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**Review Article**

# Impact of Need Assessment in Enhancing the Challenges of Science Teachers of Secondary School in Taraba State

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## Abstract

The paper focuses on the need assessment on science education enhancing the challenges of science teacher in secondary school of Taraba State. The paper took a look at the history of Taraba State, the science teacher in promoting the challenges of teaching in secondary schools. The programs that enable one to become a science teacher. This program enhances the aspiring teacher with pedagogical skills and scientific knowledge to effectively teach science concepts to students with different background and learning styles such programs like NCE, Degree Program for science teachers and secondary school objectives are also discuss such as academic-excellence, personal development, social and emotional growth, critical thinking and problem solving and lifelong learning as the cardinal objectives of secondary school. The paper also defined Needs Assessment, purposes Needs Assessment, Benefits of Needs Assessment, and the Impact of Needs Assessment on Science Teachers challenges such as enhancing teaching practices, improving students outcomes, addressing resource gaps, enhancing teachers confidence and motivation etc.the steps in implementing secondary school curriculum to need assessment like setting objectives, determine subject areas, books and materials, unit planning, lesson plan, teaching and evaluation were discussed. Lastly, conclusion and recommendation were given to meet science education teachers in our schools.

**Keywords:** Impact, Needs Assessment, Enhance, Challenges, Science Teachers, Secondary school.



## INTRODUCTION

Taraba State, located in northeastern Nigeria, has a rich and diverse history. Before the arrival of Europeans, the region was inhabited by various indigenous groups, including the Jukun, Mumuye, Mambilla, and Fulani. The Jukun people, known for their powerful kingdom, played a significant role in the region's history, establishing trade routes and exerting influence over neighboring communities.

European contact began in the 19th century, primarily through explorers and missionaries. The British established colonial rule in the region, incorporating it into the Northern Nigeria Protectorate. This period saw the introduction of Western education, administrative structures, and infrastructure development.

After Nigeria's independence in 1960, Taraba remained part of the newly formed Northern Region. In 1967, it became part of the Benue-Plateau State, and later, in 1976, it was incorporated into the Gongola State. Finally, on August 27, 1991, Taraba State was created as a separate entity, carving out its own distinct identity within Nigeria.

The state's history is marked by its diverse cultural heritage, political evolution, and ongoing challenges. It continues to strive for development and progress while preserving its rich cultural tapestry.

### Secondary School

Secondary school is a crucial stage of formal education, typically spanning from ages 12 to 18. It builds upon the foundation laid in primary school, providing students with a more specialized and in-depth learning experience. The curriculum broadens to encompass a wider range of subjects, including advanced studies in core areas like mathematics, sciences, languages, and humanities.

**Aim and Objectives of Secondary School Education**

The primary aim of secondary education is to prepare students for successful transitions into higher education or the workforce. Linda Darling-Hammond (2010) asserted that, it strives to develop well-rounded individuals with a strong foundation of knowledge, skills, and values.

Key objectives of secondary school education include:

- **Academic Excellence:** To provide students with a comprehensive education that equips them with the intellectual skills and knowledge necessary for success in further studies and future careers.
- **Personal Development:** To foster the development of students' individual talents, interests, and personalities, encouraging them to explore their potential and set personal goals.
- **Social and Emotional Growth:** To cultivate essential social and emotional skills, such as communication, teamwork, empathy, and resilience, preparing students for meaningful relationships and responsible citizenship.
- **Critical Thinking and Problem-Solving:** To develop students' abilities to think critically, analyze information, solve problems, and make informed decisions, equipping them with the tools to navigate an increasingly complex world.
- **Lifelong Learning:** To instill a love for learning and a desire for continuous personal and professional growth, empowering students to adapt and thrive in a rapidly changing environment.

Secondary education plays an important role in shaping individuals and preparing them to become productive members of society. It provides the foundation for future success, both personally and professionally, and contributes to the overall development of a nation.

**Science Teachers**

Science Teachers are educators who teach students about science. They cover subjects like biology, chemistry, physics, and earth science. Their job involves creating lesson plans, teaching, and guiding students through experiments. They want students to understand how the world works, how to do science, and how science is used in everyday life and technology.

To be a Science Teacher, you need a strong background in science. This usually means having a degree in a science subject or science education. You also need a teaching qualification. It's important to be able to explain complex science ideas clearly and interestingly. You must also know how to manage a lab safely and conduct experiments.

Science Teachers work in middle schools, high schools, and sometimes colleges. They are important because they help students become interested in science. They teach students to think critically, solve problems, and analyze information. Science Teachers not only teach about science facts but also encourage a scientific way of thinking and a desire to learn more about the world. They help prepare students for careers in science and other fields, and they help create a society that understands and can deal with scientific challenges.

