ABSTRACT

**IDENTIFICATION OF DIFFICULT TOPICS IN PHYSICS, CHEMISTRY AND ENGLISH LANGUAGE CURRICULA AMONG SENIOR SECONDARY SCHOOLS STUDENTS IN ENUGU SOUTH AND ENUGU NORTH LOCAL GOVERNMENT AREAS OF ENUGU STATE**

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This research work was conducted to identify difficult topics in physics, chemistry, and English language curricula among senior secondary school students in Enugu South and Enugu North Local Government Areas of Enugu State. Two research questions and one hypothesis guided the study. A survey design was adopted for the study. A sample of 16 teachers in the subject areas and 200 students were drawn from the 16 senior secondary schools of SS3 in the Enugu South and Enugu North Local Government Areas. A structured questionnaire was used to collect data, and the data collected was analyzed using percentages, mean deviation, and t-test for hypothesis. The study findings showed that most of the teachers did not cover those areas when they were students, which made them shy away from teaching difficult topics in physics, chemistry, and English. Teachers should attend workshops, seminars, and conferences. Resource personnel should be used to teach difficult topics, and they should be provided with adequate instructional materials for the teaching and learning of difficult topics. The study's strategies should also be used to improve how physics, chemistry, English language, and other science subjects are taught and learned in senior secondary schools.

Keywords: identification, difficult teaching, curricula.



## Introduction

According to Horny (2000), the word "identification" is defined as the process of showing, providing, or recognizing who or what somebody or something is. Therefore, the identification of difficult teaching and learning topics in SS3 physics, chemistry, and English language curricula in Nigeria can be seen as the process of showing, providing, or recognizing the difficult topics in teaching and learning physics, chemistry, and English language in SS3 curricula in Nigeria. But in order to figure out which parts of the SS3 physics, chemistry, and English language curricula are hard to teach and learn, we need to look at how different educationists have defined the word "curriculum."

A curriculum, according to Hosford (2005) and Badmus (2006), is a set of experiences planned to influence learners towards the goal of an organization. However, Lawis and Niel (2002), cited in Akanybon (2007), define a curriculum as a set of intentions about opportunities for engagement of a person to be educated with other people and things (all bearers of information, process, techniques, and values) in a certain arrangement of time and space. On the other hand, Tanner and Tanner (2000) in Akangbon (2007) see curriculum as the cumulative tradition of organized knowledge, modes of thought, a planned learning environment, cognitive and affective content and process, an instructional plan, instructional outcomes, and a technological system of production.

Therefore, the content of the curriculum and the methods employed to present it have to be determined by the nature of society and the nature of the learner. Chemistry is one of the three main branches of the pure sciences, the other two being biology and physics. Chemistry deals with the composition, properties, and uses of matter. It probes into the principles governing the changes that matter undergoes. So, of course, those who teach chemistry in schools do not concern themselves directly with the economic future of the nations in which they work. But it remains a fact that students want to do useful things and that they will profit from being shown how they can contribute to a dynamic part of their country's industry. This provides an added reason for teaching chemistry in schools. On the other hand, the teaching and learning of chemistry is not a simple job for those who teach the subject and learners. The fact that some terms in chemistry cannot be observed or be related to physical activities makes the teaching and learning of some topics in chemistry very difficult for teachers and students. In other words, the teaching and learning of some topics in chemistry involves mathematical expression and critical thinking. Physics is the science concerned with the study of physical objects and substances and of natural forces such as light, heat, and measurement. As physics is based on exact measurements, every such measurement requires two things: first, a member or quantity, and secondly, a unit. All branches of it deal inevitably with difficulties whose solutions are often envisaged to benefit humanity. Unfortunately, some students in SS3 hardly register for the subject in the SSCE examinations because they find some of its topics very difficult to understand. Charles and Chester (2001) say that students' poor performance in physics could be caused by a number of factors, such as:

Psychological factors like confidence, cognitive style, decisiveness, ideational fluency, intellectual ability, attitude, curiosity, and so on.

