

## **An Assessment of Chemistry Curriculum in Satisfying Societal Quests in Rivers State**

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### **Abstract**

*An Assessment of Chemistry Curriculum in Satisfying Societal Quests in Rivers State is a descriptive research paper crafted to elicit chemistry curriculum contents in Nigeria. The work sampled the opinions of chemistry students in all the universities in Rivers State on the relevance of Nigerian chemistry curriculum to the satisfaction of societal quests. Total number of 110 students constituted the sample. 9 items questionnaire was used in receiving the responses from the respondents. Percentage and mean statistical methods were used in analyzing the questions. The respondents basically expressed their views without fears or favour. The results indicated that chemistry curriculum in Nigeria is effective in the industrial up bring of the chemistry students. The results equally depicted that chemistry has assisted much in solving societal needs in the area of agriculture, healthcare delivery, food science and pharmaceutical drugs production. The respondents displayed that, they were already aware of the societal quests and that they are being well prepared through chemistry curriculum to face the societal challenges. The results also displayed that, there are urgent areas lagging behind in our curriculum in-order to meet the international standards. The paper concluded with recommendations on how to improve on the science curriculum in Nigeria.*

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**Keywords:** Chemistry, Science, Education, Quests, Students, Curriculum, Society, Industry, Rivers State, Development, Societal, Employment, Job creation.

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## **CHAPTER ONE**

### **1.0 Introduction**

The significance of edification in the route of satisfying societal desires cannot be over emphasized.

Education donates to self-development since it is a practice through which people are taught to get germane information in-order to undertake productive and creative occupations that will spawn trade

and industry, social transformation and services for the citizenries (Ofoeze, 2008). In the same vein, Ukeje (1986) stated that edification is the only means that develops in individuals the skills necessary for development in all aspects.

Robert - Okay & Osiobe, (2014) described education as the channel that provides indispensable skilled manpower for both the formal and informal sectors of the economy, provides the means of developing knowledge, skills and productive capacities of the labour force, and also acts as a catalyst cheering modern thoughts and ambitions.

Against these postulates, it is pertinent to state that education is a sum cumulative of all processes by which an individual develops knacks, thoughts and other structures of deeds which are of affirmative worth to the society. This cumbersome task can only be achieved through the process of organized form of teaching and learning which will lead to the required acquisition of knowledge, dexterities and feelings that will enable the citizens to adjust and contribute to the milieu. In order to blend this task, several useful contents are fused together with specifications of time, skills, techniques and other factors complimented to serve the quests of the society.

The elucidations above are universal to education but science being the hub that inquires, investigates, hypothesize and draws conclusions on natural occurrences needs a special attention and package in the schools system. This pursuit brought about chemistry curriculum. This focus of chemistry curriculum is to help usher in the type of education that fulfill the roles of producing citizens with the right type of attitudes, skills and abilities contributing to societal development or desires.

These societal needs vary in terms of geographical locations and societal norms and cultures which may not be limited to universal quests as follows; food, shelter, good healthcare services, and defense etc.

Eluozo (2018) simply put, that the success or failure of any society is rightly bestowed on the operations of her curriculum. Therefore chemistry curriculum from the elementary to the universities must be designed to address societal needs as well as produce Chemists, Engineers, Agriculturist, Medical doctors, and Defense technologists etc of her dreams. In-view of this, educationists have uncompromisingly sought for curriculum examination, re-examination and innovations in modern times, especially in area of science and technological advancement globally. All forms of governments such as the capitalist, socialist or communist states has allocated considerable amount of resources in getting a doable curriculum for its educational systems.

Without much ado, educational objectives should be achieved through the rightful design of a good curriculum with clear indications of societal quests and objectives. In this bid, a good curriculum should focus on the priorities of the society as clearly stated in Nigeria's fourth National development plans as scribed below:

*“To develop a curriculum capable of increasing the production of food and other raw materials to meet the needs of a growing population and rising industrial production; a basic objective in this respect is the attainment of self-sufficiency in food within the plan period”.*

Following this declaration, National Acceleration Food production program was designed specifically to augment the production of rice, maize, guinea corn, millet, wheat and cassava which constitutes the main food consumptions of the country.

