

## EVALUATION OF APPROVED COMPUTER STUDIES TEXTBOOKS IN USE IN ENUGU STATE JUNIOR SECONDARY SCHOOL

By

**ENEASATOR CHIAMAKA BROOKE**

(chisombrooke@gmail.com)

**Computer Science Department, Federal Polytechnic Oko, Anambra State, Nigeria.**

### **Abstract**

*This study evaluated three computer studies textbooks approved for Enugu state junior secondary schools. The study employed an Evaluation design and utilized the 8 point quantitative model for science textbook evaluation developed by Emerole in 2008. A total of two hundred and fifty two research subjects (240 students and 12 teachers) were used for the study. The textbooks evaluated are New computer studies for junior secondary school book 1 by J.O.E Otuka, A.F.A Akande and S.L Iginla, Computer studies for beginners for junior secondary school Book 1 by Oduronke T. Eyitayo and Adekunle O. Eyitayo, Basic computer studies for junior secondary school Book 1 by Sam Ige. Eight research questions and two null hypotheses guided the study. Research questions were answered using 8-point model while hypotheses were tested using the chi-square test at an alpha level of 0.05. Findings reveal that all the computer studies textbooks were good in terms of topical coverage, learning activity index, illustration index and study questions. Computer studies for beginners and basic computer studies had no chapter summaries. All evaluated textbooks were found to be good in terms of study questions and under-represented population index. The result further reveals that all the evaluated computer studies textbook are readable. The researcher recommended that authors of computer studies textbook should periodically evaluate computer studies textbooks in line with textbook evaluation criteria to ensure that they meet the demands of the curriculum.*

**Keyword:** Curriculum, Textbooks, Evaluation, Computer, Authors

### **INTRODUCTION**

Education over the years has given light to so many individuals, organisations, countries and the world. This education is acquired through various means, for instance, practical experience with learning materials, but in the olden days teaching

and learning were so tedious due to lack of materials and equipment. However, there is a paradigm shift in education following the discovery of computer in the late 19th Century; education took a new turn as teaching and learning have become relatively easy. Looking at the words of

Herbert Simon, a Nobel Laureate, who observed that the developments in science and information processing technologies have changed the meaning of the verb, "to know." It used to mean "having information stored in one's memory." It now means the process of having access to information and knowing how to use it (Simon, 1971). This is as a result of easy access to information from the computer (internet) and easy publication process, which now pave way for materials for teaching and learning to be available to the students and teachers.

Generally, world over, particularly in Nigeria, education has been considered to be the cornerstone for development. It forms the basis for literacy, skill acquisition, technological advancement and ability to harness human and material resources towards the achievement of societal goal, (FRN, 2004). Education is very important in any given society.

However, if this instructional material contains any defective knowledge or

information, the consequences will be serious on the students and the society in general. A number of science textbooks are not adequate and unsatisfactory as pointed out by Ekpenyong (1990). Inadequate instructional materials appear to be the main cause of poor performance of students, since the quality of educational materials such as textbooks is most fundamental where information presented is reliable, valid and authoritative. Textbooks stand out at the heart of educational enterprise. Teachers rely on them to set the parameters of instruction and to impact basic educational content. A textbook is seen as a tool for a subject without which a child finds himself backward in the subject. Hence the teaching and learning of any subject both teachers and students rely on textbooks as such it is not doubtful then that the quality of textbooks in use will determine, to a large extent the quality of learning and transfer of such learning which will occur (Nworgu, 2001).

Similarly, the appropriateness of the vocabulary and presentation of facts to the level of the learner, the learner's clarity of objectives, procedures are also very indispensable qualities that characterize good educational textbooks (Ali, 1996). Nweze (2003) defined textbook as a pedagogical instruments used to disseminate information about teaching and learning for attainment of educational goals. In other words a textbook is a printed materials that teaching and learning. Since textbooks are very important in teaching and learning processes, it needs to be critically evaluated to see whether they are meeting the expected goals of the national policy on education or that of national policy on science and technology Federal Republic of Nigeria (FRN,2002).