The English language is the central subject at the post-primary school level because it is the medium of instruction for all other subjects. It is, therefore, the service subject for all other subjects. According to Anibueze (2007), there are many problems teachers and students encounter in the course of teaching and learning English. Such problems are classified as

• The Problem of Equivocation refers to the difficulty that students and teachers face when reading the meaning of words, sentences, and passages.

• The problem in elocution refers to the difficulties that students anticipate in their oral delivery or use of the English language.

• Transliteration issues: This is a problem that arises due to the interference of the mother tongue.

• The problem with expression: this is a problem in which people do not fall in a way or follow a process that other people will understand and do not clearly express their ideas, opinions, thoughts, feelings, and information.and others.

Anibueze (2007) says that there are factors militating against the effective teaching and learning of the English language and other subjects. Such factors are:-

There are the problems of poor development of listening and speaking skills. Teachers have no recorded utterances in Standard English for the teaching of the language. There is no teacher's model reading for students to listen to in the classroom. Students are told to listen to each other when they speak English, but most of the time they hear bad English or English that is full of mistakes.Some students often code-switch or code-mix when using the language. Sometimes they pick nonsense varieties of English from home video, radio, television programmers, and films. Much of what they listen to is awful.

• In speaking-skills, their spoken English is influenced by their native speech habits and their linguistic community. In other words, their mother tongue interferes with their spoken words. They have psychological problems too.

• Students are taught without teaching aids or instructional materials. In the library, there are some antiquated materials that are not in any way related to contemporary issues, syllabuses, or schemes of work, which makes teaching and learning difficult.

The efficient use of different methods in the course of teaching helps, in no small measure, in the involvement of the three domains (cognitive, affective, and psychomotor), which invariably leads to the realization of chemistry, physics, and English language teaching and learning objectives. Students and teachers also maintained that the topics are difficult because the instructional materials for teaching and learning the topics are short in supply and the available ones are not properly used for the teaching and learning of the difficult topics.

**Statement of the Problem**

In most of our senior secondary school certificate examinations, there is always a mass failure in chemistry, physics and English language curricula. Both students and teachers of chemistry, physics and English language complain of their difficulty in getting on with the subjects. Most problems in the teaching and learning of chemistry, physics, and English are:

1. Students' poor performance in senior secondary school certificate examinations in physics, chemistry, and English
1. Low enrolment of students in physics and chemistry in senior secondary school certificate examinations
1. There is a lack of qualitative and quantitative instructional materials for teaching chemistry, physics, and English.
1. There is a lack of qualified teachers to handle chemistry, physics, and English language at the senior secondary school level.

**The purpose of the study**

The goals of this research are to discover:

1. The difficult topics in senior secondary school three (SS3) are chemistry, physics, and English language curricula.

1. The possible suggestions for effective teaching and learning of the difficult topics in chemistry, physics, and English language curricula in senior secondary school class three (SS3)

**The Significance of the Study**

The identification of the topics that teachers find difficult to teach in the senior secondary chemistry, physics, and English language curricula in Nigeria and the probable solutions to the problem will go a long way in solving the problem of ineffective teaching of all aspects of chemistry, physics, and English language and improve the students' performance in internal and external examinations like WAEC, NECO, JAMB, etc. In addition, the study would be significant for

1. The findings could form the basis for organizing workshops and the use of resource people to teach some difficult topics.
1. It will also help the teachers who did not cover those areas when they were students to stop shying away from teaching difficult topics in chemistry, physics, and the English language.

**Scope of the Study**

The scope is limited to senior secondary schools with a view to examining the difficult topics in teaching and learning in senior secondary school curricula in Enugu, Enugu State. The investigation was limited to students' views towards difficult topics in teaching and learning, school curricula, study habits, influence, teachers, competence, parental influence, and learning environment.

**Research Questions**

The following research questions guided the study:

1. What are the possible suggestions for effective teaching and learning of difficult topics in chemistry, physics, and English?
1. What are the difficult topics in teaching and learning in chemistry, physics, and English language in the SS3 curriculum?