In consonance with is policy, a lot of expectations from university education curriculum particularly chemistry curriculum to provide employment opportunities, self-reliance in basic food production, foreign exchange earnings and the provision of industrial raw materials has taken a centre stage.

In light of the above, it is the belief of the researcher to attract and examine the relevance of chemistry curriculum and the application of chemistry knowledge to societal needs.

For the purpose of this research, emphasis will be on chemistry industries specifically.

### **1.1 Background of the Study**

Education is a luminary agency for human capital development in which meaningful education and practical consequence as well as utility is centred to solve human practical problems. Therefore, education must play its role in satisfying the societal needs; as such the education itself must be designed in the manner that its products can systematically solve societal problems and the weapons of achieving this task are responsive to the curriculum.

Wheeler (1967) considered a curriculum as "a premeditated knowledge accessible to the learner under the supervision of the school" for the rationales of this study; curriculum will be defined as all activities that take place within the school environment which contributes to the learning experience of the learners in order to bring about desirable change in behaviours. An effective curriculum must be systematically and technically developed to gratify the goals and aspirations in terms of food, shelter, clean environment, political stability and healthcare system which are most basic for human existence.

In this respect, chemistry is seen as the primary instrument to overhaul a country for self-sufficiency in the provisions of raw materials and refining industries.

### **1.2 Statement of Problems**

No contradictions to the widely acceptance of education as the basic building block for national development. Therefore, no nation can advance technologically or theoretically without education, hence the primary objective of education is to produce citizens who will solve man's diverse problems on earth, mostly as human wants are insatiable in continuous advancement for better living. Having x-rayed these expectations, it is the problem of this study to assess the extent to which Chemistry Curriculum have contributed in developing chemistry graduates in Nigeria and to what extent the graduates have used the skills acquired in satisfying societal quests in Rivers State.

### **1.3 Significance of the Study**

This study is significantly suit for research students in chemistry. The study is of great relevance to education experts and curriculum designers in selecting innovative contents as well as encouraging chemistry students of their future prospects in chemistry studies.

#### **1.4 Objectives of the Study**

The purpose of this research is:

1. To critically examine the role of chemistry curriculum in fulfilling the societal needs in Rivers State.
2. To assess the relation between the students year of study and the impacts of chemistry curriculum in solving societal problems.

#### **1.5 Research Questions**

In order to assess the impacts of chemistry curriculum on chemistry students in using their skills to satisfy societal quests, the following questions are devised to steer the study.

1. To what extent is chemistry curriculum in Nigerian relevant to the students in solving societal problems in Rivers State?
2. What are the specific skills acquired by chemistry graduates that can help in resolving societal problems in Rivers State?

## **CHAPTER TWO**

### **2.1 Literature Review**

Edification has unrelenting played an exceptional role in the economic advancement and social transformation process of crude humans in Nigeria. Succeeding governments in appreciation of this role have accorded main concerns in the configuration of resource allocation and building of infrastructures to compliment the functions of education to the overall development of mankind. In appreciations to this great role played by education, some reasonable literatures relating to this study were reviewed.

#### **Nature of Curriculum in Nigeria**

Curriculum is the total embodiment of human capital development for oneself and the society at large. Every curriculum must meet the hope of addressing the fundamental needs of the society which the curriculum is designed for. A lot of questions have been asked particularly by Nigerians on the importance of the curriculum adopted so far in our schools? While others have concluded that the curriculum practiced in the country has not reflected in addressing the societal needs of the proponents. In contrast, other stakeholders maintain that the curriculum have not reflected in addressing basic needs, neither presence in the attitudes of our scholars rather the curriculum is western biased.