### **USES OF TEXTBOOKS**

Textbooks are useful in teaching and learning in secondary schools, some of the uses of textbooks are as follows;

- Students use it as a learning material to acquire both factual knowledge and skill of scientific enquiry.
- To address questions that can be addressed scientifically.
- Students use it to do their assignments .
- To plan and carry out experiments.
- The teacher use it as an instructional material for teaching.
- Most teachers and students in different part of the world rely heavily on textbooks as the only source of textbooks (Baiye, W 2000).

Computer textbooks are printed material that contains technological cconcepts and activities that guide teaching and learning of computer.Computer textbooks being the main source of information should have attributes of good textbooks such attributes

are easy to read and understand which depend on appropriate vocabulary. Also other important qualities of textbooks are the number and qualities of student's and teacher's activities, provision of information for obtaining related resources and inclusion of how to establish the extent the learner has attained each of learning indicators. This implies that any good educational material (textbook) should have these qualities such as appropriateness of vocabulary, presentation of facts, (that is sentence structural) clarity of objectives and procedures, number of qualities of students and teachers activities, among others. These qualities make a textbook to be good and readable.

Furthermore, Nworgu (2001) stated that once the appropriateness of the content of a book is not doubtful the next most important is the readability. This means that once the content of a book (that is the use of vocabulary, good and simple

sentences, clear diagrams, stated objects, etc) is appropriate, the next issue is the readability of that book. In the light of the above, The quality of textbooks pertains principally to its readability and evaluation.

### **Objective of the study**

The purpose of the study is to evaluate approved computer studies textbooks in use in junior secondary schools in Enugu state.

### **Research Questions**

The following research questions will guide the study,

1. How do the content of computer studies textbooks in use in junior secondary schools reflect the contents specified in the core-curriculum?
2. How adequate are the learning activities of the computer studies textbooks in use in Enugu state junior secondary schools?

3. How appropriate are the chapter summaries of the computer studies textbooks in use in Enugu state junior secondary schools?
4. How adequate are the study questions of computer studies textbooks in use in Enugu state junior secondary schools?
5. What is the illustration index of computer studies textbooks in use in Enugu state junior secondary schools?

### **Research Hypotheses**

Two null hypotheses were formulated to guide the study and will be tested at 0.05 level of significant.

HO<sub>1</sub>: The contents of the computer studies textbooks in use in the junior secondary schools in Enugu State do not significantly deviate from the specifications of the core-curriculum I computer studies.

HO<sub>2</sub>: The learning activities of each of the approved three computer studies textbooks in use in junior secondary

schools in Enugu state do not significantly deviate from the specifications of the computer studies core-curriculum.

### **Materials and Methods**

The study employed an evaluation design. According to Ali (2006), evaluation design is the type of design that makes value judgment on programmes and projects based on certain pre-determined criteria. Evaluation design is also the design which seeks to ascertain, or judge the value of a programme or resources by careful appraisal determined by a prestipulated standard (Carter, 2011). Specifically this study employed the naturalistic evaluation design, which is the act of gathering the strengths and weaknesses, merits or worth of an education innovation, materials, programmes or products. The design is useful because the study involves making value judgment about computer studies textbooks in use in junior secondary schools in Enugu state

### **Population of the study**

The population of the study consist of 17 approved computer studies textbooks in use in Enugu state. The population equally icludes all the computer science teachers in

all the 291 junior secondary schools in Enugu state of Nigeria.

### **Sample and sampling techniques**

Three computer studies textbooks approved for use in Enugu state junior secondary schools were used for the study. They are New computer studies Book 1 by J.O.E Otuka, A.F Akande, S.L Iginla, Computer studies for beginners Book 1 by Oduronke T. Eytayo, Adekunle O. Eytayo, Basic computer studies Book 1 by Sam Ige.

The researcher selected six junior secondary schools. From each school 40 students were randomly selected from each school so that for the six schools a total of two hundred and forty students were drawn from the study. The selection of the students, from the classes were achieved through simple random sampling technique.