**Hypotheses**

There is no significant difference between the mean responses of qualified teachers and learners in their perception of difficult topics in senior secondary school III chemistry, physics, and English language.

**METHODS**

The research methods used for the study are presented under the following sub-headings: Research Design, Area of the Study, Sources of Data Collection, Population of the Study, Sample and Sampling Techniques, Instrument for Data Collection, Validation of the Instrument, Method of Data Collection, Method of Data Analysis, and Decision Rule.

**Research Design**

The research design adopted for this study was a survey design. Survey design according to Osuala (2002) focuses on people and their opinions, attitudes, motivation, and behaviors. It is suitable for this study because the opinions and ratings of chemistry, physics, and English language teachers and students were used to determine the difficult topics in teaching and learning, a case study of chemistry, physics, and English language in SS3 curricula.

**The Area of Study**

The study was conducted in the Enugu urban educational zone of Enugu State in Nigeria. This study was carried out in the Senior Secondary Schools three (SS3) in Enugu Urban, which comprises two local government areas: Enugu North Local Government and Enugu South Local Government Area.

The choice of the area was made because of its geographical location and low educational development. The local governments cover both rural and urban areas.

**The study's population:**

The population under study covers all the government secondary schools in Enugu North and Enugu South Local Government Areas. The target population for this study was all secondary school students in the area, which is said to be 200 students.

The source of the data was from the Post-Secondary School Management Board 2018/2019 (PPSMB) Enugu Zonal Office Statistics and Record Office.

**The sample and sampling procedure**

A stratified random sampling technique was adopted for this study. Some schools were stratified into schools I, II, and III. Sixteen senior secondary schools, sixteen teachers, and 200 students were randomly selected by a simple random sampling technique. A total of 80 copies of the questionnaire were administered, and a total of 25 topics and 12 strategies for effective teaching and learning were identified by teachers and students. The administration was done by the researcher by hand.

**An Instrument for Data Collection**

The questionnaire was the research instrument used for collecting data. The instrument was made up of A and B. Section A contained information about the difficult topics in teaching and learning in the SS3 curricula of chemistry, physics, and English language.Section B dealt with the strategies for effective teaching and learning of difficult topics in chemistry, physics, and the English language.

The questionnaire adopted the 4-point continuous scaling method with strongly agreed, agreed, disagreed, and strongly disagreed with assigned values of 4-3-2 and 1 in order of agreement.

**Validation of the Research Instrument**

The instruments for the data were validated by three experts in chemistry, physics, and English language, that is, the teachers of the three subjects in senior secondary three (SS3), at Queens School Enugu. These teachers checked the appropriateness of the items in terms of coverage, clarity of language, suitability, and relevance.

Also, the questionnaire was validated by a lecture on science education in Enugu State College of Education (Technical). The lecturer was certainly scrutinized. The item and the suggestion and observation were confirmed and incorporated.

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**The Method of Data Collection**

The instrument administered and the questionnaire were distributed to the respondents at various schools sampled for the study. With the help of researchers, the questionnaire was distributed by hand and collected immediately.

**The Method of Data Analysis**

Data collected from the respondents for this study was analyzed using frequencies, percentages, means, and t-tests.

Research question I, which comprised tables I, II, and III, was answered using percentages of teachers and students that responded to the question. Research question II was answered using mean and a t-test was used to answer the hypothesis.

Nominal values assigned to the different scaling statements were as follows:

4 votes for Strongly Agreed

(A)-3 votes in favor

Disagreement (D)-2

1 SD (Strongly Disagreed)

**Decision Rule**

Tables I, II, and III: any topics that cover up to 60% for teachers and 59% for students are identified as difficult topics in SS3 curricula for teaching and learning.

Therefore, in table IV, any mean response of 2.50 for teachers and 2.80 for students and above is regarded as "Agreed," while the mean response below 2.50 and 2.80 is regarded as "Disagreed."

**Hypothesis**

The hypothesis with 0.05 levels of significance and 214 degrees of freedom for the hypothesis were used. This determined the acceptance or rejection of the null hypothesis.