The belief that our curriculum is still favoring the colonial master's stake is evidence in the attitudes of Nigerians in pursuant to collar jobs than technicality and craftsmanship. Nigerian curriculum is still dominated by units of the western contents. The robust part of the curriculum is featured by English language and grammars; no Nigerian local language is given a priority across any part in the curriculum. No government in Nigeria has been able to institute a good curriculum that can address the local problems of the Nigerian societies. The report of Carr (1902) favored the plan of any meaningful government to constitute an indigenous curriculum devoid of colonialism and focus on achievable objectives through the minds and hands performance.

Following the report of Carr, the implementation of the report will lead to a self, egalitarian and a democratic society. For Nigeria to attain this height, the people need a resounding education with an effective curriculum not a defective type full of colonial features.

Todaro, (1977) experimented that regal curriculum has a very strapping municipal preconceived notion and that the prevailing ambitions of the curriculum is to get ready children to pass question papers through narrations, replications and memorization of anything that was taught. In his views, the curriculum has miniature or no concentration to the needs and aspirations of bucolic inhabitants. If curriculum is to take full advantage of productivity, children should be more guided towards professional necessities of rustic residents, whether in rural or urban centers.

From the general retorts on the adoption of the colonial curriculum, it is relatable to say, that education acts as a catalyst for change in the society and must be treated with utmost priority for a radical change.

### **Role of Chemistry in addressing Societal Challenges**

Chemistry is an innermost science. The study of chemistry clinches all structures of human actions. Frankly speaking, zilch is anything without the application of chemistry science.

*Theodore Brown of USA said "in any area of human activity that deals with some aspects of the material world, there must inevitably be a concern to the study of chemistry".*

The role of chemists in the scheme of things in this epoch of technological progression is so critical that nation shouldn't jeopardize it. The sarcastic attitudes of some insensitive leaders has caused a reduction in the research interest of chemistry scientists to the extent Royal institute of chemistry 1974 in Britain raised alarm over the drop in out-put of chemistry graduates in Britain.

In this age of competing science and technology where goods and services are produced at ease, such initiation and speed wouldn't be possible without adequate knowledge of chemistry science. Ikoku (1973), noted that chemistry indisputably governed the industrialization and the economic versatility take-off. Therefore, improvement in chemistry science is a prerequisite for the sustenance of this industrial revolution.

With respect to this significant role in science and technology, the federal government of Nigeria in October, 1979 established the federal ministry of science and technology. The ministry

took over the functions and responsibilities of the defunct national science and Technology Development Agency (NSTDA) set up by Act No. 5 of 1977 and also dissolved the science and technology Act of 1979 and immediately swung into actions by creating the department of chemistry research and nuclear regulations.

To meet the needs of a teeming population with particular reference to food, textiles, shelters and healthcare, the goals of the fourth plan era of 1979 can only be achieved through the teaching of chemistry science and effective curriculum application by the students to solve the societal problems.

Archaic teachers teach chemistry to justify requirements of stereotype examinations with very little or no correlation of the subject matter to the needs and aspirations of the society they teach. Okwu (1981) asserted that chemistry instruction tends to concentrate on pressing the pure substance of the field, perhaps, on the premise that a basic knowledge will bequeath the user for future challenges. Okwu's statement represents rigid, taut, and stiffness rather than inspiring the interest of students in making it possible for university graduates to apply the chemistry knowledge in solving societal problems.

Another problem is the means of developing relevant awareness among chemistry students to general education and the combination of chemistry contents with other school subjects in solving societal problems via a good guidance counselor. In light of this, Ajeyalemi (1985) noted correctly when he said, that the aims of school chemistry education all over the world are basically the same with the following features:

- (a) Emphasizing the relevance of chemistry to the society with a vision to train students for real life challenges.
- (b) Making students to appreciate the inter-disciplinary nature of science as well as the antechamber of scientific method, and
- (c) To develop scientific attitude as well as cognitive, affective and psychomotor skills with more emphasis on students' indulgence in chemistry than mere factual evokes.

However, the teaching of chemistry in Nigeria is still lagging behind towards achieving the above aims.