**Science Teachers Education Program**

Science Teachers Education Programs are designed to equip aspiring educators with the pedagogical skills and scientific knowledge necessary to effectively teach science concepts to students of diverse backgrounds and learning styles. These programs typically integrate rigorous coursework in science disciplines, such as biology, chemistry, physics, and earth science, with pedagogical training in areas like:

- **Curriculum development and instruction:** Focusing on creating engaging and effective lesson plans, utilizing various instructional strategies, and incorporating technology into the classroom.
- **Assessment and evaluation:** Emphasizing the development and administration of formative and summative assessments, analyzing student data, and providing constructive feedback.
- **Classroom management and discipline:** Equipping educators with strategies to create a positive and conducive learning environment, manage student behavior, and foster a collaborative classroom culture.
- **Inquiry-based learning:** Training teachers in the principles of inquiry-based instruction, encouraging student exploration, and developing critical thinking and problem-solving skills.
- **Science pedagogy:** Delving into the nature of science, the history and philosophy of science, and the effective teaching of scientific concepts and processes.
- **Integration of technology:** Providing hands-on experience with educational technologies, such as simulations, data analysis software, and online learning platforms, to enhance science instruction.
- **Field experiences and student teaching:** Offering opportunities for practical application of pedagogical knowledge through supervised field experiences and student teaching placements in real-world classroom settings.

These programs aim to produce highly qualified Science Teachers who can inspire a passion for science in their students, cultivate scientific literacy, and prepare them for success in the 21st century.

**Curriculum**

The term curriculum according to John Hattie (2012), is derived from the latin word “Curus”, meaning a running course or race track for chariots. But in the educational use of the word, it means a graded course of different school subject carried on from nurset school to the university. Thus, all what pupils do or learn at

scchool from the day they are admitted into school, until the day they leave school may rightly come under the term curriculm. Ivowi (2008) view curriculum as a tool designed for educating a person in order to change the orientation, behavior, actions and values to that of a good person whose concern is not only to develop self but also the world around. To Offorma (2005) curriculum is a structured series of learning experience intended for the educations of the learners. It is what goes on in the school under the guidance of the teacher.

Curriculum is a document, plan or blue print for instructional guide which is used for teaching and learning to bring about positive and desirable behavioral changes on learners. It can be regarded as a road map for the education of the learners. Curriculum is a programme. This includes programme of studies, programme of activities, and programme of guidance. Programme of studies refers to forms of subjects, contents, subjects matters and bodies of learners knowledge. Programme of activities is made up of all the learning experiences presented to the learners which can be overt or convert. Mental or physical, learner oriented or goal oriented. Students learn through activities so the programme of activities facilitate the learning of programme of studies. Programme of guidance is the assistance given to the young and inexperienced members of the society by more experienced persons to help them solve their educational, vocational, and socio-personal problems curriculum can therefore, be taken to mean an instrument by means of which schools seek to translate the hope of the society into concrete reality.

**Curriculum Implementation**

Implementation according to Chambers (2003), is the various steps involved in producing a functional data. Curriculum implementation therefore, refers to the various steps involved in achieving the desired objectives. It is the delivery stage in curriculum process. John Hattie (2012), at this stage all the relevant curriculum inputs are brought in direct contact with the target audience in such a way that through a variety of activities, learning experiences and mastery can be maximally achieved at minimal cost. Curriculum implementation occupies a strategic positions as it links the design with evaluation stages that is, the materials and methods are put together to produce desirable learning activities and experience. It imaginatively knit together the instructional content and materials to produce desired out comes and learning experiences for the learners. Grant Wiggins & Jay McTighe (2011) asserts that, curriculum implementation is the task of translating the curriculum document into the operating curriculum by the combined efforts of the students, teachers and other concerned.

Curriculum implementation needs to start with trial testing of materials before installation. According to Ivowi (2008) the importance of trial testing has been ignored too often in Nigeria. That apart from a few projects like Bendel Primary science project, basic science for Nigerian Secondary schools, Nigerian secondary school studies project, primary science programme for the Northern states, Nigerian secondary schools Home Economics project and Nigerian secondary schools science project, all other curricula developed have not under gone the process of trial testing before being installed in schools. Even the current basic education curricula did not undergo trial testing before their installation in schools in September 2008.

**Senior Secondary Education Curriculum**

Efforts of government to achieve good curriculum for the senior secondary education started with the organization of the National curriculum conference of September, 1969 held in Lagos, The conference was sponsored by the Nigerian Educational Research and Development Council (NERDC) to provide a forum for the discussion of an appropriate curriculum for the nation's schools. The conference was attended by various stakeholders in education in the country. It was also necessary to hear the views of the masses of people who are not directly engaged in teaching or other educational activities because they have a say in decision to be taken about the structure and content of Nigeria education, since the school is a micro-cosm of the society.