The null hypothesis was rejected if the calculated t-value had a level of significance of 0.05. If the calculated t-test was less than the t-table value at the 0.05 level of significance, the null hypothesis was accepted.

The following is the t-cal formula:

XT – XS = t-cal

SDS-SDT

nt ns

Where

XT = mean teacher responses

XS = average student responses

SDT stands for standard deviation for teachers.

SDS stands for standard deviation for students.

nT denotes the total number of teachers.
nS denotes the total number of students.
The total degree of freedom is
(n1 + n2 – 2) df
The mean formula used is as follows:
XT = NT multiplied by scale value
NS
Ns x scale value = XS
* N*
Where
XT is the meaning of the mean responses for teachers.
NT is the total number of teachers who are accountable.
N represents the total number of schools.
The average student response is XS.
NS denotes the total number of students who responded.
The number of students is denoted by NRS.

**Reliability of the instrument**

In order to determine how reliable the instrument was, some copies of the questionnaire were administered to twenty (20) secondary schools that were not used for the study. Scores obtained from the trial testing were used to determine the reliability of the instrument. The scores obtained were corrected using the spearmen's rank order formula. A reliability co-efficient of 0.75 was obtained, showing that the instrument was highly reliable.

**Results**

This chapter deals with the presentation and analysis of data in the study. This is how the order of presentation and analysis worked out. It was based on the research question and the hypothesis that was drawn up for the study.
The presentation and analysis of the data are organized under the following headings or sections:

- What are the difficult topics in teaching and learning in chemistry, physics, and English language in the SS3 curriculum?
- What are the possible suggestions for effective teaching and learning of the difficult topics in chemistry, physics, and the English language?

**Research Question: I**

What are the difficult topics in teaching and learning in chemistry, physics, and English language in the SS3 curriculum? To answer this research question, teachers and students were required to indicate in a checklist the difficult topics in teaching and learning in chemistry, physics, and English language in SS3 curricula.
The analysis is presented in TABLES 1-2 & 3.

**Distribution of topics to Teacher's and Student's to Identify Difficult topics in SS3 Curriculum of Chemistry, Physics and English Language**

| S/N | **Difficult topics in teaching and learning in** | **Total no. of teache** | **Total no of studen** | **Freq. of teacher** | **Freq. of student that** | **% of the topics** | **% of the topic that are difficult** | **Rem arks** |
|---|---|---|---|---|---|---|---|---|

| | chemistry | rs for the study | t for the study | that respon ded on difficul t topics | responde d on difficult topics | that are difficult to teacher | to students | |
|---|---|---|---|---|---|---|---|---|
| 1 | Atomic structure | 16 | 200 | 12 | 150 | 75.0 | 75.0 | DT |
| 2 | Chemical formula | 16 | 200 | 11 | 120 | 68.8 | 60.0 | DT |
| 3 | Electronic configuration using spdf hybrid orbital | 16 | 200 | 12 | 125 | 75.0 | 62.5 | DT |
| 4 | Thermo-chemistry – chemical kinetics | 16 | 200 | 10 | 118 | 62.5 | 59.0 | DT |
| 5 | Electrolysis – Faraday's law calculation | 16 | 200 | 13 | 160 | 81.3 | 80.0 | DT |
| 6 | Radioactivity – decay rate calculation | 16 | 200 | 14 | 180 | 87.5 | 90.0 | DT |
| 7 | Organic compound – ILUPAC naming system | 16 | 200 | 15 | 190 | 93.8 | 95.0 | DT |
| 8 | Metal and compound – in extraction of metals | 16 | 200 | 9 | 116 | 56.3 | 58.0 | DT |
| 9 | Test for functional group | 16 | 200 | 10 | 118 | 62.8 | 59.0 | DT |
| 10 | Non-metal-industrial preparation of gases like Nitrogen (II) oxide | 16 | 200 | 12 | 145 | 75.0 | 72.5 | DT |

The data presented in table I for identification of difficult topics in chemistry, shows that the topics are being identified by chemistry teachers and students as difficult topics in teaching and learning of chemistry in SS3 curricula. The topics are difficult due to the nature and phenomenon of the topics, and the fact that the topics required adequate instructional material; and use of resource personnel for teaching them.