Therefore Eluozo (2018) concluded that, science teaching in Nigerian schools undertakes rote learning approach with uncorrelated axioms, laws, theories and definitions just to gratify the purposes of the examination than real knowledge. Eluozo frowned at the mode of instruction which does not effectively emphasis scientific processes and inquiry.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

This study was boated to determine the significance of chemistry curriculum on chemistry students in addressing societal quest in Rivers State and to ascertain the usability of the skills acquired from the curriculum.

#### 3.1 The Design of the Study

In-order to receive relevant information required for the success of this study, descriptive survey design was adopted.

#### 3.2 Population of the Study

Population of the study comprised of level 300 and 400 hundred students from all the tertiary institutions offering chemistry science in Rivers State.

#### 3.3 Samples and sampling techniques

A total of one hundred and ten students (110) drawn via stratified random sampling techniques from the three major universities in Rivers State constituted the sample (UNIPORT, RSU & IAUE). The choice of level 300 and 400 is on the fact that they can respond to questions correctly and they will be able to manipulate chemistry skills.

#### 3.4 Research Instruments

Instruments for the study were questionnaire crafted to receive information from the respondents. The instrument was design to identify respondent's level of knowledge in chemistry and to deduct their views on the extent chemistry training have impacted the society positively.

#### 3.5 Validity and Reliability of the Instrument

The instrument was read and certified by other research experts and was positively appraised for having face and contents validity. Split half method was adopted in the reliability coefficient and it was found reliable at 0.05 level of significance.

#### 3.6 Methods of Data Analysis

Questionnaires structured in likert-type order were used to present the data. Central tendency mean ( $\bar{x}$ ) was used in analyzing the questions relating to societal satisfactions.

## CHAPTER FOUR

### PRESENTATION DATA AND DISCUSSION OF RESULTS

**Table 1: Distribution of the responses of N= 110 Students to the chemistry curriculum.**

	Leading questions	Acceptance aggregates					Response level
S/No	Items	SA	A	D	SD	U	
	Knowledge acquired in chemistry studies can help students to:						mean summation
(1)	Recognize and identify different aspects of theories and principles in the chemistry industry.	34	64	11	-	1	4.182
		30.9%	58.2%	10%		0.9%	
(2)	Translate, illustrate, extrapolate and interpolate chemistry knowledge	33	55	13	-	9	8.936
		30.0%	50.0%	11.8%		8.2%	
(3)	Related, design and make generations	22	54	13	1	20	3.518
		20.0%	49.1%	11.8%	0.9%	18.2%	
(4)	Identify, compare, deduce and make assumptions.	40	55	15	-	-	4.227
		36.4%	50.0%	13.6%			
(5)	Produce, modify, design, formulate structures, operations and also make	23	47	14	7	19	4.36



	generalizations	20.9%	42.7%	12.7%	6.4%	17.3%	
(6)	Evaluate, standardize, appraise, keep accurate records, and precisions	29	58	10	1	12	3.827
		26.4%	52.7%	9.09%	0.9%	10.9%	
(7)	Apply chemistry concepts in related knowledge in the development and utilization of essential raw materials.	42	53	8	2	5	4.136
		38.2%	48.2%	7.3%	1.8%	4.5%	
(8)	Chemistry knowledge is effective when combined with on the job training for optimum performance of a chemist	72	31	1	-	6	4.482
		65.5%	28.2%	0.9%		5.5%	
(9)	Societal expectations is for the chemists to recognize, translate, design, produce, standardize and make generalizations in solving societal problems	33	60	8	5	4	4.027
		30.0%	54.5%	7.3%	4.5%	3,6%	

Table 1 displayed the distribution of responses from 110 students offering chemistry in Rivers State universities on the impact of chemistry curriculum in satisfying societal quests.

Total responses to item 1, displayed that 98 respondents representing (89.1%) agreed that chemistry curriculum builds in the students the capacity to recognize, identify different aspects of theories and principles of chemistry. While 11 respondents disagreed and 1 respondent was undecided, representing 10.9%. The reason for this disagreement may be due to the inability of the respondents to understand the questions posed or biasness. The summative mean of 4.182 was greater than critical mean value of 2.5. This result affirms that the contents in the chemistry curriculum are useful in solving societal problems.

