, interests and abilities of the learners by choosing or improvising relevant teaching aids, formulates appropriate objectives, adopts suitable methods and techniques of presentation and evaluation, and finally writes out a detailed lesson-plan (Lawal, 1995).

Thus, capacity-built science teachers are efficient in the formal planning of their lessons, time and do critique the day's work as well as giving of a brief and concise lesson. Therefore, science teachers' capacity to have a planned instruction fulfills the following purposes or needs: thinking to have a focus, identification of difficulties, organization of teaching materials and building of teachers' competencies. Maduabum (1992) described competence as a combination of skills, fitness, experience, proficient and attitudes that can be developed and acquired through training for adequate planning of science instruction.

Hence, the low performance of science students in senior secondary school certificate examination (SSCE) had probably being as a function of capacities posses' or not by their teachers in planning of science instruction. Thus, Umar and Adedokun (2006) noted that science teachers need to update their professional capacity development, commitment, creativity, mechanical skills, resourcefulness and initiative for planning of science instruction. Thereby, capacity building needs of science teachers will be seen as any assistance provided to the entirety of science instructors' education which has an aim to develop content knowledge and skills for general upgrading of overall performance in teaching science.

Historical Perspective of Needs Assessment.

Analysis of needs assessment model used in educational research indicates the availability of a variety of models such as Discrepancy model (Sweigert and Kase 1971), system model and organization needs model (Kaufman 1972), and Marketing model (Kofler, 1982). Based on the conception of training needs as a discrepancy between an educational goal and trainees performance in relation to the goal, Borich (1980) proposed another needs assessment model named Borich Needs Assessment Model, which focuses on

- underlining competencies
- surveying the in-service teachers,

- ranking competencies and
- comparing high priority competencies with training programme content.

Borich's (1980) model is widely used in determining the science teachers' needs, however, Watkins (1984) contended that there is no generally accepted model of needs assessment in the educational field since its selections, procedures as well as instrument used to determine the needs will depend on the purpose and content of the assessment study.

From literature, empirical studies on science teachers' needs and the development of procedures for identifying and categorizing science teachers' needs have been a major educational concern since the 1970s. The evolution of science teachers needs instrument inaugurated with the development of Move Assessment Profile (MAP) was further refined by Blakenship and Moore (1977) and Rubba (1981). Eleven years later, Kamariah, Rubba Temera and Zurrub (1988) established the science teacher Inventory of Needs (STIN) which classify science teachers' needs into seven categories. STIN was further used and contextually refined try Baird and Rowsey (1989) after administering the instrument to 1870 science teachers across Albama. Zurub and Ruubba also used STIN in 1993 for identifying the needs of 1507 rural science teachers in Arkansas. Until recently, the needs of the science teachers is still a major concern as evidenced in Dillon, Osborne Fairbrother and Karima (2000) and state of Dela ware study (2002).

From the models and studies carried out, the major concern is the identification of contextualized, science teachers' needs. In Nigeria, this study in needs assessment was initiated in an effect to establish empirical evidence of the science teachers' needs in meeting the challenges of science education by identification of needs required and those possessed.

Purpose of the Study

The main purpose of the study was to identify the most prevalent needs of Nigerian senior secondary school teachers required for keeping them with the current demands of teaching and learning of science. This is necessary for determining the relative measures that will be undertaking for preparation of science teachers in meeting with the classroom challenges. The study also seeks to identify the competencies possessed by science teachers in order to identify the need gap for further training.

Research Questions

A research question was posed in line with the purpose of the study to guide the study as to:

- What are the capacity needs of senior secondary school science teachers for planning science instruction?s
- What are the capacity needs of senior secondary school science teachers for implementation of science instruction?
- What are the capacity needs of senior secondary school science teachers on the classroom management?
- What are the capacity needs of senior secondary school science teacher for utilization of appropriate instructional materials?
- What are the needs assessments of senior secondary school science teachers for the evaluation of instructional strategies?

Methodology

The survey research design was used for this study, because it is capable of eliciting respondents' opinions on science teachers' capacity building needs in senior secondary schools with a view of improving and achieving an effective science teaching. The study was carried out in Taraba State of Nigeria and located in the north-eastern region of the country with eight education zones. According to Federal Ministry of Education the state is one of the educationally disadvantaged states with the total number of sixteen local Government Areas. The population of this study consists of all senior secondary school science teachers in Taraba State with a total of 589 practicing science teachers comprising 143 for Physics, 189 for Chemistry and 257 for Biology that made up the population. Source: Taraba State Post Primary Schools Management Board, Jalingo, for 2009/20 10 session.