| S/N | Difficult topics in teaching and learning in physics | Total no. of teachers for the study | Total no of student for the study | Freq. of teacher that responded on difficult topics | Freq. of student that responded on difficult topics | % of the topics that are difficult to teacher | % of the topic that are difficult to students | Remarks |
|---|---|---|---|---|---|---|---|---|
| 11 | Motion – in solving numerical problem | 16 | 200 | 13 | 160 | 81.3 | 80.0 | DT |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | involving impulse and momentum. | | | | | | | |
| 12 | Gravitational field – To determine escape velocity. | 16 | 200 | 12 | 150 | 75.0 | 75.0 | DT |
| 13 | Quantity of heat – To determine heat capacity using electrical method. | 16 | 200 | 14 | 135 | 87.5 | 67.5 | DT |
| 14 | A.C-circuit-to calculate reactance capacitance, impedance and inductance | 16 | 200 | 12 | 142 | 75.0 | 71.0 | DT |
| 15 | Energy quantization – To determine atomic energy levels, photo-electric effect and lime spectra | 16 | 200 | 14 | 156 | 87.5 | 78.0 | DT |
| 16 | Wave – polarization | 16 | 200 | 11 | 131 | 688 | 65.5 | DT |
| 17 | Electromagnetic field – in Flemings right hand rule | 16 | 200 | 12 | 140 | 75.0 | 70.0 | DT |
| 18 | Light – to determine refractive index using the principle of real and apparent depth | 16 | 200 | 15 | 170 | 93.8 | 85.0 | DT |
| 19 | Introductory electronics – using semi-conductor and using diode in rectification of transistor in amplification | 16 | 200 | 12 | 155 | 75.0 | 77.5 | DT |
| 20 | Equilibrium of forces – to determine the resultant and equilibrium of force. | 16 | 200 | 13 | 165 | 81.3 | 82.5 | DT |

**TABLE III**

| S/N | Difficult topics in teaching and learning in | Total no. of teachers | Total no of student | Freq. of teacher that | Freq. of student that | % of the topics | % of the topic that are | Remarks |
|---|---|---|---|---|---|---|---|---|

| | English language | for the study | for the study | responded on difficult topics | responded on difficult topics | that are difficult to teacher | difficult to students | |
|---|---|---|---|---|---|---|---|---|
| 21 | Comprehension – to identify grammatical functions | 16 | 200 | 14 | 165 | 87.5 | 82.5 | DT |
| 22 | Lexis – idiomatic expression | 16 | 200 | 13 | 175 | 87.3 | 87.5 | DT |
| 23 | Structure – in arranging words and functions of auxiliaries | 16 | 200 | 11 | 180 | 68.8 | 90.0 | DT |
| 24 | Oral English – Appropriate uses of stress, to identify monosyllabic, disyllabic and polysyllabic | 16 | 200 | 15 | 145 | 93.8 | 72.5 | DT |
| 25 | Writing – letter writing and essay writing | 16 | 200 | 13 | 157 | 81.3 | 78.5 | DT |

The data presented in table II and III for identification of difficult topics in physics and English language, shows that the topics are being identified by physics, English language teachers and students as difficult topics in teaching and learning of physics and English language.

**Research Question II**

What are the possible suggestion for effective teaching and learning of difficult topics in chemistry, physics and English language?

The analysis is presented in Table IV.