Two teachers were selected from each school making it the total of twelve computer teachers for the six schools. In all therefore a total of two hundred and fifty two research subjects (240 students and 12 teachers) were used for the study.

### **Instrument for Data Collection**

The instrument that was used for the data collection is the 8-point quantitative evaluation model for science textbooks. This instrument was developed by Emerole (2008). The model is an update

of the 5-point quantitative model for evaluation of science textbooks (QACEST) Nworgu (2001) developed.

### **Reliability of the Instrument**

The instrument was assessed for reliability using Kendall's Coefficient of Concordance ( $w$ ). Three teachers were used to rate each of the three textbooks. A reliability coefficient was obtained for each of the textbooks using the rating of the three teachers.

### **Method of Data Collection**

The 8-point quantitative approach for content evaluation of science textbooks, an update of the 5-point QACEST using computer studies textbooks was used to collect data. The computer studies teachers were trained on how to use the manual of the 8-point quantitative approach for the evaluation of computer studies textbooks to determine approach for the evaluation of computer studies textbooks to determine the indices of topical coverage, learning activities, study question, chapter summaries, illustration index, underrepresentation population index, readability and comprehensibility index and teacher perception rating index.

### **Method of Data Analysis**

The 8-point model quantitative formula was used to answer the research

questions. Teachers, Perception Rating Scale (TPRS), determines teachers perception on how a textbook provides instructional support to them, while the hypotheses were tested at 0.05 level of significance using chi-square test of goodness fit.

## RESULTS

All the results are represented in tables according to the research question and hypothesis.

### Research Question1

*How do the contents of computer studies textbooks in use in Enugu state Junior secondary schools reflect the contents specified in the core curriculum?*

The data collected on the (ITC) index of topical coverage were analyzed; the score of the three computer textbooks were calculated as shown in Table 1

**TABLE 1:** Indices of Topical coverage (ITC) of the computer textbooks in use in Enugu state secondary schools.

S/N	TEXTBOOK	T <sub>t</sub>	T <sub>s</sub>	S <sub>t</sub>	S <sub>s</sub>	INDEX
1	New Computer Studies	10	14	59	46	0.99
2	Computer Studies	11	14	39	46	0.82

	for beginners					
3	Basic Computer Studies	13	14	48	46	0.96

Acceptance range = 0.75 to 1.00

The formula for ITC is given by:  $ITC = (T_t / T_s + S_t / S_s) / 2$ , where  $T_t$  = Number of topics sufficiently covered by the text.  $T_s$  = Number of topic in the syllabus  $S_t$  = Number of sub-topic sufficiently covered by the text,  $S_s$  = Number of sub-topics in the syllabus. The result of data analysis in **Table 1** reveals the topical coverage indices of the texts. New computer studies had topical index of 0.99 computer studies for beginners had 0.82 and basic computer studies had 0.96. New computer studies had the highest topical coverage index while computer studies for beginners had the lowest topical coverage index.

### Research Question 2

*How adequate are the learning activities of the computer studies textbooks in use in Enugu state junior secondary schools?*

The data collected on the learning activities from each of the three computer textbooks in use in Enugu state junior secondary schools were analyzed and presented in **table 2**

**TABLE 2:** Learning activity index of the biology textbooks in use in Enugu state junior secondary schools.

S/N	TEXTBOOKS	A	P	INDEX
1	New Computer Studies	120	12	0.82
2	Computer Studies for Beginners	98	10	0.82
3	Basic Computer Studies	72	14	0.70

Acceptance range = 0.50 to 1.00

The formula for LAI is given by  $LAI = \frac{A-P}{A+P}$  where A = Number of sentences requiring the learner to perform some activities P = Number of sentences requiring the learner only to receive information with no other activity. The result of the analysis in **Table 2** showed that new computer studies had learning activity index of 0.82, computer studies for beginners had learning activity index of 0.82 and basic computer studies had learning activity of 0.70