Some of the fundamental proposals made the conference provided the foundation for the structure of senior secondary education. The National Policy on Education 92004:18), provides the following as some of the objectives of senior secondary education in Nigeria.

To provide students opportunity for education of high level, irrespective of sex, social status, religious or ethnic background.

To provide trained manpower in the applied science, technology and commerce at sub professional heritage.

To develop and promote Nigeria languages, art and culture in the context of World's cultural heritage.

To inspire students with a desire for self-improvement and achievement of excellence to foster National Unity with an emphasis on the common ties that unite us in our diversity.

To raise a generation of people who can think for themselves, respect the views and feeling of others, respect the dignity of labour, appreciate those values specified under our broad national goals and lives as good citizens.

To provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economy development.

In realization of these objectives, a senior secondary curriculum has been put in place as contained in the National Policy on Education (2004:20) as follows:-

**A VOCATIONAL SUBJECTS**
**Group B VOCATIONAL ELECTIVES**
Agricultural Science
Applied Electricity
Auto Mechanic
Book Keeping and Accounting
Building Construction
Commerce
Computer Education
Economics
Textile

**GROUP A CORE**
English Language
Mathematics
A Nigeria language
One of Biology, Chemistry, Physics or Health Science
One of Literature in English, History, Geography or religious Studies.

Food Nutrition
Home Management
Metal Work
Technical Drawing
Wood Works
Shorthand
Typewriting
Fine Art
Music

The senior secondary curriculum has core subjects and or electives. The core subjects are compulsory for every student. They are basic subject that will enable students to offer arts or science in higher education. The curriculum also stipulates that every student would select three of the elective subjects pending on the choices of career up to the end of the second year and may drip one of the non-compulsory out of the nine subjects in the last year of the senior secondary course. It therefore means, every students should take six core subjects in group A and a minimum of one and maximum of two from the list of elective subjects in group B and give a minimum of seven and maximum of eight subjects.

**Needs Assessment**

Needs assessment is a vital tool in enhancing the challenges faced by science teachers in secondary schools. By conducting a thorough needs assessment educators and administrators can identify the specific challenges and gaps in teaching practices, resources and support systems that hinder the effectiveness of science teachers. This information can then be used to design targeted interventions, professional development programs, and resources allocations that address the unique needs of science teachers.

In the context of education, needs assessment plays a pivotal role in enhancing teaching and learning experiences. It helps educators understand the specific challenges they face in delivering instruction and allows them to identify areas where additional resources or support may be necessary. For instance, in secondary school, science teacher may encounter obstacle related to curriculum implementation, classroom management, student engagement, or access to technology.by conducting thorough needs assessment, schools can pinpoint these issues and develop targeted strategies to address them.

**Purpose of Needs Assessment**
The primary purpose of need assessment is to:

i. Identify the gaps and needs
ii. Inform decision making and resource allocation
iii. Develop effective solutions and interventions
iv. Improve outcomes and impact
v. Enhance accountability and transparency

**Types of Needs Assessment**
There are several types of need assessment, including:

1. Training need assessment: identifies training needs of employees or individuals.
2. Community needs assessment: identifies needs and gaps in community service and resources.
3. Organizational needs assessment: Identifies needs and gaps within an organization.
4. Health need assessment: identifies health needs and gaps in health care.

**Benefit of Need Assessment**
Need assessment offer several benefits including:

1. Informed decision making.
2. Effective resource3 allocation.
3. Improved outcomes.
4. Enhanced accountability.
5. Better alignment.

**Impact of Needs Assessment on Science Teachers' Challenges**

Needs assessment has a significant impact on enhancing the challenges faced by science teachers in secondary schools. By identifying the specific needs and gaps of science teachers, needs assessment can inform the design of targeted interventions, professional development programs, and resource allocations. James Popham. (2013)

**Enhancing Teaching Practices**

Needs assessment can help science teachers enhance their teaching practices by:

1. Identifying areas of weakness in teaching methodologies
2. Informing the design of professional development programs
3. Providing resources and support for improving teaching practices

**Improving Student Outcomes**

Needs assessment can help science teachers improve student outcomes by:

1. Identifying areas of student difficulty and developing targeted interventions
2. Informing the design of curriculum and instructional materials
3. Providing resources and support for improving student learning outcome

**Addressing Resource Gaps**

Needs assessment can help science teachers address resource gaps by:

1. Identifying areas of resource need (e.g., textbooks, laboratory equipment)
2. Informing the allocation of resources to address priority needs
3. Providing support for accessing and utilizing resources effectively