**Distribution of Suggestion to Teachers and Students to Suggest (Identify) The Effective Method for Teaching And Learning Difficult Topics**

| S/N | Strategies for effective teaching and learning | Mean response for teachers $X_T$ | MEAN Response for students $X_S$ | Remark |
|---|---|---|---|---|
| 26 | The teachers should demonstrate his lesson to their students | 3.25 | 3.00 | Agree |
| 27 | The teachers should supervise students notes adequately | 2.00 | 2.80 | Agree |
| 28 | Use of resource person in teaching areas not covered during the pre-service years | 2.75 | 2.90 | Agree |

| | | | | |
|---|---|---|---|---|
| 29 | Competent teachers should provide fund and instructional material for effective teaching of difficult topics. | 3.25 | 3.20 | Agree |
| 30 | Teachers should use appropriate teaching aids on each topics he/she want to teach. | 2.50 | 2.98 | Agree |
| 31 | Teachers should use appropriate method for teaching of difficult topics. | 3.00 | 3.10 | Agree |
| 32 | Conducive environment should be provided for students as their study centre | 2.75 | 2.90 | Agree |
| 33 | Sufficient time should be given in time-table to teach difficult topics | 2.50 | 3.04 | Agree |
| 34 | Teacher should attend seminar and conference in order to up grade their knowledge. | 3.00 | 3.30 | Agree |
| 35 | Federal Ministry of Education should organize seminar, conference and work shop for teachers | 2.50 | 3.04 | Agree |
| 36 | Using of numerous worked examples to illustrate difficult topics when teaching, should be adopted by teachers | 3.25 | 3.40 | Agree |
| 37 | Use of principle and concept presented in a format when teaching can be easily understood by the students. | 2.75 | 3.00 | Agree |
| 38 | Use of ISEE approach in teaching difficult topics should be adopted by teachers i.e. (identify, set up, execute and evaluate) | 3.00 | 3.10 | Agree |
| 39 | Teachers should very their method of teaching. | 1.75 | 1.80 | Agree |
| 40 | Students should always do assignment | 2.00 | 1.90 | Agree |
| 41 | The teachers should supervise students note book adequately | 2.25 | 1.92 | Agree |

Based on the data analysis presented in Table IV above showed that the mean scores X of teachers 2.50 and mean score Xs of students 2.80 and above are recognized (Agree) as strategies for effective teaching and learning of difficult topics by teachers and students. While the mean score below 2.50 for teacher and 2.80 for students are disagree as strategies for effective teaching and learning of difficult topics.

**Test of Hypothesis**

Hypothesis

There is no significant difference between the mean response of teachers and students of SS3 in their perception of difficult topics in senior secondary III chemistry, physics and English language curricula.

Data relevant to this hypothesis is found in Table V.

TABLE V: t-test result on the mean response of teachers and students of chemistry, physics and English language in senior secondary school III students on perception of difficult topics.