### Research Question 3

*How appropriate are the chapter summaries of the computer studies*

*textbooks in use in Enugu state junior secondary schools.*

The data collected on chapter summaries was used for the computation of chapter summary index (CSI). The results of the CSI for the three computer textbooks evaluated are presented in **table 3**

**TABLE 3:** Chapter summaries indices of the computer textbooks in Enugu state junior secondary schools

S/N	TEXTBOOK	J <sub>s</sub>	J <sub>e</sub>	N <sub>s</sub>	N <sub>c</sub>	INDEX
1	New Computer Studies	30	39	26	73	0.56
2	Computer Studies for beginners	Nil	Nil	Nil	Nil	Nil
3	Basic Computer Studies	Nil	Nil	Nil	Nil	Nil

Acceptance range = 0.60 + 1.00

The formula for chapter summary index is given by:  $CSI = \frac{J_s/J_c + N_s/N_c}{2}$  where J<sub>s</sub> = number of statement in the summary which represent major point covered in the chapter, J<sub>c</sub> =Number of major points covered in the chapter N<sub>s</sub> = Number of statements in the summary which represent



minor points covered in the chapter,  $N_c$  = Number of minor points covered in the chapter. Information in **Table 3** showed that one of the evaluated textbooks contains chapter summaries. New computer studies had chapter summary index of 0.56, while computer studies for beginners and basic computer studies had no summaries at all at the end chapter.

2	Computer Studies for Beginners	16 3	1 9	0.54
3	Basic Computer Studies	41	1 0	0.61

Acceptance range = -0.25 to + 1.00

#### Research Question 4

*How adequate are the study questions of computer studies textbooks in use in Enugu state junior secondary schools?*

The data obtained was used for the computation of the study questions index (SQI). The computation of the SQI was based on the question found in each of the three computer textbooks evaluated. The results are presented in **table 4** below

The formula for SQI is given by:  $SQI = (T - R) / (T + R)$  where T = Number of questions that require students to engage in real life thinking, R = Number of question that require students to merely recall knowledge. The result presented in table 4 reveals that the three computer textbooks evaluated provided adequate study questions at the end of each chapter that required the student to engage in real thinking and recall knowledge. Analysis in table four shows the study question index of New computer studies to be 0.50 computer studies for beginners had index of 0.54 and basic computer studies had study question index of 0.61.

**TABLE 4:** Study Questions index (SQI) of the computer textbooks in use in Enugu state Junior secondary schools.

S/N	TEXTBOOKS	T	R	INDEX
1	New Computer Studies	83	3 1	0.50

#### Research Question 5

*With are the illustration indices of computer studies textbooks in use in Enugu state junior secondary schools?*

The data obtained on illustrations found in each of the three computer textbooks evaluated were used for the computation of

the illustrations index (ILI). The results are presented in **table 5**

**TABLE 5:** Illustrations index (ILI) of the computer textbooks in use in Enugu state junior secondary schools.

S/N	TEXTBOOKS	La	Lb	INDEX
1	New Computer Studies	13	92	- 0.75
2	Computer Studies for Beginners	31	71	-0.39
3	Basic Computer Studies	10	76	-0.77

Acceptance range = -0.05 - 0.00

The formula of ILI is  $ILI = (La-Lb) / (La + Lb)$  where La = Number of illustration requiring the learner to perform some activity, Lb = Number of illustration requiring the learner to only view. The result presented in table 5 shows that three textbook evaluated are within acceptance range of -0.05 - 0.00 . The three textbooks include adequate illustration to aid understanding of the content. The table shows that new computer studies had illustration index of -0.75, computer studies for beginners -0.39 and basic computer studies had -0.77

### Hypotheses

**H0<sub>1</sub>:** *The content of the computer studies textbooks in use in Junior secondary schools in Enugu state of Nigeria does not significantly deviate from the specification of the core-curriculum in computer studies*

The content of each of the three computer studies textbooks evaluated in this study were matched with the contents specified in the core computer studies curriculum. The frequencies of Tt = Number of topics sufficiently covered by the textbook, Ts = Number of topics in the syllabus, St = Number of sub -topic sufficiently covered by the textbook and Ss = Number of sub-topics in the syllabus were subjected to a chi-square test of goodness of fit. The result is presented in the **table 9**