The sample used for the study was drawn from education zones out of education zones in each of the zones randomly selected 3 local government arrears were randomly selected giving a total of 12 local government areas in each of the local government areas, five senior secondary schools were randomly selected giving a total of 60 secondary schools.

In each of the senior secondary science teachers were drawn making a total of 360 science teachers from 60 senior secondary schools (Government approved)

The Instrument.

The science teachers' needs used in this study is defined as a conscious drive or desire on the part of the science

teacher, which is necessary for the improvement of science teaching (Moore, 1977). The needs assessment instrument used in this study was developed by using Science Teacher Inventory of Needs (STIN) developed by Zurub and Rubba (1983) as the main reference point. Items were carefully and collectively selected which reflect the current needs of senior secondary school teachers in Nigeria.

The process of item development involved the following steps according to Kamisah (2006).

- The existing perceived needs subscales were reviewed
- A thorough review and analysis of the needs literature were conducted.
- Structured interviews were conducted, to identify the needs of science teachers, which involved five experienced science teachers. The interview data were used as background information in constructing needs.
- A panel of experts in science subjects namely agric science, Biology, Chemistry and Physics- were requested to edit the items from the initial pool of items.
- The instrument was validated again by giving it teachers of science to review the items with respect to its readability, Varity and ease of response.

The final instrument consist of two sections (A& B). Section A seeks information on the desgraphic characteristics of the respondents. Section B consists of 45 items pertaining to the in-service needs of the science teachers. These needs were collapsed into five distinct dimensions:

- Planning science instruction
- Implementation of science instruction
- Management science classroom instruction
- Utilization of impropriate instructional materials
- Evaluation of science instruction.

Each statement is followed by four (4) point rating scale ranging highly needed (4) to not needed (1). Each statement is also followed by a four point rating scale ranging highly possessed (HP) (4) to not possessed (NP)(1).

The instrument was established for reliability by employing combat Alpla () statistic. The reliability indices range from .635 to .798. in discussing item reliability, score variability, item homogeneity and text length are three main issues commonly associated with it (Anastasi, 1982; Youngman, 1979). It was found that, the, number of items for each dimension did not have any significant impact on the reliability index. Based on the reliability indices obtained and the heterogeneous nature of the samples who participated in the study, it could be argued that the heterogeneity of the scores is obtained.

The improvement Needs Index (INI) was used to determine the need gap (NB) between the means of the needed and possessed skills/ Competencies by the science teacher where the mean of the needed scale of each item is represented by X_n and the mean of the possessed scale of item is represented by $-X_p$. The difference between the X_n $-X_p$ is regarded as the improvement needs index or the need gap. When the need gap is positive, it indicates that the science teachers need improvement on those skills or competencies. When the need gap is negative, it indicates that the science teachers do not need any further training on those skills or competencies. When the need gap is zero, it means that the science teachers' need level is equal to their possessed level.

.The instrument used for data collection was a structured questionnaire named Capacity Building Needs of Senior Secondary School Science Teachers for Planning of Science Instruction Questionnaires (CABNESTEPQ). The instrument used for the study was face-validated by three experts. The reliability of the needs instrument used was conducted on 24 science teachers using trial testing within Enugu State and a reliability coefficient of 0.90 was obtained. 360 copies of the questionnaires were administered to the respondents understudied and the data collected was analyzed using the mean rating scores and formulated improvement needs index. Thus, the formula used to determine the needed capacity building levels is given as followed: Improvement Needed Index (INI) =Xn –Xp. It was also used to determine the capacity gaps (CG) between the needed and possessed capacities by science teachers.

Where, Xn =Mean of Needed Capacity and Xp = Mean of Possessed Capacity.

Results

Results of the data collection and analyzed or the study in line with five research questions are presented.