| S/N | Difficult topics in chemistry, physics and English language of SS3 curricula are: | SS 3 Teachers $n_1$ | $x_1$ | $S_{D1}$ | SS3 students $N_2$ | $X_2$ | $S_{D2}$ | t-cal | t-test | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Atomic structure | 16 | 3.00 | 0.750 | 200 | 3.20 | 0.226 | -1.163 | 1.00 | |
| 2 | Chemical formula | 16 | 2.75 | 0.685 | 200 | 3.00 | 0.212 | -1.202 | 1.00 | |
| 3 | Electronic configuration using spdf hybrid orbitals | 16 | 2.50 | 0.625 | 200 | 2.50 | 0.177 | 0.00 | 1.00 | |
| 4 | Thermo chemistry – chemical kinetic | 16 | 3.25 | 0.813 | 200 | 3.20 | 0.240 | 0.246 | 1.00 | |
| 5 | Electrolysis – Faraday's law calculation | 16 | 2.50 | 0.625 | 200 | 2.50 | 0.177 | 0.00 | 1.00 | |
| 6 | Radioactivity – Decay rate calculation | 16 | 3.00 | 0.350 | 200 | 3.20 | 0.226 | -1.063 | 1.00 | |
| 7 | Organic compound – IUPAC naming system | 16 | 3.25 | 0.813 | 200 | 3.00 | 0.212 | 0.770 | 1.00 | |
| 8 | Metal and compound – in extraction of metals. | 16 | 2.50 | 0.625 | 200 | 2.90 | 0.205 | -2.50 | 1.00 | |
| 9 | Test for function group | 16 | 2.50 | 0.625 | 200 | 3.00 | 0.212 | -1.202 | 1.00 | |
| 10 | Non-metal-industrial preparation of gases like Nitrogen (II) oxide | 16 | 2.750 | 0.688 | 200 | 3.00 | -0.212 | -0.735 | 1.00 | |
| | **PHYSICS** | | | | | | | | | |
| 11 | Motion – in solving numerical problem involving impulse and momentum. | 16 | 3.25 | 0.813 | 200 | 3.40 | 0.240 | -0.735 | 1.00 | |
| 12 | Gravitational field – To determining escape velocity | 16 | 3.50 | 0.815 | 200 | 3.50 | 0.269 | 0.000 | 1.00 | |
| 13 | Quantity of heat- To determine heat capacity using electrical method | 16 | 2.50 | 0.625 | 200 | 3.00 | 0.212 | -0.157 | 1.00 | |
| 14 | A.C-circuit-To calculate capacitive reactance, impedance and inductance | 16 | 2.9 | 0.625 | | | | | | |
| 15 | Energy quantization – To determine atomic energy level; photo-electric effect and line spectra | 16 | 2.75 | 0.685 | | | | | | |
| 16 | Wave – polarization | 16 | 3.00 | 0.750 | | | | | | |
| 17 | Electromagnetic field – | 16 | 2.75 | 0.688 | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | in Fleming's right hand rule. | | | | | | | | |
| 18 | Light – To determine refraction index using the principle of real and apparent depth | 16 | 3.00 | 0.750 | | | | | |
| 19 | Introductory electronics – using semi-conduction and using diode in rectification of transistor in amplification | 16 | 2.50 | 0.625 | | | | | |
| 20 | Equilibrium of force – To determine the resultant and equilibrium of forces. | 16 | 2.50 | 0.625 | | | | | |
| 21 | English Language Comprehension – To identify grammatical function | 16 | 3.00 | 0.750 | 200 | 3.20 | 0.226 | -1.063 | 1.00 |
| 22 | Lexis – idiomatic expression | 16 | 3.25 | 0.813 | 200 | 3.40 | 0.240 | -0.735 | 1.00 |
| 23 | Structure – in arranging words and function of auxiliaries | 16 | 2.50 | 0.625 | 200 | 2.90 | 0.205 | -2.550 | 1.00 |
| 24 | Oral English – appropriate uses of stress, to identify monosyllabic, disyllabic and polysyllabic words and emphatic stress | 16 | 2.75 | 0.688 | 200 | 3.00 | 0.212 | -1.202 | 1.00 |
| 25 | Writing – letter writing and assay writing | 16 | 2.50 | 0.625 | 200 | 2.90 | 0.205 | -2.550 | 1.00 |

Key Degree of freedom (n1 + n2 – 2) = 16+200-2 = 214
$n_1$ = Number of teachers $n_2$ = Number of students

X1 = mean teacher evaluationsX2 denotes the average student score.

SD1 denotes the standard deviation for teachers.SD2 = student standard deviation

T-cal = Calculate the volume of t

The data analysis in table V shows that the calculated t-test values are less than the critical value of 1.00 and the 0.05 level of significance for all the topics. The hypothesis was accepted that there is no significant difference in the mean scores of teachers and students in their perception of difficult topics in teaching and learning.

From the hypothesis table, there was no significant difference in the mean response of teacher's and students' perception of difficult topics in the teaching and learning of chemistry, physics, and English language in SS3 curricula.

**Discussions**

The discussion of the findings is organized according to the research question and the hypothesis of the study. To identify difficult topics in chemistry, physics, and the English language.

These difficult topics require much time and systematic procedures by the teachers for effective teaching and learning. According to Olactan and Agusiobo (1997), difficult topics in teaching and learning develop reflective thinking, creative expression, critical analysis, and logical reasoning in the teachers and students and provide valuable benefits of application to future individual and group problems. The difficult topics required a lot of strategies and calculations to be able to draft and adopt a good pattern of teaching and learning. And in planning difficult topics for teaching, the teacher should bear in mind the following: planning the topics and suggesting some ideas that will be of interest to the student; determining how to organize the class in groups; determining the time for teaching and resources available; and identifying and directing the student to their reference materials. According to Kaka (1997), the task of the teacher is to encourage students so that steady and progressive development of quality learning is ensured.