**TABLE 9:** Chi-square table on the significance of deviation of the three computer studies textbooks contents from the specification of computer studies core-curriculum

S/N	TEXTBOOKS	Tt	Ts	St	Ss
1	New textbook	10 (12.84)	14 (15.86)	69 (56.17)	46 (61.17)
2	Computer studies for beginners	11 (10.16)	14 (12.55)	39 (46.03)	46 (51.03)

3	Basic computer studies	13 (10.99)	14 (13.58)	46 (49.86)	<b>TABLE 10:</b> Chi-square table on the significance of deviation of the three computer studies textbooks learning activities from the specification of computer studies core-curriculum
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The result in table 9 reveals the chi-square calculated value of 17.35 and critical value of 12.59 at alpha level of 0.05. Based on the decision rule, researcher rejects the null hypothesis and concludes that the content of the three computer studies textbooks evaluated significantly deviated from the specification of the core-curriculum in computer studies

**HO<sub>2</sub>:** *The learning activities of each of the approved three computer studies textbooks in use in junior secondary schools in Enugu state of Nigeria do not significantly deviate from the specification of the computer studies core-curriculum.*

The learning activities of each of the three computer studies textbooks evaluated in this study were matched with the learning activities specified in the computer studies core-curriculum. The frequencies of A = Number sentences requiring the learner to perform some activities and P = Number of sentences requiring the learner to only receive information with no other activity, were subjected to chi-square test of goodness of fit. The summary of the result is presented on **table 10**

S / N	TEXTBOOK	A	P	X <sup>2</sup> Cal	Alpha	X <sup>2</sup> Crit	Decision
1	New Computer Studies	120 (117.42)	124 (115.8)	3.27	0.05	5.991	Accept
2	Computer Studies for beginners	98 (96.07)	101 (93)				
3	Basic Computer Studies	72 (76.50)	145 (150)				

Result of data analysis in table 10 showed that the chi-square calculated value is 3.27 while the critical value in 5.991 at alpha level of 0.05 of significant. Based on the decision rule, the researcher accepts the null hypothesis and concludes that the learning activities in the three computer studies textbook evaluated do not deviate significantly from the specification of the computer studies core-curriculum.

## DISCUSSION

From the evaluation, it was revealed generally that all the evaluated computer studies textbook covered the content stipulated by the curriculum with New computer studies having the highest content coverage index of 0.99 followed by Basic computer studies with index of 0.96 and computer studies for beginners had the lowest content coverage of 0.82.

All the evaluated textbooks had learning activities. New computer studies had LAI of 0.82, computer studies for beginners had LAI of 0.82 and Basic computer studies had LAI of 0.70. The result revealed that only new computer studies evaluated textbook had chapter with CSI of 0.56.

The three computer studies evaluated employed study question at the each chapter with basic computer ranking first (0.61) and new computer studies ranking the lowest with SQI score of (0.50)

The result also revealed that all the computer textbook evaluated are within the acceptance range of -0.05-0.00 of illustration index with new computer studies scoring (-0.75) computer studies for individuals had ILI score of (-0.39) and Basic computer studies scoring the highest ILI score of (-0.77).

The result also showed that the three evaluated computer studies textbooks are readable. Basic computer studies had the

highest mean readability score of 76.24 which is very readable, new computer studies had readability score of 59.27 while computer studies mean readability had the lowest score of 52.86.

Under- represented population index (UPI) of the three computer textbooks evaluated are within the acceptance range of -1.00 to 1.00 with Basic computer studies having the highest UPI of 0.64, computer studies for beginners had UPI of 0.60 while the new computer studies had the lowest score of 0.6

The grand mean score of the TPRS of the three computer textbooks ranged from 2.63 to 2.45 computer studies for beginners scored highest 2.63, followed by Basic computer studies which scored 2.55 while new computer studies had the lowest grand mean score of 2.49.

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