Table 1: Need analysis of the mean scores of science teachers needs assessments for planning science instruction

S/n	Items	Needed mean (Xn)	Possessed mean (Xp)	INI Xn-Xp
1	Selecting lesson topic in science subjects	3.73	2.98	0.74
2	Develop appropriate instructional objectives	3.65	3.01	0.64
3	Select appropriate pedagogical approaches	3.56	2.82	0.74
4	Organize lesions interactively on the topics to reflect sequencing of instruction	3.62	2.94	0.68
5	Select appropriate instructional materials	3.60	2.94	0.68
6	Plan the content of a lesion	3.73	2.99	0.74
7	Show interest on the needs of students progress in science	3.65	3.23	0.43
8	Plan the summary of al lesson prepare instructional materials for the classroom instruction based on usage (reagents, specimens)	3.54	2.99	0.55
9	Preservatives, charts, objects and pictures	3.62	2.92	0.69
10	Demonstrate proper grounding in the subject matter of specialization	3.55	2.95	0.60

key: INI- Improvement Need Index

Table 1 showed that all the ten items on the needs assessments have the mean scores ranged from 3.54-3.73 while the needs possessed by the science teachers ranged from 2.82- 3.01. Therefore, the Need gap values of all the 0ten items ranged from 0.43-0.74 and are positive on the four point rating scale. Therefore, this indicates that respondent agreed that all the items listed in table 1 above highly needed for effective planning of science instruction in the senior secondary schools in Taraba State Nigeria.

Table 2: Need gap analysis of the mean scores of science teachers on the Needs assessments for the implementation of science instruction.

S/N	Items	Neededmean (Xn)	Possessed mean (Xp)	INI Xn-Xp
1	Introduce and deliver lesion in step by step to students through appropriate approach strategies	3.74	3.06	0.69
2	Possesses facilitating skills in teaching and learning science concepts and theories	3.69	3.06	0.64
3	Reinforce science learning	3.41	2.79	0.61
4	give and assign student's science project/ assignment in a concise manner	3.43	2.78	0.65
5	Effect the transfer of knowledge by making learning a real life & daily experience to students	3.49	2.87	0.62
6	Application of science processes experimentation and safety in the use of materials and equipment	3.60	2.91	0.68
7	Negate personal feeling from influencing actual scientific facts	3.12	2.63	0.49
8	Direct students in applying problem solving techniques	3.51	2.94	0.57

key: INI- Improvement Need Index

The table 2 presents the analysis of eight items with the mean scores and revealed that items 1,2,6,&8 at the needed items have the means scores ranged from 3.12-3 3.74 but at the possession side, the science teachers have the score ranged from 2.63- 3.06. The improvement needed index are all positives and range from 0.49- 0.69 indicating that they are highly needed for science teachers as their perceptions towards all the eight needed items listed for the implementation of science instruction. Thus, it shows that respondents agreed that all the items mentioned in table 2 above are worthwhile needs that are to be inculcated in science teachers as to bring out effective implementation of science instruction in them for the senior secondary schools science e teaching in Taraba state

Table 3: Needs gap analysis of the mean scores of science teachers on the needs assessments for classroom management

S/N	Items	Needed, mean (Xn)	Possessed, mean (Xp)	INI Xn-Xp
1	Create a conducive learning atmosphere	3.69	3.07	0.63
2	Uphold a good student behaviour	3.59	2.95	0.64
3	Employ effective student behaviour management skills	3.56	2.84	0.72
4	Motivate and persuade students to learn science	3.40	2.87	0.53
5	Recognize individual differences	3.34	2.70	0.65
6	Allow active students participation	3.49	2.89	0.61
7	Conflict resolution and mentoring skills	3.38	2.68	0.70
8	Apply corrective measure to enhance discipline	3.56	2.99	0.58
9	Handle students class responses and improve upon them during lesions	3.64	3.08	0.57
10	understand science processes (inductive and deductive reasoning and logic)	3.39	2.76	0.63
11	Demonstrate a regard for and an interest in students as individuals	3.41	2.73	0.67
12	Develop constructive working relationships students	3.50	2.76	0.74
13	Maintain quietness and orderliness in the classroom	3.64	2.91	0.73

key: INI- Improvement Need Index

As shown in table 3 that seven out of thirteen items (Items: 1,2,3,8,9, 12,&) at the capacity building needed level have thesame scores ranged from 3.34 – 3.69 but on the possessed by the science teacher the means from 2.68 – 3.07. Therefore, it was observed that science teachers from table 3 have high INI of about 0.53- 0.74 depicting that they have seen the needs for science teachers to be well acquainted with all these in order to bringing about effective classroom management in senior secondary schools science teaching in Taraa State.