**Teaching and Learning Strategies for Difficult Topics in Chemistry, Physics, and English Language in Senior Secondary School III**

The method of teaching used by the teacher should provide an opportunity for students to participate. It is through participation that students learn best. Gagne (1997) stated that teachers are to plan and encourage group learning and that each student in the class can make good strategies toward solving a given difficult problem. The teachers make use of the individual differences to provide for their needs and aspirations. This is supported by Fleck (1998), who said that a teacher should find something good in a student's problem-solving to encourage him to learn more about hard topics.The teacher should support his teaching with a demonstration.

Godwin (2000) advocated the use of demonstration to concretize teaching. The teachers should demonstrate the lesson in the centre of the class where every student will observe and take part fully in the learning of the topics. Students should always involve themselves in difficult problem-solving solutions. This was supported by Gagne (1997), who stated that each student in a class can contribute something towards learning difficult topics. According to Fleck (1998),

teachers should share problems with students in order to encourage them to find a solution to their problems.

The State Ministry of Education should organize seminars and conferences for teachers to attend and upgrade their knowledge and acquire some strategies for teaching which they were not able to cover when they were student teachers. A resource person should be invited by the school to teach those areas that were not covered when they were students-teachers. Competent teachers should teach chemistry, physics, and English language skills. This was supported by Bright (2001). He observed that "everything depends on the teacher". He emphasized that a successful teacher of those subjects must have a clear goal in mind as well as the necessary knowledge of how to impart information and receive feedback from students.

The school authorities should provide funds for the teaching of difficult topics that need practical teaching. In some schools, some principals show a non-chalet attitude towards the teaching of practicals. They didn't want to pay for the practicals because they didn't want to give students the chance to learn about the topics.

It is believed that if these identified reasons for the difficult topics areas in chemistry, physics, and English language of the SS3 curriculum are observed, measures and befitting teachers will not find those topics difficult to teach in chemistry, physics, and English language and teaching will improve.

The study from Table 1-4 identified difficult topics and strategies for improving the teaching and learning of difficult topics.

**Conclusion**

The study has successfully identified areas of difficulty in teaching and learning and strategies for enhancing teaching and learning in the senior secondary school curriculum. Based on the findings of this study, the following conclusions were made:

The difficult topics in the chemistry of the SS3 curriculum, such as chemical kinetics, writing chemical formulas, electrolysis, radioactivity, and others,

The difficult topics in the physics of the SS3 curriculum, such as atomic energy level, Compton effect, photoelectric effect lines spectra, decay constant, and others,

The difficult topics in the English language, such as figurative context, idiomatic expression, article writing, question tags, and others, need adequate strategies for teaching them.

Strategies for improvement in teaching and learning difficult topics, such as the use of resource people to cover difficult areas and the use of adequate equipment and facilities during practical instruction, help to improve effective teaching and learning of difficult topics.

All these factors have led to teachers finding teaching such topic areas difficult, and these students may be denied the opportunity to require vital knowledge in those areas.

In the study, some impending ways of improving the teaching and learning of difficult topics in chemistry, physics, and English have been identified. It is believed that if the chemistry, physics, and English language teachers, students' school authorities, and government take cognizance of these suggested ways of improving the teaching and learning of different topics in chemistry, physics, and English language courses, the standards will be considerably improved and teachers will not neglect such areas and they will then find it easy to teach and learn.

**Recommendations**

The following recommendations were made after identifying the difficult topics in chemistry, physics, and English language teaching and learning:

1. The Ministry of Education should organize workshops, seminars, and conferences for teachers and students to upgrade their knowledge in the areas they find difficult to teach and learn.

1. Adequate funding should be made available to enable the necessary activities to improve the teaching and learning of difficult topics in chemistry, physics, and English language.

1. Resource personnel should be used to teach. Those are the areas where teachers find it difficult to teach.



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