**Enhancing Teacher Confidence and Motivation**

Needs assessment can help science teachers enhance their confidence and motivation by:

1. Identifying areas of teacher strength and weakness
2. Informing the design of professional development programs
3. Providing resources and support for improving teacher confidence and motivation

These teachers faced a lot of challenges ranging from teaching practice, student outcome, gap disposed field when teaching, confidence and motivation. They faced a lot of problem during teaching, they also faced problem of student individual differences, problems of intervention from Tetfund and welfare e.g accommodation, and problem of support. These are some of the challenges faced by science teachers teaching in our secondary schools, of which government need to come in and play their own role to enhance the teaching and learning of secondary school students in Taraba State.

**Steps in the Implementation of Senior Secondary Curriculum to Meet Need Assessment**

The implementation of the curriculum is a very important level because it is at this stage that all that has been planned at the federal/state/levels will be translated into action. It is is well done, the expectations from education will be realized. Conversely, poor implementation will make a mockery of the entire system. The following steps can be followed in the implementation of a curriculum:

**Setting Objectives:**

The actual task of implementation begins with the setting of the objectives. Although the objectives have been set at the national/ state level, there is need for a further breakdown of the objectives into meaningful terms from the national level to the implementation level where the objectives becomes specific enough for action and for evaluation. For the setting of school objectives, the head of school may present the plans from the ministry of education to staff, as part of their preparation for the school year. Small committees may be set up to prepare possible specific objectives from those the ministry.

**Determining Subject Areas:**

When specific objectives have been prepared, there is need to look closely at the subject areas indicated, in order to think of additional learning areas. An examination of the subject areas is incomplete without a close look at the contents. Their sequence, and level of difficulty. There should be a link among the contents.

**Books and Materials:**

The suggested textbooks and other materials should be looked at closely. Are they new books or materials that the staff do not know? Or are there other things that the staff need to know?

**Unit Planning:**

A unit plan simply means the amount of work, materials, or area that can be finished within a prescribed time. It is sometimes called scheme of work and it is possible to break a topic in the scheme of work into a number of units, each unit being a sub-division of that topic. For each unit, specific objectives should be stated, the teaching-learning approaches and teaching aids should be indicated, and the evaluation of that particular bit work in the unit should also be stated. Thus, unit planning serves as a useful guide for the teacher and those who may handle a particular class in the absence of the actual teacher.

**Lesson Plan:**

This involves further selection from the unit plan of what can be realized within a class period of thirty-five to forty minutes. It will contain the specific objectives, methods of teaching, teaching aids, and how to evaluate that small bit of work.

**Teaching:**

The next step in the implementation stage is the teaching which represents the point at which the goods are actually delivered to the students. It is a very important step and every teacher should be mindful of this. If the planning of units and of the lesson have been

well done, there is an assurance that, in the hands of good teacher, the teaching stage will be fruitful.

**Evaluation:**

Finally, the curriculum should be evaluated to see the achievement of the stated objectives. The process should begin from the classroom and end up at the ministry level. This will enable the school to asses it own objectives and programme based on the results of evaluation from the various classes. In turn, based on the evaluation result from the various schools in a state, the state Ministry of Education will judge whether or not its objectives have been achieved. Based on the results from the various states, the Federal Ministry of Education can decide on the achievement of its goals fro the entire educational system.

## CONCLUSION

Needs assessment has a significant impact on enhancing the challenges faced by science teachers in secondary schools. By identifying specific needs and gaps, needs assessment can inform the design of targeted interventions, professional development programs, and resource allocations. This can help science teachers enhance their teaching practices, improve student outcomes, address resource gaps, enhance teacher confidence and motivation, and address the challenges of diverse learners.

## RECOMMENDATION

1. Conducting a need assessment can significantly enhance the challenges faced by science teachers in secondary schools. By identifying areas where teachers require professional development, such as teaching methods, subject matters expertise and technology integration.
2. Schools can provide targeted support to improve teachers' effectiveness, this, in turn, can boost teachers' confidence, particularly when teaching complete scientific concept or utilizing technology.
3. It can also, address the professional development needs of science teachers which can leads to better students learning outcomes in science.
4. Science teachers whose background is not in science should embark on training and re-training to improve their science teaching skills.
5. Teachers of science should let the students know that science skills that they need to develop their entrepreneurship skills can be enhanced in science when offering science.
6. It enables the science teachers to know the gaps for him/her to fills in the science curriculum.
7. Furthermore, the data collected from the need assessment can inform policy and decision making at the school, environment, state level by ensuring that science teachers receive the necessary support to excel in their roles.

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