Table 4: Needs gap analysis of the mean score of science teachers on the needs assessment for the utilization of appropriate instructional materials

S/N	Items	Needed, mean (Xn)	Possessed, mean (Xp)	INI Xn-Xp
1	Use of appropriate visual aids	3.54	2.80	0.74
2	Being innovative using multimedia technology (ICT)	3.56	2.61	0.95
3	Administer appropriate instructional facilities and equipment	3.59	2.66	0.93
4	Selection of relevant teaching aids for science instructions	3.50	2.65	0.85
5	Being resourceful	3.55	2.73	0.82

key: INI- Improvement Need Index

Table 4 presents the mean rating of science teachers on the capacity building needed for effective use of the appropriate instructional materials in teaching science. It showed that all the five items at the needed category have the mean scores ranged from 3.50 – 3.59 but on the capacity possessed by the science teachers the mean range from 2.61 -2.80. The improvement needed index are all positives and range from 0.74 -0.93 meaning that they are highly needed. Therefore, with all these indications the respondents agreed that all the items mentioned in table 4 above are needed for effective
utilization of appropriate instructional materials in the senior secondary schools in Taraba State.

Table 5: Need gap analysis of the mean score of science teachers on the capacity building needs assessment for evaluation of instructional strategies.

S/N	Items	Needed, mean (Xn)	Possessed, mean (Xp)	INI Xn-Xp
1	Direct instructions and develop criteria for study performance	**3.50**	**2.80**	**0.70**
2	Decision making skills based on related instruction and laboratory grades obtained follow up activities after	**3.47**	**2.63**	**0.84**
3	Instruction and science out of school	**3.53**	**2.67**	**0.86**
4	Involve students in evaluation of science teaching- learning	3.46	2.69	0.77
5	Develop practical tests for consistent assessment of students acquired skills in science subjects	3.67	2.90	0.77
6	Evaluate students achievement properly in science subjects	3.62	2.95	0.67
7	Give feedback on students performance	3.47	3.00	0.47
8	Self assessment and reflection to met progression standard	3.46	2.58	0.88
9	Give assignments to the students on works already done	3.56	2.84	0.72

key: INI- Improvement Need Index

The above table 5 presents those respondents opinions on the needed capacity for effective evaluation of instructional strategies. It is observed from the table that, all the nine items have mean scores ranging from 3.46 – 3.67 while at the possession side, the science teachers have the mean range of 2.58- 3.00. Thereby, it observed that the improvement needs index of science teachers from table 5 are all positives and range from 0.47—0.88 indicating that all the capacities enlisted under table 5 are highly needed for evaluation of instructional strategies as perceived needs for the science teachers. Thus, the outcome of the total analysis shows that science teachers perceived that all the nine capacity items listed in the table 5 above are highly needed for the evaluation of instructional strategies in senior secondary schools science teaching in Taraba state.

DISCUSSION

The results of the study revealed that most of the science teachers who participated in this study perceived that there are needs to update their knowledge and skills in the context of pedagogic contents and approaches that bring about meaningful science teaching. The result of the study in table 1 shows that science teachers only possessed the capacity building needs for planning science instruction at the average level, which would have embraced effective dissemination of science concepts to the student in senior secondary schools. This is not very commendable enough as to no meaningful teaching can take place in the absence of effective planning of science instruction (Agbi & Mbuk, 1996). Science teachers need support in planning and designing their science instruction as well as equipping themselves with generic pedagogical knowledge and skills

Thus, the findings indicated that capacity needs that bring about improvement needs are highly needed for planning of science instruction so as to be more effective in teaching sciences in senior secondary schools. The study of Kamisah, Lilia & Subaham (2006) asserted that the planning of science instruction creates a need for teachers to make their lessons to be interesting and attractive especially for students with low cognitive levels.