The responses to item 2, indicates that 88 respondents representing (80%) agreed that chemistry curriculum enables the students to translate, illustrate, extrapolate and interpolate chemistry knowledge while 13 respondents representing (11.8%) disagreed and 9 respondents representing (8.2%) were undecided. This result indicates that few students of about 20% are yet to understand the applications of chemistry concepts. However, the summative mean was greater than the critical mean, affirming that greater number of students were already applying chemistry knowledge but those with poor chemistry knowledge application needs to be identified and groomed properly.

The result of item 3, indicates the responses of 76 respondents representing (69.1%) agreeing that the knowledge acquired through chemistry curriculum helps to relate, design and make generalizations while 1 respondent representing (0.9%) disagreed and 20 respondents representing (18.2%) were undecided. The calculated summative mean of 3.518 greater than critical mean of 2.5 affirmed that through the concepts of chemistry curriculum, chemists can solve societal problems. The result also indicates that 19.9% of the respondents lack adequate knowledge in chemistry after graduation; as such they cannot solve any societal problem independently.

Result of item 4, depicts that 95 respondents representing (86.4%) can identify, compare, deduce and make assumptions through the knowledge acquired from chemistry curriculum, while 15 respondents representing (13.6%) disagreed. This disagreement may be related to students' deficiency in practical activities and scientific processes. However, the result indicates that greater numbers of the students were already using chemistry knowledge in solving societal problems.

Item 5, with 70 respondents representing (63.6%) agreed that the knowledge acquired in chemistry curriculum helps students to produce, modify, design, formulate structures, operations and also make generalizations, while 21 respondents disagreed and 19 were undecided representing a total of (37.4%). The percentage of those who disagreed and were undecided is relatively high compared to those who disagreed in item 1-4. This increase indicates that only few students go into production after graduation and that sourcing for raw materials is a challenge to fresh graduates. However, the summative mean of 4.36 being greater than critical mean of 2.5, indicates that skills acquired from chemistry curriculum helps chemistry graduates in the production industry such as soap, cream, and medicines etc.

Responses to item 6, indicates that 87 respondents representing (79.1%) of the total respondents affirmed the positive impacts of chemistry curriculum on the students ability to evaluate, standardize,

appraise, keep accurate records, and make precisions on chemistry concepts. 12 respondents representing (10.9%) disagreed while 11 respondents representing (9.09%) were undecided. This result signifies that chemistry graduates can relation, juxtapose and implement chemistry theories into practical experiences. However the result of (20.9%) respondents disagreeing and being undecided to the facts, indicates that not all the students studying chemistry made chemistry their first choice of study and that few students studying chemistry were not capable of copying with chemistry curriculum.

In item 7, total number of 95 respondents representing (86.4%) agreed that chemistry curriculum helps in the application of chemistry concepts with related knowledge in the development and utilization of essential raw materials. 10 respondents representing (9.1%) disagreed, while 5 respondents representing (4.5%) of the total respondents were undecided. This result affirmed the expectation of the societal quests in converting raw materials into finished products by chemistry graduates. The disagreement and indecisiveness witnessed in this result may be due to few students not being able to source for raw materials and their location base.

In item 8, a total number of 103 respondents representing (93.7%) acknowledged that chemistry curriculum develops in the students the abilities to utilize chemistry concepts hence they all postulated that chemistry knowledge is effective when combined with on the job training for optimum performance of a chemist in the industries. This result indicates that chemistry graduates can function effectively in other related job tasks when given on the job training. The disagreement witnessed from 7 respondents representing (6.3%) may be due to response errors as such could be undermined hence a greater number of the students can solve societal problems when combined with other professional scientists in the production and services industries.

The responses to item 9, total of 93 respondents representing (84.5%) of the respondents agreed that the societal expectations is for the chemists to recognize, translate, design, produce, standardize and make generalizations in solving societal problems. But 13 respondents representing (15.5%) of the respondents disagreed while others were undecided. This disagreement could be due to inexperience of the respondents in responding to structured questionnaires. The result indicated that the students were already aware of the societal expectations and the tasks awaiting them after graduation.