This finding is in line with study of Olaitan, Alaribe &Nwobu (2009) that the teachers of agricultural science exhibited low performance capacity in the general curriculum content planning of agriculture programme of Colleges of Education. The finding indicated that they required capacity needs in order to be more effective in teaching agricultural science in Junior Secondary Schools. This finding may be found in teaching of other science subjects. The study of Robert and Dyer (2004) also revealed that the" strategic planning (program improvement needs) of science instruction for science teachers is required because the teachers ability to plan for the next lesson, develop effective ways of communication and evaluate the effectiveness of the whole teaching or program is an act of professionalism. Thereby, this capacity is necessary for continuous improvement on the school-based programmes

Another finding of this study from table 2 is that science teachers indicated average or low capacity for the implementation of science instruction. Perhaps, it should be stressed further that the level at which this capacity is exhibited determines to a great extent the success or failure of science education curriculum implementation (Agbi, 1997). The result shows that the respondents agreed all the eight capacity items in the table 2 above are the capacity needs required for an effective implementation of science instruction in senior secondary schools science teaching. It is also apparent from the findings that science teachers do have problems with updating their content knowledge as well as technical skills in administering science instructional facilities and equipment. .

Another plausible reason for the concern in implementing instruction is associated with the government policy of achieving a 60 to 40 ratio of science to art students. This is a new phenomenon which science teachers are currently facing especially in dealing with the students who do not really want to take up science subjects but

were forced to do so. When such classification of science teachers needs is compared with previous social studies conducted by Agbi 1997, Akiseende, 1993, Olaitan, Alaribe and Nwobu (2001) it could be argued that science teacher needs evolve with time as well as social and political situation that turn the policy implementation of the country years ago, during the implementing of Nigerian integrated science curriculum the important needs of the Nigerian science teachers then mainly involved delivering and managing science instruction and administering science instructional facilities and equipment which as a whole contributed towards improving one's self competence as a science teacher in meeting new challenges in science teaching.

This indicates that there is need to consciously familiarize science teachers with these capacities in both pre-service and in-service training programmes. In the study of Kamisah, Lilia & Subaham (2006), science teachers also need regular support in implementing their science instruction as well as equipping themselves with the necessary pedagogical knowledge and skills. The finding is in agreement with study of Ellah (2007) where it was found out that the NCE graduate teachers of science acquired low competence in the instructional content areas of science education while in training and therefore, the NCE graduate teachers of science improvement needs in some content knowledge and teaching skills for enhancing their effectiveness in the field.

The results in table 3 indicate that science teachers show an average capacity possessive performance in classroom management. This depicts that there is still need for improvement so as to ensure effective science teaching in senior secondary schools. A research from Gootman (2008) shows that effective classroom management involves clear communication of behavioural and academic expectations as well as a cooperative learning environment, and deduced that rules give students concrete direction of teaching so as to ensure that their expectation becomes a reality.

The finding is also in support of Agbi (1997) that effective classroom management is one of the attributes of a capacity-built teacher while maintenance of quietness and orderliness in the classroom with developing constructive working relationships with students are the integral part of classroom management. More so, science teachers indicated an average possessive performance of these capacities but generally shown that they are highly needed in the classroom management for effective science teaching in senior secondary schools.

This is in conformity with the study of Kamisah, Lilia & Subaham, 2006, on What Malaysian Science Teachers Need To Improve Their Science Instruction. It was apparent from the findings that science teachers only require a moderate need of assistance in managing their science instruction and in measuring students' performance. They found out that managing and planning science instruction is entrenched in the teachers' inclination to motivate their students to learn science, which is triggered with current ways and practice of teaching science; thereby findings showed that these capacity needs are highly required.

It was indicated that all five capacity items listed in the table 4 above are the highly needed capacity building needs for the utilization of appropriate instructional materials for effective science teaching in senior secondary schools. The concern about utilization of instructional materials is entrenched in the teacher's inclination to motivate their students to learn science. Such situation is cropped up due to the practice of teaching science in English language, even at the primary level of Education. Thus the existence of wide spectrum of children's abilities creates a need for teachers to make their lesson interesting and attractive especially for children of low ability levels.

The result of the study in table 4 is also in agreement with the finding of (Agbi, 1997) who asserted that it is only when the teachers are given adequate preparation in this area that a better performance can be expected from the students. Since effective use of instructional materials in the teaching of science not only helps to concretize abstract concepts but also helps to arouse and sustain students' interest in the materials being learnt.

The study of Kamisah et al (2006) observed that the science teachers' awareness of the importance of varying their pedagogical approaches and how to constructively maneuver their lessons with the support of appropriate instructional materials and other teaching aids that are also contributing to such pattern of effective teaching. The findings also give credence to the view of Ogbuanya (1996) where it was found out that teachers indicated the needs for in-service training based on the difference between the skills they possessed and those they are required for effective performance. The above observation indicates that capacity building programmes should be organized for the teachers in the areas of teaching, using appropriate instructional materials.

The outcome of the findings from table 5 of this study is that science teachers shown average possessive performance on the capacity needs assessment for evaluation of instructional strategies. Therefore, the findings revealed that the respondents agreed that capacity needs for an effective evaluation of instructional strategies in senior secondary schools science teaching are highly required. The science teacher's awareness of the importance of varying their pedagogical approaches and how to constructively manipulate their lesson with the support of ICT and other instructional materials also contribute to such patterns of feedback. The students lack of interest and the lack of motivation formed their attitudes towards the science subject which ultimately shape their negative behaviours during science lessons

Therefore, all the skills required for effective evaluation should be inculcated in senior secondary schools

science curriculum for maximum results. This is quite in line also with research findings of Maduabum (1992) & Ivowi (1 997a) that science teachers do not effectively evaluate learning outcomes using comprehensive assessment tools.

The researchers found out that teachers do not show adequate capacity building in evaluation of instructional strategies which is a matter of deep concern. The findings indicate that, a good teacher should not only be able to transmit knowledge and skills effectively and efficiently but he should also be able to inspire the learners to a greater height of achievement through meaningful use of evaluation techniques. This is necessary because the science teacher needs to arouse the students' interests in the subjects, keep the teachers informed of areas of difficulties that need more remedial work and subsequently the rate of progress towards the set objectives is enhanced.

Conclusion

This study provides meaningful empirical evidences of effective in-services programmes in the process of upgrading science teacher's professionalism in Nigeria. The data obtained in this study provide information especially for those inwfred in designing and implementing science curriculum so that all the programmes implemented will be glared towards the immediate needs of the science teachers. From this study, the science teachers needs to identified centered on upgrading oneself in meeting current challenges of teaching and learning sciences. Another important issues emanating from this study is the science teachers personal concern and awareness of importance of self improvement, especially in making their lessons meaningful and attractive, which would eventually lead to improvement in the students achievement. It would therefore be argued that science teachers perceived needs, has identified by this study, is in contrast to the current accepted view of priority needs which lead to effective science teaching viz developing student understanding and creating meaningful learning (Harden, 1996). Thus, it is thought necessary that another comprehensive assessment of the perception of the professional needs of secondary school science teachers be conducted. Parkinson (2004) agreed that the first step in designing a curriculum for continuous professional development is the assessment of teachers needs.

Similarly, Baird and Rowsey (1989) based on their study of secondary schools science teachers needs concluded that with out accurate date on teacher needs, planning is not only difficult, but results to wasteful exercise. Another significant points is that those who teach science at secondary school level are from diverse groups and this required different needs. Therefore, high quality in service, programmes designed to meet the perceived needs of science teachers are necessary is teachers are expected to effective and efficient.

In conclusion, it is suitable to indicate that the Nigerian Senior Secondary School Science Teachers, as evidenced in this study embark in keeping the best interest of their students and maintaining that lifelong learning as at the centre of teacher development.

Recommendation

Based on the findings, several recommendations can be put forward to meet the current needs of science teachers. In –service courses which offer continuous development of science teachers appear to be the best framework in upgrading science teacher's needs as identified in this study (Craft, 1996, Parkinson, 2004). Figure 1 displays graphically a proposed framework for the Nigerian senior school science teachers in-service training (INSET) Adopted form Kamisah, Lilia & Subatan (2006). In

Figure 1, the INSET established can take many forms, school- based , central –based institutionalized , conducted training either through public or privat4e institutions conducted by means of a virtual or a distance learning mode supporting institutions such as the local government Education Authority Facilities of Education and colleges of education can offer assistance in ensuring effective implementation of the programmes. In the figure 1, there are three modes of operation which can be undertaken such as short courses professional workshops or long term courses such as pursuing masters or doctoral degree programme. The findings of this indicate that multimedia technology should be used as the main institutional tool in order to support the face to face interaction. According to Louchs-Horsley, Hewson, Love& Stiles (1998) the main few of technology is not only as a tool for creating opportunities for diverse learning experiences but it can become the vest support for professional training.

Also to ensure that the programmes implemented meet its objectives, continuous monitoring ad evaluation by stakeholders and governing bodies should be systematically planned and followed besides all these there are other strategies such as provision of curriculum materials, self –instructed modules, action research network, peer and study group support, and establishing with scientist that should be adopted .

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