## CHAPTER FIVE

### 5.0 Summary

The results as indicated in table 1 above, depicts that chemistry curriculum in Nigeria is productive in resolving societal challenges. The result of item 8 displayed that chemistry graduates are useful to the society. The result of item 2 indicates that chemistry curriculum helps in building the cognitive, affective and psychomotor skills of the students which will conglomerate the satisfactions to the societal quests. The result of item 1 indicates that chemistry curriculum develops in the learners the skills of scientific processes. Item 3 results is evidence that chemistry graduates can work with other scientific experts in searching and researching on several science and technological challenges to proffer solutions to the societal needs. Item

4, 5, 6 & 7 crowned it that chemistry is a vital science subject needed in the society to help solve human challenges, that chemistry curriculum has equally invested much in the carrier development of Nigerians in the production and services sector.

### 5.1 Conclusion

Conclusively, the opinions of students have been used to assess the extent to which chemistry curriculum have assisted in satisfying societal quests.

From the analysis, it is apparent on the role of chemistry curriculum in the Nigerian society. This indicates that curriculum determines the fate of a nation's success or failure in the development of science and technological advancement. However, the study equally revealed that there are some shortcomings in the chemistry curriculum that needs urgent attention in-order to serve the purpose of satisfying the societal quests.

Therefore, chemistry curriculum should be given more priority in the bid to salvage the Nigerian society from colonial curriculum repressions.

### 5.2 Recommendations

On the basis of the findings, the following recommendations were made:

1. More chemistry practical class should be included in the curriculum and also make available to the students chemicals and equipment, to achieve the objectives of the curriculum.
2. Students' one year industrial attachment should be made compulsory to enable the students acquire required practical skills in the industries and also to put most of the theories into practice.
3. Chemistry curriculum should be designed to use locally developed raw materials for all practical illustrations.

### REFERENCES

- Ajeyalemi, U.I (1985), Science for the 80's. *Journal of science teachers Association of Nigeria*.16 (3), Pp5.
- Carr, M.S (1902), *Teaching Chemistry Effectively*. Bricks and Co. publishers. London.
- Eluozo, C. (2018). Teachers' Trait as an Impediment to Physics Students Academic Achievement Among Secondary Schools in Ikwerre Local Government Area, of Rivers State. *Ceka international journal of basic and applied sciences*, 4(1), 50-57.
- Eluozo, C. (2018). Discovery Learning: A pedagogical Approach in Science Education. *Hezekiah University Journal of Contemporary Research*, 8(1), 115-122.
- FGN. (1981), *Fourth National Development Plan*. PP76,79, 209&268.
- Ikoku, C. (1973), The school chemistry curriculum and its relevance to society. *West African Journal of education*. 92(3) Pp 475-486.

- Ofoeze, H.G.A (2008). Education and national development in Nigeria: the underlying Assumptions and practical realities. In Ibekwe Robert – Okah (2017), *Journal of Education & Society* 7(1).
- Okwu, G.N The teaching of chemistry in developing countries with particular reference to Nigeria. *STAN Journals* (1981) 19 (2), Pp100-103.
- Robert-Okah, I. & Osiobe, C (2014) Higher Education for sustainable economic development. In Ibekwe Robert – Okah (2017), *Journal of Education & Society* 7(1).
- Theodore, B. (2017). Educational curriculum and National development: The underlying assumptions and practical realities. *Journal of Education and society*, 5(2), 38-69.
- Todaro, M.P (1977). *Economics for a developing world*. Longman Group Ltd. London. Pp 283-288.
- Ukeje, B. O. (1986) *Education for the survival of the Nigerian nation*. An inaugural lecture series No. 4. university of Port Harcourt Choba, Nigeria.
- Wheeler, D.K. (1967). *Curriculum process*. Hodder and Stoughton Ltd. USA.